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Motivational Implications of Pain: Chronicity, Psychological Distress, and Work Goal Construal in a National Sample of Adults

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Abstract

A heterogeneous national sample of adults (mean age = 40 years) employed in management positions was contacted by random digit dialing procedures and interviewed about current pain experience, work-goal cognitions, and psychological status (depression and anxiety). In accord with predictions, persistent pain experience was differentially related to the construal of work-related goals. Specifically, individuals with both persistent and episodic pain (relative to those with no pain) reported lower levels of goal-centered value, self-efficacy, and positive arousal and heightened perceptions of goal-based self-criticism, negative arousal, and conflict between work and nonwork goals. Furthermore, regression analyses revealed that goal cognition accounted for unique variance in depression and anxiety over and above the contribution of pain chronicity.

Keywords

pain; motivation; goal systems; psychological distress

A broad-based cognitive or social-cognitive framework on the motivational facet of chronic pain is one that allows for an elaboration of the typically short-term approach-avoidance focus to include an examination of pain's influence on the purposive pursuit of temporally extended life projects or goals (cf. Bandura, 1986; Cantor & Zirkel, 1990; Karoly, 1993; Karoly & Jensen, 1987; Mischel & Shoda, 1995; Pervin, 1996). Instead of viewing the pain sufferer as reacting passively and automatically to noxious stimulation, the broadened perspective focuses on the content and organization of the individual's mental representations of reality, an organization that can either exacerbate or alleviate the felt unpleasantness of a given situation (including the "interiorized" sensation of chronic pain).

The present study focuses on the relations between pain experience, psychological distress, and adults' cognitive representations of workplace-centered goals. The putative links between pain experience and psychological distress have been widely considered, whereas the inclusion of cognitive representations of workplace-centered goals is, to the best of our knowledge, a novel contribution.

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Pain and Distress

The construct of *distress*, considered within contemporary theories of stress and coping (e.g., Lazarus & Folkman, 1984), is relational, pivoting upon the appraised connection(s) between the person and events in the environment. Pain may be considered a powerful distress-engendering or negative life event with the potential for triggering unpleasant self-appraisals as a result of its goal-interruptive qualities. Within the contemporary psychology of pain, distress has also been viewed in terms of self-defeating person-environment relations, often defined as involving (a) reductions in activity level, (b) patient dependence on analgesic medication and medical intervention, and/or (c) multiple dimensions of psychosocial impairment, centering usually on depression and anxiety (Jensen & Karoly, 1991; Jensen, Turner, Romano, & Karoly, 1991). Utilizing the last (and most clearly psychological) index of distress, research has shown that in patients referred to pain clinics, approximately one third meet standard diagnostic criteria for depression or anxiety. Nonetheless, pain (even when experienced at high levels of intensity or chronicity) does not lead inevitably to distress; thus, the search has been ongoing for moderating or mediating factors that might strengthen the causal connection between nociceptive experience and various mental health (emotion-centered) outcomes.

Coping skills, attitudes, pain-specific beliefs and attributions, cultural differences, and various personality factors have been the most studied bridging elements in the pain-distress equation, along with various presumed neurobiological under-pinnings (Elton, Stanley, & Burrows, 1983; Jensen & Karoly, 1991; Keefe, Salley, & Lefebvre, 1992; Zautra, Burleson, Matt, Roth, & Burrows, 1994). Despite the success of many of these intervening constructs in accounting for variance in the pain-distress relation, few have forged intrinsic or natural conceptual links to either pain or distress (i.e., they have been defined and assessed within their own, unique assumptive frameworks and language systems), and considerable unexplained variance still remains.

It is our contention that the manner in which individuals construe their everyday goals can serve as an integrative bridge between pain and mental health outcomes. Pain is hypothesized to influence patterns of goal cognition, and goal cognition is hypothesized to account for unique variance in depression and anxiety (two key indices of psychological status) over and above that due to pain. This general view is consistent with a number of contemporary models of emotion and motivation and their relation to pain experience.

