

Temporal associations between spouse criticism/hostility and pain among patients with chronic pain: A within-couple daily diary study



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ABSTRACT

Chronic musculoskeletal pain can strain marriages, perhaps even to the point of engendering spouse criticism and hostility directed toward patients. Such negative spouse responses may have detrimental effects on patient well-being. While results of cross-sectional studies support this notion, we extended these efforts by introducing expressed emotion (EE) and interpersonal theoretical perspectives, and by using electronic diary methods to capture both patient and spouse reports in a prospective design. Patients with chronic low back pain (CLBP) and their spouses (N = 105 couples) reported on perceived spouse behavior and patient pain 5 times/day for 14 days using Personal Data Assistants (PDAs). Concurrent and lagged within-couple associations between patient's perceptions of spouse criticism/hostility and patient self-reported pain and spouses' observations of patient pain behaviors revealed that (1) patient perceived spouse criticism and hostility were correlated significantly with pain intensity, and spouse observed patient pain behavior was related significantly with patient perceived hostility at the same time point; (2) patient perceived spouse hostility significantly predicted patient pain intensity 3 hours later, and spouse observed pain behaviors significantly predicted patient perceived spouse hostility 3 hours later. Results support both EE and interpersonal models, and imply that a comprehensive model would combine these conceptualizations to fully illustrate how spouse criticism/hostility and patient pain interact to produce a negative spiral. Given that marital interactions are amenable to clinical intervention, improved insight into how spouse behavior and patient pain are tightly linked will encourage productive translational efforts to target this neglected area.

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1. Introduction

For some people who suffer from persistent pain, the quality of the marital relationship may decline [6,28,35,44]. Long-term pain, coupled with lifestyle changes caused by pain, may not only undermine support but may also increase the likelihood of spouses responding in unhelpful ways to patients [36]. High levels of negative marital interactions may actually inhibit patient adjustment to chronic pain. In particular, spouse criticism, punishment and hostility have been shown to be related to elevated patient pain intensity [1,4,7–9,16,23,27,43].

Despite robust effects in this emerging literature, most studies are not based on well-articulated theories of interpersonal interaction, making it difficult to derive testable hypotheses and to interpret results. Moreover, extant studies have largely been cross-sectional which leaves temporal sequences ambiguous. We propose that the nature of the relationship between spouse criticism/hostility and patient pain may be illuminated by two theoretical perspectives that differ in their temporal sequencing of interpersonal events and pain: expressed emotion (EE) and interpersonal theory. EE theory explains how family environments high in criticism and hostility exacerbate or maintain a variety of illnesses by interacting with patient vulnerability to stress [14], leading to perpetuation of symptoms [19,20]. Indeed, relationships between EE and psychiatric relapse are strong [5,19,46]. Expanding this model to patients with chronic pain, spouse criticism/hostility may aggravate and perpetuate symptoms of chronic pain, such as patient pain intensity and pain behaviors.

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Just as aversive spouse reactions might contribute to poor patient adjustment, the reverse causal pathway may also exist, as described in interpersonal models of depression [12]. Interpersonal models hold that depressed patients behave in ways that engender rejection from others and that this rejection in turn perpetuates depression [13]. Like spouses of depressed patients [10], spouses of chronic pain patients may become frustrated when pain does not remit and adverse lifestyle changes become seemingly permanent [34]. Because patient pain intensity and pain behaviors may provide reminders to spouses of the negative impact of the pain condition, hearing patients speak of pain intensity and witnessing pain behavior may elicit critical and hostile behavior from spouses toward patients [36].

In the present study, we evaluated the degree to which EE and interpersonal models explain connections between spouse criticism/hostility and patient pain behaviors and pain intensity using longitudinal daily diary methodology. Patients with chronic low back pain (CLBP) and their spouses were prompted to report on perceived spousal behavior and patient pain 5 times/day for 14 days using Personal Data Assistants (PDAs). Concurrent and lagged within-couple associations between patient's perceptions of spousal criticism/hostility and patient self-reported pain and spouses' observations of patient pain behaviors were examined. If the EE model is valid, then patient perception of criticism/hostility from spouses would predict patient self-report of pain and spousal observations of patient pain behavior concurrently and in the 3 hours following perceptions of criticism. If the interpersonal model is valid, then spousal observations of patient pain behaviors would predict patient perceptions of spousal criticism/hostility concurrently and in the next 3 hours.

