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# Social interaction in pain: Reinforcing pain behaviors or building intimacy?

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## 1. Introduction

To date, pain research has focused almost exclusively on operant models to interpret the function and predict the consequences of pain-related interaction in chronic pain couples. However, evidence suggests that intimacy models of interaction may provide additional and alternative explanations for pain interaction. Specifically, intimacy models conceptualize some verbal expressions of pain-related distress as emotional disclosure, which the partner may validate or invalidate. This review compares and contrasts models of interaction in chronic pain couples, describes limitations of the existing research, and offers directions for future research. Although models of pain empathy suggest that facial expressions and other nonverbal behaviors convey important information concerning pain and other emotions[8], we focus this review on verbal communications for two reasons. First, it is not known whether nonverbal behavior can be understood using an intimacy framework. Second, others' interpretations of nonverbal behaviors are affected by accompanying verbal communication[12].

## 2. Operant Models of Pain-Related Interaction

Simply put, operant models[6] as well as cognitive-behavioral[30] models of pain posit that pain behaviors—particularly facial expressions and paraverbal verbalizations[28,29]—communicate pain to close others. Spouses' responses to pain behaviors may reinforce or punish those behaviors. A great deal of self-report and observational research has supported the operant model of pain in couples[27]. Evolutionary refinements to operant approaches have suggested that pain behaviors communicate pain to kin and safe others who can mobilize resources[31]. Intentionality may differ by the modality of expression[10]. For instance, deliberate, verbal communications are under greater cognitive and emotional control than facial expressions.

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A limitation of operant and cognitive-behavioral models of pain is the focus on verbal pain behaviors such as rating or describing one's pain. Examples of verbal pain behavior in pain models are often restricted to pain ratings or descriptions of pain[6,10]. However, individuals with pain may also describe their pain-related distress (e.g., "This pain is really getting me down"). There have been few attempts in the pain literature to distinguish these verbal communications from verbal pain ratings. Instead, talking about one's thoughts or feelings about pain appears to be defined as yet another type of verbal pain behavior. Spouse responses —especially reassurance and emotional validation[6]—are considered to be possible reinforcers of that behavior. While this is one way to conceptualize these behaviors, there is an alternative approach to understanding the meaning of and reactions to verbal communications about pain-related distress.

## 3. The Intimacy Process Model of Interaction

Reis and Shaver's[24] interpersonal process model of intimacy has contributed to a growing interest in the meaning of couples' interaction behaviors. According to this model, intimacy develops when one person's self-disclosure of emotions is met with the partner's empathic and validating responses. Indeed, one's self-disclosure of emotions as well as the partner's responsiveness and empathy predict intimacy and satisfaction in couples[17–19]. With this in mind, verbal communications about one's thoughts and feelings about pain, may entail attempts to disclose emotion, recruit emotional support, and build intimacy.

An empathic and concerned response from the partner may also contribute to intimacy. Emotional validation, including empathic responses, enhances the emotion regulation process for both partners because such responses allow each person to process stressful or aversive stimuli[7]. In contrast, interactions characterized by invalidation, such as hostility or ignoring a partner's emotional responses, indicate rejection and disregard for the partner and, in turn, disrupt emotion regulation. For example, sadness and anger expressed by both partners is associated with greater depressive symptoms and pain severity in chronic pain couples[11].

## 4. Using Intimacy Models in Pain Research

### 4.1 Verbal Communications about Pain-Related Distress and Spouse Responses

In contrast to operant models, in which talking about pain constitutes pain behavior that should be extinguished, intimacy process models of interaction[7,17] conceptualize some types of verbal communications—namely, talking about one's thoughts or feelings about pain—as emotional self-disclosure. In some respects this formulation of pain talk resembles the communal coping model of pain catastrophizing[29], in which catastrophizing might communicate the need for instrumental and emotional support, consciously or not. However, an intimacy process model framework encompasses a wider array of disclosures.

The operant approach typically views positive social attention, reassurance, and concern as likely reinforcers of verbal pain behaviors [6]. Because communications about thoughts and feelings can be conceptualized as emotional disclosures in intimacy models, the emotional content of spouse responses becomes more relevant. Yet, existing measures of attentive or concerned responding (i.e., solicitousness) based on operant and cognitive-behavioral theories rarely account for emotional valence[15,25,26]. A qualitative self-report study of chronic pain couples demonstrated that there is great variability in the emotional tone of spouse responses, as evidenced by a hostile-solicitous response category 22. Not only is there evidence that emotional valence is important but there is also evidence that emotional validation is qualitatively different from solicitous spouse responses commonly assessed in pain research. Specifically, a factor analytic study of couples showed that solicitous and distracting spouse responses loaded on a different factor than spousal validation and invalidation[1]. Validation

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loaded negatively and invalidation loaded positively with punishing spouse responses, which consist of responses laden with negative affect.

