Journal of Behavioral Medicine, Vol. 28, No. 5, October 2005 (© 2005)
DOI: 10.1007/s10865-005-9013-8

Health Goal Cognition and Adjustment in Women with Fibromyalgia

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Accepted for publication: November 22, 2004; Published online: September 23, 2005

The purpose of this study was to identify individual differences in symptom-specific goal for persons diagnosed with fibromyalgia syndrome (FMS) and to determine whether those differences are related to adjustment outcomes. Women with FMS ($N = 71$) rank ordered 12 FMS-specific goals and completed a packet of psychosocial outcome measures. Cluster analysis suggested that there were three relatively homogeneous subgroups defined. Cluster 1 ranked goals related to seeking professional care higher than all other groups. Cluster 2 ranked self-sufficiency goals higher than the other two groups. Cluster 3 ranked social-validation goals higher than the other two clusters. Multivariate analyses of variance (MANOVAs) and post-hoc tests showed that goal profiles covaried with differences in pain, negative affect, goal-specific social support, general social support, goal-related interference, and negative life events. Differences between groups are discussed in the context of proposed relations between goals and environmental support.

KEY WORDS: fibromyalgia; pain; goals; self-regulation; social networks.

Research on chronic pain has recently begun to make use of a motivational organizing perspective, emphasizing the putative role of patients' aspirations, personal strivings, or goals as key moderators of long-term adaptive success (e.g., Emmons, 1999; Karoly, 1991, 1999; Karoly and Lecci, 1997; Karoly and Ruehlman, 1996). Within this emerging framework, the relation between pain perception and adjustment is believed to be influenced by the type(s) of life goals a person elects to pursue, the ways in which personal goals are cognitively appraised and organized, the ways in which the process of goal pursuit is represented schematically, the structural relationships among the goals in a person's hierarchy of aspirations, and the availability of goal-related environmental resources (cf., Affleck *et al.*, 2001; Emmons and Kaiser, 1996; Karoly, 1991, 1993). Essentially, by inquiring into what people want and how goals are construed and supported, investigators operating from a motivational framework strive to predict and account for successful and unsuccessful patterns of adaptation over time and across changing circumstances.

The construction of pain-related goals may be particularly important for those managing a severe and poorly understood chronic illness, such as fibromyalgia syndrome (FMS). Persons diagnosed with FMS present an enigmatic clinical picture characterized by diffuse pain in the absence of systemic disorder (Aronoff, 1988). FMS pain seems to emanate from muscle and soft tissue (Wolfe *et al.*, 1990), and although chronic pain is a central diagnostic symptom, FMS is often comorbid with chronic fatigue, irritable bowel syndrome, and clinical depression (e.g., Buchwald, 1996; Epstein *et al.*, 1999). In contrast to their effects on other musculoskeletal diseases such as arthritis, pharmacological agents have not been particularly efficacious with FMS other than as temporary pain relievers (see review by Buckelew, 1989). Perhaps because of the ambiguous nature of this illness, persons with FMS may

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experience dissatisfaction with medical care and also report inadequate support from social networks (Henriksson *et al.*, 1992). In view of these difficulties, we believe that there is much to be gained by examining the role of FMS-related goals. Specifically, we believe that how people prioritize their FMS-related goals may be directly related to physical and psychological outcomes and may also be linked to social network characteristics (Karoly, 1999).

GOAL COGNITION AND ITS ASSESSMENT

The assessment of goals and the relationship between goal constructs and health-related outcomes is a relatively new area of inquiry (cf. Austin and Vancouver, 1996). Thus, researchers have taken varied approaches to the measurement and modeling of individual goals. For instance, the link between goal attainment and dimensions of positive mental health was documented in a study of the caregiver partners of men with AIDS (Stein *et al.*, 1997). In this study, positively appraised goal outcomes were associated with positive mental health 12 months postbereavement.

Other researchers have focused on FMS as the clinical target. These investigators have employed prospective designs to investigate, via an electronic diary methodology, the relations between perceptions of goal progress, goal effort, and interference with goal accomplishment and daily measures of pain, mood, fatigue, and restorative versus nonrestorative sleep (Affleck *et al.*, 1998, 2001). As an aid to understanding FMS, the study of patients' goals can be especially valuable to the degree that goals mediate the relation between pain perception and adjustment. In the studies by Affleck and colleagues, the emphasis was on linking, via within-subjects analyses, the daily accomplishment of health and social goals to momentary patterns of pain, fatigue, and related indices of functioning (Affleck *et al.*, 1998, 2001). On days when patients reported greatest pain and fatigue, accomplishment of daily goals was disrupted by the perception of increased barriers to goal attainment (Affleck *et al.*, 1998, 2001). Further, disruptions in the pursuit of health and social goals had serious day-to-day affective consequences. Specifically, when pain and fatigue interfered with progress towards health and social goals, women reported less positive affect (Affleck *et al.*, 1998). However, the debilitating effects of pain and fatigue were less pronounced for women with a more optimistic and less pessimistic explanatory style. These results suggest that day-to-day accomplishments of health and social goals despite pain and fatigue have important mental health consequences for women with this chronic illness.

