What's in a Name?
The Case of Emotional Disclosure of Pain-Related Distress

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Abstract

Pain behavior plays a key role in many theoretical models of pain, with many of these models conceptualizing pain behaviors as potentially detrimental to patient functioning. We propose that a certain class of behaviors—talking to others about one's pain-related distress (i.e., emotional disclosures of pain-related distress)—can be distinguished from other behaviors traditionally conceptualized as pain behaviors. Emotional disclosures of pain-related distress include verbally disclosing one's anger, sadness, or worry about the pain and its impact to another person. In this article, conceptual and empirical evidence is offered to indicate that these verbal behaviors are distinct from other pain behaviors such as bodily expressions and motions, facial expressions, pain ratings, and paraverbal expressions. Emotion and relationships models are also applied to assert that disclosures of pain-related distress may have functions that are not shared with other pain behaviors. In addition to an expanded conceptualization of these verbal expressions of distress about pain, further directions are provided to spur new research as well as clinical recommendations concerning appropriate responses to these behaviors.

Perspective: This article offers an expanded conceptualization of one type of pain behavior—emotional disclosure of pain-related distress—by demonstrating the theoretical and empirical distinctions between this behavior and other pain behaviors. This perspective may enhance clinical work and research aimed at identifying adaptive responses to these behaviors to improve pain adjustment.

Keywords: pain behavior; emotional disclosure; emotion regulation; operant model; responses to pain; pain-related distress

According to Fordyce [11], pain behavior is "the expression or display of pain" (p. 1). Pain behavior plays a key role in many theoretical models of pain including the Fear Avoidance Model [22, 44], biopsychosocial models [13], and communication models [5]. As with the operant model [11], many of these models conceptualize pain behaviors as potentially detrimental to patient functioning and as such, caregivers are advised to extinguish these behaviors and to refrain from reinforcing them. However, we propose that a certain class of behaviors—talking to others about one's pain-related distress (i.e., emotional disclosures of pain-related distress)—can be distinguished from other behaviors traditionally conceptualized as pain behaviors. Emotional disclosures of pain-related distress include sharing with another person one's anger, sadness, or worry about the pain including the extent to which it has affected or may affect one's life and one's relationships. These emotional disclosures can be made with explicit reference to emotion words (e.g., "I'm really sad that I can't go for long walks like I used to"), with indirect verbalization of the specific emotions (e.g., "I'm sick and tired of this pain!" expressed with an angry tone of voice), or without direct reference to emotion words if an emotion can be detected in the expression (e.g., "It's hard for me to walk" said with sad tone of voice). Thus, emotional disclosures of pain-related distress may be identified by language use, emotional content, facial expression, tone, and/or body language, which is consistent with gestalt approaches to emotion coding[4]. Note that merely describing one's pain or its impact without emotional words, content, or expression (e.g., "My back hurts a lot today" with no emotional expression) does not constitute an emotional disclosure of pain-related distress. This behavior may be considered "pain talk" or a verbal pain behavior but it is not an emotional disclosure. Similarly, talking about one's feelings related to a stressor but unrelated to pain may constitute an emotional disclosure but not a pain-related emotional disclosure. Figure 1 illustrates the concept of emotional disclosure of pain-related distress as it relates to other pain behaviors and emotional disclosure behaviors, and it accounts for the fact that there are diverse antecedents and consequences of these behaviors.

Disclosures of pain-related distress may be associated and expressed simultaneously with other pain behaviors, but there is ample conceptual and empirical evidence indicating that these verbal behaviors are distinct from other pain behaviors such as bodily expressions and motions, facial expressions, pain ratings, and paraverbal expressions [19, 41, 43, 46]. Although emotional disclosures of pain-related distress express something about the pain experience, which is a defining characteristic of pain behaviors, conceptual models of emotion [38, 48] and work stemming from the intimacy process model on interpersonal interaction [36] suggest that emotional disclosures of pain-related distress may have functions that are not shared with other pain behaviors. Thus far, theoretical and empirical work has focused on responses to disclosures [3, 9]; much less attention has been paid to the disclosures themselves. The purpose of this manuscript is to offer an expanded conceptualization of these verbal disclosures or expressions of distress about pain to spur new research and offer clinical recommendations concerning appropriate responses to these behaviors.

