

SOCIO-DEMOGRAPHIC AND PERSONALITY VARIABLES AS
PREDICTORS OF CHRONIC BACK PAIN TREATMENT OUTCOME

A THESIS

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Socio-Demographic and Personality Variables as Predictors of Chronic Back Pain Treatment Outcome

Chronic pain resulting from low back disorders is one of the most common debilitating factors of severely disabled persons. In spite of the seriousness of the problem there are no known medical schools in this country that include courses in management of chronic pain (Bonica, 1979). Numerous treatment techniques have been developed in recent years in attempts to alleviate suffering caused by this syndrome. However, the success rate of these techniques remains low in comparison to the size of the problem (Black, 1974; Gaumer, 1974; Roberts, 1974; Sacerdote, 1978; Shealy, 1974). According to Shealy (1974), 10% of all Americans have some permanent impairment of the back. Shealy's studies of compensation-related back injuries indicate that only 38% of these patients return to work within six months of onset and 31% remain unemployed for over two years. Further, a surgical procedure reduces chances for return to work. Additional surgical procedures and each month of inactivity further reduce the chance for an individual to return to employment. Back injury is estimated to cause a loss to industry of approximately 15 million working days each year (Sweetman, Anderson, & Dalton, 1974), constitutes

a serious world health problem, and, in the United States alone, costs the American people between 19 and 25 billion dollars every year (Melzack, 1973). Chronic pain is often associated with iatrogenic (doctor caused) complications, resorts to quackery, and even suicides. Individuals suffering from chronic pain can be shuttled from one doctor to another with little or no benefit to the patient. Early diagnosis and the use of an effective therapeutic strategy can help avoid prolonged chronic disability and iatrogenic complications (Bonica, 1973).

Chronic pain also has devastating psychological consequences and is a subjective experience which creates varying degrees of emotional reaction in different individuals (Beecher, 1957). The significance of chronic pain to the individual, coupled with the emotion of fear, can serve to aggravate the pain experience. It impairs individuals' ability to work and to think clearly, prevents sleep, affects appetite, lowers morale, and may even destroy their will to help themselves survive (Bakan, 1968). A significant aspect of chronic pain is that patients do not become accustomed to it. Typically, they become more sensitive and suffer more with the passing of time. Many individuals exhibit gradual alterations in their attitudes toward their environments, losing interest in activities as the pain becomes an overpowering problem (Bonica, 1973).

Mastrovito (1974) cited some psychological factors to be considered in the evaluation of pain, including one's emotional state, personality traits, past experiences, and an individual's defense mechanisms. However, he warned that one should not think of psychogenic pain and organic pain in terms of a dichotomy, but rather as a combination of both types of pain in which the psychological variables may play a greater or lesser role. The elements are complex and there is little agreement among clinicians as to which factors play meaningful roles in a given situation. Gentry, Shows, and Thomas (1974) found that there is little understanding of the precise relationship between psychological factors and chronic back pain which has been unresponsive to medical and surgical treatment. Several studies have found that changes of personality occur in patients with long-term chronic pain (Bakan, 1978; Bond, 1973; Bonica, 1973), and that depression is one of the major manifestations (Sternback, 1974a). Depression is such a common symptom in this syndrome that some clinicians believe that a lack of signs of depression indicates that pain behavior itself may be receiving adequate reinforcement and be rewarding enough to produce continued pain behavior in the absence of underlying pathology (Fordyce, 1976). To the contrary, Woodford and Mersky (1972) found that there was no difference in the degree of anxiety and

depression between groups of patients with organic disease and those with pain and no organic related disease.

Contemporary literature abounds with studies that are concerned with separating a functional (psychological) component from an organic component in chronic pain patients by means of the Minnesota Multiple Personality Inventory (MMPI) and shortened versions of the MMPI. One study (Calsyn, Spengler & Freeman, 1977) examined the usefulness of five factors (Somatization, Low Morale, Depression, Psychotic Distortion, and Acting Out) of the MMPI-168 in assessing low back pain (LBP) patients. These same authors conducted a second study to cross-validate significant findings of the first study. They found that of the five factors only the Somatization factor was an effective predictor of group placement--functional or organic pain--and concluded that it is highly predictive of a functional component in LBP patients.

Leavitt and Garron (1980) constructed a Back Pain Classification Scale (BPCS) by embedding 13 pain descriptive words into a 103-item LBP questionnaire. The results were analyzed in an attempt to identify psychological disturbance in LBP patients and were validated against the MMPI. The findings supported the validity of the BPCS as predictive of psychological disturbance. They concluded its brevity would make it a useful alternative to the MMPI. Other

studies have failed to support the MMPI itself as predictive of a functional component in back patients. These studies indicate characteristics that are not limited to the neurotic triad (an elevation on hysteria, depression, and hypochondria) which has come to be considered the typical LBP profile. This could raise a question regarding the appropriateness of validating a new instrument against the MMPI for predicting a functional component in back pain. Lending no support to the concept of a LBP personality stereotype as measured by the MMPI were the studies by Abi-Karam (1977), Esibill (1976), and Sternback, Wolf, Murphy and Akeson (1973).

Other studies have concentrated on demographic and personality characteristics of the LBP patients. Maruta, Swanson, and Swenson (1976) described the typical LBP patients as tending to come from families with many siblings and as having more academic difficulties and less formal education before starting work at an earlier age when compared to other patients. Ziesat's (1978) study did not support the findings of number of siblings or birth order as prognostic indicators of possible chronic LBP patients. Nagi, Riley and Newby (1973) did, however, find a consistent relationship between chronic LBP and both education and occupation, citing several studies which supported that conclusion. They found that the majority of the patients

on whom they collected data had lower levels of education and had worked in labor-type occupations.

Many studies substantiate the role of psychosocial factors in the chronic pain experience and these factors may assume major importance in shaping response to chronic pain. Pilowsky and Spence (1976) found an association between intractable pain and suppression of anger. Brena and Koch (1975) considered personality variations a result of the pain experience, while Duncan, Gregg and Ghia (1978) believed it to be an independent variable that might influence a patient's reaction to chronic pain, concluding that "Chronicity fosters the intervention of complicating variables between the original physical insult and the resulting behavioral response" (p. 283). Armentrout's (1979) data indicated that the experience of chronic pain over an extended period is strongly related to an individual's negative self-concept. These data confirmed prior findings of other studies (Elton, Stanley, & Burrows, 1977; Sternback, 1974b).

Studies in the area of family practice also substantiate the role of psychosocial factors in the chronic pain experience. In one study (Maruta, Osborne, Swanson & Halling, 1981) of chronic LBP patients, evidence indicated a high incidence of sexual problems as reported independently by patients and spouses. Mohamed, Weisz and Waring

(1978) found that depressed pain patients, their spouses, families, and spouses' families had significant prevalence of pain problems as well as similarity of pain locations among themselves. There was also a significant amount of marital maladjustment. Nichols (1978) demonstrated that husbands' reports of pain were negatively correlated with the wives' marital satisfaction and their interpersonal dominance. He suggested that both spouses may experience the pain problem as a solution to the conflict brought about by their strong dominant qualities and their balanced relationships. These findings support the theories of Haley, that symptoms can be a paradoxical resolution to marital conflict, and Bowen, that a symptom can serve to establish psychological distance (Foley, 1975).

Predicting Treatment Outcome

As discussed above, certain demographic and personality factors do seem to have a strong correlation with chronic pain. However, few studies have researched these variables for their importance in predicting successful treatment outcome. Duncan et al. (1978) described a complicated computer-based system which develops a pain profile and is used to compare the relative importance of factors such as organic and psychosocial problems to the patient's pain behavior. This profile is used to suggest to clinicians the area in which therapy should have the heaviest emphasis.

Duncan's study gave no data relating the pain profile to outcome of treatment.