In the studies by Affleck and colleagues (Affleck *et al.*, 1998, 2001), the types of goals that patients provided were not the primary focus of study. Nor were the goals elicited so as to ascertain their specific relevance to FMS. Although no study to date has focused on the content of FMS patients' goals, research in other domains suggests that goal content may be related to key outcomes. For instance, among elderly respondents to the Terman Study for the Gifted (Terman *et al.*, 1925), goals such as maintaining autonomy, social involvement, and achievement motivation covaried with both physical and psychological health (Holahan *et al.*, 1985). Another approach has been to examine the relationship between the overall pattern of personal goals and adjustment outcomes (Rapkin and Fischer, 1992; Turner *et al.*, 1998). By measuring multiple goals and by then clustering participants based on response profiles, researchers were able to identify subgroups of elders who were more or less vulnerable to depression, low self-esteem, and distress related to health problems (Rapkin and Fischer, 1992). It has been argued that examining the overall pattern of goals rather than individual goals yields a more complete picture of adjustment, because it is likely that people simultaneously pursue multiple, and perhaps incompatible, goals (Karoly *et al.*, in press; Turner *et al.*, 1998).

In the present study we focused on the content of FMS-related goals. Within the context of goal-systems theory, goal content has been defined as the endpoint or target of personal aspirations (Karoly, 1999). Goal content is assumed to vary across persons, and goals are thought to vary in the position they occupy within each person's goal hierarchy. For instance, in the present study, it would be reasonable to assume that all patients with pain would like to experience less severe FMS symptoms. However, it was assumed that participants would vary in terms of how they approached the goal of pain reduction. Consistent with the hierarchical nature of goals, we asked participants to rank-order logically derived subtypes of FMS-specific goals rather than rely on Likert scaling. Requiring participants to create a FMS-specific goal hierarchy preserves an ecologically valid dynamic relationship between similar but often competing goals within the structure of each person's goal hierarchy.

On the basis of a review of the goals and pain literature (cf. Karoly and Jensen, 1987), we created a list of goals that captured the following dimensions of chronic pain management: symptom reduction, treatment seeking from traditional practitioners, alternative treatment seeking, self-sufficiency, and social validation. We hypothesized that the relative position of different goal types within an FMS-specific goal hierarchy would have important implications for the overall adjustment of FMS women. For example, goals that necessitate the active cooperation of other people, such as the desire to prove to friends and family that one's problems are genuinely medical, or goals that involve seeking medical sanctioning of one's FMS-related symptoms are likely to prove to be difficult and frustrating because of the controversial nature of FMS (Aronoff, 1988). In light of these possible consequences, endorsement of social-validation goals and treatment-seeking goals were expected to correlate negatively with indices of psychological and physical adjustment. In contrast, we expected that the endorsement of self-sufficiency as a goal would covary with effective psychological and physical functioning. A great deal of motivational literature from diverse sources reveals that goals reflecting the display of personal choice and self-focused initiative tend to channel the individual's continued efforts towards goal accomplishment and generate a sense of general well-being (e.g., Bandura, 1986; Deci and Ryan, 1985; Ford, 1992; McGregor and Little, 1998). The goal of seeking assistance via alternative medicine might well yield positive consequences to the degree that it reflects patient self-determination, or negative consequences to the extent that seekers of alternative medical help are often alienated and disaffected and have, for varied reasons, derived little benefit from traditional sources. The same reasoning applies to those who strongly endorse the goal of symptom reduction. Thus, we made no *a priori* assumptions with respect to the relation of these two FMS goals to clinical outcomes.

In addition to differences in FMS symptom severity, we also expected that there would be a relationship between goal profiles and the social network of women with FMS. Goals are pursued in the context of an environment that may either support or impede goal attainment (Karoly, 1999). The pursuit of specific goals may be related to either support or interference by the social network. People with FMS have frequently reported low social support (e.g., Davis *et al.*, 2001; Turk, 2002; Zautra *et al.*, 1999). We therefore predicted that the pursuit of social-validation goals would not be supported by the social network and might, in fact, be associated with social interference. In contrast, we predicted that members of the social network would support, rather than inhibit, the goal of self-sufficiency. Finally, in light of the controversial nature of the FMS diagnosis, we also predicted that the social network of FMS patients would not support patients who were highly motivated to seek medical treatment. We did not make predictions about the social network's response to symptom-reduction, or goals related to the use of alternative medicine.

METHOD

Participants

Participants were 71 women, ranging in age from 38 to 78 years ($M = 57.51$), who were recruited from community seminars on FMS offered by the Arthritis Foundation and a rheumatology practice in the Phoenix, Arizona metropolitan area. Interested parties provided their mailing address and phone number and signaled their willingness to participate without financial compensation, by returning an initial questionnaire (described later) and signing an informed consent.