Pain Behavior is a Multidimensional Construct

To suggest that emotional disclosure of pain-related distress is a distinct class of pain behavior assumes that pain behavior is multidimensional. Indeed, several researchers have taken a multidimensional view of pain behavior [19, 25, 33, 34, 43]. Williams [46] offered a critique of the current approach to the study of pain behaviors, stating that research has rarely examined the correlations among different pain behaviors and treatment studies often focus on reducing overall pain behaviors. Thus, it has not been possible to adequately isolate the function and correlates of different kinds of behaviors [46]. This state of affairs has been particularly detrimental to work on emotional disclosures of pain-related distress, a pain behavior that has received much less attention than other behaviors, such as facial expressions and body movements.

Despite the dearth of research on the multidimensionality of pain behaviors, there are examples in the assessment literature of examining different types of pain behaviors. Based on the work of Turk et al. [25], Kerns and colleagues [19] developed the Pain Behavior Checklist

(PBCL), which assesses four pain behavior domains: Distorted ambulation, facial and audible expressions, help-seeking behavior, and affective distress. Neither the affective distress nor help-seeking behavior subscales assess the behavior of interest in this review. However, both of these scales may have elements of overlap with emotional disclosure of pain-related distress. The affective distress subscale assesses emotion but not whether it has been shared with anyone. In fact, research shows that many people with pain refrain from disclosing their pain-related emotions [26]. The help-seeking subscale contains one disclosure item: "Talk about my pain problem"; however, the item does not assess whether the pain talk included emotional content. Endorsement of this item indicates that there was pain talk but does not necessarily mean that the talk constituted an emotional disclosure of pain-related distress. Nevertheless, it is interesting to observe that in the original [19] and replication sample [27], the help-seeking subscale correlated least strongly with the other subscales. In addition, neither the affective distress nor the help-seeking subscale was significantly correlated with observed pain behaviors in the original PBCL study [19]. Tait and Chibnall [41] also found different correlates of the PBCL subscales such that distorted ambulation loaded on a disability factor whereas the affective distress, facial expressions, and help-seeking subscales loaded on a distress factor. This pattern of findings supports the multidimensionality of the pain behavior construct. These findings also suggest that pain talk (i.e., non-emotional talk about pain) and emotional disclosures of pain-related distress are distinct types of pain behavior or that these verbal behaviors do not belong to the pain behavior construct. Yet, it will be necessary to directly test the extent to which emotional disclosures of pain-related distress may be differentiated from pain talk and the PBCL scales in future studies.

More recently, the 39-item Patient-Reported Outcome Measurement Information System (PROMIS) item bank was developed to measure a more inclusive range of pain behaviors [37]. Interestingly, the only items that captured "talking about the pain" were excluded because Item Response Theory analyses indicated poor fit with the pain behavior construct: "When I was in

pain, I talked about the pain", "When I was in pain, I gave a detailed description of the pain to others", and "When I was in pain, I talked about the pain with one or more people." Note that these items imply that the person with pain is giving an account of their pain *during* the pain episode. Items tapping into emotional disclosure behaviors about the pain experience, either during the pain episode, or afterwards, were not included in item development, suggesting that the survey developers did not consider emotional disclosures of pain-related distress as a pain behavior. However, if one examines the non-emotional pain talk items that were included in the analyses but then dropped out, these non-emotional disclosures did not seem to group with other pain behavior items. It is possible that intentional and purposeful disclosures, whether they contain emotional content or not, are distinct from other pain behaviors precisely because of the intentionality involved in the expression of these behaviors. Dual process accounts of neuropsychological processing propose that pain expression is dependent on both automatic (i.e., reflexive behaviors such as facial expressions) and controlled processes (i.e., purposeful behaviors such as asking for help) [15]. McCrystal et al. [25] applied this dual process account to a factor analysis of pain behaviors in the PROMIS item bank. An item that appears to indicate the indirect expression of distress (i.e., "asked people to leave him/her alone") loaded on the controlled factor. It appears that items that involve directly engaging with someone else, even if it means asking to be left alone, could be conceptualized as controlled responses. Furthermore, it is possible that expressive language used to describe thoughts, feelings, and experiences about pain, including emotional disclosures about pain-related distress, could load onto a controlled factor, although future research is necessary to test this hypothesis because these items were not included in PROMIS. In sum, the findings provide further evidence that sharing one's suffering with another person may be distinct from pain behaviors that are more reflexive or automatic in nature (e.g., facial expressions; guarding).