Newman, Seres, Yospe and Garlington (1978) did a long-term follow-up study of LBP patients who had received treatment from a pain clinic. They found that despite verbal reports of continuing pain, most patients claimed to be coping much better. There is no mention of specific variables and their importance to treatment outcome. Wiltze and Rocchio (1975) demonstrated the hysteria and hypochondria scales of the MMPI to be significant predictors of treatment outcome when using chemonucleolyses (chemical surgery). This finding did not hold up in Spruance's (1979) study of facet denervation, but he hypothesized that the reason was due to a difference in populations studied. Cattell's Sixteen Personality Factor Questionnaire (16PF) also failed to be predictive of treatment outcome in Spruance's study. McCreary, Turner, and Dawson (1979) found, as did Achterberg and Lawlis (1980), that the MMPI failed to differentiate between successful and unsuccessful outcome of patients who had received conservative (nonsurgical) treatment. Indicators of treatment outcome that have been found are premorbid adjustment as measured by Phillips Premorbid Adjustment Scale and level of social adjustment as measured by the Zigler Social Competence Scale (Kalla, 1977). A prediction method based

on seven of the scales from the 16PF was developed and used as the basis for evaluating potential of patients to improve with treatment (Lawlis, Mooney, Selby & McCoy, in press). Treatment outcome was judged at discharge according to ratings from 1-5 on levels of (a) Goal Attainment, (b) Percentage of Pain Estimate, (c) Psychological Adjustment, and (d) Percentage of Physical Improvement. A point system was used to get an index of treatment motivation. The model is as follows (Achterberg & Lawlis, 1980):

- Decision 1: If Factor C is equal to or greater than Q_4 ($C \geq Q_4$) = 4 points
 - Decision 2: If Factor L is less than 5 ($L < 5$) = 3 points
 - Decision 3: If Factor Q_3 is less than or equal to 5 ($Q_3 \leq 5$) = 2 points
 - Decision 4: If Factor G is greater than 5, or ($G > 5$), or if Factor Q_1 is less than 5 ($Q_1 < 5$) = 1 point
 - Decision 5: bonus: If Factor B is greater than or equal to 5 ($B \geq 5$) = 1 point
- $$D_1 + D_2 + D_3 + D_4 + D_5 = \text{motivation index}$$

While studies on chronic pain and personality variables are voluminous, the results are mixed and somewhat controversial. There is still a serious need for non-threatening ways of assessing the potential needs of a patient with the presenting complaint of chronic LBP. Better assessment and predictor tools obviously should lead to more efficient management of and attention to the individual treatment

programs and thus lead to more successful treatment outcome. Such an assessment is a multidimensional (medical, social, psychological, physical) problem; thus, it would seem to require a multidisciplinary approach (Bonica, 1974; Fordyce, 1976; Seres & Newman, 1976; Hudgens, 1977; Newman et al., 1978; Swanson, Swenson, Maruta & Floreen, 1978). For these reasons, this study was conducted at a spinal pain clinic where a full range of medical and psychological diagnostic and therapeutic services is available.

Treatment/Training Program at the Spinal Pain Clinic

At the spinal pain clinic identical treatment/training programs are prescribed for all low back patients and are administered on a strict schedule. This schedule consists of walking before breakfast, followed by physical therapy exercises and swimnastics, biofeedback, individual and group therapy, a slide presentation illustrating proper back care, listening to biofeedback tapes, and there are weekly meetings with doctors and staff. The weekly staffings are for the purpose of determining the previous week's progress and for evaluating the potential of patients to improve with treatment. Progress is measured by verbal reports from professionals working with the patient and by the patient's report of his or her own subjective experiences. The 16PF profile and the weekly progress reports provide the basis for evaluating improvement potential. If a

patient is, for any reason, unable or unwilling to maintain the schedule as outlined, s/he is discontinued from the program. A patient with poor prognostic indications may be discouraged from continuing in the program after the first week.

Due to the high rate of drop-outs from the program (20% in 1980) and high percentage of individuals who report no decrease in pain (66%) or no increase in activity level (49%), the staff is seeking more efficient and dependable ways of spotting these potential failures.

Present Study

The purpose of this study, using the variables which have been associated through previous studies with chronic back pain patients, was to identify specific socio-demographic and personality predictors of treatment outcome. Because of the stated need for a predictive instrument and based on the findings as outlined in the literature search, there appeared to be a reasonable expectation that such an instrument could be developed.

Bonica (1973), Duncan et al. (1978), Fordyce (1968), and Shealy (1974) indicated that the longer an individual has experienced chronic pain, the more neurotic symptoms and coping problems s/he seems to develop. Therefore, duration of pain was hypothesized to be a predictor of treatment outcome.

Occupation and education have been shown to be consistent factors in chronic pain patients (Gentry et al, 1974; Nagi et al. 1973) with the bulk of back pain sufferers coming from industrial occupations and those jobs requiring strenuous activities. The lower educational levels of these individuals is also a consistent trait. This relationship is easily explained on the basis of types of work performed by those with less education. These individuals are often reported to be dissatisfied with their lives as well as their occupations, with chronic pain offering them an honorable option out of an unhappy existence. Occupation, education, and income level, therefore, were expected to be predictive of treatment outcome with the higher levels of these variables tending toward more successful outcome. No hypotheses were stated for the remaining demographic variables such as religion, marital status, number of children, use of alcohol and cigarettes, due to lack of literature on those subjects.

Based on examination of results of a previous study (Lawlis, et al., in press) seven factors of the 16PF were hypothesized to be predictive of treatment outcome. There was no basis on which to hypothesize whether the nine other factors would have any predictive value. All factors are described in detail in the instrument section of this paper. All 16 factors were analyzed for predictability.

Methodology

Subjects

Medical records of 90 individuals who were patients at a spinal pain clinic in 1980 and who had completed six-month follow-up evaluation questionnaires were used in this study. All patients involved had been diagnosed as having chronic back pain with chronic being defined as having a duration of at least six months.

Instruments

A 35-item socio-demographic questionnaire (Appendix A) which was completed by each patient at the time of acceptance into the program was analyzed for predictor variables. The questionnaire was designed 10 years ago at the Memorial Hospital in Long Beach, California, by Drs. L. L. Wiltse and P. D. Rocchio, for the purpose of studying socio demographic patterns of pain patients. More recently (1975) Wiltse and Rocchio developed the MMPI neurotic scale (high scores on Hs and Hy) for predicting outcome of chemonucleolysis for treatment of LBP patients using symptomatic relief as criteria for success. They used parts of the questionnaire in their study and reported that biographical data such as age, sex, marital status, occupations and education were not related to post-operative outcome. Even though pain clinics have used this questionnaire as a standard form for all patients, no reliability statistics have been

developed for this instrument. Among the information elicited by the questionnaire are age, education, income, marital status, occupation, religion, duration of pain, medications being taken, and subjective ratings of their pain. During these ten years no study has been performed to follow up the significance of individual responses within the questionnaire. This is the first attempt to determine if this questionnaire (which has been used for ten years) has any predictability features or if individual items have predictability features of successful treatment outcome in a pain control program. Correlations have been made with individual items on the questionnaire with other testing instruments such as the Carnell Medical Index and certain questions on the MMPI such as, "is your sex life satisfactory?" Other studies have been done in regard to sexual frequency and its relationship to pain in addition to self-rating scales on personality and how these scales relate to pain.

