

Accurate Pain Detection Is Not Enough: Contextual and Attributional Style as Biasing Factors in Patient Evaluations and Treatment Choice¹

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Ninety-six adults with a supportive or unsupportive attributional style participated in an experiment that examined the effects of contextual (i.e., coping and medical evidence) information on evaluations of pain severity, the pain sufferer, and treatment choice for shoulder pain patients. Respondents accurately detected a patient's pain level from the videotaped facial displays, but patients who were coping with the pain were evaluated more positively than noncoping pain patients. Furthermore, unsupportive attributional style predicted harsher treatment choices. Thus, accurate detection of pain does not guarantee unbiased reactions toward the pain patient.

It is impossible to know exactly how much pain someone else is feeling. Nevertheless, judgments about the experiences of others who are suffering happen routinely. The most obvious examples occur in healthcare settings where physicians, nurses, and other professionals with access to historical, technical, and interpersonal information draw conclusions about the severity of injuries and suffering, treatment choice, and the effectiveness of treatment. Less obvious examples occur when parents evaluate how to respond to a child who has a stomachache or has sustained a fall, supervisors determine whether employees may be released from obligations, and peers weigh excuses in many other social contexts.

It is important to understand the nature of pain observers' perceptions and the forces that may affect their judgments. From a theoretical perspective, certain

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reactions (e.g., expressing sympathy) that are dependent on the perception of suffering may have more or less irreversible effects on the subsequent behavior of the afflicted individual. From a practical perspective, the decisions that people make about sufferers may promote healing, recovery, and positive adjustment or, conversely, they may prolong or even exacerbate suffering.

Prkachin and Craig (1995) provided a model of pain communication as a process in which pain experience is encoded into behavioral changes that are then broadcast into a social world. The behavioral changes may be decoded by observers who then make judgments and decisions about the sufferer. Research based on this model has focused primarily on identifying stimuli that determine observers' ability to ascertain the pain levels of others (e.g., Prkachin, Berzins, & Mercer, 1994). However, the model emphasizes that observers' responses to evidence of suffering can be highly variable and can be influenced by a host of personal and contextual variables. The aim of the current study was to examine contextual and individual difference variables that may influence observers' perceptions of pain in sufferers, as well as the observers' helping reactions to those sufferers.

A study of how people perceive victims may provide concepts that advance our understanding of the pain communication process. Weiner (1980a, 1980b, 1986, 1995a) has proposed a model of helping as an attribution to affect to behavior sequence. According to this model, the causal inferences an individual makes regarding a person's need for help lead to feelings of sympathy or anger that, in turn, mediate helping behavior. Within this tradition, *onset controllability* refers to a victim's control over the circumstances that were responsible for his or her plight. For example, if a person falls on a bus as a result of alcohol intoxication, that misfortune is considered onset controllable. If the fall resulted from blindness, it is considered onset uncontrollable. Higher levels of sympathy and help are accorded to those with an onset uncontrollable cause, whereas those with an onset controllable cause are met with higher levels of anger, lower sympathy, and decreased help. *Maintenance controllability* refers to current efforts to control the misfortune. For example, in the face of adversity, a person may or may not expend effort to cope with his or her plight. The former would be seen as exercising maintenance controllability, whereas the latter would not be viewed in this light. According to the model, victims who are perceived as not exercising maintenance control are blamed more by others, elicit less sympathy, and are less likely to be offered help than those who are seen as coping (Schwarzer & Weiner, 1991).

Numerous studies have demonstrated the important role of onset controllability (e.g., Betancourt, 1990; Higgins & Shaw, 1999; Schmidt & Weiner, 1988; Weiner, Perry, & Magnusson, 1988) and maintenance controllability (e.g., Schwarzer & Weiner, 1991) in reactions to victims. In health settings, for example, Marteau and Riordan (1992) provided physicians and nurses with details of patients' actions prior to the onset of illnesses. The details differed only in the

patients' health habits prior to their ailments. The patients who were depicted as having failed to take health-relevant action were viewed as being less concerned about their situation, less likely to follow advice, less likely to understand their condition, and less enjoyable to work with when they were compared with patients who had exercised good health habits. Salmon and Manyande (1996) studied nurses' ratings of patients undergoing minor abdominal surgery. Patients who were believed to be coping were judged to be compliant and cooperative, whereas noncoping patients were judged to be dependent, demanding, and unpopular.

Attributional style—an individual's cognitive "habit" of explaining events and outcomes—has been shown to influence reactions to negative life events in a number of domains, including helping behavior (e.g., Higgins & Shaw, 1999), helplessness depression (e.g., Abramson, Metalsky, & Alloy, 1989; Peterson, 1991; Peterson & Seligman, 1984), and loneliness (e.g., Anderson & Arnoult, 1985). Unsupportive attributional style refers to a tendency to view the negative outcomes of others as internal to, and personally controllable by, the victim. In contrast, individuals with a supportive attributional style tend to view the negative outcomes of others as less controllable by the victim (Higgins & Morrison, 1998). In a field experiment (Higgins & Shaw, 1999), individuals with an unsupportive attributional style offered more help to a peer whose problem was onset uncontrollable than to a peer whose problem was onset controllable. However, individuals with a supportive attributional style offered similar levels of help irrespective of the onset controllability of the peer's problem. In other words, different attributional styles moderated helping reactions in situations that differed only with respect to the victim's control over the onset of the problem. Given that evaluating a person in pain is quintessentially a helping situation, it is reasonable to expect that a respondent's attributional style may moderate his or her reactions to a pain sufferer.