2. Method

2.1. Participants

Participants were 105 married couples recruited primarily through referrals from staff at the pain control centers of Rush University Medical Center in Chicago, IL, Duke University Medical Center in Durham, NC, and Memorial Hospital in South Bend, IN. In order to obtain additional participants and to increase the diversity of the sample we also recruited through advertisements placed in local newspapers and through flyers provided at various health care agencies. Couples received \$300 for participation in the study. The protocol was approved by the Institutional Review Boards at Rush University Medical Center, Duke University Medical Center, and University of Notre Dame.

Inclusion criteria for patients were: (a) musculoskeletal pain of 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 a history of psychotic or bipolar disorders; (b) inability to understand English well enough to complete questionnaires; (c) acute suicidality; (d) psychotic symptoms; (e) meeting criteria for substance abuse or dependence (within the past 12 months); (f) meeting criteria for depression of postpartum subtype; (g) meeting criteria for any type of bipolar disorder; and (h) meeting criteria for obsessive-compulsive disorder or posttraumatic stress disorder within the past 2 years. A further exclusion criterion for patients was if their pain complaint was caused by malignant conditions (eg, cancer,

rheumatoid arthritis), migraine or tension headache, fibromyalgia, or complex regional pain syndrome. A further exclusion criterion for spouses was if they reported currently suffering from a condition that caused episodes of acute pain (ie, migraine headaches) or reported a history of chronic pain within the past 12 months.

Inclusion and exclusion criteria were assessed by a detailed medical and psychosocial history, including administration of the Mood Disorder, Psychotic Screening, and Substance Use Disorders modules of the Structured Clinical Interview for DSM-IV Axis I Disorders - Non-Patient Edition (SCID-IV/NP [15]). The medical history assessed general health as well as low back pain.

Initially, we recruited 121 couples, but 8 couples declined to participate in the diary portion of the study, 3 couples started the diary study but did not finish, 4 couples lost data because of PDA malfunctions, and 1 couple's data were lost because of failure to upload from the PDA at an appropriate time. Thus, the final sample included 105 couples. Women comprised 48.6% of the sample ($n = 51$). Demographic characteristics of couples not included in this investigation did not differ significantly from those who were included. See Table 1 for sample descriptive information.

2.2. Electronic diary

Electronic diaries signaled participants to complete 5 assessments each day, starting at 8:50 am and occurring every 3 hours until 8:50 pm. Such frequent assessments can help minimize retrospective bias in ratings [42]. Daily diary data obtained in this manner also appear to suffer little from reactivity effects that are sometimes caused by monitoring [11,24]. Variability in ratings within the day is also captured well by this method [29,41]. Studies also have provided support for the reliability, validity, and compliance with electronic diary strategies when used to assess pain, affect, and behavior [11,24,29,42]. Electronic diaries with time-stamped entries also enable one to accurately assess when ratings were made, something that cannot be done with paper diary methods [24]. Finally, the software we used to program PDAs allowed us to include branching algorithms to reduce participant burden. We used the branching algorithms to assess whether participants interacted with their spouse or if spouses observed patients in the past 3 hours. If participants did interact with their spouse, they would be asked questions about perceived criticism/hostility, but if they did not interact with their spouse, then those questions would be skipped. If spouses reported observing patients, they would be directed to questions asking about pain behaviors they observed in the patient, but if they did not observe the patient, they would not be asked these questions.

Both patients and spouses completed electronic diary measures of pain, behavior, and perceived criticism and hostility for 14 consecutive days. The Experience Sampling Program (ESP [3]) was used for this study. For data collection participants were given handheld Palm Zire 22 PDAs, Palm, Inc. 950 W. Maude Ave. Sunnyvale, California 94085-2801, running the Palm OS platform. This device provided a high resolution screen that allowed adequate

Table 1
Demographic characteristics.

	Patient	Spouse
Gender (female)	48.6% ($n = 51$)	51.4% ($n = 54$)
Age in years, mean (SD)	46.30 (12.1)	45.96 (13.2)
Hispanic	4.8% ($n = 5$)	5.7% ($n = 6$)
African American	15.2% ($n = 16$)	18.1% ($n = 19$)
Caucasian	80.0% ($n = 84$)	76.2% ($n = 80$)
Employed	40.0% ($n = 42$)	63.8% ($n = 67$)
Disability insurance	34.3% ($n = 36$)	13.3% ($n = 14$)
Length of marriage, mean (SD)	14.30 (14.0)	–
Pain duration, mean (SD)	9.04 years (7.8)	–
Dyadic adjustment scale, mean (SD)	105.05 (22.51)	–

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