The 16PF was chosen because it is widely used and is of known reliability and validity. All patients were administered the 16PF, Form C, on the first day at the clinic. Form C was used because of its rapid occupational selection procedures and special motivational distortion (MD) scale. Split-half reliability coefficients for the 16PF factors range from .54 to .93 over a seven-day period. Internal

construction validity ranges from .35 to .92. A brief operational description of the 16 primary factors is presented in Appendix B. For a complete description see Cattell (1972, pages 17-22, 26, 28). The 16 primary factors represent functionally independent dimensions of personality according to Cattell's (1970) analysis. Seven of these factors (B, C, G, L, Q₁, Q₃, and Q₄) were judged to be most predictive of change as a result of a pain control program (Lawlis et al. in press). The 16PF was also used in a study by Spruance (1979) to determine its usefulness as a predictive instrument for outcome of facet denervation and by Esibill (1976) in a descriptive study of personality factors in LBP patients.

A six-month follow-up questionnaire (Appendix C) was used as a basis to define successful treatment outcome. The follow-up questionnaire was designed from pre-existing questionnaires used by five different pain clinics and their follow-ups. Questions which were perceived to be pertinent to the needs of the pain clinic were selected by qualified staff members from each of the questionnaires.

Procedure

A socio-demographic questionnaire (Appendix A) to be analyzed for predictor variables along with several personality tests including the 16PF and pain measurement scales were completed by each patient at the time of acceptance

into the program. In order to collect needed data, all patients were contacted via mail and telephone calls and were invited to return to the clinic to participate in a follow-up evaluation of their condition. Of the 151 patients who were invited, 35 returned to the clinic. These individuals were asked to complete a second set of questionnaires and tests identical to the ones they had completed at the time of acceptance into the program in addition to completing a six-month follow-up questionnaire. They also were evaluated by physical therapists for levels of pain and changes in back and leg flexion. Upon visual analysis of the follow-up material, it appeared that the individuals who returned might be the dependent ones still seeking help for their problems.

In order to obtain a more representative sample, follow-up questionnaires along with stamped return envelopes were mailed to all of the patients who did not return. They were asked in a cover letter to answer the questionnaires and return them to the clinic. Two weeks following the mail-out all patients who had not returned their questionnaires were called and asked if they would be willing to give the information over the telephone. A total of 90 usable follow-up evaluation questionnaires were finally obtained (Appendix C). This represents 60% of all patients who participated in a treatment-training program at the clinic.

To establish criteria for successful and unsuccessful treatment, pertinent items (some were repetitive and not used) on the six-month evaluation questionnaire (Appendix C) were weighted on a scale of 1-5. The researcher with the assistance of the clinic director edited out the repetitive questions before the weighting process was initiated. A score of 1 represented the least importance and a score of 5 represented most importance to success of treatment. The weighting was done by three clinic staff members--a psychologist, a physician's assistant, and a physical therapist--each of whom had worked with back pain patients for several years. They worked independently and assigned a point value to each of the questions on the follow-up evaluation questionnaire. Following the individual weighting the points for each question were totaled and averaged to obtain a final point value for each item. The total of possible points was 29. Appendix D lists the 10 questions which were used and the weight assigned each question. The point system was factor analyzed for further validation.

Statement of Hypotheses

Hypothesis 1: Duration of pain would be a negative predictor of success with the longer durations predicting poor treatment outcome.

Hypothesis 2: Occupation would be a predictor with

those jobs requiring strenuous activities being predictive of poor treatment outcome.

Hypothesis 3: Education would be a predictor with the higher levels being more predictive of successful treatment outcome.

Hypothesis 4: Income would be a predictor with the higher levels being predictive of successful treatment outcome.

Hypothesis 5: Scores on the following factors of the 16PF would be predictors of treatment outcome: B (Concrete/Abstract Thinking), C (Affected by Feelings/Emotionally Stable), G (Expedient/Conscientious), L (Trusting/Suspicious), Q₁ (Conservative/Liberal), Q₃ (Undisciplined/Controlled), and Q₄ (Relaxed/Tense). A search of the literature revealed no clearly defined directional trend for this hypothesis.

Statistical Analysis

The pre-entry questionnaire was in a multiple-choice format so the responses which could be ranked were assigned ordinal data scores. Responses which were not appropriate for rank order were assigned dummy variables. The questionnaire scores and the 16PF results were analyzed to determine which, if any, were predictor variables. Data used in the statistical analysis were the scores derived from the intake evaluation questionnaire, the 16PF, and the follow-up evaluation questionnaire, all of which were completed by 90 indivi-

duals. There were 28 intake questionnaires with missing data. Computations involving data from the intake questionnaire used only the scores of the 62 subjects who responded to every question. Using variables produced by factor analysis of the point system, t tests were done to determine possible differences between the 28 subjects who had missing data on the intake questionnaire and the 62 subjects who had no missing data. Descriptive statistics were computed on the data from both the intake questionnaires and the follow-up evaluation. Central tendencies and frequencies of responses were found.

A multiple regression equation for predicting total points derived from the follow-up questionnaire was computed using the 102 variables produced by the intake questionnaire (Appendix A) and all factors on the 16PF as predictors (Appendix B). Then, a factor analysis of the point system, using results from the follow-up evaluation on all 90 subjects was computed. The three factors which emerged in the equation were used to create three new multiple regression equations. These three factors were used for criterion of success in the treatment of low back pain.

Results

The average age of the patients was extrapolated from the intake questionnaire to be 48. Sixty-nine of the 90 subjects were high school graduates; 10 subjects had a grade school education; 11 subjects attended college, and none had advanced degrees. The average income was less than ten thousand dollars a year. The mode fell in the 10 to 15 thousand dollars a year bracket. Sixty-four of the subjects were married, 12 were divorced, 10 were single, and four were widowed. The subjects had, on the average, experienced 2 to 5 years of pain since onset. Patient responses to intake questionnaire are shown in Appendix E.

Fifty-eight of the 90 patients stayed eleven days. The minimum length of treatment for any one individual was nine days and maximum length of treatment was 30 days. Analysis indicated that length of treatment did not significantly affect the outcome of treatment. All patients participated in identical programs--the only variation being in number of days enrolled.

According to t tests on total points earned on the follow-up questionnaire and the factors, Behavioral/Attitudinal, Exercise, and Drugs, there were no significant differences between the 28 subjects who omitted one or more items on the intake questionnaire and the 62 subjects who did complete it. The homogeneity of the two groups made

it feasible to use all 90 subjects in the factor analysis of the point system. The larger n added stability to the results. Descriptive statistics computed from the point system used on the follow-up evaluation questionnaire are shown in Table 1. Similar results were obtained in subjects

TABLE 1
Frequency Distribution of
Points Obtained on Follow-up
Evaluation Questionnaire

Points Obtained Out of Possible 29	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
27 - 29	10	11.1	100.0
24 - 26	14	15.6	88.9
21 - 23	18	20.1	73.3
18 - 20	13	14.4	53.2
15 - 17	12	13.3	38.8
12 - 14	10	11.1	25.5
9 - 11	7	7.8	14.4
6 - 8	4	4.4	6.6
3 - 5	1	1.1	2.2
0 - 2	1	1.1	1.1
Total	90	100%	
Mean = 18.83		Range = 26.00	
Median = 20.00		Variance = 38.07	
Mode = 27.00		Std. Dev. = 6.17	

Note. $n = 90$

included in regressions. See Table 2.

Table 2
Frequency Distribution of
Points Obtained on
Follow-Up Questionnaire

Points	Behavioral/ Psychological <u>a</u>	Exercise <u>b</u>	Drugs <u>c</u>
0	3	8	8
1	1	1	0
2	3	4	6
3	1	20	2
4	0	28	1
5	4		12
6	6		0
7	2		9
8	11		24
9	3		0
10	16		0
11	4		0
12	4		0

Note. n = 62

a Total possible points = 12, \bar{x} = 8

b Total possible points = 4, \bar{x} = 3

c Total possible points = 12, \bar{x} = 5

The multiple regression analysis on total points indicated that the global index could not be predicted significantly. The factor analysis on the point system (derived from follow-up evaluation form) produced three different factors of fractions of the global index. These factors were assigned by the researcher descriptive names based on the questions which fell into each factor. The three factors are Behavioral/Attitudinal, Exercise, and Drugs. As these were orthogonal factors, success experienced by a subject on any one factor did not necessarily mean success on either of the other two factors. In other words, success could be defined on three different planes. Table 3 shows the correlation coefficients derived when total points were correlated with the three separate factors.

