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Predicting Hyperactive Behavior as a Cause of Non-Compliance with Rehabilitation:

The Reinforcement Motivation Survey.

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ABSTRACT

Non-compliance with therapy is a significant problem in vocational rehabilitation. Significant amounts of professional time and money are wasted treating patients who are unwilling or unable to participate in their own rehabilitation. The client with chronic musculoskeletal pain - depressed, without energy (i.e., "anergic") and refusing to attend therapy - is the exemplar of non-compliance. However, clients with chronic pain and other disabilities demonstrate a different type of non-compliance, characterized by chronic hyperactivity and refusal to decrease behaviors that are known to maintain or increase symptoms. To document the occurrence of hyperactive non-compliance, 80 clients treated for chronic musculoskeletal pain (CMP) and 41 clients treated for Post-Polio Sequelae

(PPS) were studied prospectively and administered the Beck Depression Inventory (BDI) and the Reinforcement Motivation Survey (RMS). Forty percent of the CMP clients and 79% of the PPS clients who were discharged from therapy demonstrated hyperactive non-compliance. CMP clients as a group had significantly elevated BDI and RMS Type A behavior and Negative Reinforcement Motivation scores, while PPS clients as a group had elevated Sensitivity to Criticism and Failure scores, as compared to controls. Significantly elevated Type A behavior and Sensitivity to Criticism and Failure scores were associated with hyperactive non-compliance as well as completion of therapy. These findings indicate that hyperactive non-compliance is an frequent cause of treatment failure in rehabilitation clients and that the RMS may be of use in identifying potentially non-compliant clients and the form non-compliance will take. The design of individualized rehabilitation programs to manage non-compliance and maximize the probability of completing therapy is described.

Refusal to comply with therapeutic recommendations or prescribed therapies is a significant problem in medicine (Cameron and Gregor, 1987). Clients with conditions ranging from arthritis (Jette, 1982) to diabetes (Ekerling and Kohrs, 1984) often refuse to follow daily dietary and exercise regimens, while more than half of clients with hypertension or tuberculosis were found to refuse continued medical care (Sackett and Snow, 1979)

Non-compliance is also a common problem in rehabilitation. Many clinicians point to the client with chronic musculoskeletal pain, especially low back pain, as the exemplar of non-compliance (Blumer and Heilbronn, 1981; King and Snow, 1989). Chronic musculoskeletal pain (CMP) clients are described as having a premorbid history of hyperactivity, characterized by their performing in "a slave-like manner, working and keeping active beyond average expectations" in order to provide for the needs of others (Blumer and Heilbronn, 1982). Such excessive caretaking is believed by these individuals to be required for their acceptance by family, friends and employers, and is said to protect against excessive sensitivity to criticism and profound feelings of "insecurity and guilt" (Blumer and Heilbronn, 1982).

Hyperactivity is said to persist until "a minor injury provide(s) a rational and socially acceptable" reason for ceasing excessive caretaking and becoming dependent on others (Gentry, et al., 1974). The cessation of hyperactive caretaking of others is thought to trigger a "depressive disorder" which causes both chronic pain and "a disabling degree of anergia" (i.e., a profound lack of energy and activity). This disabling anergia becomes evident when CMP clients "completely lose their initiative and zeal for work" (Blumer and Heilbronn, 1981). They become "helpless sufferers" waiting to be "spoiled and cared for continuously" and are disinterested in participating in a rehabilitation program designed to help them tolerate their

pain and decrease their disability (Blumer and Heilbronn, 1982).

This description of the depressed, anergic CMP client as the exemplar of non-compliance is not consistent with our experience. While it does appear that many CMP clients are premorbidly hyperactive, not all chronic pain clients become depressed, anergic, helpless and dependent following injury. Even after pain onset, a large minority of CMP clients refuses to reduce their premorbid level of hyperactivity. They vigorously maintain their independence and continue to work excessively, caring for others, even though their hyperactivity maintains or exacerbates the pain. These clients often report that they are "overcome by guilt" if they reduce their caretaking of others. Further, it is persistent hyperactivity, and not depressive anergia, that prevents these clients from complying with treatment recommendations or even attending therapy sessions and causes them to be discharged from the pain management program.