Factors that influence the perceptions of pain patients have been studied intensively by Tait and Chibnall (1994; Chibnall & Tait, 1995). In these studies, respondents were presented with vignettes describing a pain patient, his or her symptoms, and contextual information in which key variables were manipulated. Tait and Chibnall (1994) found that observers judged patients who had no onset control over the pain to have more severe pain and more emotional distress than patients in an onset controllable condition. A factor that has had a consistent and strong effect on pain severity judgments and general perceptions of sufferers is the presence or absence of objective medical evidence explaining or justifying the pain condition (e.g., Chibnall & Tait, 1995; Tait & Chibnall, 1994). For example, in another scenario study, Chibnall and Tait (1995) found that the absence of medical evidence for pain led to reduced ratings of pain severity.

Although these findings are potentially of great importance, their generalizability is unknown. The principal reason for this is that the methods rely

exclusively on judgments made with regard to imaginary patients. In the scenario method, respondents are provided with a description of the patient's condition and then are told how much pain the patient says he or she is experiencing. After this, respondents are asked to provide ratings of the patient's pain and other variables. It is possible that this manipulation is entirely transparent to respondents, whose judgments may then be affected by their imaginary construction of an artificial situation. Pain events that occur in the natural environment allow for the observation of behavior. There is evidence that for clinicians (Ferrell, Eberts, McCaffery, & Grant, 1991) and other key figures in the social environment of the sufferer (Jacox, 1980; Reid, Hebb, McGrath, Finley, & Forward, 1995), observation of behavior is an influential factor in decision-making. It is not clear that an observer's behavior would be the same when confronted with actual evidence of suffering in the form of pain behavior.

A basic purpose of the current study was to extend the work of Tait and Chibnall to judgments of the pain behavior of actual patients. To do so, videotapes were employed displaying the facial pain expressions of patients from a previous study. We were interested in the influence of attributional style, control-related contextual variables, and medical evidence on observers' judgments of a variety of attributional, affective, and behavioral variables. We elected to examine the influence of maintenance controllability given that, in a study in which both onset controllability and maintenance controllability were examined, maintenance controllability was found to have the greater impact (Schwarzer & Weiner, 1991). In view of its consistent and conceptually important effects in the work of Chibnall and Tait (1995), the influence of medical evidence was also of central interest.

We examined observers' evaluations of patients' pain severity, disability, and emotional distress since these variables are conventions that are used by society to determine whether a sufferer may be exempted from social responsibilities (Chibnall & Tait, 1995; Tait & Chibnall, 1994).

Several other outcomes were evaluated in an attempt to extend our understanding of the mechanisms and consequences of attributions about suffering. Respondents provided judgments about the extent to which the sufferer was responsible for his plight. Although the concepts of responsibility and controllability are closely related, controllability refers to the characteristics of a cause, whereas responsibility is a judgment made about a person (Schwarzer & Weiner, 1991; Weiner, 1995b). In order for an individual to be considered responsible for a negative outcome, they must first be considered to be in control of the cause of the outcome. An individual can be considered to be in control over the cause of an event, but not be responsible, if there are perceived mitigating circumstances. For example, a child may find a loaded gun. If the child pulls the trigger and the bullet causes damage, is the child responsible? According to Weiner (1995b), although the child had control of his or her actions, there were mitigating

circumstances (the child's age and lack of understanding of firearms). Consequently, it is likely that the child would not be considered responsible. Judgments of responsibility are, therefore, key variables that would be expected to mediate the effects of controllability and attributional style. Respondents also rated their own affective reactions (sympathy and anger) to the patients. These variables were included because they play an important role as mediators of helping behavior in Weiner's theory. Individuals who feel sympathetic toward a sufferer are likely to provide assistance, whereas those who feel angry are not likely to do so.

Finally, the respondents' likely behavior toward the sufferer was assessed in two ways. In accordance with the emphasis in attributional approaches on helping behavior, it was important to determine the extent to which people would indicate their willingness to extend help to the sufferer. The helping behavior examined was social support. We were also interested in whether the variables of interest were likely to influence the form of help offered when options were available. When people evaluate and make decisions about sufferers, they often have choices about how to respond. For example, clinicians may be able to recommend alternative treatments that may vary in effectiveness, the effort they require, their risks, and their side effects. Brewin (1984) found that even if pain levels were equal, medical students were more willing to prescribe psychotropic drugs to patients whose problems were onset uncontrollable than to those with onset controllable problems. It is significant that some of the choices that people have available to them vary in the amount of discomfort that they entail. We hypothesized that positive feelings toward a sufferer would be associated with a tendency to choose a treatment that entailed a greater degree of comfort, whereas negative feelings would be associated with a tendency to choose a treatment that entailed a greater degree of discomfort, other things being equal.

Method

Respondents

In exchange for either credit in their psychology classes or entry into a lottery, 96 undergraduate students participated in this study. Of these, 63 were female and 33 were male. The age range was from 17 to 52 years ($M = 23$, $SD = 7$).