Table 3
Factor Analysis of
Point System

Point System	Factor (Behavioral/ Attitudinal)	Factor 2 (Exercise)	Factor 3 (Drugs)
(1) Pain Decrease?	.32	.06	.23
(2) Medications?	.21	.17	.70**
(3) Pain-Relief techniques?	.16	.79**	.21
(4) Working?	.52*	-.03	.15
(5) Body Mechanics?	.33	.12	-.07
(6) Exercises?	-.03	.76**	-.05
(7) Activity level?	.49*	-.01	.34
(8) Control muscle spasm?	.13	-.02	.59*
(9) Control pain?	.62**	-.14	.24
(10) Back school helped?	.65**	.27	.28

Note. $n = 90$

* $p < .05$

** $p < .01$

The first factor (Behavioral/Attitudinal) contained four significant variables. They were work status of the subject, activity level, control of pain by the subject, and the patient's evaluation of the helpfulness of the pain clinic. The second factor (Exercise) contained two significant variables: whether the subject was practicing pain relief techniques learned at the clinic, and whether the subject was practicing the exercises recommended. The third factor (Drugs) also contained two significant variables: whether the subject was on medication at follow-up, and what the subject did when experiencing muscle spasms.

The regression equation computed on each of the three factors showed several predictors of success on each factor which met or exceeded the .05 level of significance. It was hypothesized that duration of pain would be a predictor of treatment outcome, but duration of pain was not a significant predictor for any of the three factors. Also, contrary to the hypotheses, occupation, education level, and income level were not significant as predictors. A possible explanation for occupation, education, and income levels failing as predictors is that the population tested contained no upper levels of any of these variables. Four of the seven 16PF factors which were hypothesized to be predictors succeeded in doing so.

Significant predictors for the Behavioral/Attitudinal

factor were general health, whether there was a working spouse, and whether the subject had undergone a rhizotomy. An individual who was successful on the Behavioral/Attitudinal Factor would probably report good health, a working spouse, and no rhizotomy. Conversely, a low score on this factor would probably involve poor health, no spouse working, and a rhizotomy. These three variables (health, working spouse, and rhizotomy) account for 28% of the variability in the Behavioral/Attitudinal Factor (See Table 4).

Table 4
Multiple Regression Using
Behavioral/Attitudinal Factor
Point System

Variable	Multiple R	R ²	R sq Change	Simple R	B	Beta
Reported Health	.37	.14	.14	-.37	-2.0	-.38
Spouse Working?	.46	.21	.07	.30	1.8	.27
Had Rhizotomy?	.53	.28	.07	-.23	-3.9	-.26
Constant					11.0	

The Exercise Factor had many predictor variables. Those from the 16PF, in the order of their strength, are Q₁, G, I, Q₄, A, O, and B. Other predictors are whether a person reports s/he is depressed, whether Thorazine is being taken, the individual's work history, whether pain increases with working or lifting, marital status, and whether the pain

was caused by an accident. Success could be predicted on this factor if the individual reports being depressed but does not take Thorazine, has had more than two jobs in five years, has pain when working or lifting, is not single, takes no drugs for pain relief, the onset of pain was not due to an accident, and exhibits the following personality characteristics as measured by the 16PF: liberal, conscientious, tender minded, relaxed, reserved, insecure, and is an abstract thinker. These variables account for 81% of the variability in the Exercise factor (See Table 5).

TABLE 5

Multiple Regression Using
Exercise Factor From
Follow-up Evaluation Questionnaire

Variable	Multiple R	R ²	Rsq Change	Simple R	B	Beta
Depressed?	.30	.09	.09	.30	1.60	.40
SPQ1	.45	.20	.11	.30	.32	.47
Takes Thorazine?	.53	.28	.08	-.28	-3.20	-.30
SPG	.59	.35	.07	.23	.33	.43
SPI	.67	.45	.09	.23	.27	.30
SPQ4	.70	.49	.04	.02	-.24	.34
SPA	.73	.53	.04	-.16	-.18	-.24
SPO	.75	.56	.03	.27	.27	.41
SPB	.79	.63	.06	-.11	-.38	-.45
2 Jobs in 5 yrs?	.82	.67	.04	.19	1.00	.35
Pain with working/ lifting?	.84	.71	.04	-.12	-.91	-.32
Single?	.86	.75	.04	.02	-1.30	-.29
Drugs for Pain Relief?	.89	.79	.04	-.13	-1.50	-.19
Onset of Pain from Accident?	.90	.81	.03	.09	-.82	-.21
Constant					.97	

Note. SPQ₁=Conservative/Liberal, SPG=Expedient/Conscientious, SPI=Tough/Tender Minded, APQ₄=Relaxed/Tense, SPA=Reserved/Outgoing, SPO=Secure/Insecure, SPB=Concrete/Abstract Thinking.

The Drug Factor indicated three predictor variables. They were whether the individual has had a rhizotomy, whether non-pain-relieving medications were taken, and whether the individual takes drugs for pain relief. Success is predicted on this factor if the subject has not had a rhizotomy, does not take non-pain-relieving medications, and does take pain-relief medications. A low score on this factor means that the subject has probably had a rhizotomy, takes other medications, but reports taking no drugs for pain relief. These three variables account for 28% of the variability in the Drug Factor (see Table 6).

TABLE 6
Multiple Regression Using
Drugs Factor From Follow-up
Evaluation Questionnaire

Variable	Multiple R	R ²	Rsq Change	Simple R	B	Beta
Had Rhizotomy?	.39	.15	.15	-.39	-6.3	-.48
Takes Psy. Drugs?	.47	.22	.08	-.23	-2.2	-.32
Takes Pain Relief Drugs?	.53	.28	.05	.08	1.4	.24
Constant					5.6	

Discussion

Results of data have revealed significant predictors in the treatment of low back pain patients. Instead of having one over-all definition of successful treatment, this study has demonstrated there are three separate definitions of success. The study also indicates that an individual succeeding on one factor may not be considered a success on the other two. These findings show that pre-entry testing of the patient can be used to indicate to the clinician the area in which the patient is most likely to experience a successful outcome. The study suggests that, using pre-entry data, treatment should vary according to the factor in which the patient is predicted to have the most success. For example, a program of treatment which emphasizes exercise would be the preferred program for those patients who have an exercise-related success predictor. However, those patients who fall into the other factors may need a program with different emphasis. A clinician should be aware that success on the Drug Factor, as predicted by pre-entry data, indicates that patients will have a tendency to continue using drugs (though possibly in decreased dosage) even after successful completion of the program. These patients can be expected to report that the program has taught them how to cope with pain and

many will return to work and/or lead a more normal life. Since addiction to some of the drugs prescribed for the relief of pain is common, these individuals may need to be placed on non-addictive pain-relieving drugs.

The individual who, from pre-entry data, is predicted to be successful on the Behavioral/Attitudinal factor would probably be successful in a variety of programs. This person seems to have a good prognosis to begin with (health is good and no rhizotomy), and has financial support from the spouse which might serve to reduce the stress involved in rehabilitation. This individual reports that the pain clinic was a success, though s/he may not necessarily be doing the exercises recommended.

The results of this study do not indicate how exactly the treatment of low back pain should be changed. They do show that the definition of successful treatment needs to be re-examined. Treatment individualized to take into account the particular success factor as predicted from pre-entry data for each patient will probably be more successful overall. Clinics which emphasize exercise need to be aware that their orientation may not be successful with everyone. A multi-dimensional clinic may simply move the emphasis for each individual depending on his or her success factor as predicted from intake data. Further

studies are needed to determine whether a patient's success orientation could be changed and the implications involved in effecting such a change.