Procedure

Data were gathered from all respondents who indicated they had been diagnosed with FMS. However, only those participants who met the criteria for either primary or secondary FMS were included in the present analyses. A self-report screening instrument and a multiple tender points examination (see later) were employed to determine participant eligibility. Over the course of the research (only a portion of which is described here) a total of four questionnaires were sent to each participant. The initial packet was returned by 124 of 204 seminar attendees who agreed to be contacted (61%). The packet included a screening instrument for FMS and measures of various personality factors. A second mailer, containing three questionnaires to be returned on a weekly basis, was sent to all participants who completed the initial questionnaire. Included in the first of the weekly questionnaires was a FMS Personal Goals Assessment. Ratings of pain intensity, affect, and small negative life events were included in each weekly questionnaire (see later for psychometric details on each of these three instruments). Of the initial 124 participants, 71 (57%) met clinical criteria for FMS, returned weekly assessments, and provided complete data on all the instruments used in the present analysis.

Measures

Two methods of screening were employed. First, participants who returned the initial questionnaire answered a set of questions designed to discriminate FMS from other chronic pain conditions. The questionnaire was based on criteria established in a FMS population prevalence study (Wolfe *et al.*, 1990). Participants responded to seventeen 4-point Likert items concerning the frequency of FMS-related symptom. Six items were used as our self-report screen, following the scoring criteria established by Bradley (personal communication, 1997). To be classified as positive for FMS, participants were required to answer in accordance with the following pattern: (a) a strong indication of poor sleep quality (answering "never" or "sometimes" to "Do you sleep well at night?"); (b) clear muscular pain (answering "often" or "always" to the question "Do you have pain in your neck and shoulders?" or "Do you have pain in your muscles and joints?"); (c) morning stiffness (answering "often" or "always" to "Do you feel stiff in the morning?" or "Do you have aches in the morning?"); and (d) muscular pain below the waist (answering "sometimes," "often," or "always" to the question "Do you have lower back or hip pain?").

Second, a Multiple Tender Points assessment (MTPS) clinical procedure was conducted by a trained nurse for 33 of the participants who passed the self-report screen noted earlier in this article (as a partial check on the validity of the paper-and-pencil screen), following procedures established by Okifuji *et al.* (1997). Of the participants who were given the MTPS examination, 97% met the standard criteria for FMS (Wolfe *et al.*, 1990). Participants who met criteria by MTPS, or if that assessment was not available, the screening questionnaire, were included in the present study.

Goals Appraisal

The FMS Goals Assessment consisted of a listing of 12 possible goals that a patient with FMS might currently be pursuing (along with a 13th "other" category) and the requirement that each goal in the set be ranked in order of importance. Items were written by the second author, based upon a review of the goals and pain literature (cf. Karoly and Jensen, 1987). Copies of the listing procedure are available from the first author. For the present analysis, the individual goals were combined to form five superordinate goal categories. The five categories were (a) Professional Care Seeking (e.g.,"to find a health professional who care cure my FMS"), (b) Self-Sufficiency (e.g., "to learn how to get on with my life despite my FMS"), (c) Social-Validation (e.g., "to convince people [doctors and my family] that I really have a genuine medical problem"), (d) Symptom Reduction (e.g., "to find a way to control the symptoms of my FMS"), and (e) Alternative Medicine Seeking (e.g., "to find help for my FMS through non-medical sources"). Although it is typical to report reliability statistics associated with Likert-scaled measures, this scale was composed of ranked items. Thus, the assessment of internal consistency would be inappropriate. Both the original list and the combined categorical typology were the product of rational rather than empirical construction.

Perceived Support

Items from the Medical Outcome Study (MOS) social support survey were designed to assess perceived availability of four domains of functional social support: emotional/information; tangible support; positive interaction; affection (Sherbourne and Stewart, 1991). The scale was normed on a chronically ill population and includes items suitable for mild to moderately impaired adults. The authors found the scale to be stable across a 1-year interval and to have high internal consistency (0.97). Internal consistency in the present sample was also high (0.97).

Affect

Positive affect and negative affect were assessed via the Positive and Negative Affect Scales (PANAS) (Watson *et al.*, 1988). The PANAS is a widely employed measure of emotion that makes use of 20 adjectives rated on a 1–5 Likert scale to indicate the extent of felt mood (across alternative temporal anchors). The present study used the "past week" as the time frame for assessing mood. The three weekly assessments of positive and negative affect were collapsed into a mean positive and mean negative affect scores. Based on responses for 3 weeks of monitoring, the reliability for positive affect was 0.84 and was 0.83 for negative affect.