The emotional nature of interaction has also been taken up in the social support literature, which consistently links spousal support to health benefits [3,16]. Spousal behaviors are most beneficial when they match the needs of the support seeker because they demonstrate that one's needs are being met [4]. In other words, these spousal responses validate the experience of the support seeker. In a study of couples' support interactions, matching of support mattered more when partners disclosed emotion than when partners sought instrumental support[5]. Empathy, caring, concern, and closeness may be desired when a person with pain discloses emotion, not "expertise" or problem-solving, which could signal invalidation of emotion.

### 4.2 Future Research Directions and Opportunities for Intervention

Intimacy process models of pain-related interaction generate a variety of avenues for future research. We believe the first step toward conducting such research is to consider methods that will generate emotional disclosure between partners. Although persons with pain may express their thoughts and feelings about pain during household chore tasks such as those used by Romano and colleagues[26], it is more likely that emotional disclosures will be elicited if couples are directed to talk about their thoughts and feelings about the pain. Couples can be asked by an interviewer to discuss the negative and positive aspects of pain, including the impact that the pain has had on their relationship and activities. Pain discussion tasks of this type last for approximately 10 minutes and also elicit spousal validation and invalidation[1]. Researchers should also keep in mind that interactions about topics other than pain may also be relevant to pain adjustment [11].

Careful consideration of interaction coding systems is also recommended. Newton-John[21] observed that many of the studies on solicitousness that provide support for operant models of pain define solicitousness based on researchers' *expectations* of the reinforcement value of these responses, not on the actual consequences of these responses. For instance, solicitous responses on self-report inventories include getting the spouse something to eat or drink or giving the partner medication15. These are instrumental support behaviors that may or may not reinforce pain behaviors. It may be more appropriate to label spouse responses topographically[21] so that differences between instrumental support (e.g., solicitous responses as currently measured) and emotional validation could be evaluated. Topographical coding would also allow for more rapid coding of large samples of couples.

After choosing appropriate research methods, a variety of hypotheses could be tested. A basic test of the intimacy process model of interaction would be to investigate the associations among pain-related emotional disclosure, validating and invalidating spouse responses, and pain adjustment. Some individuals may conceal pain or limit pain talk to preserve relationship harmony, reduce burden on close others, or prevent negative reactions [20,23]. Thus, an evaluation of motives behind disclosure can inform research on particular patterns of verbal communications among individuals with pain. It may also be interesting to examine the conditions under which emotional validation contributes to pain adjustment. For instance, emotional validation combined with high amounts of instrumental support may predict poor pain adjustment whereas validation combined with lower instrumental support may predict better adjustment.

Researchers interested in testing operant models of pain could also test whether instrumental and emotionally validating responses reinforce pain behavior and/or emotional disclosure by examining the consequences of these responses. Researchers could also investigate whether it is useful to distinguish between instrumental and emotional support responses by the demand that is being made. For instance, it is possible that instrumental or so-called solicitous responses

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in response to emotional disclosures will be detrimental to mental and physical well-being because such instrumental support does not match one's emotional need for validation. To conduct this research, it will be necessary to develop better measures that tap into couples' desires and motivations. For instance, focus groups could be used to generate items assessing the desires for different kinds of support in response to various behaviors in which persons with pain engage (e.g., emotional self-disclosure, explicit requests for help). Alternatively, video recall methods could be used in which persons with pain rate the helpfulness or desirability of their spouses' responses during a discussion about pain or during a pain behavior task. Similar techniques can be used to assess spouses' intentions and motivations.

Several existing interventions incorporate partners into the pain treatment process. For instance, spouse-assisted coping skills training[13] and other cognitive-behavioral and systems approaches[14,30] provide couples with the opportunity to strengthen communication and pain coping skills in order to improve pain adjustment. However, direct attempts to build emotional support and empathy are lacking, which is problematic because couples experiencing problems with emotional support and hostility may need more than skills training [2,14]. These couples may need guidance on developing empathy and perspective-taking [2] as well as the importance of meeting expressions of pain-related emotional disclosure with matching support. Thus, intervention research is also likely to benefit from an intimacy and support approach.

Last, in accord with several models of pain[6,8–10], we recommend that researchers take into account the contextual and situational factors that might affect emotional disclosure and validation. For instance, it is possible that a history of depression, pain, or conflictual interactions with close others may limit one's ability to disclose emotion or express validation. Furthermore, high levels of current pain, the presence of severe life stressors, and time constraints due to work or other obligations may limit spouses' active engagement in supportive and intimacy-enhancing interaction.

## 5. Conclusions

In this review, we argue that some pain-related interaction behaviors-particularly verbal communications about pain-related distress-can be reconceptualized in an intimacy process model of interaction, which suggests that emotional disclosure and validating responses serve to enhance intimacy and healthy emotion regulation. We also recommended that researchers use methods that match their conceptual approaches if progress in the field is to be made. Specifically, researchers must consider if they are interested in the topographical or functional features of pain-related interaction and choose interaction tasks and coding systems accordingly. Doing so will lead to many testable hypotheses that can make significant contributions to intimacy process and operant models of pain as well as intervention development. Drawing on several models of interaction processes appears to be a promising way forward for understanding the role of social interaction in the pain process.

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