This study revealed some rather serious flaws in the questionnaires used. It is believed that both questionnaires need to be more clearly worded and organized differently in order to yield more precise results as research instruments. For instance, question number two on the intake questionnaire (Appendix A) should elicit clearly the highest grade completed. In its present state there is no way of knowing whether the patient finished high school and/or college or whether he or she only attended a year or more. The poorly constructed question on religion (number 6, Appendix A) could have been responsible for much of the missing data since many subjects failed to indicate a religious preference. It is possible that those subjects who failed to respond to that question did not fall in any of the listed categories of religion. Perhaps a more appropriate delineation of categories of religion is needed. Questions 9 and 19 do not list the categories in proper order causing some difficulty in ranking them. It is also suggested that the follow-up questionnaire should follow the socio-demographic questionnaire more closely so that a more accurate "before and after" picture could be

developed. Some of the items on the intake questionnaire do not appear to be significant in any way and could be left out completely.

This study was limited by the fact that the sample used was more heavily weighted on the lower end of the socioeconomic level. Persons with low back pain are often manual laborers, so the bias of the sample was to be expected. However, the findings of this study would be more stable if the same results were found using a sample which included higher income levels and some professional occupational levels.

Perhaps the area demanding the most attention now is the most appropriate way to treat people who are predicted (from pre-entry data) to be successful on different factors. This gives rise to at least two questions: How should pain clinics change their programs to be more responsive to individual needs as identified by these predictors? Should pain clinics specialize in treating particular types of patients? One thing is clear--that the definition of successful treatment is a complicated issue. An equally important point is that more flexibility is called for in deciding whether or not the individual is experiencing success in the control of pain.

Seemingly contradictory findings need to be examined

also. Patients who reported depression were not taking Thorazine, whereas non-depressed patients said they were taking Thorazine. Of course one explanation could be that those who are taking Thorazine are not depressed because the medication totally alleviated the depressed symptomology. Further studies may be needed to find other possible explanations for this discrepancy.

Analysis of the data has revealed successful predictor variables of treatment outcome on three separate planes. These results can be used to aid clinicians in predicting treatment outcome based on pre-entry data. The pre-entry data profile is composed of questions dealing with general health, working spouse, surgical intervention (rhizotomy), depression, non-pain-related medication (Thorazine), work history (more than two jobs in five years), increased pain with working or lifting, marital status (single or not-single), accident-caused pain, and pain relieving medication--all from the intake questionnaire--and with personality factors related to conservative/liberal, expedient/conscientious, tough-minded/tender-minded, relaxed/tense, reserved/outgoing, secure/insecure, and concrete-thinking/abstract-thinking--from the 16PF Inventory. A clinician could use the patient's intake questionnaire and 16PF profile to predict which success mode would be most effective for that

patient and thereby tailor a treatment program for that individual which could most likely ensure success in the control of pain. On the other hand, if the intake data indicate that the patient would fail in all three modes, the clinician would have to determine what to recommend to the patient. Some options might be pre-treatment counseling, referral to another clinic, or a more creative treatment program.

To deny treatment to potential failures in treatment outcome is certainly not the purpose for identifying failure-prone patients. Rather such a profile could serve as a red flag of warning to clinicians that this patient may need some individualized therapeutic intervention. For instance, if a patient demonstrates a profile which is failure prone on any or all of the factors, the staff could be creative and imaginative in attempting to overcome the obstacles with which that patient may be having to deal.

This study has also laid the groundwork for further studies to determine the direction and types of therapies needed for these three separate factors of success. There is ample evidence that it takes a great deal of effort to learn to live productively with chronic pain, and not every patient knows how to channel that effort successfully. Therefore, in addition to treating the physical components

of pain, further attempts should be made to help the patients deal with their own feelings and attitudes toward themselves. Additionally, patients need to be taught to cope successfully with the attitudes and stereotypes that others have about them (Armentrout, 1979).

In summary, success can be defined in a variety of ways depending on mechanisms employed by each individual in his/her attempts to control pain. The factors (Behavioral/Attitudinal, Exercise, and Drugs) are three ways to look at success. It is recommended that clinicians take these findings into consideration and that further studies be done to give direction on designing programs to deal more specifically and effectively with these three factors.

Appendix A

Pre-entry Intake Questionnaire

Completed by All Patients

Dallas Rehabilitation Institute
Caruth Memorial Hospital

Division of Orthopedics
Southwestern Medical School

SPINAL PAIN PROGRAM

QUESTIONNAIRE

INSTRUCTIONS: This pain questionnaire contains a series of statements designed to help evaluate and treat your pain. The answers are confidential.

1. Age
 - A. Less than 30
 - B. 30 - 45
 - C. 45 - 60
 - D. Over 60
2. Education
 - A. Grade school
 - B. High school
 - C. College
 - D. Masters
 - E. Doctorate
3. Your best income
 - A. Less than \$5,000 annually
 - B. Less than \$10,000 annually
 - C. \$10,000 to \$15,000 annually
 - D. \$15,000 or over annually
4. Marital situation
 - A. Married once
 - B. Married more than once
 - C. Divorced
 - D. Single
 - E. Widowed
5. Occupation
 - A. Housewife
 - B. Desk job
 - C. Driving a car, bus, truck
 - D. Walking a lot
 - E. Heavy work
 - F. Professional work
6. Religion
 - A. Catholic
 - B. Protestant
 - C. Jewish
 - D. Other organized religion
 - E. Atheist
7. Length of time you have had pain.
 - A. Less than 1 year
 - B. Less than 2 years
 - C. Less than 5 years
 - D. Less than 10 years
 - E. Over 10 years
8. Describe your personality.
 - A. Tense
 - B. Anxious
 - C. Cool, well-adjusted
 - D. Nervous
 - E. Excitable
 - F. Happy
 - G. Depressed

9. Your intellectual ability. A. Average
B. Below average
C. Above average
10. Your physical health other than related to your pain. A. Excellent
B. Good
C. Fair
D. Poor
11. Your financial support now. A. Husband or wife working.
B. Self-supporting
C. Workman's Compensation payments.
D. Disability insurance
E. Social Security
F. Personal investments or income
12. The number of children you have. A. One
B. Two
C. More than two
D. None
13. The cause of your pain. A. Accident
B. Doctor
C. Previous treatment or surgery.
D. Scar
E. Nature
14. Surgeries done to correct your pain problem A. Laminectomy, once
B. Laminectomy, twice
C. Laminectomy, three times or more
D. Laminectomy with fusion
E. Amputation
F. Freeing of scar
G. Removal of tumor
H. Other
15. Surgeries done just to relieve pain. A. Sympathectomy
B. Rhizotomy
C. Cordotomy (surgical)
D. Cordotomy (by needle)
E. Cingulumotomy
F. Other
16. When does pain occur? A. At rest
B. Sitting
C. Walking
D. With working or lifting
E. All the time
F. Less than 8 hours a day
G. 8 - 16 hours a day
H. During sexual intercourse
17. How long do you have to rest to relieve pain once it starts? A. Less than 30 minutes
B. At least an hour
C. Several hours or more