Recently, another group of rehabilitation clients who also demonstrate hyperactivity and therapeutic non-compliance has been described: the 1.63 million survivors of America's polio epidemics (Frick and Bruno, 1986). Like hyperactive CMP clients, polio survivors vigorously strive to maintain their hard-won independence and work excessively, also performing in a slave-like manner, keeping active beyond average expectations in order to provide for the needs of

others (Bruno and Frick, 1991). For example, polio survivors have been found to work significantly more overtime hours per week, regardless of the severity of their disability, than do their non-disabled peers (Lonnberg, 1993). Further, two national surveys have found that polio survivors on average demonstrate significantly more hard-driving, pressured, over-achieving Type A behaviors than do the general population (Bruno and Frick, 1987;1991; Rosenman, et al., 1964). The experience of polio has been suggested to provide the ideal environment for the development of the Type A personality, since hyperactive Type A behaviors are said to be learned in service of the "active avoidance of punishment" (Perkins, 1984) by individuals with "low social support and self-esteem" (Powell, et al., 1984) who are involved in a chronic "struggle to overcome environmental barriers" (Rosenman, 1964). And, polio survivors, like hyperactive CMP clients, persist in their hyperactivity even though it has been shown to cause and exacerbate Post-Polio Sequelae, the late-onset symptoms that include muscle and joint pain, overwhelming fatigue and muscle weakness (Bruno and Frick, 1986;1991).

Surprisingly, there have been few studies that document the frequency and examine causes of non-compliance in rehabilitation. Many studies of pain management program outcome have actually excluded non-compliers from their analyses (Aronoff and Evans, 1982; Chapman, etal., 1981; Guck, et al., 1986: Maruta, et al., 1987; Painter, et al., 1980). King and Snow (1989) did compare CMP clients who "were

discharged from or left" their inpatient pain program, but the behaviors that prompted discharge were not specified.

This paper describes 1) the frequency of anergic and hyperactive behaviors as causes of non-compliance with therapy in rehabilitation, 2) the development of an instrument that measures the behaviors and motivational factors associated with therapeutic non-compliance and helps to identify potentially non-compliant clients and 3) the creation of individualized rehabilitation plans that incorporate client management strategies to minimize non-compliance and maximize the probability of clients completing rehabilitation and returning to work.

METHODS

Subjects. Eighty consecutive clients admitted to the Pain Management Program over two years were studied. They had a history of 3.2 (+/- 3.5) years of musculoskeletal back and/or neck pain as a result of motor vehicle or work-related accidents. This chronic musculoskeletal pain (CMP) group consisted of 44 females and 36 males with a mean age of 39.8 (+/- 10.4) years having had 13.2 (+/- 2.6) years of education.

Forty-one polio survivors consecutively admitted over two years to the Post-Polio Service with a diagnosis of Post-Polio Sequelae (PPS) were also studied. The PPS group consisted of 32 females and 9 males with a mean age of 47.7 (+/- 11.4) years having 14.4 (+/- 2.1) years of education who reported new PPS symptom an average of 42 (+/- 8.0) years after

having had polio.

Reinforcement Motivation Survey. The Reinforcement Motivation Survey (RMS) is a 36 item, forced choice questionnaire containing three scales designed to measure behaviors and motivational factors that have been noted in non-compliant clients: a Brief Type A behavior scale, a scale measuring negative reinforcement motivation and a scale measuring sensitivity to criticism and failure (Table 1).

Type A Behavior scale. Since the hyperactive behaviors seen in CMP and PPS clients appear similar to the behaviors characteristic of the Type A personality (Rosenman, et al., 1964), the 10 item brief Type A Behavior scale developed by Young and Barboriak (1982) was administered (Table 1). The TAB score was elevated when respondents agreed that they performed work in a excessive, driven, angry or competitive manner uninterrupted by rest or vacation.

Negative Reinforcement Motivation scale. Our CMP and PPS clients often report that their hyperactive behavior is not motivated by others' praise or personal satisfaction but by a compelling noxious internal drive that ceases only when tasks performed for or required by others are successfully completed. Behavior motivated by an attempt to reduce a noxious stimulus is called negative reinforcement in learning theory, but is usually described by our hyperactive clients as "guilt." Motivation resulting from negative reinforcement is consistent with the suggestion that hyperactivity protects against life-long feelings of guilt. (Blumer and Heilbronn,

1982; Bruno and Frick, 1991; Van Houdenhove, et al., 1987).