Materials

The materials included the Reasons for Misfortunes Questionnaire (RMQ; Higgins, 1992), videotapes of patients with shoulder pathology undergoing a physiotherapy assessment, written vignettes to accompany the videotapes that included the manipulations, and measures designed to assess the dependent variables.

The RMQ (Higgins, 1992) is a measure of attributional style based on McAuley, Duncan, and Russell's (1992) Causal Dimension Scale II (CDS-II).

The RMQ, which comprises six negative outcomes (e.g., bankruptcy) that happen to a hypothetical other person, instructs respondents to think of a cause for each outcome and then rate the cause along several attributional dimensions, including the locus of causality (i.e., the degree to which the cause is internal or external to the target) and personal control (i.e., the degree to which the cause is controllable by the target). Ratings are done on 9-point scales, with high scores representing greater internal locus of causality and greater personal control. Responses on the locus and personal control scales are summed or averaged to create an attributional style score for each respondent (see Higgins & Morrison, 1998, for information on RMQ scales and validity).³ Respondents are divided into supportive and unsupportive attributional style groups depending on whether they are in the bottom half or top half of the attributional style score distribution, respectively.

The videotapes contained excerpts of facial reactions selected from a study of patients with shoulder pathology who were undergoing range of motion tests (for a full discussion of patient characteristics, tests, and videotape characteristics, see Prkachin & Mercer, 1989). Excerpts that were selected from the available pool had to have specific properties. Since there is evidence that observers tend to discount females' pain (Holden, Gladstein, Trulsen, & Wall, 1994), we wished to control for this influence. Consequently, we limited the available pool of patients to men. We sought excerpts that would show three intensities of facial pain: none, moderate, and strong. Patients' pain expressions had been quantified by the Facial Action Coding System (FACS; Ekman & Friesen, 1978), which provided an objective measure of the severity of pain displayed on each test. A FACS index of pain expression was constructed, based on a composite of the intensity (ranging from 1 [*trace of a reaction*] to 5 [*an extreme reaction*]) and duration of four facial actions: brow lowering, tightening of the orbital muscles around the eyes, raising of the upper lip, and eye closure (Prkachin, 1992). To be considered comparable, patients had to exhibit approximately the same number, intensity, and duration of facial movements. After investigation of the distribution of pain scores, *no pain expression* was defined as a FACS index of 0, *moderate pain expression* was defined as an index of 10 to 15, and *high pain expression* was defined as an index above 15. The range of FACS index scores in the original videotapes was from 0 to 120. Two male patients displayed reactions that were comparable across the range of intensities of interest. Consequently, they were selected for display. Patient A's FACS indices for the tests selected as examples of

³The Reasons for Misfortune Questionnaire (RMQ; Higgins, 1992) measures four causal attributional dimensions (locus of causality, personal controllability, external controllability, and stability), but only the locus and personal control dimensions are central to the construct of supportive/unsupportive attributional style (see Higgins & Morrison, 1998, for a full discussion of construct validity issues). Readers interested in further information about respondents' external control and stability ratings in the current study may obtain it from the authors. The RMQ is available from the authors upon request.

moderate and high pain were 10.5 and 37.14; Patient B's FACS indices were 13.02 and 30.00.

These tests and tests from two other patients were edited to produce six different videotapes. Each tape displayed two practice patients to allow the respondents to familiarize themselves with the procedure, as well as one of the two target patients showing no, moderate, and high pain. The sequencing of the target patients' intensity levels was counterbalanced to control for order effects, which resulted in six different videotapes. The excerpts of pain expression were 10 s long. Between these excerpts was 10 s of black screen, which provided respondents the opportunity to make judgments about the patients before viewing the next excerpt.

The context manipulations were presented in vignettes that the respondents read before they viewed the videotapes. The vignettes described the nature of the patient's pain and gave information about the videotapes (e.g., they were filmed during the patient's first visit to the physiotherapist). The vignettes explained the patient's condition in more detail, including the length of time that the patient had experienced pain (18 months), and then introduced the coping and medical evidence manipulations. Each respondent received only one version of the coping and medical evidence information, which resulted in four different versions of the vignettes. The manipulations appear below:

A neurologist has examined patient (A/B), and a nerve conduction study and CT scan were ordered. These tests show (clear evidence/no evidence) of nerve damage (and a/or any) well-recognized pain syndrome.

After being injured, this patient was advised by his physician to take anti-inflammatory drugs on a prescribed schedule, to apply a cold pack daily, and to engage in activity to distract himself from the pain. It is clear from an assessment of the patient that he (has followed this advice quite closely, but his pain persists/has not followed this advice very closely, and his pain persists).

The instructions encouraged the respondent to imagine that he or she was a physician evaluating the severity of the patient's pain based on the highest amount of pain that the patient appeared to be experiencing on each trial.

Dependent Variables

With the exception of a final question concerning treatment choices, respondents provided ratings of the patient on a series of scales ranging from 0 to 10. Respondents first rated the amount of pain they thought the target patient had experienced on each trial. After that, they rated the patient's distress, disability,

and degree of responsibility for his condition, as well as their own sympathy for and anger toward the patient. Finally, respondents answered questions about how they would be prepared to help the patient.