Pain and Goal Cognition

Karoly (1985, 1991; Karoly & Jensen, 1987) has suggested that patients who have had to live with pain for extended periods of time (6 months or more) come to develop a schematic model about their predicament that serves to guide (or misguide) perceptions, preferences, attentional foci, and task-specific actions (cf. Edwards & Pearce, 1994; Leventhal & Everhart, 1979; Pennebaker, 1982; Price & Harkins, 1992, for further discussions of pain-relevant schemata). Within such a framework the pivotal clinical process appears to involve a self-defeating reappraisal of one's everyday goals and aspirations in light of the unabating discomfort and pain.

Goal Cognition and Distress

A number of separate but conceptually overlapping approaches to self-regulated adaptation have converged, in recent years, to suggest that the ways in which personal goals or intentions are cognitively represented or propositionally specified have predictive implications for various indices of mental and physical health (e.g., Bandura, 1986; Emmons, 1992; Higgins & Moretti, 1988; Karoly, 1991; Karoly & Lecci, 1993; Lavalley & Campbell, 1995; Lecci,

Karoly, Briggs, & Kuhn, 1994; Ruchlman & Wolchik, 1988; Van Hook & Higgins, 1988). Within this emerging framework, stress, whether in the form of unpredictable or challenging life events or uncontrollable sensory events (e.g., pain), yields detrimental outcomes to the extent that current life goals are threatened or pressure is applied for the enactment of new (i.e., unfamiliar or risky) goals. Coping is likewise conceived as involving the deliberate alteration or reorganization of short- and long-term personal goals or objectives (cf. Karoly, in press). The individual's consciously accessible goals are thus hypothesized to be the key bridging elements that link stressful life events to varied adaptive outcomes.

Assessment of Goal Cognition

In the present research, four recently developed questionnaires (divisible into 9 subscales), collectively called the Goal Systems Assessment Battery (GSAB), were used to gauge several dimensions of self-conscious goal pursuit as outlined in D. Ford's (1987) functional components model of human self-regulation. Despite the existence of several methods for the assessment of goal cognition, including Little's (1983) Personal Projects Assessment methodology, Emmons's (1986) index of "personal strivings," and Klinger's (1977) structured appraisal of "current concerns," the GSAB was developed (a) to capture the content of a comprehensive, multi-factor model of self-regulation and (b) with attention to establishing basic psychometric properties, such as temporal stability and factorial structure.

The GSAB assesses what Ford (1987) called the primary "governing functions" of a self-directing system; that is, the basic processes whereby information is organized, transformed, stored, and used to produce coordinated action (see Ford, 1987, Chpt. 3). The first of the key processes is the *directive or feedforward function*. The GSAB's Directive Function Questionnaire consists of two 4-item subscales that tap goal-related value and self-efficacy (e.g., "This goal is valuable to me" and "I possess the necessary skills to attain this goal"). The GSAB's Regulatory Function Questionnaire, which assesses a comparator function, consists of a 4-item goal monitoring scale and a 4-item social comparison scale (e.g., "I keep track of my overall progress toward this goal" and "I evaluate my progress on this goal by comparing myself to people who are very much like me in terms of background and ability"). Ford (1987) also postulated a control function whose purpose is to move the individual strategically toward his or her objective. The GSAB's Control Function Questionnaire consists of three 4-item subscales that assess planning, self-criticism, and self-reward (e.g., "I try to plan out in advance the steps necessary to reach this goal;" "I routinely criticize myself for unsatisfactory work on this goal;" and "I reward myself when I make progress on this goal"). Finally, the Arousal Function Questionnaire assesses the emotional sequelae of goal pursuit with a 4-item positive arousal scale (e.g., "Working on this goal makes me happy") and a 4-item negative arousal scale (e.g., "Thinking about this goal gives me an uneasy feeling").