18. What relieves your pain?
- A. Lying down
 - B. Sex
 - C. Sitting
 - D. Drugs
 - E. Heat
 - F. Massage
 - G. Traction
 - H. Other
19. Use of alcohol?
- A. None
 - B. Moderate
 - C. Heavy
20. Use of cigarettes?
- A. None
 - B. Less than one pack a day
 - C. One pack a day
 - D. Two or more packs a day
21. How many hours a day are you in pain?
- A. Less than 8
 - B. 8 to 16
 - C. 16 to 24
22. How many hours do you lie down in each 24 hour period?
- A. Less than 8
 - B. 8 - 12 hours
 - C. 12 - 16 hours
 - D. 16 - 18 hours
 - E. 18 - 24 hours
23. Would you work if you had no pain?
- A. Yes
 - B. No
 - C. Full time
 - D. Part time
24. Do you have difficulty having sexual intercourse?
- A. Yes
 - B. No
25. How many times do you have sexual intercourse each month?
- A. 0 - 1
 - B. 2
 - C. 3
 - D. 4 - 7
 - E. 8 or more times per month
26. Does pain interfere with Sexual intercourse?
- A. Yes
 - B. No
27. Do you have a compensation claim or lawsuit pending?
- A. Yes - If (yes) please explain.
 - B. No
28. Your work history:
- A. Same job over 5 years
 - B. More than two jobs in the past 5 years
 - C. No work for one year
 - D. No work for over two years
 - E. Retired because of age

29. Where is your pain?
- A. Head
 - B. Neck
 - C. Right arm
 - D. Left arm
 - E. Chest
 - F. Abdomen (stomach)
 - G. Pelvis, groin, rectum
 - H. Right leg
 - I. Left leg
30. Which word describes your pain at its worse?
- A. Mild
 - B. Discomforting
 - C. Distressing
 - D. Horrible
 - E. Excruciating
31. Which word describes it when it is at its least?
- A. Mild
 - B. Discomforting
 - C. Distressing
 - D. Horrible
 - E. Excruciating
32. Your pain medications (pain relievers)
- A. Aspirin
 - B. Talwin shots
 - C. Talwin pills
 - D. Darvon Compound
 - E. Demerol
 - F. Percodan
 - G. Codeine (Emperin #3, Tylenol #3)
 - H. Methadone
 - I. Other narcotics
 - J. None
33. Other medications/drugs
- A. Thorazine
 - B. Elavil
 - C. Tofranil
 - D. Soma
 - E. Valium
 - F. Phenergan
 - G. Librium
 - H. Barbiturates
 - I. Dilantin
 - J. Others
34. How would you describe your EMG?
- A. Mild
 - B. Discomforting
 - C. Distressing
 - D. Horrible
 - E. Excruciating
35. How would you describe your myelogram?
- A. Mild
 - B. Discomforting
 - C. Distressing
 - D. Horrible
 - E. Excruciating

Appendix B

Operational Definitions of 16PF Factors

Operational Definitions of 16PF Factors

<u>Factor</u>	<u>Low Score</u>	<u>High Score</u>
<u>A</u>	Reserved, Detached Critical, Aloof, Stiff	Warmhearted, Outgoing, Easygoing, Participating
<u>B</u>	Less Intelligent, Concrete-Thinking	More Intelligent, Abstract-Thinking, Bright
<u>C</u>	Affected by Feelings, Easily Upset, Changeable	Emotionally Stable, Mature, Faces Reality, Calm
<u>E</u>	Humble, Mild, Easily Led Docile, Accommodating	Assertive, Aggressive, Stubborn, Competitive
<u>F</u>	Sober, Taciturn, Serious	Happy-Go-Lucky, Enthusiastic
<u>G</u>	Expedient, Disregards Rules	Conscientious, Persistent Moralistic, Staid
<u>H</u>	Shy, Timid, Threat- Sensitive	Venturesome, Uninhibited, Socially Bold
<u>I</u>	Tough-Minded, Self- Reliant, Realistic	Tender-Minded, Sensitive Clinging, Overprotected
<u>L</u>	Trusting, Accepting Conditions	Suspicious, Hard to Fool
<u>M</u>	Practical, Down-to-Earth Concerns	Imaginative, Bohemian, Absent-Minded
<u>N</u>	Forthright, Genuine but Socially Clumsy	Astute, Polished, Socially Aware
<u>O</u>	Self-Assured, Placid, Secure, Complacent	Apprehensive, Self- Reproaching, Insecure
<u>Q₁</u>	Conservative Respecting Traditional Ideas	Experimenting, Liberal, Free-Thinking
<u>Q₂</u>	Group-Dependent, A Joiner and Sound Follower	Self-Sufficient, Resource- ful, Prefers Own Decisions

<u>Factor</u>	<u>Low Score</u>	<u>High Score</u>
<u>Q₃</u>	Undisciplined Self- Conflict, Lax, Careless of Social Rules	Controlled, Exacting Will Power, Socially Precise, Compulsive
<u>Q₄</u>	Relaxed, Tranquil Unfrustrated, Composed	Tense, Frustrated, Driven, Overwrought

Appendix C

Follow-up Evaluation Questionnaire

THE SPINAL PAIN PROGRAM

214/837-2780

Dallas Rehabilitation Institute
Caruth Memorial HospitalThe University of Texas
Southwestern Medical School7850 Brook Hollow Rd
Dallas, Texas 75235

NAME _____

FOLLOW-UP EVALUATION

1. Have the pain relieving techniques you have learned at the Pain Clinic decreased your pain?
☐ Yes ☐ No
2. Since discharge, has your pain:
☐ A. Increased?
☐ B. Remained the same?
☐ C. Decreased?
3. Since discharge, has your activity:
☐ A. Increased?
☐ B. Remained the same?
☐ C. Decreased?
4. What medications are you taking at the present time, if any? How often?

5. Are you continuing to practice your pain relieving techniques at this time?
☐ Yes ☐ No
6. Since your discharge, have you received further treatment for your pain?
☐ Yes ☐ No If yes, what? _____

7. Are you presently:
☐ A. Working?
☐ B. In vocational rehabilitation?
☐ C. Retired?
☐ D. Ready for vocational rehabilitation?

THE SPINAL PAIN PROGRAM

214/837-2780

Dallas Rehabilitation Institute
Caruth Memorial HospitalThe University of Texas
Southwestern Medical School7850 Brook Hollow Rd
Dallas Texas 75235**FOLLOW-UP EVALUATION**Page 2

8. What is your job? _____

9. What is your present pain estimate? _____ %
10. What was your pain estimate before entering the Pain Program? _____ %
11. Do you use a TENS? _____ Yes _____ No
If yes, what % of pain relief do you have? _____ %
12. How many hours are you up? _____
13. How far are you walking a day? _____
14. Are you doing your exercises? _____ Yes _____ No
15. Were you employed at the time you came to this program? _____ Yes _____ No
If not, how long had you not be working? _____
If you were employed, did you return to your job after discharge?
_____ Yes _____ No
How soon after discharge did you begin working? _____
16. Since discharge from this program, what household chores are you now performing which you were previously unable to do (or now do with less pain)? _____

17. Since discharge from this program, what leisure activities are you now doing that you were previously not doing (or were painful)? _____



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6 MONTH QUESTIONNAIRE

Please check appropriate answer or answers.
More than one may apply!

1. I am using the body mechanics I learned at Back School:
☐ a. all the time
☐ b. most of the time
☐ c. only when I think about it.
2. I do the exercises:
☐ a. once a day or more
☐ b. two-three times a week
☐ c. never
3. I have seen my doctor _____ times since Back School.
☐ a. 0
☐ b. 1-3
☐ c. more than 3
4. My level of activity is:
☐ a. normal- what it was
☐ b. better
☐ c. same, no better
5. When I experience muscle spasm I:
☐ a. reach for muscle relaxers
☐ b. reach for ice & aspirin
☐ c. do stretching exercises
6. I now feel I am in control of my back pain:
☐ a. all the time
☐ b. most of the time
☐ c. never
7. My recreational activities have:
☐ a. increased
☐ b. stayed the same
☐ c. decreased
8. The following techniques I learned at Back School have helped me:
☐ a. body mechanics
☐ b. exercising
☐ c. first aid
☐ d. relaxation
9. I feel Back School:
☐ a. really helped
☐ b. didn't help

Any comments you may have
would be appreciated.

