Cognitive Distortion and Depression in Chronic Pain: Association With Diagnosed Disorders

Timothy W. Smith, Jennifer L. O’Keeffe, and Alan J. Christensen

Chronic pain is often accompanied by depression. Although some inconsistencies have appeared in the literature, the evidence suggests at least a moderate association (Romano & Turner, 1985). Several explanations of this association have been offered in recent years, but the prevailing model suggests that depression arises in response to the stress of chronic pain. Recent prospective studies support this view (Brown, 1990; C. A. Smith & Wallack, 1992).

Despite the apparently robust association between chronic pain and depression, not all chronic pain patients become depressed. As a result, vulnerability factors have been the focus of recent research. A variety of cognitive factors have been examined in this context (see Turk & Rudy, 1992, for a review), and Beck’s (1967) cognitive model has received much of this attention. Briefly, Beck’s model suggests that cognitive errors—the tendency to personalize, overgeneralize, catastrophize, and selectively abstract the implications of negative events—contribute to the development and maintenance of depression. Lefebvre (1981) found that, compared with nondepressed pain patients, depressed chronic pain patients reported higher levels of cognitive distortion. Similar results have been obtained with chronic low-back-pain patients (Smith, Aher, Folk, & Ahern, 1986) and rheumatoid arthritis (RA) pain patients (Smith, Peck, Milano, & Ward, 1988). Thus, negative construal of the severity, implications, and course of their pain problem, as well as more generalized cognitive distortion, is associated with greater levels of depression among chronic pain patients.

To date, these studies have relied almost exclusively on self-report measures of depression. As a result, they are limited in at least two important respects. First, scores on these inventories may reflect levels of dysphoric mood or variations on personality traits within a nonpathological range, rather than the presence of a clinically significant mood disorder (Kendall, Hollon, Beck, Hammen, & Ingram, 1987). As a result, it is possible that these findings will not generalize to patients with diagnosable depressive disorders (cf. Haaga, Dyck, & Ernst, 1991). Second, the use of self-report inventories to assess both depression and cognitive errors creates the possibility that common method variance contributes to, if not accounts for, the observed associations (e.g., Sullivan & D’Eon, 1990). Although Smith et al. (1988) found similar results using self-reports and interview ratings of depression, diagnoses of depressive disorders were not included in their analyses.

To address these limitations, we examined levels of cognitive distortion in patients with depressive conditions diagnosed through structured interviews and with appropriate controls. Four groups were compared: depressed pain patients, nondepressed pain patients, depressed nonpain patients, and nondepressed nonpain controls.

Method

Subjects and Selection Procedures

A total of 63 subjects participated in the study. Chronic pain was defined as pain of at least 6 months’ duration (mean = 95 months) that could not be attributed to an underlying disease process (e.g., cancer, arthritis, etc.). Chronic pain subjects suffered from a variety of conditions, chiefly low back pain. They were recruited from a university medical center pain clinic, a university medical center family practice clinic, and two community hospital low-back-pain clinics.

Patients were classified as depressed if they met Diagnostic and Statistical Manual of Mental Disorders. Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987) criteria for major depression or dysthymia. Subjects were excluded if they evidenced a primary thought disorder, bipolar disorder, or organic brain syndrome. Depressed nonpain patients were recruited from a university medical center mood disorders clinic and two private psychiatric practices. Non-
pain, nondepressed controls were recruited from a university medical center family practice clinic and personnel department. None of the subjects were suffering from a chronic illness (e.g., cancer, heart disease, etc.). All subjects were paid $10 for their participation.

Through this selection and classification procedure, four groups were formed: chronic pain, depressed patients (CP-depressed, \( n = 17 \)); chronic pain, nondepressed patients (CP-nondepressed, \( n = 12 \)); depressed nonpain patients (\( n = 15 \)); and nondepressed nonpain patients (\( n = 19 \)). Preliminary analyses revealed no significant group differences on demographic variables: The average age was 37.4 yr; 65% of subjects were female, the average years of education was 14.0, 60.5% were employed, and 58.5% were married.

**Materials and Procedures**

Subjects completed a packet of questionnaires, which included a form for demographic information and the primary measures. The Cognitive Errors Questionnaire (CEQ; Lefebvre, 1981) consists of 48 separate vignettes, each followed by one of four types of illogical or distorted inference (i.e., catastrophizing, overgeneralization, personalization, and selective abstraction). Half of the CEQ items refer to events involving low back pain (e.g., "You have a painful back problem, but have continued to work. Although you got quite a bit done today, you quit work a little early because your back was really hurting. You think to yourself, 'what a terrible day; it seems like I can't get anything done."). The remaining items are unrelated to pain. Subjects are asked to indicate on a 5-point scale the extent to which the thought listed resembles the thought they would have had in the same situation. The CEQ generates two total distortion scores, one for general and one for pain-related cognitive distortion. The version of the CEQ used in this study changed the original references to low back pain to unspecified pain problems. The internal consistency of this general pain form of the CEQ was high; Chronbach's \( \alpha \) was 0.96 for pain-related distortion and 0.94 for general distortion.