Emotional Disclosures are Functional and Goal-Directed

In addition to these factor analytic studies, which focus on quantitative approaches to the

study of pain behaviors, another way to examine emotional disclosures of pain-related distress is to consider the function of such behavior. According to Fordyce [11], the function of all pain behavior is to express or communicate pain. Facial expressions, for instance, may communicate information to others about a need for assistance or potential threats in the environment [46, 47]. Emotional disclosures of pain-related distress communicate emotion and may also communicate a variety of other messages including but not limited to one's need for emotional intimacy or desire for instrumental support. According to operant models, responses to pain behaviors may increase or reduce the frequency of the pain behavior in the future, thus providing important information about the function of the behavior. Unfortunately, self-report checklists do not assess the function of individual pain behaviors, nor do scales measuring others' responses such as those found in the Multidimensional Pain Inventory [20] or Spouse Response Inventory [39] assess the effects upon an individual's pain-related behaviors. The functions of behaviors are ideally assessed on a case-by-case basis and through observation and repeated trials [1] in the presence of others. Despite these limitations in measurement, it is useful to consider the variety of functions that are served by disclosing pain-related distress to aid in the conceptualization of this behavior and how it fits within the broader category of pain behavior (or not).

Consistent with recent social neuroscience research [29], emotional disclosures of pain-related distress may be aimed at regaining rewards or diminishing reward loss due to pain. Drawing from basic research with multiple animal models including humans, Papini and colleagues [29] concluded that pain is a multidimensional experience that includes emotional consequences to the interference and physical disability associated with pain. With interference and disability come actual and expected losses in positive reinforcement from activity (i.e. reward loss). This view is consistent with a behavioral model of depression that argues that depressive behaviors are expressed when a person experiences reductions in response-contingent positive reinforcement from the environment [23]. Applying Papini et al.'s work to humans, pain-related

reward losses may occur in one's relationships (e.g., loss of intimacy and relationship function), activities (e.g., the inability to pursue certain activities), or self-schemas (e.g., "I am no longer the person I thought I was"). In the case of pain, the inability to engage in valued activities because of pain and the loss of reinforcement from activities due to pain may elicit a variety of reactions including emotional distress and behaviors such as emotional disclosures of pain-related distress. For instance, people may disclose about actual or anticipated pain-related reward loss (e.g., anger or sadness about the inability to engage in cherished activities, fear of future disability) with other people. Such behaviors may also be aimed at restoring lost rewards (e.g., identifying new activities or adaptations to existing activities) or altering one's perception of the losses with the aim of reducing distress (e.g., gratitude for the ways in which one is still able to contribute to society). To the extent that people are not able to achieve these goals by sharing their experiences with others, they may become more distressed as their reward losses continue or worsen. This social neuroscience research suggests that emotional disclosures of pain-related distress are distinct from other pain behaviors because of the experience of emotion stemming from the need to reduce pain-related reward loss [29].