The 18 item RMS Negative Reinforcement Motivation scale (Table 1) was designed so that the scale score was elevated when respondents agreed that they were uninterested in others' appreciation of or praise for their work, focused on only one task at a time and were motivated by their own internal sense of discomfort that decreased only when they worked continuously and completed tasks quickly.

Sensitivity to Criticism and Failure scale. Hyperactivity in CMP and PPS most often appears to serve the needs or expectations of others. This is consonant with the suggestion that hyperactivity is an attempt to protect against chronic insecurity and low self-esteem by preventing criticism or punishment by others and a sense of personal failure (Blumer and Heilbronn, 1982; Bruno and Frick, 1991; Perkins, 1984; Powell, et al., 1984; Van Houdenhove, et al., 1987)

The 8 item Sensitivity to Criticism and Failure scale (Table 1) was designed so that the scale score was elevated when respondents agreed that they were motivated by the need to please others, that they ruminated about past mistakes and that their self-image and affect were negatively impacted by a lack of success in their work or the critical comments of others.

Scoring. Items answered correctly on each scale (correct answer given in parenthesis in Table 1) were given a score of

one, while those answered incorrectly were given a score of zero. The total scale scores were calculated by summing the individual item scores, dividing by the number of scale items and multiplying by 100.

RMS Normative Sample. The validity and reliability of the RMS were assessed on 125 individuals without CMP, polio or other disabilities. Clients were asked to provide their own controls by asking friends and relatives to complete the RMS. Item analysis was conducted by using product-moment correlations to relate responses on individual items with the total score for each scale. Correlations ranged from 0.18 to 0.59 for the Type A behavior items, from 0.17 to 0.49 for the Negative Reinforcement scale items and from 0.39 to 0.34 for the Sensitivity to Criticism and Failure scale items (Tables 1).

The Type A behavior scale correlated 0.09 (p=N.S.) with the Negative Reinforcement scale and 0.29 (p=0.02) with the Sensitivity to Criticism and Failure scale. The Negative Reinforcement and Sensitivity to Criticism and Failure scales correlated -0.17 (p=N.S.) with each other.

Two pair of items with similar content were included in the Negative Reinforcement and Sensitivity to Criticism and Failure scales to assess reliability by measuring internal consistency. The Spearman-Brown formula, applied to phi correlations calculated for each pair of item scores, estimated full-scale reliabilities of 0.87 for the Negative Reinforcement scale and 0.79 for the Sensitivity to Criticism

and Failure scale (Anastasi, 1988). The reliability of the Type A Behavior scale is given by Young and Barboriak (1982).

PROCEDURE

Clients were administered the Reinforcement Motivation Survey (RMS) and the Beck Depression Inventory (BDI) (Beck, et al., 1961) during the initial evaluation. Clients were directed to complete the RMS based on how they usually thought, felt or acted prior to the onset of pain or PPS symptoms and to answer the BDI questions on the basis of how they felt during the preceding week.

Clients in both groups were prescribed individualized rehabilitation programs including physical and occupational therapy, individual and group psychotherapy and EMG biofeedback. The CMP rehabilitation program was designed to eliminate the use of narcotic drugs and assistive devices, decrease anergic or hyperactive behaviors, prescribe stretching and endurance exercises and increase the level of personal and vocational functioning. The PPS rehabilitation program was designed to decrease pain, fatigue and muscle weakness by teaching energy conservation, work simplification and time management, prescribing non-fatiguing exercise and needed assistive devices (Bruno and Frick, 1991). CMP outpatients received three one hour sessions while PPS outpatients received two one hour sessions of physical and occupational therapy per week.

CMP or PPS inpatients received 17.5 hours of physical and occupational therapy per week. All clients received one hour per week of individual psychotherapy; CMP clients received four hours per month and PPS clients two hours per month of group psychotherapy. A complete rehabilitation program lasted from eight to twelve weeks.

