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The Communal Coping Model of Pain Catastrophizing in Daily Life: A Within-Couples Daily Diary Study

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Abstract: The Communal Coping Model characterizes pain catastrophizing as a coping tactic whereby pain expression elicits assistance and empathic responses from others. Married couples (N = 105 couples; 1 spouse with chronic low back pain) completed electronic daily diary assessments 5 times/day for 14 days. In these diaries, patients reported pain catastrophizing, pain, and function, and perceived spouse support, perceived criticism, and perceived hostility. Non-patient spouses reported on their support, criticism, and hostility directed toward patients, as well as their observations of patient pain and pain behaviors. Hierarchical linear modeling tested concurrent and lagged (3 hours later) relationships. Principal findings included the following: a) within-person increases in pain catastrophizing were positively associated with spouse reports of patient pain behavior in concurrent and lagged analyses; b) within-person increases in pain catastrophizing were positively associated with patient perceptions of spouse support, criticism, and hostility in concurrent analyses; c) within-person increases in pain catastrophizing were negatively associated with spouse reports of criticism and hostility in lagged analyses. Spouses reported patient behaviors that were tied to elevated pain catastrophizing, and spouses changed their behavior during and after elevated pain catastrophizing episodes. Pain catastrophizing may affect the interpersonal environment of patients and spouses in ways consistent with the Communal Coping Model.

***Perspective:** Pain catastrophizing may represent a coping response by which individuals' pain expression leads to assistance or empathic responses from others. Results of the present study support this Communal Coping Model, which emphasizes interpersonal processes by which pain catastrophizing, pain, pain behavior, and responses of significant others are intertwined.*

***Key words:** Pain catastrophizing, Communal Coping Model, daily diary, spouse responses.*

Pain catastrophizing is related to acute pain intensity among healthy people[31,38] and to pain severity and poor function among patients with chronic pain.[28,29,39] Pain catastrophizing is defined as a tendency to ruminate on, magnify, and feel helpless about pain.[20,38] Pain catastrophizing has been cast in terms of various theoretical models, including cognitive appraisal[30] and attention-bias models.[8,14,24] These models have a common focus on intrapersonal processes, such as catastrophic cognitive appraisals and information processing biases toward the most threatening aspects of pain. Another conceptualization argues that pain catastrophizing represents a coping response by which people's pain expressions prompt assistance or empathic responses from others.[39] This Communal Coping Model (CCM) of pain catastrophizing emphasizes interpersonal processes and the social context in which pain and pain behavior is embedded.

A variety of studies suggest that pain catastrophizing is indeed related to responses of others toward people in pain. Patient pain catastrophizing is related to patient-reported spouse solicitousness, social support,[22] and otherwise positive responses.[3,12,13] However, some studies also suggest that patient pain catastrophizing is related to patient-reported spouse punishing and negative responses.[2,34,43]

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A key tenet of the CCM is that in order to be communicative, pain catastrophizing cognitions must "produce" detectable signs of pain. Going beyond the traditional self-report paradigm, Sullivan et al[40] found that, among healthy people, high pain catastrophizers displayed facial and vocal pain behaviors during a cold pressor for a longer duration when with another person than when alone. Sullivan et al[41] also found, again among healthy people, that the relationship between pain catastrophizing and observer ratings of subject pain intensity during a cold pressor was mediated by observer-rated displays of subjects' facial pain behavior. Keefe et al[22] addressed whether pain catastrophizing in patients with cancer was related to spouse reports of their own responses to patients. Not only was patient pain catastrophizing related to spouse ratings of patient pain intensity and frequency of pain behaviors but it was also related to spouse reports of high caregiver stress and critical responses toward patients. Cano et al[7] conducted an observational study of couples discussing the impact of chronic pain on their lives. They found that patient pain catastrophizing was related to greater frequency of patient emotional disclosure about pain to the spouse, but that these more frequent disclosures predicted more frequent invalidating responses by the spouse.