The scale to rate the patient's pain severity was anchored at *no pain* and *unbearable pain*. The question to assess distress, taken from Chibnall and Tait (1995), described emotional distress as involving negative feelings, being upset, and experiencing depression. Respondents' ratings of the patient's distress were anchored at *no distress* and *extreme distress*. The questions to assess disability were based on those used by Tait and Chibnall (1994), who modified items from the Pain Disability Index (Tait, Chibnall, & Krause, 1990; Tait, Pollard, Margolis, Duckro, & Krause, 1987) to assess perceptions of disability in others. The Pain Disability Index is a measure designed for self-ratings of disability. It assesses functioning in family/home responsibilities, recreation, social activity, occupation, sexual behavior, self-care, and life support activities on scales anchored at *no disability* and *total disability*. Respondents' answers were summed to arrive at a single disability score.

The responsibility item posed the question: "How much of the responsibility for the pain do you believe is the patient's?" Responses were anchored at *not responsible* and *completely responsible*. The degree of anger felt toward the patient was rated from *no anger* to *a lot of anger*. The question to assess sympathy substituted the word "sympathy" for "anger" in both the question and the rating scale.

Two helping questions were used. One question dealt with social support, and the other dealt with treatment choice. The social support question read: "If you were a physician looking after this patient, would you be willing to extend support (such as spending time talking and listening to) this patient?" The anchors for responses to this question were *not willing* and *completely willing*. A second helping question asked the respondent to choose one of two treatments for the patient. The treatment choices were set up in an identical fashion, describing how the therapy worked, who performed the therapy, its duration and purpose, the level of discomfort that the patient would endure, and the treatment's effectiveness. Everything was equivalent between the two choices with the exception of the level of discomfort ostensibly involved in the treatment. The therapies either involved discomfort (repetitive exercise) or did not involve discomfort (ultrasound). The two choices are described below:

Activation therapy. This therapy addresses the shoulder pain through repetitive exercise. The therapy is delivered by a physiotherapist. The patient is prescribed a 30-min exercise routine, which is performed twice a week for 4 weeks. The purpose of the exercises is to promote healing by strengthening the muscles that support the shoulder joint. The exercises themselves are

uncomfortable, but the overall effectiveness of the therapy is excellent in most cases.

Ultrasound therapy. This therapy addresses the shoulder pain through exposure to ultrasonic stimulation. An ultrasound device is placed on the affected shoulder, and the beam is aimed at the underlying muscular tissue. The therapy is delivered by a physiotherapist twice a week in sessions that last a half hour. The purpose of the treatment is to promote healing by reducing inflammation in the shoulder joint. Although the treatment itself is not uncomfortable, it does leave the patient with a sensation of warmth in the shoulder for some time after the session. The overall effectiveness of the therapy is excellent in most cases.

After data collection was completed, respondents were asked about their perceptions of the purpose of the study as part of the postexperimental inquiry.

Procedure

Respondents completed the study either individually or in small groups of up to four people. A television and videocassette recorder were located at the front of the testing room to allow respondents to view the videotape. Upon entering the testing room, respondents were briefed about the study and informed consent was obtained. Half of the respondents received the RMQ before viewing the videotape, and the other half received it after viewing the tape. Before viewing the videotape, respondents read the scenario that included the manipulations. After each video excerpt, respondents had 10 s to make their pain severity ratings. After viewing the complete videotape, respondents were asked to answer the rest of the questions. The order of the two therapy choices was counterbalanced to control for order effects. After the postexperimental inquiry, respondents were debriefed.

Results

Although the effects of patient and respondent gender were not of principal interest, they were dummy coded and included in all analyses as covariates. Respondents' pain ratings were examined in a univariate analysis of covariance (ANCOVA). Ratings on the other interval scales were examined in a multivariate analysis of covariance (MANCOVA). Ratings of therapy choice were examined using binary logistic regression analyses. Significant multivariate effects were subsequently examined using univariate analyses. Significant univariate effects were followed up with *t*-tests when necessary. The statistical significance of terms involving repeated measures was evaluated with the Geisser-Greenhouse correction. Measures of effect size (η^2) for univariate analyses and population point

biserial correlation (ρ_{pb}) coefficients for *t*-tests were also examined for all significant effects. Based on the criteria outlined by Kirk (1996), η^2 values of .010, .059, and .138, and ρ_{pb} values of .10, .24, and .37 were taken as corresponding to small, medium, and large effect sizes, respectively. Respondents' attributional styles were derived by averaging the (combined) locus and personal control ratings for the six negative outcomes. Respondents were then divided into supportive and unsupportive attributional style groups based on whether they were in the bottom half or top half of the attributional style score distribution, respectively.