Definition of Non-Compliance. Two types of non-compliance were noted: clients either failed to increase or decrease their levels of activity. For example, clients who failed to increase their level of activity refused to leave bed in the morning, returned to bed prematurely or remained sedentary during the day. Some also failed to attend therapy sessions or left sessions prematurely, failed to perform the prescribed number or type of therapeutic activities or exercises, failed to correct poor posture or to independently perform self-care activities (e.g., failed to stop asking others to help with ADLs). Non-compliant CMP clients also failed to discard unnecessary assistive devices (e.g., a cane, crutch or wheelchair). These types of behaviors were termed anergic non-compliance.

The second type of non-compliance was characterized by clients failing to decrease their general level of activity and eliminate behaviors that had been identified as maintaining or exacerbating their symptoms. Typically, these clients failed to attend therapy sessions, perform prescribed physical therapy, relaxation and biofeedback exercises or take prescribed breaks during the day because of schedules

that burgeoned with numerous activities in service of employers, social organizations, family members and friends. Clients also failed to decrease the number, duration, intensity or extent of their daily activities or to request appropriate assistance in performing them. PPS clients failed to keep daily activity and symptom logs or to use newly prescribed assistive devices (e.g. a cane, crutch, brace or wheelchair). These types of behaviors were termed hyperactive non-compliance.

Discharge Procedure. When non-compliant behaviors were observed by the treatment team, the need for their alteration was discussed with the client. If the behaviors did not change by the next therapy session, a behavioral contract was written by the team that detailed the specific behavior(s) to be altered and stated that the client would be discharged from all therapies if a behavior change was not effected. The contract was presented to the client by the treatment team and signed by the client.

If the client refused to sign the contract, he was immediately discharged from all therapies until he was willing to participate in the rehabilitation program. If the client signed but failed to comply with the contract by the next therapy session the client again met with the team. The non-compliant behavior(s) were again discussed and the terms of the contract reiterated. The client was immediately discharged from all therapies if the contract was violated a second time and readmitted only when he was willing to

participate in the rehabilitation program. Clients were classified as anergic or hyperactive non-compliers depending upon the type of behavior they emitted that caused their discharge from therapy (see above).

Data Analysis. Descriptive statistics were calculated for all variables. Two-tailed independent-groups t-tests, with p values corrected for multiple comparisons using the Bonferroni inequality, were used to compare the control subject's BDI and RMS scores to those of the CMP and PPS client groups (Table 2) and the three outcome subgroups (those who completed rehabilitation or were discharged for anergic or hyperactive non-compliance) (Table 3) and within the three outcome subgroups.

RESULTS

Twenty-five (31%) of the CMP clients and 14 (34%) of the PPS clients were prematurely discharged for non-compliance with their rehabilitation program. Fifteen (18%) CMP clients and 3 (7%) PPS clients were discharged for anergic non-compliance, while ten (13%) CMP clients and 11 (27%) PPS clients were discharged for hyperactive non-compliance.

CMP clients were significantly younger (40 +/- 10 years) than the controls (50 +/- 13 years)($t=5.91$; $p < 0.01$) and PPS clients (48 +/- 11 years)($t=3.83$; $p<.01$). However, there were no significant differences in age within the CMP or PPS outcome subgroups or in years of education between the

CMP and PPS groups or within the outcome subgroups. There were also no significant differences within the PPS subgroups in years since polio onset. However, CMP clients discharged for hyperactive non-compliance reported significantly more years since pain onset (6.3 +/- 7.4) as compared to the CMP clients who completed rehabilitation (2.6 +/- 2.4)($t=3.01$; $p<0.01$).

Beck Depression Inventory Scores. The mean BDI score in the CMP group was statistically but not clinically (not > 17) significantly elevated as compared to the control and PPS group means (Table 2) (Beck, et al., 1961). The BDI scores for the CMP clients who completed rehabilitation and those who were discharged for anergic non-compliance were statistically significantly elevated as compared to the control group mean (Table 3). However, only the mean BDI score of 19 in the CMP clients discharged for anergic non-compliance was clinically elevated indicating that these clients as a group demonstrated symptoms of "mild" depression (Beck, et al., 1961).

There were no significant differences in BDI scores between the PPS clients as a group and the controls, within the PPS subgroups or between the controls and any PPS subgroup.