In a series of studies (Karoly & Ruchlman, 1995; Lecci, Karoly, Ruchlman, & Lanyon, 1996), the 36-item GSAB with its four factors and nine subscales has proven to possess good psychometric characteristics. It is a reliable and valid procedure for assessing goals of varied types across a variety of contexts and populations. Confirmatory factor analytic procedures have been used to demonstrate factor structure invariance across academic, health-related, and social goals. Finally, like extant goal-assessment protocols, the GSAB can account for significant variance in indices of adjustment.

In addition to reliance on GSAB subscale scores, we also assessed several indices of goal conflict. Specifically, we measured respondents' levels of self-reported conflict between various work goals as well as conflict between important work and nonwork strivings. Previous goals research has suggested that conflict has a significant impact upon measures of psychological status (e.g., Emmons & King, 1988).

Design Considerations

As noted previously, the overall objectives of the present research were to assess the relation between differential pain experience and work goal construal and to demonstrate that two indices of mental health status—depression and anxiety—could be uniquely predicted (in a regression model) by goal construal patterns after accounting for pain experience. However, several aspects of our rationale and operationalization need to be clarified.

First, we elected to study a national sample of nonclinic-referred adults reporting on everyday pain rather than a group of pain patients. We did so for several reasons. Pain patients are generally considered to be an “extreme” group in terms of nociceptive experience, and are therefore not the best choice for examining a general hypothesis about pain (broadly conceived) and motivation. Pain patients also tend to experience a number of comorbid psychological conditions (e.g., neuroticism, low self-esteem, passive-aggressive tendencies, etc.) whose effects on goal construal would represent a needless confound at this early stage of research (cf., Elton, Stanley, & Burrows, 1983). Although pain patients are, in our view, an important subpopulation of pain sufferers, they are not the only group worthy of careful examination. Placing our motivational analysis into a normative context necessitated the use of a broader sampling of pain experience than would be provided by exclusive reliance on clinic patients.

Second, our key index of pain experience was *chronicity*, the amount of time respondents reported having a pain problem. We reasoned that the felt intensity of pain in a nonclinical population would, on average, be relatively mild but that relationships to goal construal would nonetheless emerge as a function of the individual’s prolonged exposure to unpleasant sensory stimulation. To qualify as “persistent” pain sufferers, then, participants had to indicate that their pain, irrespective of its intensity, was present and unresolved for at least 6 months. Within this broad, unidimensional categorization, however, multiple acute episodes occurring within a 6-month interval would not exclude the respondent from the chronic or persistent group.

Finally, we chose to study the goal-centered correlates of pain among managerial-level workers rather than among blue collar workers because prior research on goal cognition in vocational settings suggested that we might be hampered by a rather restricted number of work goals in the latter group.

Method

Participants

Participants were 227 English-speaking adults (127 men and 100 women) recruited from a larger national sample of persons taking part in a separate survey. To be eligible for the present study, respondents were required to (a) be employed full time, (b) work for others (rather than being self-employed), (c) supervise at least one other individual, and (d) describe their work as either managerial, white collar, or professional. Three hundred two respondents drawn from a larger national probability sample met the above criteria. Five percent (16 people) refused to participate in the current survey when contacted, whereas 8% (25 people) initially agreed but subsequently failed to complete the entire interview. Eleven percent (32 people) were unable to be contacted for the present study. Completed interviews were therefore conducted with a total of 229 persons. Two of these participants were subsequently dropped from the analyses when it was discovered that, although they reported having persistent pain, their ratings of pain intensity were “0” (indicative of no pain).

The participating sample of 227 consisted of 84% White adults, with an average age of 40 years (range = 20 to 68 years). Sixty-one percent were married. One percent reported less than 12 years of education, 15% were high school graduates, and the remaining 84% reported some

education beyond high school. Fifteen percent of the sample supervised two workers and 85% supervised three or more employees. Six percent of participants reported yearly incomes of less than \$20,000, 31% had annual incomes of between \$20,000 and \$40,000, and 63% reported incomes in excess of \$40,000 per year.