Models of emotion and interpersonal interaction [38, 48] also make claims that are consistent with the idea that a subset of communicative pain behaviors may have particular functions that are different from other pain behaviors [5, 15, 16, 47]. Specifically, interpersonal relationships research has shown that individuals often engage in social interactions to reduce distress and improve mood (i.e., interpersonal emotion regulation [48]). The intimacy process model suggests that partner responsiveness, including accepting the other person's emotions as valid, in response to emotional disclosures can promote self-regulation and interpersonal intimacy [36]. Pain research suggests that indeed sharing emotions with another person about painful procedures is related to less pain and better emotion regulation [21, 40]. Emotional disclosures of pain-related distress to others, as with other forms of emotional disclosure, may also serve other goals aside from reducing distress and managing emotions. As noted by Rimé [38], there are

numerous motives for sharing emotions about events including but not limited to desires to bond with others, receive attention or consolation, legitimize experiences, obtain advice or comfort, or vent. Other motives could include attempts to clarify thoughts and feelings surrounding events [48]. In sum, a number of goals—all centered on reducing distress—may be served by talking with another person about one's thoughts, feelings, and experiences, including disclosures of pain-related distress. The social interaction and neuroscience research suggests that there are a variety of goals that may be served by emotional disclosures of pain-related distress and while the behavior may be communicative in that it simply communicates one's emotional experience to another person, it is also goal-directed with many possible goals or needs beyond simply expressing distress, obtaining instrumental support, or gaining intimacy.

The sheer diversity of goals that may be served by pain-related distress disclosures means that empathic attention may not necessarily reinforce this behavior, an idea that has been suggested in prior work [3, 9]. One must understand the goal-directed nature of the pain talk to make predictions about the effects of others' responses to these behaviors. For instance, if the goal is to increase intimacy and the partner does not attend to one's disclosures or reacts with hostility, this will elicit more distress and perhaps other pain behaviors that signal distress and escape. If the goal is to identify and engage in new rewarding activities, empathic responses in the absence of activity engagement may fall short and also create distress and elicit other pain behaviors. If the goal is to think things through and understand one's situation, empathic responses or offers of instrumental support may actually be rebuffed. The consideration of goals and motives offers many fruitful avenues for further investigation.

Future Directions

To review, studies using factor analytic and item response theory approaches have shown that emotional disclosures of pain-related distress and other forms of talking about pain-related distress do not load on the same factors as other pain behaviors. In addition, theoretical and empirical work in pain, emotion, social interaction, and neuroscience suggests that emotional

disclosures of pain-related distress are behaviors that may serve a variety of functions including but not limited to garnering support from others. Although these disclosures share features with other pain behaviors and with other types of emotional disclosures, the working model presented in Figure 1 also demonstrates that these disclosures are distinct from each class of behavior.

However, empirical research is needed to investigate how these behaviors are correlated with other types of pain behaviors, including whether disclosures may lead to other types of pain behaviors and vice versa. Evidence suggests that sharing anxiety about dental procedures and frustrations regarding knee replacement recovery are related to less pain and better emotion regulation [21, 40]. Perhaps these effects also depend on the type of sharing (e.g., in person, writing), type of relationship, goals for emotional disclosures of pain-related distress, and environmental contingencies including others' responses (e.g., validating or invalidating, see [2]). The extent to which emotional disclosures of pain-related distress relate to pain reports and other pain behaviors may also depend on the chronicity of the pain, whether the pain is benign or malignant, of insidious or discrete onset, and related to a procedure or an injury. In other words, the circumstances of the pain as well as the attributions and meanings attached to the pain may influence the correlation and temporal associations between disclosures of pain-related distress and other pain behaviors. The working model in Figure 1 includes a role for these characteristics and experiences in predicting behavior.

Research also is needed to understand how the goals and motives of multiple pain behaviors can be differentiated in human studies. For instance, a request that one be left alone when in pain could arise from pain sensations and the desire to not be touched lest it cause pain. The same behavior may stem from feelings of hopelessness and despair at losing valued social activities. The same behavior may arise from both motives. Multiple pain behaviors may also be executed simultaneously or nearly so. For instance, a person in pain may grimace, express worries about a future with pain, and ask for help to avoid more pain. Each behavior

may arise from a different motive and reinforcement schedule but because they are occurring simultaneously, it may be difficult to determine how these behaviors may have developed and how to choose the most appropriate response in a given situation. Work is needed to develop more nuanced models of pain behavior that can offer guidance on the most appropriate responses to behaviors in a way that attends to the diverse motivations that underlie these behaviors as well as the environmental contingencies that may have shaped them. As such, the working model in the figure includes a role for motives and goals and reinforcement history.