Subjects also completed the Center for Epidemiological Studies Depression scale (CESD; Radloff, 1977) and the Sickness Impact Profile (SIP; Bergner, Bobbitt, Carter, & Gilson, 1981). The CESD has been found to have high levels of internal consistency and construct validity in several populations (e.g., Radloff, 1977), including patients with chronic pain (Blalock, DeVellis, Brown, & Wallston, 1989). The SIP assesses disability along several dimensions, including physical impairment (i.e., ambulation and mobility) and psychosocial functioning (i.e., emotional behavior and social interaction). Previous research has demonstrated the reliability and validity of this measure in many medical illness groups (Bergner et al., 1981).

On completion of the questionnaires, subjects underwent the Schedule for Affective Disorders and Schizophrenia (SADS) semistructured diagnostic interview (Endicott & Spitzer, 1978). The present study utilized the version that reviews symptoms that may have occurred during the past year. The opening questions of the interview identified any illness groups (Bergner et al., 1981). As might be expected, nondepressed patients did their nondepressed counterparts, with contrast \( F(1, 57) = 31.6, p < .001 \). Again, this level of disability is moderate to high (Bergner et al., 1981). As might be expected, nondepressed chronic pain patients reported an intermediate level of psychosocial disability, with remainder \( F(2, 59) = 3.5, p < .04 \).

**Cognitive Distortion**

As predicted and depicted in Figure 1, depressed subjects reported more cognitive distortion in general nonpain situations than did nondepressed subjects, with contrast \( F(1, 59) = 18.7, p < .001 \). Further, among depressed subjects, the nonpain group reported more general distortion than did the chronic pain group, \( F(1, 59) = 6.46, p < .02 \). No other group differences were significant; with remainder \( F(1, 59) < 1.0 \). For pain-related distortion, the two depressed groups displayed more cognitive errors than did nondepressed groups, with contrast \( F(1, 59) = 31.6, p < .001 \). The two depressed groups did not differ from each other, \( F(1, 59) < 1.0 \), and no other group differences were significant, with remainder \( F(1, 59) < 1.0 \).

**Discussion**

Overall, these results suggest that cognitive distortion is associated with interview-assessed, clinically significant depression in chronic pain. This conclusion is strengthened by the significant, independent checks on the classification of both chronic pain and depression. Thus, previous evidence of an association between self-reports of depression and cognitive distortion (Le-
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Table 1
Levels of Disability and Depression

<table>
<thead>
<tr>
<th>Group</th>
<th>Chronic pain depressed</th>
<th>Chronic pain nondepressed</th>
<th>Depressed nonpain</th>
<th>Nonpain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent measure</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Disability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIP physical</td>
<td>7.1</td>
<td>7.9</td>
<td>8.4</td>
<td>14.2</td>
</tr>
<tr>
<td>SIP psychosocial</td>
<td>24.1</td>
<td>11.2</td>
<td>11.4</td>
<td>10.7</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CESD</td>
<td>28.5</td>
<td>8.4</td>
<td>9.6</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Note. SIP = Sickness Impact Profile; CESD = Center for Epidemiological Studies Depression scale.

Several important methodological considerations require qualification of the present findings. For example, other self-report measures of dysfunctional thinking in chronic pain have been criticized as reflecting symptoms of depression rather than its correlates or causes (Sullivan & D'Eon, 1990). However, the format and item content of the CEQ is sufficiently distinct relative to depressive symptoms, that this problematic discriminant validity is not compelling as an alternative explanation of the present results (cf. Haaga, 1992). Nonetheless, the use of information-processing measures of cognitive distortion that do not employ self-reports of dysphoric thoughts would provide a more compelling test of the cognitive model of depression in chronic pain (Ingram & Kendall, 1986).

The cross-sectional, correlational design of the present study precludes causal interpretations. However, some studies of chronic pain suggest that initial levels of dysfunctional thinking are associated with subsequent changes in depression (e.g., Keefe, Brown, Wallston, & Caldwell, 1989; C. A. Smith & Wallston, 1992; T. W. Smith, Christensen, Peck, & Ward, 1993) and other indices of the impact of chronic pain (Gil, Abrams, Phillips, & Williams, 1992). In any case the fact that cognitive distortion is associated with clinically significant levels of depression among pain patients suggests that this model of the

Figure 1. Means (and standard errors) for levels of cognitive distortion in pain and general situations among depressed and nondepressed and pain and nonpain groups.
origin and treatment of depression warrants further research. The results of such studies may help to explain the development of depression in response to chronically painful conditions and guide its treatment.

References


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