Procedure

Telephone interviews, averaging 43 min in duration, were conducted by DataStat Inc. (Ann Arbor, Michigan), a survey research firm specializing in telephonic data gathering. All interviews, which were designed by the authors, were conducted through DataStat's computer-assisted telephone interviewing (CATI) system. National sampling was based on random-digit dialing, a technique that uses randomly generated telephone numbers. The computer-based, single-stage systematic sampling procedure was designed to ensure (a) geographic representativeness and (b) that each and every possible area code, exchange, and four-digit suffix was assigned a known and equal probability of being selected. Because some homes have more than one phone number, there was no way to guarantee that households would have an equal probability of selection. All participants were paid \$30 for a completed interview.

Pain assessment and group classification.—Because persistence of pain was hypothesized to be associated with dysfunctional goal construals, we sought to capture the “chronicity” construct (albeit in a nonclinical context) by establishing a temporal cutoff, consistent with the clinical literature, of 6 months or greater. Participants were, therefore, asked, “Do you experience troublesome pain anywhere in your body that has lasted for 6 months or more, or pain that reoccurs on a regular basis?” Respondents provided “yes” or “no” responses. Pain intensity experience was also assessed. Participants were instructed, “Please rate the amount of pain that you usually experience on a day-to-day basis by giving a number between zero and 100. A zero means no pain at all and one hundred means pain as bad as it could be. You can use any number from 0 to 100” (cf., Karoly & Jensen, 1987). Thus, the intensity rating reflected average daily pain.

With the data from these two questions we formed three groups of respondents: those reporting no pain, those with pain of measurable intensity but not of persistent duration, and those with persistent pain (single pain problems of 6 months or more or recurrent pain over a 6-month period; see Results section for further descriptive information on the 3 obtained groups).

Work-centered goal assessment.—Participants were presented with a list of 13 potential work goals from which to select (See Table 1). The list was designed to tap the 4 types of goals outlined by Ford and Nichols (1991) in their broad-based taxonomy of human strivings. These included cognitive, affective, social-relational, and task goals. Owing to the relative brevity of the telephone interview, participant selection from a representative listing of goals derived from prior research was preferred to an open-ended goal nomination format, although respondents were permitted to add any single additional goal to the list of 13.

For each goal selected from the list, participants were asked, “Are you currently trying to do this at work?” Affirmative answers were followed by the question, “How often have you worked on this goal over the past 2 weeks?” A 1 (*not at all*) to 5 (*daily*) response scale was used to gauge goal pursuit frequency. After answering with regard to all of the goals on the list, participants were asked if they were currently working on any goal not mentioned by the telephone interviewer and, if so, how often they had worked on it over the previous 2-week period. The interviewer repeated from the original goals list only those goals that the respondent had indicated pursuing over the past 2 weeks, and then requested that the respondent select the two most important goals. These two goals were rated by the participant with the GSAB.

Goal cognition.—As already noted, the participants provided goal representation data according to the 36 items of the GSAB (Karloly & Ruchlman, 1995) for their two most important and current work goals. Previous research has demonstrated good retest reliabilities (1 week) for the nine GSAB subscales, ranging from .68 to .89, with a mean of .79.

Goal conflict.—First, participants rated the extent to which each of their two most important work goals conflicted with one another according to a 1 (*not at all*) to 5 (*a great deal*) scale. Respondents were next asked to think about goals that were not work related (including family, recreational, or self-improvement goals) and to select their single most important nonwork goal. Participants were then asked to rate how much each of their two most important work goals conflicted with their single most important nonwork goal using the same 1 to 5 scale previously described. The average of the two conflict ratings was calculated to serve as our index of perceived work–nonwork conflict.

Depression.—Ratings of depression were obtained using the Center for Epidemiological Studies—Depression scale (CES–D), a 20-item measure of current depressive symptoms designed for use with a general population (Radloff, 1977). The scale is widely used and has good psychometric properties.