Pain catastrophizing appears to produce noticeable signs of pain, both physical and verbal, and is linked to responses from others, although these are not necessarily positive supportive responses. However, it is difficult to draw firm conclusions from these studies. Most studies (aside from those by Keefe et al[22] and Cano et al[7]) relied on questionnaire-based patient self-reports of pain and perceptions of spouse responses, possibly capitalizing on shared reporter variance. In addition, previous studies were cross-sectional. There are no studies on the longitudinal relationships wherein pain catastrophizing could show effects on subsequent responses by others in naturalistic settings, as stipulated by the CCM. To better understand pain catastrophizing in its full interpersonal context, both the relationship between pain catastrophizing and subsequent spouse responses and the reverse causal pathways need to be tested. That is, certain behaviors of others may stimulate patient pain catastrophizing.

To test these relationships, we used electronic diary methods to evaluate the degree to which pain catastrophizing among patients with chronic low back pain, occurring in the course of daily life, was related not only to patient-reported pain, function, and perceptions of spouse support, criticism, and hostility, but also to spouse-observed patient pain behavior and spouse reports of their own supportive, critical, and hostile expressions toward patients. Spouse reports were used to estimate cross-spouse effects absent in common reporter method variance.[33]

To the degree that the CCM is valid, we expect patient pain catastrophizing, pain intensity, and negative mood to be greater when the spouse is present than when absent, and we expect patient pain catastrophizing to be related to increases in patient pain behaviors as observed by the spouse in both concurrent and lagged analyses. Given the inconsistent findings in the literature, we cannot hypothesize that pain catastrophizing will be related primarily to either positive or negative spouse responses. If the CCM is valid, we expect at least that pain catastrophizing will be related to changes in patient perceptions of spouse support, criticism, and hostility, as well as to changes in spouse ratings of the support, criticism, and hostility they express toward the patient in both concurrent and lagged analyses. In exploratory analyses, we also evaluated whether the degree to which spouses responded to increases in pain catastrophizing would be partly accounted for by the degree to which they noticed increases in patient pain expression (ie, their observations of changes in patient pain intensity and pain behaviors). Reverse (cross-) lagged effects were also evaluated to illuminate the broader interpersonal context of pain catastrophizing. The CCM would be supported to the extent that lagged associations proceeding from a pain catastrophizing → spouse behavior pathway generally exceed lagged associations proceeding from a spouse behavior → pain catastrophizing pathway. Finally, we controlled for patient state negative affect in all analyses to determine whether observed relationships between pain catastrophizing and spouse responses were not actually reflecting relationships between simple negative affect and spouse responses.

Method

Participants

One hundred twenty-one married couples were recruited through referrals from staff at the pain clinics of Rush University Medical Center in Chicago, IL, Duke University Medical Center in Durham, NC, Memorial Hospital in South Bend, IN, through advertisements in local newspapers and via flyers provided through various health care agencies. Each participant received $150. The protocol was approved by the Institutional Review Boards at Rush University Medical Center, Duke University Medical Center, and University of Notre Dame.

Patient inclusion criteria were a) pain in the lower back stemming from degenerative disk disease, spinal stenosis, or disk herniation (radiculopathy subcategory), or muscular or ligamentous strain (chronic myofascial pain subcategory); b) pain duration of at least 6 months with an average intensity of at least 3/10 (with 0 being "no pain" and 10 "the worst pain possible"); and c) age between 18 and 70 years. The inclusion criterion for spouses was age between 18 and 70 years.

Exclusion criteria for both patients and spouses were a) current alcohol or substance abuse problems or meeting criteria for alcohol or substance abuse or dependence within the past 12 months; b) a history of or current psychotic or bipolar disorders; c) inability to understand English well enough to complete questionnaires; d) acute suicidality; and e) meeting criteria for obsessive-compulsive disorder or posttraumatic stress disorder within the past 2 years. A further exclusion criterion for patients was pain due to malignant conditions (eg, cancer, rheumatoid arthritis), migraine or tension headache, fibromyalgia, or complex regional pain syndrome. A further exclusion criterion for spouses was current acute pain from any other source (ie, migraine headaches) or history of chronic pain within the past 12 months.