In addition, whereas emotional disclosures of pain-related distress may have beneficial effects on emotion regulation, it is also possible that such behaviors could have negative consequences. For instance, extensive emotional disclosures can take on a ruminative quality [6]. Specifically, Curci and Rimé [6] found that continued social sharing about a distressing life event over a 10-month period was related to a lower likelihood of self-reported emotional recovery. Negative emotional disclosures can also provoke resentment, disengagement, and less emotional responsiveness in others, especially when the discloser is perceived as having high baseline negative affect prior to the disclosure [12]. Similarly, in a study of chronic pain couples who discussed the impact of pain in their lives, repeated emotional disclosures about the impact of pain was related to perceived and observed negative partner responses like emotional invalidation [2]. In contrast, refraining from talking about illness-related concerns is related to greater distress for patients with cancer and their partners [32] and research has shown that patient and partner ambivalence over emotional expression is related to distress and pain behaviors in the person with pain [31]. Investigations into the benefits and drawbacks of emotional disclosure should account for a possible curvilinear association between emotional disclosure of pain-related distress and well-being. It remains to be seen if minimal and excessive disclosures both result in negative consequences whereas a moderate amount of disclosures may be ideal.

Although emotional validation responses that convey acceptance and attempts to understand the partner's pain appear to have positive socioemotional benefits for people with

pain including less individual and relationship distress [3, 9, 14], the benefits of validation may also depend on the other responses in which the partner engages. It is likely that the most beneficial responses are those that include emotional validation of emotional disclosures of pain-related distress as well as encouragement and reinforcement of valued activity. Whether validation is a beneficial response to pain-related emotional disclosures may also depend on the emotion regulation goals of the person with pain including the type of reward loss that generated the distress. For instance, an individual with a high need for intimacy who can no longer participate in a valued activity with one's partner because of the pain may experience distress due to both the pain and the loss of intimacy. The partner's emotional validation may contribute to reduced distress and initiate a new reward structure in which intimacy is developed through other activities. In contrast, someone with a low need for intimacy may not prefer validation to cope with the reward loss caused by pain. Preliminary evidence for the importance of considering emotion regulation goals comes from the cancer literature in which it was found that partner responsiveness was related to less distress among people with cancer who expressed a high need for emotional expression whereas partner responsiveness was associated with greater distress in those with a low need for emotional expression [7]. As suggested in Figure 1, researchers should explore the extent to which features of the context (e.g., intended goal or function of the disclosure), pain characteristics (e.g., pain duration), or other characteristics (e.g., overall need for emotional expression) of the individual in pain moderate the effects of others' responses upon an individual's outcomes (e.g., reduction of pain-related distress).

Future research may employ three strategies. First, future studies may use existing measures of pain behaviors as well as measures of emotional disclosure to test the extent to which these behaviors are correlated. Second, new measures must be developed to capture the full range of pain behaviors, especially controlled expressions such as emotional disclosures about pain-related distress. Most items that assess talking about pain, regardless of whether the talk is about pain-related distress, have been excluded from or not adequately assessed in

current measures of pain behaviors such as the PBCL and PROMIS inventories. Third, while some work has been done on developing methods of assessing emotional disclosure of pain-related distress in the context of specific interactions about the impact of pain in couples [2], future research should use other methodologies including diary methodologies, video recall tasks, and single-subject designs to assess individuals' motives (goals) and the effects of disclosures of pain-related distress.