Pain Intensity

Participant ratings of average and worst pain were collected, using a standard 101-point numerical rating scale (Karoly and Jensen, 1987). Participants were asked as part of the weekly assessments to "choose a number between 0 and 100 that best describes the average/worst pain you have experienced over the past week due to your FMS." Higher scores indicated greater pain. The three weekly assessments of average and worst pain were collapsed into a mean average and mean worst pain scores.

Small Negative Life Events

Stressful life events were measured with an abridged version of the Inventory of Small Life Events (ISLE; Zautra *et al.*, 1986). This instrument was selected because it can reliably document external (objective) life occurrences, reducing the potential confounds of personality, affect, psychopathology, and health status (Dohrenwend *et al.*, 1984). Participants provided frequency counts as to the weekly occurrence of 12 undesirable events gathered from three domains of the ISLE: (1) spouse or significant other, (2) family members, and (3) friends and acquaintances. Although we gathered information on positive events, we did not use this information in our analyses. The three weekly assessments of negative events were totaled across domains and weeks and collapsed into a mean negative event score.

Social Context of Goal Pursuit

Goal social support was defined by the question "Relative to all of your other goals, how much assistance or support do you typically receive from family and friends or working on your #1 Fibromyalgia goal." Goal social interference was defined by the question "In comparison to all your other goals in life, how much interference do you typically receive from friends and family for working on your #1 Fibromyalgia goal?" Participants responded to each of these questions on a 5-point Liker scale; higher scores respectively indicated greater perceived support or interference.

RESULTS

The demographic and disease-related characteristics of the sample are presented in Table I. Weekly reports suggested that pain and fatigue played an important role in the daily lives of the study participants. In fact FMS weekly reports of "worst pain" were higher than similar reports by women with rheumatoid arthritis during baseline and flare-up (Zautra *et al.*, 1997), and "average pain" reports were higher than similar reports by women with osteoarthritis (Zautra *et al.*, 1997),

Attrition analyses were performed comparing participants who completed weekly questionnaires, providing complete data on all study variables and those completing only the initial questionnaire. Initial data were available for 121 of 124 participants (3 participants failed to complete all initial questionnaires). Participants who completed weekly questionnaires were more likely to have completed high school (97%) than those who returned only the initial questionnaire (87%), χ^2 $(1, N = 121) = 4.91, p < 0.05$. Thus, although there was a substantial attrition rate, the final sample did not differ substantially from the initial sample.

Cluster Analysis

Because we expected that there would be distinct subgroups within our sample, we selected cluster analysis to assign the participants to homogeneous groups on the basis of differences in hierarchically ranked goals. We used the squared euclidian distance measure to estimate distance between pairs of participants. This distance measure was chosen because the squared euclidean distance is sensitive to the shape differences between pairs of participants (Aldenderfer and Blashfield, 1984). Ward's method was used to assign similar participants to clusters, because it minimizes within-cluster variance and creates smaller, more distinct clusters of relatively equal size and shape (Aldenderfer and Blashfield, 1984).

Following the recommendations of Everitt (1979), we examined the dendrogram for changes in fusion coefficients. The cluster dendrogram suggested that a 3, 4, and 5 cluster solutions might provide the most parsimonious classification of the data. However, there are no universally acceptable methods for selecting the optimal number of clusters (Aldenderfer and Blashfield, 1984; Everitt, 1979).

Different solutions can be compared in terms of interpretability (Rapkin and Fischer, 1992). On the basis of the criteria of interpretability, we chose a three-factor solution and followed recommendations by Aldenderfer and Blashfield (1984) to validate the solution by performing significance tests on variables not used to generate the cluster solution.

Because we asked participants to rank-order their FMS goals, a low score on a particular goal item would indicate that that goal was important to members in that cluster. To facilitate interpretation of the data, we have reverse-scored median rankings so that higher scores denote greater importance to members in a given cluster. For example, a goal that was ranked as 12 (a low-priority goal) was recoded as 1. Conversely, a goal ranked as 2 (a relatively high-priority goal), was recoded as 10.

As can be seen in Table I, symptom-reduction goals alone did not differentiate clusters. Symptom-reduction goals were assessed as important, relative to other goals, by all clusters. However, clusters were differentiated by endorsement of goals that we have categorized as reflecting a desire for professional care, self-sufficiency, and social validation for the FMS diagnosis. Table I shows that goals related to seeking professional care were ranked higher by cluster 1 than all other groups. Thus, we have labeled cluster 1 as the treatment-seeking cluster. Goals related to self-sufficiency were ranked higher by cluster 2 than all other groups. Thus, we have labeled cluster 2 as the self-sufficiency cluster. Goals related to the desire for social validation were ranked higher by cluster 3 than by the other two clusters. Thus, we have labeled cluster 3 as the social-validation cluster.

