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ILLNESS BEHAVIOUR QUESTIONNAIRE AS A PREDICTOR OF  
PROBLEMATIC AND APROBLEMATIC PATIENTS WITH A  
PAINFUL UPPER EXTREMITY

By

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Thesis

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ABSTRACT

ILLNESS BEHAVIOUR QUESTIONNAIRE AS A PREDICTOR OF PROBLEMATIC AND APROBLEMATIC PATIENTS WITH A PAINFUL UPPER EXTREMITY

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The purpose of this study was to measure the illness behavior of acute and chronic upper extremity pain patients using the Illness Behaviour Questionnaire (IBQ), to determine the rehabilitation outcome by pre-set criteria, and to determine the effectiveness of the seven scales of the IBQ in predicting the problem pain patient. Each subject completed a self-administered test packet which included the IBQ. Each was identified by the investigator as a problematic or as an aproblematic patient using information in the medical chart. Patients entering the study with acute pain (n=12) had less pain upon discharge and returned more quickly to activities of vocation, avocation and daily living than did the chronic pain patients (n=8). Statistical analysis of the IBQ scores of the problematic and aproblematic patients did not support the use of the IBQ as a predictor of the problem pain patient.

## Chapter 1

### INTRODUCTION

The painful upper extremity is a devastating economic and social problem for many patients treated by physical and occupational therapists. Long-term painful injuries result in loss of work time, loss of involvement in avocational activities, and loss of function in tasks of every day living. The surgical techniques of repair, reimplantation, and reconstruction have advanced to a level of technical sophistication, as have the technical skills of physical therapists and occupational therapists; yet the factors involved in the psychological reaction to injury have not been so well studied or documented.

The National Safety Council reported 660,000 hand injuries in 1981; this represented 31.4% of all industrial injuries (Blair & Allard, 1983). In a 1981 report, Kelsey, et al. stated there were 90 million days of restricted activity due to upper extremity injuries, 16 million lost working days, and 5.8 million dollars lost in hand injuries alone. Many of these patients develop chronic problems that require extended periods of rehabilitation--often in specialized upper extremity or hand centers.

This investigator's interest in the ability to predict the rehabilitative outcome of the patient with a painful upper extremity arose from clinical experience in a hand management clinic at a university medical center. Many of the patients with painful upper extremity injuries moved through the rehabilitation process in an expected and timely manner--once again becoming productive, satisfied members of society. Others, however, despite the degree of physical injury or disease, required many weeks and months of therapy. These problem patients often expressed pain as their chief complaint. They subjectively reported little or no improvement in symptoms; they were often overly depressed, angry, pessimistic, even hostile. They voiced many somatic complaints and made many demands. It was these patients that drained the therapist, both emotionally and technically.

It was then that the therapists began to ask themselves several questions. Is the individual's reaction to an injury or illness solely a reaction to the current injury or does it also involve pre-existing psychological factors? Is there a way to recognize the problem pain patient early in the rehabilitation process? Is it possible to give patients a psychological test prior to treatment in the hand center that can predict the success or failure of treatment for their hand injury? Can the same test predict abnormal illness behavior? If so, can we then intervene with

physical and psychological forms of therapy that will subsequently more effectively alter their pain behavior?

### Purpose of Study

It was with these questions in mind that the Illness Behaviour Questionnaire (Pilowsky & Spence, 1975) was selected to be administered to a group of patients with upper extremity pain. The intent of the study was to measure the illness behavior of these patients, using the Illness Behaviour Questionnaire, to determine their rehabilitation outcome, to assess the relationship between their illness behavior and their outcome, using the above information, and to determine the effectiveness of this questionnaire as a tool for predicting the problem pain patient, or as Pilowsky refers to them, as patients exhibiting "abnormal illness behavior" (Pilowsky, 1969:350).

### Research Questions

The primary question answered by this research was as follows: Is there a difference between the aproblematic pain patients' scores and the problematic pain patients' scores on the Illness Behavior Questionnaire (IBQ)?