Anxiety.—Anxiety was assessed by means of the Beck Anxiety Inventory (cf. Beck & Steer, 1990), a self-administered questionnaire consisting of 21 items designed for use with adults. The manual (Beck & Steer, 1990) details the more than adequate psychometric properties of this instrument, including its reliability and five types of validity.

Results

Group Designations

The sample of 227 adults was divided into three groups as follows: (a) a no pain comparison group ($n = 55$) consisting of persons who failed to indicate any pain experience; (b) a nonpersistent pain group ($n = 110$) consisting of individuals who did not endorse the 6-month duration question, but who nevertheless reported experiencing some pain (mean pain intensity = 10.88 on a 0 to 100 scale of intensity); and (c) a persistent (chronic) pain group ($n = 62$) consisting of persons with measurable pain (mean pain intensity = 29.84) that persisted or recurred over a 6-month period.

The three groups did not differ in age, $F(2,224) = .064, p > .05$, the total number of goals endorsed (ranging from 3 to 14), $F(2,224) = 2.50, p > .05$, or the average frequency of work on their two most important vocational goals, $F(2,224) = 2.23, p > .05$. It should be noted that, although the two pain groups differed significantly in their intensity ratings, $t(170) = 8.44, p < .001$, the absolute levels of intensity that were reported are indicative, not surprisingly, of an average daily pain of nonclinical proportions.

Pain and Goal Cognition

For all participants, scores on the GSAB subscales were averaged across their two vocational goals (analyses of the goals separately yielded virtually identical findings). A multivariate analysis of variance (MANOVA) was then conducted to compare the three groups along the nine GSAB scales. The three groups were found to differ significantly (Pillai's criterion = .16, $F[18,428] = 2.13, p < .01$). Subsequently, multivariate groupwise comparisons were carried out by means of the Hotelling test. Table 2 provides the means and standard deviations for the three groups. Insofar as the multivariate tests are concerned, results indicated that, although the persistent and nonpersistent groups failed to differ from one another, both the persistent pain group (Pillai's criterion = .30, $F[9,106] = 4.94, p < .05$) and the nonpersistent (acute)

group (Pillai's criterion = .12, $F[9,152] = 2.40, p < .05$) differed significantly from the no pain comparison group.

Follow-up univariate t -tests (one-tailed because of the directional nature of the hypotheses) further revealed that, compared with the no pain group, the nonpersistent (episodic) pain respondents reported significantly lower levels of goal-related value, $t(226) = -2.99, p < .01$, self-efficacy, $t(226) = -1.73, p < .05$, and positive arousal, $t(226) = -2.04, p < .05$, as well as greater levels of goal-based self-criticism, $t(226) = 2.35, p < .01$, and negative arousal, $t(226) = 3.38, p < .001$ (see Table 2).

Relative to the comparison respondents, the persistent pain sufferers likewise reported a pattern of greater self-criticism, $t(226) = 1.93, p < .05$, and negative arousal, $t(226) = 4.09, p < .001$, along with lower scores on goal-relevant value, $t(226) = -3.19, p < .001$, self-efficacy, $t(226) = -2.36, p < .01$, and positive arousal, $t(226) = -2.54, p < .01$ in their pursuit of important vocational strivings.

Pain and Goal Conflict

A MANOVA indicated significant differences among the pain groups and the comparison group in the domain of goal conflict (Pillai's criterion = .05, $F[4,448] = 2.98, p < .05$). To further probe the nature of the obtained differences, multivariate groupwise comparisons were conducted. The episodic and the comparison (no pain) groups were found not to differ significantly. However, the persistent (chronic) sufferers differed both from their acute pain peers (Pillai's criterion = .05, $F[2,169] = 4.36, p < .05$) and from the no pain comparison respondents (Pillai's criterion = .06, $F[2,114] = 3.74, p < .05$). Follow-up t -tests revealed that the persistent pain group reported significantly greater conflict between work and non-work goals than did either the episodic, $t(226) = 2.08, p < .05$, or no pain respondents, $t(226) = 2.43, p < .01$. No significant differences emerged, however, when examining conflict between respondents' two work-related goals across the groups.