Figures 1–3 graphically display median ranking for each individual goal. We have grouped similar goal items on the x-axis to facilitate interpretation. Figure 1 shows the goal profile for women assigned to cluster 1. Cluster 1 membership was defined by high rankings for goals related to symptom reduction and treatment seeking. As can be seen in Fig. 1, the four highest median scores were for the goals: (1) "to simply feel less pain than I do right now"; (2) "to find a way to get more rest and restorative sleep than I do right now"; (3) "to find a way to control the symptoms of FMS"; and (4) "to get a better and more accurate diagnosis of my problems than I now possess." Conversely, women in cluster 1 ranked social-validation goals at the bottom of the goal hierarchy.

Figure 2 depicts the goal profile for women assigned to cluster 2. Membership in cluster 2 was defined by high rankings for goals related to symptom reduction and self-sufficiency. As can be seen in Fig. 2, the highest median scores were for the following goals: (1) "to learn how to get on with life, despite my FMS"; (2) "to find a way to increase my physical energy level"; (3) "to find a way to control the symptoms of FMS"; and (4) "to simply feel less pain than I do right now." Similar to individuals in the treatment-seeking cluster, these individuals ranked social-validation goals at the bottom of their goal hierarchy. In contrast with

Table I. Descriptive Data

	Total sample ($N = 65$)	Cluster 1: Treatment seeking ($n = 15$)	Cluster 2: Self-sufficiency ($n = 38$)	Cluster 3: Social validation ($n = 12$)
Variable	*M* (SD)	*M* (SD)	*M* (SD)	*M* (SD)
Demographics				
Age	57.37 (9.95)	58 (10.63)	57.89 (10.14)	56.08 (9.61)
Years since diagnosis with FMS	12.39 (10.62)	11.57 (11.34)	13.84 (11.94)	9.36 (3.14)
Education (% completing high school)	95	93	100	92
Marital status (% married)	70	60	78	50
Employment status (% employed)	28	27	26	33
Ethnicity (% caucasian)	99	100	97	100
Goal categories				
Professional care	4.79 (2.49)	7.10 (1.79)^a	4.07 (2.23)^b	3.79 (1.96)^b
Self-sufficiency	7.51 (2.14)	5.73 (2.07)^b	8.66 (1.52)^a	5.88 (1.40)^b
Symptom concerns	8.26 (1.00)	8.55 (.89)	8.19 (.99)	8.30 (1.08)
Social validation	5.93 (1.82)	5.23 (1.44)^b	5.50 (1.44)^b	8.17 (1.86)^a
Non-traditional treatment	4.55 (2.57)	4.13 (2.57)	5.23 (2.56)^a	2.92 (1.44)^b

Note. Different superscripts denote differences.
$p < 0.05$.

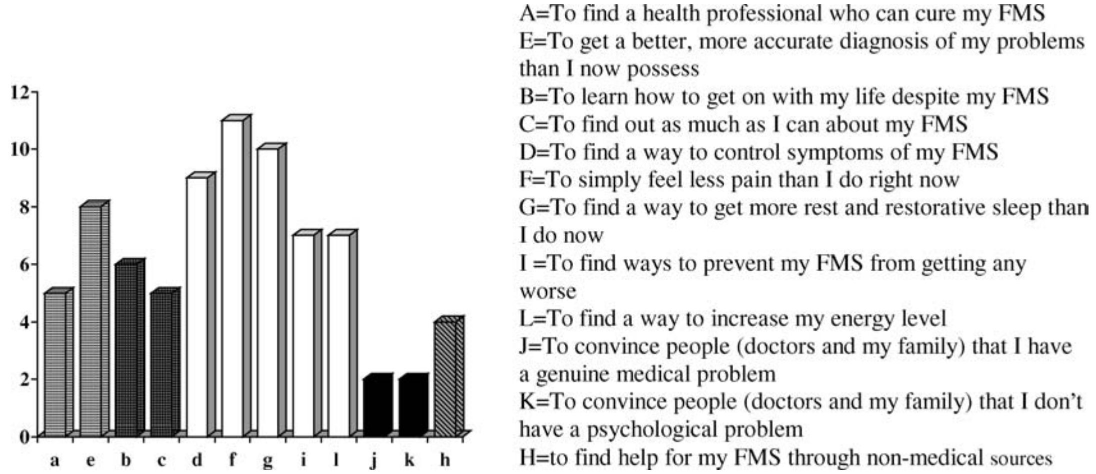

Fig. 1. Treatment-seeking goal profile.

the treatment-seeking cluster, individuals in the self-sufficiency cluster ranked treatment seeking from traditional medical sources lower than seeking treatment from alternative sources.

Figure 3 shows the goal profile for women assigned to cluster 3. Membership in cluster 3 was defined by high rankings for goals related to symptom reduction and social validation. As can be seen in Fig. 3, the highest median scores were for the following goals: (1) "to simply feel less pain than I do right now"; (2) "to find ways to prevent my FMS from getting any worse"; (3) "to find a way to increase my physical energy level"; and (4) "to convince people (doctors and my family) that I really have a genuine medical problem." Interestingly the goal ranked lowest by this group was "to find a health professional who can cure my FMS."