Appendix D

Explanation of Point System Derived From Appendix C

Point System

1.	Page 45, question 2:	Answer "C"	2
2.	Page 45, question 4:	One-to-three RX pain pills taken per day	2
		No RX pain killers or muscle relaxants taken	5
3.	Page 45, question 5:	Answer "Yes"	2
4.	Page 45, question 7:	Answer on any category	5
5.	Page 47, question 1:	Answer "a"	3
		"b"	2
		"c"	1
6.	Page 47, question 2:	Answer "a"	2
		"b"	1
7.	Page 47, question 4:	Answer "a"	3
		"b"	2
8.	Page 47, question 5:	Answer "b"	2
		"c"	3
9.	Page 47, question 6:	Answer "a"	3
		"b"	2
		"c"	1
10.	Page 47, question 9:	Answer "a"	1

Total possible points = 29

Appendix E

Frequencies of Responses to
Socio-Demographic Intake Questionnaire

Frequencies of Responses to
Socio-Demographic Intake Questionnaire (n = 90)

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
1. <u>Age</u>	A. Less than 30	13.3	13.3
	B. 30 - 45	54.4	67.8
	C. 45 - 60	30.0	97.8
	D. Over 60	2.2	100.0%
		<hr/> 100.0%	
2. <u>Education</u>	A. Grade School	11.1	11.1
	B. High School	76.7	87.8
	C. College	12.2	100.0%
		<hr/> 100.0%	
3. <u>Annual Income</u>	A. No Response	3.3	3.3
	B. Less than \$5,000	7.8	11.1
	C. \$5,000 - \$10,000	26.7	37.8
	D. \$10,000 - \$15,000	31.1	68.9
	E. More than \$15,000	31.1	100.0%
		<hr/> 100.0%	
4. <u>Marital Status</u>	A. Married once	41.1	41.1
	B. Married more than once	30.0	71.1
	C. Divorced	13.3	84.4
	D. Single	11.1	95.6
	E. Widowed	4.4	100.0%
		<hr/> 100.0%	
5. <u>Occupation</u>	A. No response	2.2	2.2
	B. Houswife	12.2	14.4
	C. Desk job	7.8	22.2
	D. Driver	16.7	38.9
	E. Walk a lot	7.8	46.7
	F. Heavy work	37.8	84.4
	G. Professional	15.6	100.0%
		<hr/> 100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
6. Religion	A. No Response	8.9	8.9
	B. Catholic	5.6	14.4
	C. Protestant	56.7	71.1
	D. Other Organized religion	28.9	100.0%
		<u>100.0%</u>	
7. Duration of Pain	A. Less than 1 year	35.6	35.6
	B. Less than 2 years	31.1	66.7
	C. Less than 5 years	21.1	87.8
	D. Less than 10 years	7.8	95.6
	E. Over 10 years	4.4	100.0%
		<u>100.0%</u>	
8. Tense?	A. No	74.4	74.4
	B. Yes	25.6	100.0%
		<u>100.0%</u>	
9. Anxious?	A. No	84.4	84.4
	B. Yes	15.6	100.0%
		<u>100.0%</u>	
10. Cool, well- adjusted?	A. No	70.0	70.0
	B. Yes	30.0	100.0%
		<u>100.0%</u>	
11. Nervous?	A. No	75.6	75.6
	B. Yes	24.4	100.0%
		<u>100.0%</u>	
12. Excitable?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		<u>100.0%</u>	
13. Happy?	A. No	71.1	71.1
	B. Yes	28.9	100.0%
		<u>100.0%</u>	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
14. Depressed?	A. No	88.9	88.9
	B. Yes	11.1	100.0%
		100.0%	
15. Intellectual Ability	A. No Response	1.1	1.1
	B. Below Average	6.6	7.7
	C. Average	75.6	83.3
	D. Above Average	16.7	100.0%
		100.0%	
16. Health (Other than pain)	A. Excellent	18.9	18.9
	B. Good	66.7	85.6
	C. Fair	11.1	96.7
	D. Poor	3.3	100.0%
		100.0%	
17. Spouse Supporting you Financially?	A. No	71.1	71.1
	B. Yes	28.9	100.0%
		100.0%	
18. Self-Supporting?	A. No	91.1	91.1
	B. Yes	8.9	100.0%
		100.0%	
19. Receiving Workman's Compensation?	A. No	44.4	44.4
	B. Yes	55.6	100.0%
		100.0%	
20. Receiving Disability Insurance?	A. No	86.7	86.7
	B. Yes	13.3	100.0%
		100.0%	
21. Receiving Social Security?	A. No	92.2	92.2
	B. Yes	7.8	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
22. Supported by Personal Investments?	A. No	94.4	94.4
	B. Yes	5.6	100.0%
		100.0%	
23. Number of Children?	A. No Response	1.1	1.1
	B. One	16.7	17.8
	C. Two	28.9	46.7
	D. More than two	37.8	84.4
	E. None	15.6	100.0%
		100.0%	
24. Pain Caused By Accident?	A. No	15.6	15.6
	B. Yes	84.4	100.0%
		100.0%	
25. Pain Caused By Doctor?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
26. Pain Caused By Surgery?	A. No	84.4	84.4
	B. Yes	15.6	100.0%
		100.0%	
27. Pain Caused By Scar?	A. No	94.4	94.4
	B. Yes	5.6	100.0%
		100.0%	
28. Pain Caused By Nature?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
29. Had one Laminectomy?	A. No	78.9	78.9
	B. Yes	21.1	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
30. Had two Laminectomies?	A. No	82.2	82.2
	B. Yes	17.8	100.0%
		100.0%	
31. Had three of More Laminectomies?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
32. Had Laminectomy with Fusion?	A. No	87.8	87.8
	B. Yes	12.2	100.0%
		100.0%	
33. Had an Amputation?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
34. Surgery to Free Scar?	A. No	88.9	88.9
	B. Yes	11.1	100.0%
		100.0%	
35. Tumor Removed?	A. No	98.9	98.9
	B. Yes	1.1	100.0%
		100.0%	
36. Other Surgery to End Pain	A. No	87.8	87.8
	B. Yes	12.2	100.0%
		100.0%	
37. Sympathectomy to Relieve Pain?	A. No	98.9	98.9
	B. Yes	1.1	100.0%
		100.0%	
38. Rhizotomy to Relieve Pain?	A. No	96.7	96.7
	B. Yes	3.3	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
39. Had Surgical Cordotomy?	A. No	92.2	92.2
	B. Yes	7.8	100.0%
		100.0%	
40. Had Cordotomy by Needle?	A. No	88.9	88.9
	B. Yes	11.1	100.0%
		100.0%	
41. Had Cingulotomy?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
42. Other Surgery to Relieve Pain?	A. No	86.7	86.7
	B. Yes	13.3	100.0%
		100.0%	
43. Does Pain Occur when Resting?	A. No	90.0	90.0
	B. Yes	10.0	100.0%
		100.0%	
44. Pain Occur when Sitting?	A. No	62.2	62.2
	B. Yes	37.8	100.0%
		100.0%	
45. Pain Occur when Walking?	A. No	68.9	68.9
	B. Yes	31.1	100.0%
		100.0%	
46. Pain Occur when Working or Lifting?	A. No	72.2	72.2
	B. Yes	27.8	100.0%
		100.0%	
47. Pain Occur Constantly?	A. No	36.7	36.7
	B. Yes	63.3	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
48. Pain Occur Less Than 8 Hours a Day?	A. No	93.3	93.3
	B. Yes	6.7	100.0%
		<hr/> 100.0%	
49. Pain Occurs 8 - 16 Hours A Day?	A. No	82.2	82.2
	B. Yes	17.8	100.0%
		<hr/> 100.0%	
50. Pain Occurs During Inter- course?	A. No	82.2	82.2
	B. Yes	17.8	100.0%
		<hr/> 100.0%	
51. Rest Time Needed for Pain Relief?	A. No Response	5.6	5.6
	B. Less than ½ hour	5.6	11.1
	C. At least 1 hour	43.3	54.4
	D. Several hours or more	45.6	100.0%
		<hr/> 100.0%	
52. Does Lying Down Relieve Pain?	A. No	27.8	27.8
	B. Yes	72.2	100.0%
		<hr/> 100.0%	
53. Does Sex Relieve Pain?	A. No	98.9	98.9
	B. Yes	1.1	100.0%
		<hr/> 100.0%	
54. Does Sitting Relieve Pain?	A. No	88.9	88.9
	B. Yes	11.1	100.0%
		<hr/> 100.0%	
55. Do Drugs Relieve Pain?	A. No	51.1	51.1
	B. Yes	48.9	100.0%
		<hr/> 100.0%	
56. Does Heat Relieve Pain?	A. No	51.1	51.1
	B. Yes	48.9	100.0%
		<hr/> 100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
57. Does Massage Relieve Pain?	A. No	73.3	73.3
	B. Yes	26.7	100.0%
		100.0%	
58. Does Traction Relieve Pain?	A. No	87.8	87.8
	B. Yes	12.2	100.0%
		100.0%	
59. Other Methods to Relieve Pain?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
60. Use of Alcohol	A. None	1.1	1.1
	B. Moderate	65.6	66.7
	C. Heavy	33.3	100.0%
		100.0%	
61. Use of Cigarettes	A. No Response	1.1	1.1
	B. None	44.4	45.6
	C. Less than 1 pack per day	14.4	60.0
	D. 1 pack per day	32.3	92.2
	E. 2 or more packs/day	7.8	100.0%
		100.0%	
62. Hours a Day in Pain	A. Less than 8	13.3	13.3
	B. 8 to 16	33.3	46.7
	C. 16 to 24	53.3	100.0%
		100.0%	
63. Time Spent Lying Down Per Day	A. Less than 8 hours	1.1	1.1
	B. 8 - 12 hours	27.8	28.9
	C. 12 - 16 hours	47.8	76.7
	D. 16 - 18 hours	12.2	88.9
	E. 18 - 24 hours	11.1	100.0%
		100.0%	