Pain, Goals, and Psychological Distress

Table 3 presents the intercorrelations between all the predictors, including the goal-based measures (the GSAB subscales and the 2 conflict indices) and pain status (*persistent vs. no pain* = dummy code 1; *episodic vs. no pain* = dummy 2). The correlations between the predictors and the mental health outcomes of anxiety (Beck Anxiety Inventory) and depression (CES-D) are presented in Table 4. As can be seen in Table 4, persistent pain (vs. no pain) correlates significantly with depression and anxiety, whereas the episodic pain (vs. no pain) condition shows no such relation. Both goal-based self-criticism and negative arousal (negative affective components of goal construal) were found to relate moderately to both depression and anxiety. Note also the moderate intercorrelations among the predictors themselves (see Table 3).

Tables 5 and 6 present hierarchical regression analyses wherein anxiety (Table 5) and depression (Table 6) were regressed in turn on the block of dummy-coded pain status variables (Step 1) followed by the block of goal construal measures found to be significant in the previous MANOVAs (Step 2).

In accordance with our expectations, although pain group status accounts for the usual 8% of the variance in anxiety ($R^2 = .30$ is consistent with the extant literature on pain's link to psychological status), the block of goal variables revealed incremental utility by enhancing the adjusted R^2 from .08 to .23. An examination of the beta weights further reveals that goal-based self-criticism, conflict between work and nonwork goals, and negative arousal in the pursuit of vocational goals are the key correlates of anxiety in this nonclinical population.

In contrast, the link between pain status and depressive affect in our sample appears to be slightly weaker than usual ($R^2 =$ about .20). However, the block of goal construal variables brought the adjusted R^2 from .03 to .21, again supporting our contention that goal cognition has a unique role as a correlate of psychological distress. Whereas goal-centered self-criticism and negative arousal again yielded significant betas, in the depression equation the average positive arousal experienced during goal pursuit also played a significant role ($\beta = -.14, p < .05$).

Discussion

Overall, our findings support the contention that normative pain experience (i.e., pain in a nonclinical sample of adults) is associated with a distinctly negative pattern of work goal construal relative to the work goal cognitions of individuals without pain. Furthermore, as predicted, goal cognition patterns account for variation in psychological status (depression and anxiety) over and above that due to pain.

Interestingly, pain experience had no apparent impact on the number of work-related strivings that adults selected, nor on the frequency with which important vocational goals were pursued. Mild pain in nonclinic-referred individuals would thus appear to produce no obvious manifestations of behavioral avoidance. Nonetheless, individuals with both persistent and episodic pain appeared to subjectively appraise their important work goals differently from individuals with no discernible pain experience.

Specifically, goal-related value and self-efficacy were of lower magnitude in pain sufferers, suggesting a potential deficit in what self-regulation theory calls the *feedforward* or directive function. Such a function is involved in the “process of using thoughts about potential future events to organize current behavior” (Ford, 1987, p. 333). It appears that pain, even mild pain, is associated with a slightly diminished intentionality.

Moreover, pain was associated with lower levels of positive arousal in the pursuit of work goals and with relatively higher levels of negative arousal. The arousal function, in control theory terms, is concerned with the fine tuning of energy production and distribution (Ford, 1987, Chapter 13), and is manifest in the form of emotions whose purpose is to help the individual evaluate situations and organize goal-directed action toward valued incentives. Our data suggest that normative pain experience in working adults is associated with both diminished environmental engagement and heightened disengagement from incentives (cf. Klinger, 1977).

It is also instructive to note which aspects of work-related goal cognition did not vary with respondents' pain experiences. It would appear that, with the exception of a greater tendency to self-criticize, the pain groups' information evaluation (regulatory function) and coping (control function) capacities were unrelated to nociceptive experience. Perhaps, because of the presumably greater flexibility and decisional freedom accorded to white collar workers relative to their blue collar peers, the existence of bodily discomfort can be readily self-treated or accommodated over the course of the work day, thereby requiring little modification of work-goal schemas. It would be useful, therefore, to replicate these findings with other subgroups in the workplace.