The ANCOVA of the pain ratings was a $2 \times 2 \times 2 \times 3$ (Medical Evidence \times Coping \times Attributional Style \times Pain Level) mixed model, with repeated measures on the last factor. The analysis revealed a significant pain level effect, Greenhouse-Geisser $F(1.62, 139.17) = 30.78$, $\eta^2 = .26$, $p < .001$. The mean ratings of patients' low, moderate, and high intensity displays were $2.53 \pm .21$, $4.42 \pm .17$, and $5.58 \pm .20$, respectively, and all means differed significantly. There were also significant Attributional Style \times Medical Evidence, $F(1, 86) = 4.45$, $\eta^2 = .05$, $p < .05$, and Attributional Style \times Medical Evidence \times Coping, $F(1, 86) = 5.18$, $\eta^2 = .06$, $p < .05$, interactions. The three-way interaction is displayed in Figure 1. Posthoc decomposition of the interaction by *t*-tests indicated that the means for the Medical Evidence conditions differed only when respondents were led to believe that the patient was coping and only among respondents with an unsupportive attributional style. When respondents with unsupportive attributional styles were led to believe that the patient was coping and believed that there was medical evidence consistent with the patient's suffering, they imputed greater pain to the patient. The magnitude of this effect, $\rho_{pb} = .49$, was substantial.

The MANCOVA of the responsibility, anger, sympathy, distress, disability and social support ratings was a $2 \times 2 \times 2$ (Medical Evidence \times Coping \times Attributional Style) model. This analysis revealed only a multivariate effect for coping, $F(6, 81) = 7.18$, $p < .001$. Significant univariate differences were found on responsibility, $F(1, 86) = 9.60$, $\eta^2 = .10$, $p < .01$; anger, $F(1, 86) = 26.10$, $\eta^2 = .23$, $p < .001$; sympathy, $F(1, 86) = 9.34$, $\eta^2 = .10$, $p < .01$; distress, $F(1, 86) = 9.86$, $\eta^2 = .10$, $p < .01$; and support, $F(1, 86) = 6.39$, $\eta^2 = .07$, $p < .05$. Mean differences on these variables are presented in Table 1. When led to believe that he was not coping, respondents rated the patient as being more responsible for his plight and as experiencing less distress than when they were led to believe that he was coping. The noncoping patient elicited greater anger and less sympathy than the coping patient. Finally, respondents rated themselves as being less willing to provide support when the patient was not coping than when he was coping.

Of the respondents, 55% indicated that they would recommend the activation therapy for the patient, whereas 45% preferred the ostensibly less painful ultrasound therapy. Respondents' indications of the type of therapy they would recommend for the patient were analyzed using logistic regression. In the first analysis, treatment choice, as predicted by the grouping factors of Medical Evidence,

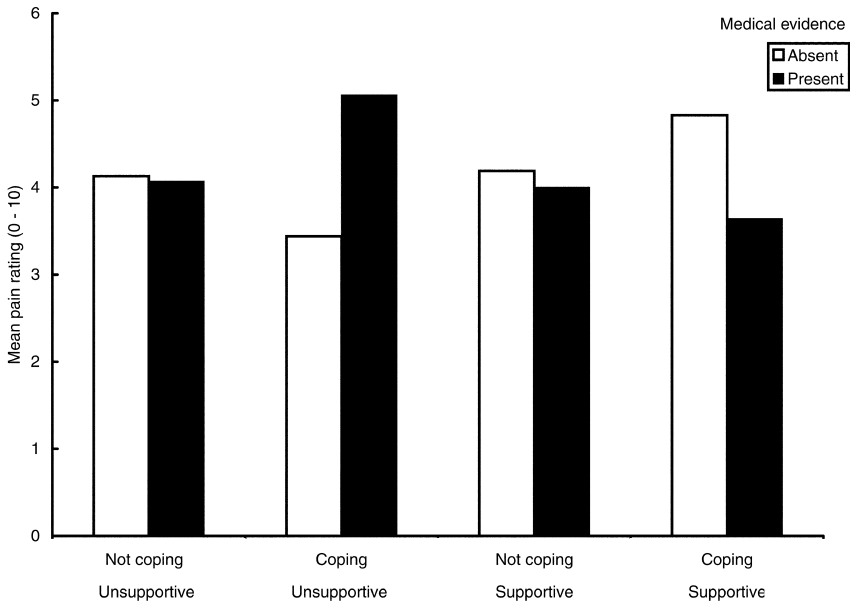


Figure 1. Mean evaluation of the pain level of shoulder patients by respondents with unsupportive and supportive attributional styles in the experimental conditions (Medical Evidence \times Coping).

Coping, Attributional Style, and the interaction of Coping and Attributional Style, was examined. Patient and respondent gender were forced into the first step. No significant effects emerged from this analysis. The second logistic regression analysis focused on individuals with highly consistent attributional styles (i.e., very high and very low scorers), who should have shown stronger attributional style effects (e.g., Cutrona, Russell, & Jones, 1985). Thus, the analysis examined treatment choices of individuals who were in the bottom third or top third of the attributional style score distribution. The other predictors were Medical Evidence, Coping, and the interaction of Coping and Attributional Style. Patient and respondent gender were again forced into the first step. The analysis revealed a marginally significant interaction between Coping and Attributional Style, $\chi^2(1) = 3.26, p = .07$, which is consistent with the prediction that Attributional Style would moderate the effect of attributional context (i.e., Coping) information on helping responses. As shown in Figure 2, respondents with an unsupportive attributional style chose the less painful treatment (i.e., ultrasound) more often when the patient was coping (60% of 20) than when the patient was not coping (25% of 12), $\chi^2(1) = 3.68, p = .05$. In contrast, respondents with a supportive attributional style chose the less painful treatment about equally as