Type A Behavior Score. The mean Type A Behavior scale (TAB) score was significantly elevated in CMP clients as a group as compared to the controls (Table 2). The mean TAB score was also significantly elevated as compared to the controls in the CMP clients who completed rehabilitation

and elevated even higher in those who were discharged for hyperactive non-compliance (Table 3). However, there were no significant differences in TAB score between the CMP clients discharged for anergic non-compliance and the controls or within the CMP subgroups. There were no significant differences in TAB scores between the PPS clients as a group and the controls, within the PPS subgroups or between the controls and any PPS subgroup.

Negative Reinforcement Motivation Score. The mean Negative Reinforcement Motivation scale (NEG) score was significantly elevated in the CMP clients as a group (Table 4) and in each of the CMP subgroups as compared to the controls (Table 5). However, there were no significant differences in NEG scores within the CMP subgroups. There were also no significant differences in NEG scores between the PPS clients as a group and the controls, within the PPS subgroups or between the controls and any PPS subgroup.

Sensitivity to Criticism and Failure. There was no significant difference in the mean Sensitivity to Criticism and Failure scale (SEN) score between the CMP clients as a group and the controls (Table 2) or between any CMP subgroup and the controls (Table 3). However, the SEN score was significantly elevated in the CMP clients discharged for hyperactive as compared to anergic non-compliance.

The mean SEN score was significantly elevated in the PPS clients as a group as compared to the controls (Table 2). The

mean SEN score was also significantly elevated as compared to the controls in the PPS clients who completed rehabilitation and elevated even further in those who were discharged for hyperactive non-compliance (Table 3). However, there was no significant difference in SEN score between the PPS clients discharged for anergic non-compliance and the controls or within the PPS subgroups.

DISCUSSION

These findings document that discharge from a chronic pain management program results not only from anergia but also from hyperactivity, since 40% of CMP clients were discharged for hyperactive non-compliance. Further, hyperactive CMP clients did not report significantly more symptoms of depression than did those discharged for anergic non-compliance or those who completed rehabilitation. These findings contradict those of Blumer and Heilbronn (1989) but support the data of King and Snow (1989). Thus, anergia is not always demonstrated by CMP clients, nor are symptoms of depression necessary for the genesis of chronic pain.

The significantly elevated Type A behavior and Negative Reinforcement Motivation scores in CMP clients as a group support the description by Van Houdenhove, et al. (1987) of "pain-prone" individuals demonstrating premorbid, internally-driven hyperactivity that serves in part to protect against feelings of guilt (Van Houdenhove, et al., 1987). The lack of significant differences in Negative Reinforcement

Motivation scores between CMP subgroups suggests that negative reinforcement motivation may be a trait in individuals who develop CMP and is not a factor that affects compliance with rehabilitation.

The significantly elevated Type A behavior score in CMP clients who completed rehabilitation suggests that an elevated level of work-oriented behavior may be helpful or even necessary to complete rehabilitation in a pain management program. This conclusion is supported by the below average Type A behavior score of 39 recorded in CMP clients who were documented to be malingering (Bruno, 1991). These clients demonstrated profound anergia and refused to participate in their own rehabilitation.

However, an extreme elevation in Type A score, as seen in CMP clients discharged for hyperactive non-compliance, suggests that excessive Type A behavior may be inimical to the self-care behaviors and moderation of activity that are required to manage chronic pain in clients demonstrating hyperactivity.

The significant elevation of the Sensitivity to Criticism and Failure score in CMP and PPS clients discharged for hyperactive non-compliance, as well as in the PPS clients who completed rehabilitation, may be interpreted in a similar fashion. A certain level of sensitivity to criticism and concern about failure may be required for clients to listen to the treatment team and make the significant life-style

changes that are necessary to treat both CMP and PPS. This conclusion is supported by the below average Sensitivity to Criticism and Failure score in the clients discharged for anergic non-compliance (Table 3) and by the report of an even lower score of 23 in malingering CMP clients, who appeared insensitive to input from the treatment team or the needs of and impact on others of their continuing disability (Bruno, 1991).