Cluster Differences in FMS Symptoms and Social Networks

The result of the cluster analysis illustrated that subgroups of women with FMS could be identified on the basis of a set of theoretically derived and categorized illness management goals. Recall that we hypothesized that self-sufficiency goals would be associated with good psychosocial adjustment. In contrast, social-validation goals and treatment-seeking goals were expected to be associated with poor out-

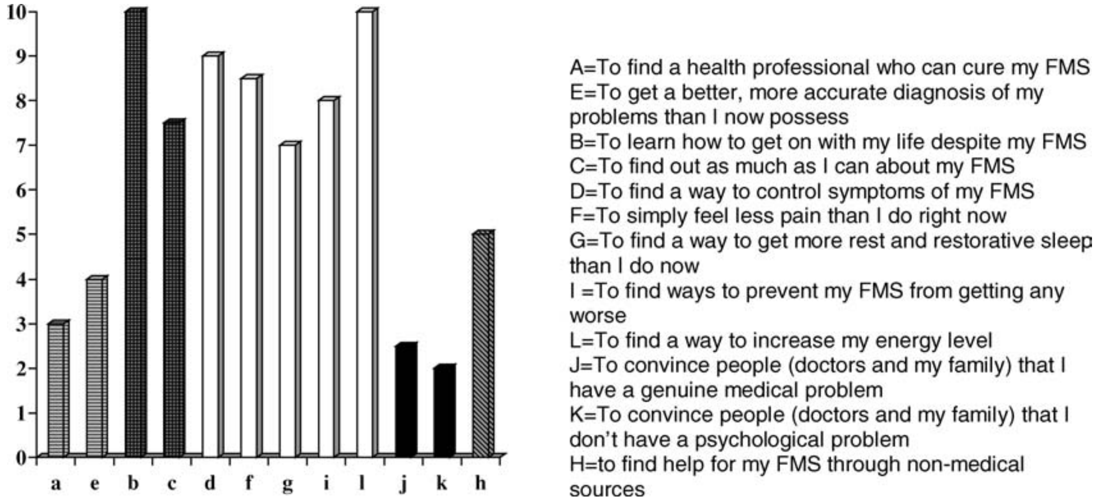

Fig. 2. Self-sufficient goal profile.

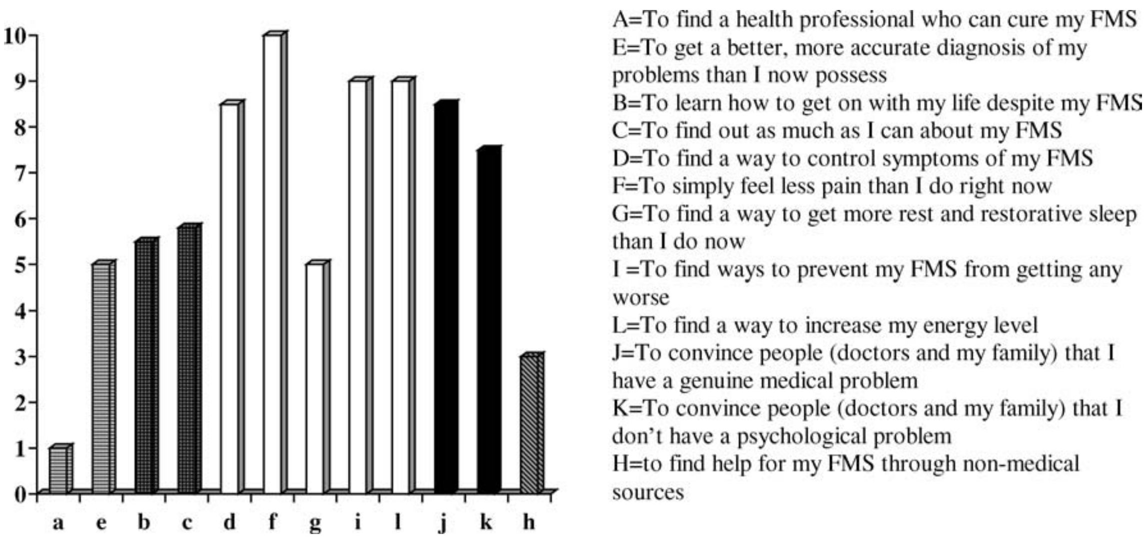

Fig. 3. Social-validation goal profile.