Research is also needed to better understand the role of emotional disclosures of pain-related distress and other pain behaviors in interventions. A shared aim of Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) for pain appears to be reducing interference of pain with daily activities and reward loss so that individuals can pursue valued goals and enhance quality of life. Additional research may investigate the extent to which responses to emotion regulation needs and reward loss explain the benefits of these interventions. For instance, expressing feelings about pain as part of an intervention may alleviate distress by meeting clients' goals in the way of fostering interpersonal emotion regulation to change perceptions about reward loss and initiating new rewarding interactions. Spouses and other family members should also be included as active participants in interventions because they have the potential to address (disclosures of) distress on a daily basis. In fact, an emotional disclosure intervention for patients with cancer, many of whom reported pain, and their partners resulted in greater intimacy for patients who initially reported lower levels of disclosure to their partners [30]. To do this effectively, it may be necessary to train partners and family members in "mindfulness" skills including awareness to the present moment of the verbal interaction, in order to help partners identify the sources of distress in the partner with pain and encourage empathic listening behavior [8, 28]. Rather than extinguish talking about distress, this approach offers an opportunity for patients and their caregivers to understand the losses associated with pain and to confront them constructively. For instance, partners can validate emotional disclosures and encourage valued activities, including physical activity to

promote health and reduce pain. Intervention researchers may also test the efficacy of emotional disclosure and partner responsiveness strategies compared to or in conjunction with other coping and pain management interventions including individual CBT[10] and ACT[24, 45] approaches and couple-focused approaches[17, 18]. The central role of language in distress behaviors also requires further investigation in basic and intervention research. As the underlying theory of Acceptance and Commitment Therapy, Relational Frame Theory [42] posits that language is at the root of human suffering and that verbal behavior, which would include emotional disclosure of pain-related distress, is shaped by the environment. Drawing from RFT, the antecedents and consequences of (verbal) pain behaviors should be thoroughly examined, for instance by means of observational-experimental designs (e.g., single-subject designs) and experience sampling methods (e.g., diary studies). This is especially important because disclosures can have different functions and goals for a given person at a given point in time. This research could then be used to develop evidence-based assessments and interventions that account for the diverse functions of (verbal) pain behaviors.

Conclusion

In conclusion, this review suggests that the emotional disclosure of pain-related distress is a special case of pain behavior. Empirical research has shown that talking about pain and pain-related distress may be distinct from other pain-related behaviors and that items assessing talking about pain were dropped from the PROMIS pain behavior item bank because of poor fit [37]. Instead, emotional disclosures of pain-related distress may be an example of controlled [15] and goal-directed [48] communicative behavior that arises from pain-related reward loss [19]. This new conceptualization, which is visually depicted in the working model in Figure 1, may clarify seemingly paradoxical models of appropriate responses to others in pain (e.g., Fordyce's account [11] versus intimacy process account [3, 35]) and promote new insights into the management of chronic pain within its social context. It also offers interesting new challenges to

pain researchers in understanding how multiple pain behaviors are expressed, assessed, and addressed within clinical situations.