The pattern of relations between pain status and work-goal conflict revealed a somewhat more group-specific linkage than has heretofore been noted, in that the persistent pain sufferers reported greater conflict between work and nonwork goals than did both the episodic pain sufferers and the no pain group. Unfortunately, we still know comparatively little about the online processes by which individuals coordinate multiple goals across time and across changing circumstances. We can speculate that perhaps the relatively well-structured nature

of the work environment for managers permits goal juggling to occur more readily in the workplace, whereas negative spill-over between work and nonwork settings is more apt to occur for those persistent pain sufferers whose cognitive resources are being sapped by recurrent nociceptive experience.

As has been reported many times before, the zero-order correlations between chronic (persistent) pain and psychological distress were modest. However, the GSAB-assessed measure of goal-relevant self-criticism and negative arousal, along with a structural index of intergoal conflict, evidenced a stronger relation to anxiety than did our index of pain chronicity. Clearly, in the prediction of anxiety a set of negative goal construals proved uniquely useful. It is noteworthy that GSAB-assessed positive arousal was a significant predictor of depression, suggesting that something more than negative affectivity was driving that relationship. However, because common negative elements are contained in both pain and distress, the disposition toward negative emotionality (cf. Watson & Clark, 1984) is no doubt playing a role (i.e., is a possible alternative explanation of the findings). A full explanation of the process, however, requires a clarification of the mechanism(s) whereby negative affectivity influences the complex and bidirectional pain–distress connection. Our data suggest that perhaps the manner in which life goals are construed may provide one avenue of moderation worth exploring.

The present experiment clearly suffers by virtue of its cross-sectional nature and its reliance on self-report indices of the major variables under investigation. Our assessments of pain, goal construal, and psychological distress were all retrospective by design, as if the linkages among these variables were by definition a function solely of “trait variance.” We know, however, thanks to the longitudinal modeling work of Zautra et al. (1995), that although substantial trait variance is at work in the pain–distress equation, there is also a sizable state variance.

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Table 1

Stimuli for Work Goal Assessment

Stimulus
Finish an important project or task. Manage your relationships with bosses. Manage your relationships with the people you supervise. Manage your relationships with your coworkers. Master a new task or develop a new skill. Satisfy your needs for mental challenge. For example, learning more about your field, achieving greater variety in your work, or taking on difficult responsibilities. Control your feelings. For example, feelings of boredom, anxiety, frustration, or anger. Be more creative. For example, inventing something, improving a product, or finding a creative solution to a problem. Achieve greater control or organization of your daily tasks. Obtain or keep the resources necessary to do your job. Improve working conditions. Work harder to improve your performance. Change your responsibilities or duties.

Table 2
Means and Standard Deviations for Study Variables by Group

Variable	Persistent pain		Episodic pain		No pain	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	39.56	11.13	39.61	10.06	40.18	11.20
Number of goals	10.56	2.16	10.15	2.38	10.96	1.94
Mean frequency of work on two most important goals	3.75	0.65	3.80	0.67	3.99	0.58
Pain intensity	29.84	18.41	10.88	11.05		
Value	13.82	2.10	14.00	2.28	14.91	1.59
Self-efficacy	13.32	2.10	13.64	1.96	14.19	1.86
Social comparison	6.85	3.92	7.91	3.82	7.53	3.60
Self-monitoring	11.23	2.40	11.32	2.75	11.49	2.75
Planning	9.50	2.62	10.00	2.96	10.05	3.17
Self-reward	7.28	3.89	7.44	3.25	7.09	4.37
Self-criticism	7.64	3.52	7.72	3.46	6.34	3.68
Positive arousal	10.11	3.67	10.62	3.71	11.89	3.89
Negative arousal	5.67	3.26	5.17	3.60	3.24	3.16
Conflict between work and nonwork goals	3.00	1.15	2.63	1.10	2.48	1.16
Conflict between two most important work goals	2.37	1.26	2.65	1.05	2.40	1.36
Depression (CES-D)	11.18	9.39	8.68	7.27	6.65	6.59
Anxiety (Beck)	6.32	5.85	4.65	4.58	2.13	2.97

Note. *N* = 227. CES-D = Center for Epidemiological Studies-Depression scale.