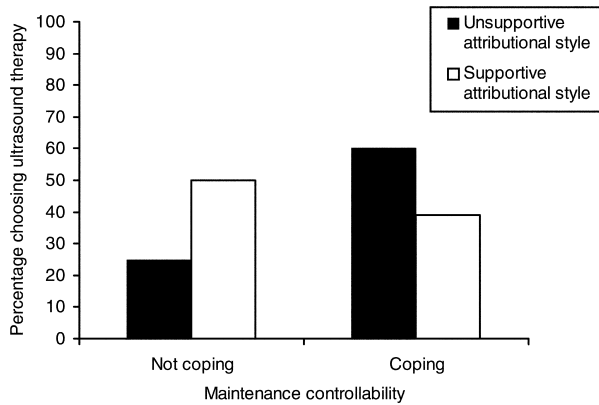


Figure 2. Percentages of respondents with unsupportive and supportive attributional styles choosing the less painful treatment (ultrasound) in the Coping and Not Coping conditions.

choices. Respondents with an unsupportive attributional style were especially susceptible to differences in contextual information, imputing greater pain to the coping patients, but only if medical evidence was present that was consistent with the suffering. The respondents with an unsupportive attributional style also chose the less painful ultrasound treatment more often when the patient was coping than when the patient was not coping. The interaction among coping information, medical evidence information, and attributional style on judgments of pain level is a novel finding that demonstrates that the decoding of pain displays may be influenced by personality variables, as well as external (i.e., pain context) stimuli.

The interaction between the effects of coping information and attributional style on treatment choice is consistent with past research on attributional factors that influence helping behavior. For example, individuals with an unsupportive attributional style helped less often when the reason for the need was onset controllable than when it was onset uncontrollable (Higgins & Shaw, 1999). The current study mirrors this finding using another attributional context factor—coping information. In both Higgins and Shaw and the current study, the attributional context information had a larger influence on the respondents with an unsupportive style than it had on those with a supportive style. The interaction between the effects of attributional style and coping information on treatment choice demonstrates the combined role of the pain context and the observer's cognitive habit of explaining others' negative outcomes.

Consistent with past research, an attributional context factor was found to influence a number of observers' reactions to the pain patients. Specifically, the patient's degree of coping (i.e., current efforts to control an ailment by following

his physician's advice) influenced observers' judgments of the amount of distress the patients felt. Observers gave higher ratings of distress to patients who were following their physicians' advice than to those who were not. This finding extends Tait and Chibnall's (1994) results, which showed that patients who had no control over the onset of their pain (e.g., struck from behind in a car accident) were given significantly higher ratings of emotional distress than those patients who had onset control over their pain (e.g., ran a red light and struck another car). The absence in the current study of a significant effect for pain-related disability again mirrors Tait and Chibnall, who also failed to identify a control-related disability effect.

Furthermore, the effect of coping on the ratings of responsibility, anger, sympathy, and support were all in the expected directions and lend additional support to Weiner's (1980a, 1980b, 1986, 1995a) attributional model of helping behavior. Respondents who were told that the patient had followed his physician's advice quite closely (i.e., the Coping condition) gave lower ratings of responsibility to the pain patient and expressed lower anger, higher sympathy, and a greater likelihood of offering social support than did respondents who were told that the patient had not followed his physician's advice very closely (i.e., the Not Coping condition). Logically, respondents should rate distress as being higher when the patient is presented as coping. That is, if a patient is following his physician's advice, he is actively trying to reduce his ailment; therefore, he must be concerned about his situation, and it is logical to assume that this could lead to observers' perceptions of higher emotional distress (Marteau & Riordan, 1992). In the current study, those patients who were presented as not coping may have been viewed as too unconcerned to act on their own behalf and, thus, to be in less emotional distress. This logic is also supported by respondents' responsibility ratings, in which they viewed patients who were not coping as being more responsible for their ailment, instead of thinking that there might be mitigating circumstances that prevented the patients from coping. According to the attributional theory of helping behavior (Weiner, 1995a), not coping also would be expected to lead to higher negative affect (anger), lower sympathy, and less willingness to help, as the current findings demonstrated. Why the coping effect did not extend to the disability and severity ratings is an interesting question. Respondents appear to be denigrating the person but not the person's pain experience. They may be less likely to help these patients, but they are at least aware that pain levels and resulting disability between the two groups (Coping vs. Not Coping) are equivalent.

The finding in the current study that respondents' sympathy ratings predicted treatment choice, whereas responsibility judgments did not, was also consistent with the attributional model of helping. Higher ratings of sympathy were associated with the selection of the less painful treatment choice (ultrasound over activation); conversely, lower ratings of sympathy were associated with the selection

of the more painful alternative (activation over ultrasound). According to the attributional model (Weiner, 1980a, 1995a), emotions mediate between judgments and behavior. Thus, sympathy should be more strongly linked to helping responses than perceived patient responsibility for the pain. Furthermore, it is not likely that judges were being vindictive toward those they felt were responsible for their plight, given that there was no relationship between negative affect (i.e., anger) and treatment choice. However, there was a relationship between their level of supportive affect (sympathy) and their treatment selection.