Questionnaire Item		Relative Freq (%)	Cumulative Freq (%)
64. If you Didn't Have Pain, Would You Work?	A. Yes	60.0	60.0
	B. Fulltime	36.7	96.7
	C. Part-time	3.3	100.0
		100.0%	
65. Difficulty During Inter- course?	A. No Response	7.8	7.8
	B. Yes	63.3	71.1
	C. No	28.9	100.0
		100.0%	
66. Times You Have Inter- course per Month	A. No Response	15.6	15.6
	B. 0 - 1	15.6	31.3
	C. 2	11.1	42.2
	D. 3	14.4	56.7
	E. 4 - 7	28.9	85.6
	F. 8 or more	14.4	100.0
		100.0%	
67. Does Pain Interfere With Sex?	A. No Response	10.0	10.0
	B. Yes	66.7	76.7
	C. No	23.3	100.0
		100.0%	
68. Compensation Pending?	A. Yes	27.8	32.2
	B. No	72.2	100.0
		100.0%	
69. Work History	A. No Response	2.2	2.2
	B. Same job for 5 years	50.0	52.2
	C. Two jobs in 5 years	23.3	75.6
	D. No work for year	10.0	85.6
	E. No work for 2 years	13.3	98.9
	F. Retired because of age	1.1	100.0
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
70. Pain in Head?	A. No	94.4	94.4
	B. Yes	5.6	100.0%
		100.0%	
71. Pain in Neck?	A. No	75.6	75.6
	B. Yes	24.4	100.0%
		100.0%	
72. Pain in Right Arm?	A. No	93.3	93.3
	B. Yes	6.7	100.0%
		100.0%	
73. Pain in Left Arm?	A. No	93.3	93.3
	B. Yes	6.7	100.0%
		100.0%	
74. Pain in Chest?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
75. Pain in Stomach?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
76. Pain in Pelvis?	A. No	75.6	75.6
	B. Yes	24.4	100.0%
		100.0%	
77. Pain in Right Leg?	A. No	50.0	50.0
	B. Yes	50.0	100.0%
		100.0%	
78. Pain in Left Leg?	A. No	54.4	54.4
	B. Yes	45.6	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
79. Pain at its Worst	A. Discomforting	15.6	15.6
	B. Distressing	31.1	46.7
	C. Horrible	28.9	75.6
	D. Excruciating	24.4	100.0%
		100.0%	
80. Pain at its Least	A. Mild	23.3	23.3
	B. Discomforting	56.7	80.0
	C. Distressing	14.4	94.4
	D. Horrible	5.6	100.0%
		100.0%	
81. Take Aspirin to Relieve Pain?	A. No	90.0	90.0
	B. Yes	10.0	100.0%
		100.0%	
82. Talwin Shots to Relieve Pain?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
83. Talwin Pills to Relieve Pain?	A. No	95.6	95.6
	B. Yes	4.4	100.0%
		100.0%	
84. Darvon Compound to Relieve Pain?	A. No	88.9	88.9
	B. Yes	11.1	100.0%
		100.0%	
85. Demerol to Relieve Pain?	A. No	97.8	97.8
	B. Yes	2.2	100.0%
		100.0%	
86. Percodan to Relieve Pain?	A. No	85.6	85.6
	B. Yes	14.4	100.0%
		100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
87. Codeine to Relieve Pain?	A. No	70.0	70.0
	B. Yes	30.0	100.0%
		<hr/> 100.0%	
88. Methadone to Relieve Pain?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		<hr/> 100.0%	
89. Other Narco- tics to Relieve Pain?	A. No	76.7	76.7
	B. Yes	23.3	100.0%
		<hr/> 100.0%	
90. No Medica- tions to Relieve Pain	A. No	80.0	80.0
	B. Yes	20.0	100.0%
		<hr/> 100.0%	
91. Take Thora- zine?	A. No	98.9	98.9
	B. Yes	1.1	100.0%
		<hr/> 100.0%	
92. Take Elavil?	A. No	91.1	91.1
	B. Yes	8.9	100.0%
		<hr/> 100.0%	
93. Take Tofranil?	A. No	96.7	96.7
	B. Yes	33.3	100.0%
		<hr/> 100.0%	
94. Take Soma?	A. No	96.7	96.7
	B. Yes	3.3	100.0%
		<hr/> 100.0%	
95. Take Valium?	A. No	83.3	83.3
	B. Yes	16.7	100.0%
		<hr/> 100.0%	

<u>Questionnaire Item</u>		<u>Relative Freq (%)</u>	<u>Cumulative Freq (%)</u>
96. Take Phener- gan?	A. No	96.7	96.7
	B. Yes	3.3	100.0%
		100.0%	
97. Take Librium?	A. No	98.9	98.9
	B. Yes	1.1	100.0%
		100.0%	
98. Take Barbitu- rates?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
99. Take Dilan- tin?	A. No	100.0	100.0
	B. Yes	0.0	100.0%
		100.0%	
100. Take Other Medications?	A. No	81.1	81.1
	B. Yes	18.9	100.0%
		100.0%	
101. Describe EMG	A. Had None	26.7	26.7
	B. Mild	10.0	36.7
	C. Discomforting	42.2	78.9
	D. Distressing	4.4	83.3
	E. Horrible	13.3	96.7
	F. Excrutiating	3.3	100.0%
		100.0%	
102. Describe Myelogram	A. Had None	16.7	16.7
	B. Mild	11.1	27.8
	C. Discomforting	30.0	57.8
	D. Distressing	5.6	63.3
	E. Horrible	24.4	87.8
	F. Excrutiating	12.2	100.0%
		100.0%	

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