comes because they necessitate the cooperation of others. On the basis of this hypothesis, we predicted that individuals in cluster 2, the self-sufficient cluster, would show better psychosocial adjustment than individuals in either cluster 1 or cluster 3. To address this prediction, we used a one-way multivariate analysis of variance (MANOVA), using average pain, worst pain, fatigue, negative affect as the set of FMS symptom-related dependent variables.[4] Clusters differed significantly on the set of FMS symptoms. (Wilks's $\Delta = 0.324$, $F(8, 116)$, $p = 0.02$). Cluster means and standard deviations and univariate F statistics are presented in Table II. Tukey Honesty Significant Difference (HSD) test post-hoc contrasts indicated that there were significant cluster differences in negative affect and in worst pain. Specifically, women with a self-sufficient goal profile and women with a treatment-seeking goal profile reported less negative affect than did women with a social-validation goal profile. The pattern was slightly different for worst weekly pain. Women with a self-sufficient profile reported less pain than women with a symptom-focused to treatment seeking profile. There was no significant difference between women with a self-sufficient profile and women with the social-validation profile. Although there was a univariate difference between groups in average pain, Tukey post-hoc contrasts failed to show significant group differences. Observed power for univariate analyses indicated that the test of group differences in fatigue was underpowered (0.39), but that we had at least adequate power to test for cluster differences in average pain, worst pain, and negative affect (0.69, 0.71, and 0.88, respectively).

In addition, we predicted that goal profiles would be associated with differences in the social networks of women with FMS. To address this prediction, we conducted a oneway MANOVA, using goal social support, goal interference, generalized social support, and small negative life events as the set of dependent variables.[5] Again it was predicted that individuals in cluster 2, the self-sufficient cluster, would show better psychosocial adjustment than shown by individuals in either cluster 1 or cluster 3. Results of this test showed that clusters differed significantly on characteristics of the social network (Wilks's $\Delta = 0.6.28$, $F(8, 114)$, $p < 0.001$). Tukey HSD post-hoc contrasts indicated that this difference was related to significant differences in all dependent measures. Specifically, women with a self-sufficient goal profile reported that their friends and family were more sup-

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[4] Univariate analysis of variance revealed that cluster membership did not vary with the following demographic variables: age, duration of FMS symptoms, and time since diagnosis with FMS. Duration of FMS symptoms and time since diagnosis were not correlated with any of the dependent variables. Age was correlated with negative affect ($r = 0.27$, $p < 0.05$). Thus, we compared a multivariate equation including negative affect residualized for age, to an equation using an unresidualized measure of negative affect. There was no appreciable difference between equations.

[5] The demographic variables (age, duration of FMS symptoms, and time since diagnosis with FMS) were not correlated with any of the dependent variables.

Table II. Cluster Differences in FMS Symptoms and Social Network

	Cluster 1: Treatment seeking ($n = 15$)	Cluster 2: Self-sufficiency ($n = 38$)	Cluster 3: Social validation ($n = 12$)	
	M (SD)	*M* (SD)	*M* (SD)	
FMS symptoms				
Average pain: $R^2 = 0.09$	65.51 (13.99)	53.92 (20.81)	67.50 (14.20)	3.97*
Worst pain: $R^2 = 0.11$	78.06 (11.88)^b	65.58 (19.26)^a	77.96 (15.37)	4.13*
Negative affect: $R^2 = 0.19$	2.13 (.74)^a	1.98 (0.56)^a	2.71 (0.65)^b	6.21**
Fatigue	2.13 (0.74)	4.63 (0.71)	4.97 (0.65)	n/s
Social network characteristics				
Goal support: $R^2 = 0.24$	1.93 (1.21)^b	3.49 (1.43)^a	1.92 (1.00)^b	10.86**
Goal interference: $R^2 = 0.09$	2.00 (0.29)	1.57 (0.18)^a	2.50 (0.31)^b	3.57*
Social support: $R^2 = 0.29$	3.57 (0.25)^a	4.04 (0.15)^a	2.46 (0.26)^b	13.54**
Negative life events $R^2 = 0.20$	4.33 (1.80)^a	4.86 (1.11)^a	13.75 (1.95)^b	8.74**

Note. Different superscripts denote differences.
$^{*}p < 0.05$; $^{**}p < 0.01$.

portive of efforts to work towards the first ranked FMS goal than were women with either a treatment-seeking goal profile or a social-validation goal profile. In contrast, women with a social-validation goal profile showed additional evidence of a goal-resource mismatch. In contrast with women with a self-sufficient profile, women with a social-validation goal profile reported significantly more interference with pursuit of the first ranked FMS goal. Further, women with a social-validation goal reported less social support in general and more interpersonal negative life events. Observed power for univariate analyses indicated that we had sufficient power to test for cluster differences in network support, network interference, generalized social support, and small negative life events (0.98, 0.64, 0.997, and 0.96, respectively).

DISCUSSION

Consistent with a motivational framework, the results of the present study generally lent support to the hypothesis that the content of fibromyalgic womens' health-relevant goals has important implications for selected indices of psychosocial adjustment. The results of this study indicate that there are significant differences in the way that women with FMS organize their goal hierarchies. Cluster analysis suggested that women in this sample could be assigned to one of three distinct groups. More importantly, group membership was also related to measures of adjustment. Specifically, women who ranked self-sufficiency goals at the top of their goal hierarchy reported less severe FMS symptoms and a more supportive and pleasant social environment than did women who ranked social validation towards the top of their goal hierarchy. Less clear was the link between adjustment outcomes and the goal of treatment seeking. Although we predicted that women in cluster 1 would fare less well than women in cluster 2, there were only sporadic differences between these two clusters.