Table 3

Intercorrelations Among the Predictors

Predictor	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Value													
2. Self-efficacy	.33**	—											
3. Social comparison	.21**	.16*	—										
4. Self-monitoring	.50**	.45**	.49**	—									
5. Planning	.40**	.44**	.39**	.71**	—								
6. Self-reward	.14*	.20**	.42**	.41**	.47**	—							
7. Self-criticism	.19**	-.07	.58**	.32**	.26**	.32**	—						
8. Positive arousal	.47**	.36**	.31**	.43**	.53**	.39**	.17*	—					
9. Negative arousal	.05	-.16*	.30**	.14*	.04	.17**	.61**	.09	—				
10. Goal conflict: Work goals	-.12	-.05	.14	.00	-.05	.11	.20**	.10	.21**	—			
11. Goal conflict: Work vs. nonwork	.05	.08	.20**	.12	.02	.04	.23**	.01	.30**	.30**	—		
12. Persistent vs. no pain (Dummy 1)	-.10	-.11	-.11	-.02	-.08	.00	.05	.11	.15*	-.07	.16*	—	
13. Episodic vs. no pain (Dummy 2)	-.08	-.02	.10	-.01	.04	.03	.10	.04	.09	.11	.05	.59**	—

Note. N = 227.

* p < .05.

** p < .01.

Table 4
Correlations Between the Predictors and Outcomes

Predictor	Depression	Anxiety
Value	.00	-.01
Self-efficacy	-.09	-.15*
Social comparison	.17*	.08
Self-monitoring	.01	-.03
Planning	-.03	-.13
Self-reward	.00	.01
Self-criticism	.34**	.33**
Positive arousal	-.13	-.14*
Negative arousal	.41**	.41**
Goal conflict		
Work goals	.09	.12
Work vs. nonwork goals	.21**	.26**
Persistent vs. no pain (Dummy 1)	.18**	.23**
Episodic vs. no pain (Dummy 2)	-.02	.03

Note. $N = 227$.

* $p < .05$.

** $p < .01$.

Table 5
 Regression of Anxiety on Pain Group (Dummy Coded) and Measures of Goal Cognition

Variable	R^2	Adjusted R^2	R^2 change	13
Dummy 1 ^a	.09***	Step 1	.08	
Dummy 2 ^b				
Negative arousal	.26***	Step 2	.17***	.20*
Self-criticism				.16*
Goal conflict: Work vs. nonwork goal				.14*
Positive arousal				-.11
Self-efficacy				-.06
Value				.05

Note. $N = 227$.

^aDummy 1 = Persistent pain group vs. no pain group.

^bDummy 2 = Episodic pain group vs. no pain group.

* $p < .05$.

*** $p < .001$.

Table 6
 Regression of Depression on Pain Group (Dummy Coded) and Measures of Goal Cognition

Variable	R^2	Adjusted R^2	R^2 change	β
		Step 1		
Dummy 1 ^a	.04*	.03		
Dummy 2 ^b				
		Step 2		
Negative arousal	.23***	.21	.19***	.27**
Self-criticism				.19*
Positive arousal				-.14*
Goal conflict: Work vs. nonwork goal				.08
Value				.02
Self-efficacy				.00

Note. $N = 227$.

^aDummy 1 = Persistent pain group vs. no pain group.

^bDummy 2 = Episodic pain group vs. no pain group.

* $p < .05$.

** $p < .01$.

*** $p < .001$.