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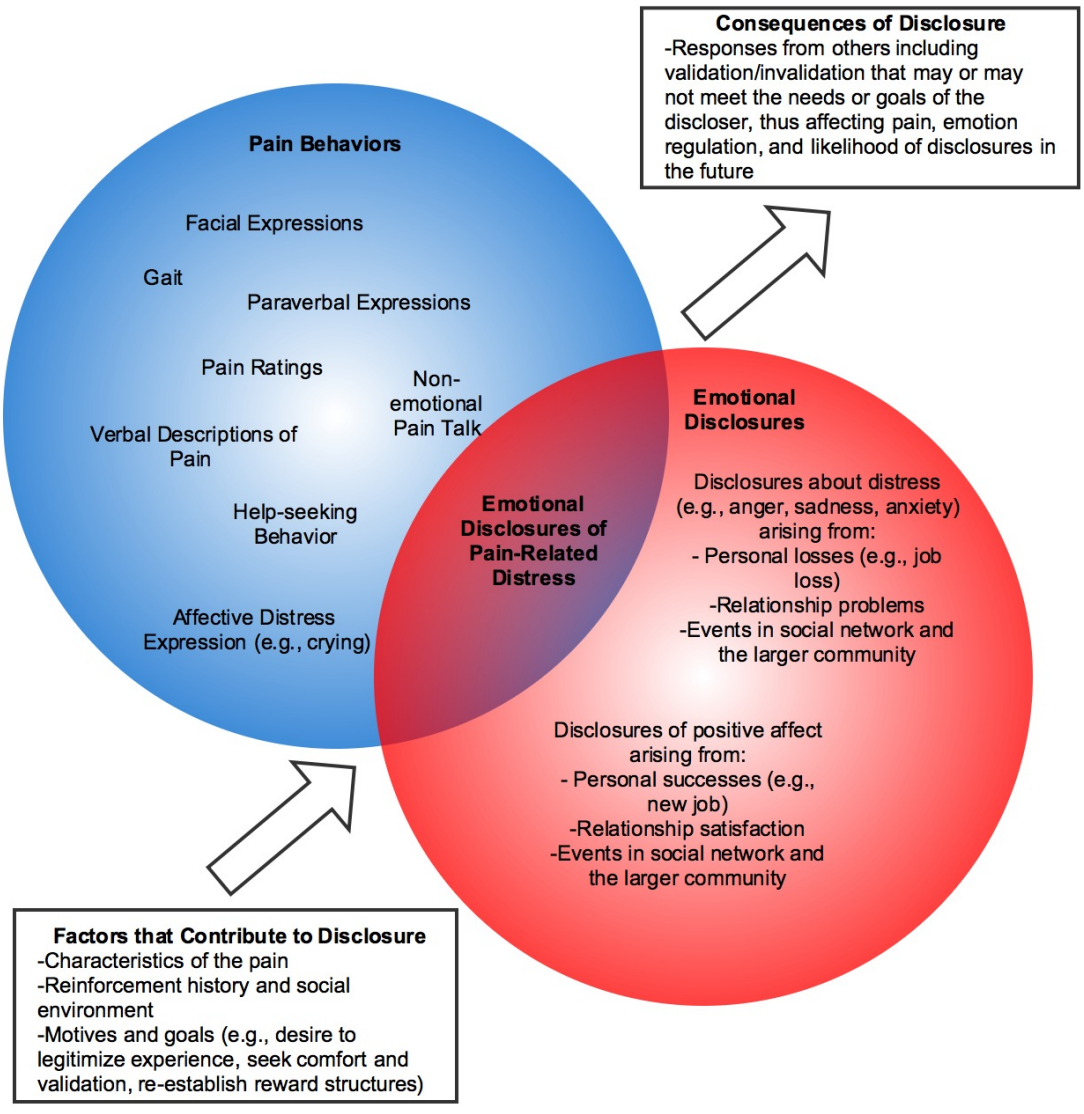
Figure 1. Conceptual model of emotional disclosure of pain-related distress as it relates to other pain behaviors and types of emotional disclosures.


Consequences of Disclosure
-Responses from others including validation/invalidation that may or may not meet the needs or goals of the discloser, thus affecting pain, emotion regulation, and likelihood of disclosures in the future
Pain Behaviors
Facial Expressions
Gait
Paraverbal Expressions
Pain Ratings
Non-emotional Pain Talk
Verbal Descriptions of Pain
Help-seeking Behavior
Affective Distress Expression (e.g., crying)
Emotional Disclosures of Pain-Related Distress
Emotional Disclosures
Disclosures about distress (e.g., anger, sadness, anxiety) arising from:
- Personal losses (e.g., job loss)
-Relationship problems
-Events in social network and the larger community
Disclosures of positive affect arising from:
- Personal successes (e.g., new job)
-Relationship satisfaction
-Events in social network and the larger community
Factors that Contribute to Disclosure
-Characteristics of the pain
-Reinforcement history and social environment
-Motives and goals (e.g., desire to legitimize experience, seek comfort and validation, re-establish reward structures)