Our findings pertaining to the positive and negative implications of health goal content are congruent with work actively being pursued in personality, social, and health psychology. The content of people's goals is presumed to be driven, in part, by situational and developmental demands, and is theoretically required to be "in tune" with task requirements, social expectations, or higher order needs (cf., Austin and Vancouver, 1996; Higgins, 1987; Locke and Latheam, 1990; Ryan *et al.*, 1996). When goal content is out of step with task requirements or is unrepresentative of past accomplishments, or is unsupported by the social network, then commitment tends to be relatively low and task accomplishment ultimately less likely (cf. Oettingen, 1999; Polivy and Herman, 2002).

The present findings suggest, albeit correlationally, that health goals predicated on the active intervention of other people, as is implied in the social validation and professional care may set the stage for the experience of personal distress and lower levels of physical health functioning. In the case of individuals with fibromyalgia, the pursuit of social validation is likely to be an uphill battle, in other words low in probability and delayed in time, rendering such aspirations frustrating and potentially failure prone. The pursuit of social validation may also be limited by constraints within the social network of FMS patients. Our data showed that high needs for validation were linked with reduced perceptions of social support and perceptions that there was less support for pursuing FMS-related goals. In addition these women reported more interpersonal conflict as reflected in the greater number of negative life events. Consistent with data presented here, evidence of disrupted social networks was found in another study conducted by the Arizona State University FMS group, which showed that under conditions of interpersonal stress, women with FMS sought less social support than did women with osteoarthritis (Zautra *et al.*, 1999). Thus, among individuals with FMS, highly valued social-validation goals may lead to goal dysregulation as a function of a structural mismatch between their goals and an unresponsive environment.

A number of contemporary goal theories converge in their assumption that how one represents and/or evaluates personal goals bears a relation to goal attainment as well as to indices of adjustment and well-being (Dweck, 1991; Emmons, 1999; Ford, 1987; Higgins *et al.*, 1997; Karoly, 1999; Little, 1999). Future research should examine not only goal content among women with fibromyalgia, but also goal construal patterns, making use of any of the several extant assessment methodologies (cf., Affleck *et al.*, 2001). Perhaps, for example, fibromyalgic women who set self-sufficiency goals have an especially well-developed directive function (i.e., Ford, 1987) or an effective control function. Perhaps they structure their goals from within an "approach" rather than an "avoidant" organizing frame (Higgins *et al.*, 1997; Karoly, 1999). Alternatively, one might hypothesize that women who seek social validation perceive their health goals in passive manner, externalizing responsibility rather than internalizing it. A number of intriguing hypotheses about goal construal patterns can serve to direct this research domain in the future. Notwithstanding the unanswered questions that remain, our current findings provide a good beginning for a goal-centered approach to assessing the motivational strengths and deficits of individuals with FMS.

Finally, we also need to be cognizant of the limitations of the present research. Most obviously, we have been discussing the impact of goal content on adjustment within the context of a cross-sectional study, one that cannot provide credible confirmation of a cause–effect sequence. An alternate, viable interpretation of the data is that experience with pain, negative affect, and network support shaped the selection of symptom-related goals. For instance, it may be easier for women with less pain and more supportive social networks to pursue self-sufficient goals. It is noteworthy that women in the self-sufficient cluster reported the highest levels of social support and support for working towards their illness-related goals. Thus, for women in the self-sufficient cluster there was little need to pursue goals related to social validation. Conversely, for those women in the social-validation cluster, convincing others that FMS is a real illness may be a necessary precondition to eliciting the support necessary to effectively manage the symptoms of FMS. Future research needs to avail itself of intensive methodologies, such as the daily diary approach employed by Affleck and Tennen and their colleagues (e.g., Affleck *et al.*, 1998), as well as multiyear longitudinal studies designed to evaluate how changes in goal hierarchies unfold in time.

Additional limitations are related to sample characteristics and our measure of FMS-related goals. The present study included only women, as the prevalence of fibromyalgia among males is comparatively low. Nevertheless, males should be included in future research in order to more fully appreciate the implications of gender and gender-role socialization in the goal systems adjustment relation. Finally, although our list of fibromyalgia-specific health goals was derived from a review of the clinical literature, there is no reason to expect that it was exhaustive. Although the pattern of findings reported here was readily interpreted, had other goal types been included, our findings may well have looked different.

In sum, our findings, though preliminary, provide ample reason to believe that the assessment of health-relevant goals in the domain of FMS may offer the practitioner and researcher a powerful new tool for understanding a common, yet largely misunderstood clinical syndrome.

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