It was surprising that the presence or absence of medical evidence had no effect on judgments of emotional distress and pain-related disability in the current study. In both Chibnall and Tait (1995) and Tait and Chibnall (1994), the presence of medical evidence led to significantly higher ratings of patients' emotional distress and pain-related disability relative to the judgments given in the absence of medical evidence. One possibility for the discrepancy from the earlier findings is that the earlier studies used paper and pencil manipulations exclusively, whereas, in the current study, patients not only read information about the person, but that information also was embellished by visual images of the pain behavior of the person that they were judging. The discrepancy between our findings and those of previous studies that manipulated medical evidence suggests that reactions to pain patients based on the presentation of written scenarios alone may not be valid indicators of how people will react in real life situations. To improve the applications of laboratory findings to real situations, representations of the manipulations should be as true to life as possible.

Implications

There are a number of practical, theoretical, and methodological implications that follow from the results of this study. Practically, pain patients who do not present themselves as actively working toward healing themselves face more negativity from observers than patients who present themselves as actively working toward healing themselves. For noncoping patients, people's perceptions of their lack of coping may lead to anger, less willingness to lend these patients social support (i.e., spend time talking with and listening to them), lower feelings of sympathy, lower judgments about the patients' level of disability, and more painful treatment options. In short, observers tend to denigrate these patients relative to patients who are perceived to be coping with their pain. In particular, observers with an unsupportive attributional style were highly discriminatory toward the pain patients. They assigned the patients higher pain levels only when the patients were coping and there was medical evidence of the pain, and they chose the more painful treatment option for the noncoping patients.

Interestingly, there was no relationship between negative judgments of responsibility and anger and observers' ratings of the amount of pain and

pain-related disability suffered by the patient. Thus, it seems that observers are not influenced by negative emotional or social judgments when assessing suffering and disability. However, when deciding on a treatment, observers were influenced by the level of sympathy that they felt toward the pain patient. In other words, the relationship between emotion and treatment involved observers' levels of affinity, not malice. If a patient wants to ensure that he or she receives the least painful of all possible treatments with equivalent outcomes, the patient must make certain that he or she has the sympathy of the individual making that decision and, in the absence of medical evidence of their pain, that he or she has the good fortune of being treated by an individual with a supportive attributional style. Based on these results, it is impossible to know what a healthcare professional who has the power to decide on a treatment would choose, but it would be worthwhile to examine whether these results hold true for that population.

Limitations and Suggestions for Future Research

Although several possible explanations for the interactive effect of attributional style and contextual information on helping responses have been posited (Higgins & Shaw, 1999), none were tested in the current study. For example, it is possible that supportive and unsupportive attributional styles develop as a function of different attitudes (i.e., liberalism/conservatism) that guide explanations of life outcomes. It is also possible that the attitudes differ in their degree of resistance to contextual information. A conservative attitude promotes more personally controllable causes for others' negative outcomes, whereas a liberal attitude promotes more personally uncontrollable causes for others' negative outcomes (e.g., Skitka & Tetlock, 1993). The current findings suggest that individuals with a supportive attributional style resist contextual information about victims' maintenance controllability (and, thus, the affective and behavioral consequences of those beliefs) more than do unsupportive style individuals. Future studies that explore relationships between attributional styles and liberal/conservative attitudes also might examine the potential impact of different types of contextual information in relevant social situations.

The mean age of respondents in the current study was 23 years, and the mode was 19. It would be worthwhile to examine developmental differences in the influence of contextual and attributional style factors in pain perception to identify age-related effects. Future studies should also include more male respondents and some female pain patients to see if the contextual information and attributional style influence perceptions of the pain and evaluations of the male and female patients. A larger sample size than that used in the current study would also provide greater power to detect interaction effects when attributional style is a grouping factor. The weak interaction in the current study may be due to the smaller sample size ($n = 64$; individuals at the top and bottom thirds of the

attributional style distribution) compared with that in Higgins and Shaw (1999; $n = 75$).

Equally important is a further understanding of ways to improve judges' accuracy in assessing severity of pain. As is evident in the current findings, people can be sensitive to variations in displayed pain level, and identifying the factors that contribute to this sensitivity may have important implications for people in pain. Appropriate treatment and care begins with a full and accurate understanding of a pain patient's condition, including the actual amount of pain that he or she is experiencing, and being able to identify subtle differences in displayed levels of pain is a step toward increasing accuracy in pain assessment. Yet, as we found, the accurate detection of pain does not guarantee unbiased reactions toward the pain patient. Both the context for the pain and an observer's attributional style can skew the person's judgments about the pain patient and the type of treatment the patient ought to receive.

References

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358-372.
- Anderson, C. A., & Arnoult, L. H. (1985). Attributional models of depression, loneliness, and shyness. In J. H. Harvey & G. Weary (Eds.), *Attribution: Basic issues and applications* (pp. 235-279). New York, NY: Academic Press.
- Betancourt, H. (1990). An attribution-empathy model of helping behavior: Behavioral intentions and judgments of help-giving. *Personality and Social Psychology Bulletin*, *16*, 573-591.
- Brewin, C. R. (1984). Perceived controllability of life-events and willingness to prescribe psychotropic drugs. *British Journal of Social Psychology*, *23*, 285-287.
- Chibnall, J. T., & Tait, R. C. (1995). Observer perceptions of low back pain: Effects of pain report and other contextual factors. *Journal of Applied Social Psychology*, *25*, 418-439.
- Cutrona, C. E., Russell, D., & Jones, R. (1985). Cross-situational consistency in causal attribution: Does attributional style exist? *Journal of Personality and Social Psychology*, *47*, 1043-1058.
- Ekman, P., & Friesen, W. V. (1978). *Manual for the Facial Action Coding System*. Palo Alto, CA: Consulting Psychologists Press.
- Ferrell, B. R., Eberts, M. T., McCaffery, M., & Grant, M. (1991). Clinical decision making and pain. *Cancer Nursing*, *14*, 289-297.
- Higgins, N. C. (1992). *Cross situational consistency attributions about the causes of others' misfortunes: A critical evaluation of attributional style*. Unpublished doctoral dissertation, Simon Fraser University.