On the other hand, extreme sensitivity to criticism and a constant fear of failure would prevent hyperactive individuals from making lifestyle modifications that are readily noticed by others (such as reduced caretaking, eliminating overtime work or using a wheelchair) and that could generate negative comments by family members, friends and colleagues. Thus, the significantly elevated Sensitivity to Criticism and Failure score in the PPS group could explain their 79% rate of hyperactive non-compliance (versus 40% in the CMP group) and the near 4:1 ratio of discharge for hyperactive versus anergic non-compliance in the polio survivors. These clients' heightened sensitivity may also explain why individuals with supportive and less critical family members were found to be more likely to complete a pain management program (King and Snow, 1989) or rehabilitation for PPS (Creange and Bruno, 1994).

Using the RMS in Developing a Rehabilitation Plan. These findings indicate that the Reinforcement Motivation Survey can be useful in both identifying clients with the potential for

non-compliance and indicating the form non-compliance will take even before the client begins therapy. Using the RMS to identify potential non-compliers should be of great help to the vocational rehabilitation counselor and insurance nurse who are responsible for returning clients on long-term disability to work in a pressured managed care environment that demands rapid results but allows a minimum expenditure of insurance company dollars. If behaviors that will likely subvert rehabilitation are identified and managed from before the first day of treatment, the client's potential for success in therapy and returning to work will be maximized. Clients who are unable or unwilling to modify their non-compliant behaviors - in spite of the best interdisciplinary efforts of the case manager, therapists and psychologist - could be discharged from rehabilitation with cause, compensation stopped and their cases closed.

For example, clients with markedly elevated Type A behavior or Sensitivity to Criticism and Failure scores (i.e., more than one standard deviation above the control group mean) would be identified as potential hyperactive non-compliers. The early identification of hyperactive non-compliers is especially important, since hyperactive behavior is often overlooked or even welcomed, since counselors are pleased when a client appears "extremely well motivated for therapy." Hyperactive behaviors that were present premorbidly and that are related to the exacerbation or maintenance of symptoms should be discussed with the client before treatment begins. Clients should be cautioned that

unless hyperactivity is decreased, their symptoms will continue, rehabilitation will be subverted and the likelihood of returning to work will be significantly decreased.

A rehabilitation plan should then be developed that includes clients keeping daily symptom and activity logs that are reviewed before each therapy session. The presence of hyperactivity should be immediately discussed with the client and its persistence should be addressed by requiring the that client sign a behavioral contract. This contract should make clear that continued treatment and compensation income are contingent on decreasing hyperactive behaviors and full compliance with therapy. A client's inability to decrease hyperactive behaviors also necessitates referral to a psychologist who can help identify the motivations for Type A behaviors and modify elevated sensitivity to criticism and failure.

Clients having extremely low Type A behavior or Sensitivity to Criticism and Failure scores (i.e., below the control group mean) would be identified as potential anergic non-compliers. Even before therapy begins, these clients should sign a behavioral contract stating that all therapy session will be attended, daily logs completed and home exercises and ADL activities performed as prescribed or rehabilitation and compensation income will be discontinued. When physical and occupational therapy begin, the contract is expanded to include an individualized home exercise program and the specific activities to be performed outside

of the clinic.

We have found the RMS to be very helpful over the past five years in identifying potential non-compliers and guiding the creation of individualized rehabilitation plans. However, we are much more successful in slowing hyperactive clients than in activating those who are anergic. Even the RMS prompting behavioral contracting before treatment begins - contracts promising that therapy and even compensation income will be discontinued with the persistence of non-compliance - cannot motivate the profoundly anergic client to participate in his own rehabilitation. More applied research is needed to identify ways in which the anergic client can be motivated.

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Table 1. Correlations (r) between individual RMS scale items and total scale scores. (Answers scored with a "1" in parentheses; a,b: Item pairs correlated to assess internal consistency.)

r Type A Behavior Scale Items.

.59 Do you consider yourself to be "hard driving?" (True)

.54 Do you set at least one deadline per day for yourself? (True)

.53 Is it very important for you personally to get ahead in life? (True)

.47 Do you set at least one deadline per week for yourself? (True)

.45 Do you spend more than 8 hours per week working overtime? (True)

.41 Do you usually wake up in the morning not feeling well rested? (True)

.39 Have you taken less than one vacation per year during

the past 5 years? (True)

.34 Do you spend less than 5 days on an average vacation? (True)

.29 Do you enjoy competition? (True)

.18 Do you have a temper that's hard to control, "fiery?" (True)

r Negative Reinforcement Scale Items.