- Higgins, N. C., & Morrison, M. A. (1998). Construct validity of unsupportive attributional style: The impact of life outcome controllability. *Social Indicators Research, 45*, 319-342.
- Higgins, N. C., & Shaw, J. K. (1999). Attributional style moderates the impact of causal controllability information on helping behavior. *Social Behavior and Personality, 27*(3), 221-236.
- Holden, E. W., Gladstein, J., Trulsen, M., & Wall, B. (1994). Chronic daily headache in children and adolescents. *Headache, 34*, 508-514.
- Jacox, A. K. (1980). The assessment of pain. In W. L. Smith, H. Mersky, & S. C. Gross (Eds.), *Pain: Meaning and management* (pp. 75-88). New York, NY: SP Medical & Scientific Books.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement, 56*, 746-759.
- Marteau, T. M., & Riordan, D. C. (1992). Staff attitudes towards patients: The influence of causal attributions for illness. *British Journal of Clinical Psychology, 31*, 107-110.
- McAuley, E., Duncan, T. E., & Russell, D. W. (1992). Measuring causal attributions: The revised causal dimension scale. *Personality and Social Psychology Bulletin, 18*, 566-573.
- Peterson, C. (1991). The meaning and measurement of explanatory style. *Psychological Inquiry, 2*, 1-10.
- Peterson, C., & Seligman, M. E. P. (1984). Causal explanations as a risk factor for depression: Theory and evidence. *Psychological Review, 91*, 347-374.
- Prkachin, K. M. (1992). The consistency of facial expressions of pain: A comparison across modalities. *Pain, 51*, 297-306.
- Prkachin, K. M., Berzins, S., & Mercer, S. R. (1994). Encoding and decoding of pain expressions: A judgment study. *Pain, 58*, 253-260.
- Prkachin, K. M., & Craig, K. D. (1995). Expressing pain: The communication and interpretation of facial pain signals. *Journal of Nonverbal Behavior, 19*, 191-205.
- Prkachin, K. M., & Mercer, S. R. (1989). Pain expression in patients with shoulder pathology: Validity, properties and relationship to sickness impact. *Pain, 39*, 257-265.
- Reid, G. J., Hebb, J. P. O., McGrath, P. J., Finley, G. A., & Forward, S. P. (1995). Cues parents use to assess postoperative pain in their children. *Clinical Journal of Pain, 11*, 229-235.
- Salmon, P., & Manyande, A. (1996). Good patients cope with their pain: Postoperative analgesia and nurses' perceptions of their patients' pain. *Pain, 68*, 63-68.
- Schmidt, G., & Weiner, B. (1988). An attribution-affect-action theory of behavior: Replications of judgments of help-giving. *Personality and Social Psychology Bulletin, 14*, 610-621.

- Schwarzer, R., & Weiner, B. (1991). Stigma controllability and coping as predictors of emotions and social support. *Journal of Social and Personal Relationships*, *8*, 133-140.
- Skitka, L. J., & Tetlock, P. E. (1993). Providing public assistance: Cognitive and motivational processes underlying liberal and conservative policy preferences. *Journal of Personality and Social Psychology*, *65*, 1205-1223.
- Tait, R. C., & Chibnall, J. T. (1994). Observer perceptions of low back pain. *Journal of Applied Social Psychology*, *24*, 415-431.
- Tait, R. C., Chibnall, J. T., & Krause, S. J. (1990). The pain disability index: Psychometric properties. *Pain*, *40*, 171-182.
- Tait, R. C., Pollard, C. A., Margolis, R. B., Duckro, P. N., & Krause, S. J. (1987). The pain disability index: Psychometric and validity data. *Archives of Physical Medicine and Rehabilitation*, *68*, 438-441.
- Weiner, B. (1980a). A cognitive (attribution)-emotion-action model of motivated behavior: An analysis of judgments of help-giving. *Journal of Personality and Social Psychology*, *39*, 186-200.
- Weiner, B. (1980b). May I borrow your class notes? An attributional analysis of judgments of help-giving in an achievement related context. *Journal of Educational Psychology*, *72*, 676-681.
- Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York, NY: Springer-Verlag.
- Weiner, B. (1995a). Inferences of responsibility and social motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 27, pp. 1-47). San Diego, CA: Academic Press.
- Weiner, B. (1995b). *Judgments of responsibility: A foundation for a theory of social conduct*. New York, NY: Guilford.
- Weiner, B., Perry, R. P., & Magnusson, J. (1988). An attributional analysis of reactions to stigmas. *Journal of Personality and Social Psychology*, *55*, 738-748.