.49 I don't need much from people. (True)

.42 I would dislike very much working alone in some isolated place. (False) a

.42 I sometimes need people to prod me to work. (False)

.41 Once I begin a task I try to finish it immediately, even if there's no deadline. (True) b

.41 When I'm sick, I prefer that my friends leave me alone. (True)

.35 I feel dissatisfied if I remain unnoticed. (False)

.35 I'd rather not be by myself. (False)

.34 I do my best work when I know it will be appreciated. (False)

.32 I feel very uncomfortable when tasks I've started go unfinished. (True) b

.28 When I was growing up, I didn't care to be a member of a group or crowd. (True)

.27 It bothers me that I never get all the praise I deserve for the work I do. (False)

.27 I prefer to work alone. (True) a

.26 I tend to be interested in several different activities, rather than working at one for a long time. (False)

.25 I find it impossible to relax if there's work left to be done. (True)

.24 I'm never happier than when people say I've done a good job. (False)

.22 I have the habit of starting things and then losing interest in them. (False)

.21 I have very many close friends. (False)

.17 More than once, I've very nearly let my car run out of gas. (False)

r Sensitivity to Criticism and Failure Scale Items.

.64 What people think of my work very much affects how I feel about myself. (True) a

.60 Criticism disturbs me very much. (True)

.59 Thoughts of my past mistakes often bother me. (True) b

.58 I give little thought to my failures after they're past. (False) b

.57 If something goes wrong in my work, it can make me feel depressed. (True)

.53 Peoples' comments about me don't bother me. (False)

.50 My image of myself depends greatly on success in the work that I do. (True) a

.39 I am the only person I have to please. (False)

CONTROLS CMP PPS

Sample Size 125 80 41

Beck

Depression 11 (± 8) a 16 (± 9) 14 (± 9)

Inventory

Type A Score 47 (± 21) 63 (± 20) 55 (± 18)

Negative

Reinforcement 52 (± 17) 65 (± 16) ¥ 51 (± 14)

Score

Sensitivity to

Criticism and 59 (± 27) 65 (± 28) 77 (± 22)

Failure Score

a: Mean Beck Depression Inventory score of a group (n=115) diagnosed as not being depressed (from Beck, et al, 1961). Mean score significantly elevated (p<0.01) as compared to the control ( ) or post-polio group (¥) mean.

Table 2. Mean (± standard deviation) BDI and RMS scale scores for the control, chronic musculoskeletal pain (CMP) and post-polio sequelae (PPS) groups.

Completed program Discharged hyperactive Discharged anergic

Pecent of Patients

CMP 55 (69%) 10 (13%) (18%)

PPS 27 (66%) 11 (27%) 3 (7%)

Beck Depression Score

CONTROLS 11 (± 8) a

CMP 16 (± 10) 14 (± 3) 19 (± 7)

PPS 13 (± 8) 18 (± 11) 9 (± 6)

Type A Score

CMP 66 (± 21) 69 (± 14) 57 (± 22)

PPS 55 (± 17) 57 (± 22) 40 (± 0)

CONTROLS 47 (± 21)

Negative Reinforcement

CMP 64 (± 17) 68 (± 11) 63 (± 12)

PPS 52 (± 12) 46 (± 15) 61 (± 15)

CONTROLS 52 (± 17)

Sensitivity to Criticism and Failure Score

CMP 65 (± 26) 81 (± 20) ¥ 43 (± 27)

PPS 76 (± 22) 87 (± 13) 50 (± 25)

CONTROLS 59 (± 27)

a: Mean Beck Depression Inventory score of a group (n=115) diagnosed as not being depressed (from Beck, et al, 1961). Mean score significantly elevated ($p<0.0084$) as compared to the control group ( ) or to the CMP anergic non-compliance group (¥) mean.

Table 3. Mean (± standard deviation) BDI and RMS scale scores for the control group and chronic musculoskeletal pain (CMP) and post-polio sequelae (PPS) subgroups.