Other questions of interest that were addressed in the study included:

1. Does the patients' scores on the IBQ change from the initial visit to discharge from treatment?

2. Is there a difference between the initial and discharge IBQ scores for the acute patients and the initial and discharge scores for the chronic patients?

3. Is there a relationship between the length of time patients experienced pain and their classification as a problematic or aproblematic pain patient?

### Null Hypothesis

There will be no statistically significant difference between the aproblematic pain patients' IBQ scores and the problematic pain patients' IBQ scores.

### Sub-null Hypotheses

1. There will be no statistically significant differences in the patients' initial IBQ scores and the patients' IBQ scores at discharge.

2. There will be no statistically significant difference between the pre and post treatment IBQ scores for the acute patient group and the pre and post treatment IBQ scores for the chronic patient group.

3. There is no relationship between length of time patients experience pain and their classification as a problematic or aproblematic patient.

### Operational Definitions

The following terms have been defined as they are used in this study by this investigator:

Illness Behaviour Questionnaire (IBQ)

The Illness Behaviour Questionnaire (IBQ) is a 62-item,

self-administered questionnaire that was developed by Pilowsky and Spence in 1975 to assess illness behavior (see Appendices A and B).

#### Illness behavior

Illness behavior refers "to the ways in which symptoms may be differentially perceived, evaluated, and acted (or not acted) upon by different kinds of persons" (Mechanic, 1962:189).

#### Problematic patients

Problematic patients are those patients who meet four or more of the following criteria:

1. Pain is greater than 4 on the 10 centimeter Visual Analogue Scale (see Appendix C).
2. Patient has not returned to 50% of the hours spent in pre-injury vocational activities.
3. Patient has not returned to 50% of the number of pre-injury avocational activities.
4. Patient has not returned to 75% of the number of pre-injury activities of daily living.
5. Patient has missed one-third or more of treatment sessions or has discontinued himself.
6. Range of motion, as measured with a goniometer, has shown at least 10° regression or lack of improvement in involved joints, at least one-third of the time.
7. Grip strength, as measured with a dynamometer, has shown at least one kilogram regression or lack of

improvement, at least one-third of the time.

#### Aproblematic patients

Aproblematic patients are those who meet fewer than four of the above criteria.

#### Acute pain

Acute pain is pain that the patient has experienced for less than six months.

#### Chronic pain

Chronic pain is pain that the patient has experienced for six months or more.

#### Treatments

Treatments are the therapeutic techniques used by the physical and occupational therapists in the center to which the patient was referred for treatment of a painful upper extremity.

#### Painful upper extremity

Painful upper extremity is any painful condition in which the pain is perceived as being located in the glenohumeral joint or distal to it and that may be labelled as a pain syndrome. The patient's chief complaint is pain. Painful conditions may include such diagnoses as reflex sympathetic dystrophy, nerve compression, myofascial pain, psychogenic pain, hysteria, and any undiagnosed painful condition (Pilowsky, 1969). This does not include the expected, short-term local pain associated with most hand injuries.



### Assumptions

1. The patients in the study experience pain, i.e., their reports of pain represent their experience with pain.
2. The patients will complete the questionnaires in an honest portrayal of their current state of illness behavior.
3. The patients understand the meaning of the items in the questionnaire.
4. Clinicians gathering the data exhibited expertise and consistency in recording objective and subjective information on the patients.

### Summary of Chapters

The second chapter of the thesis contains a critical review of the literature currently available on the subjects of illness behavior, abnormal illness behavior, the significance and meaning of hand injury and its effect on illness behavior, the Illness Behaviour Questionnaire, and the significance of previous studies using the questionnaire. In Chapter three, the method of selecting subjects, a description of the materials utilized, and the procedures for collecting and analyzing the data are presented. Chapter four contains the results of the study. Chapter five presents a discussion of the results and the conclusions of the study. The concluding chapter consists of an article suitable for publication.

## Chapter 2

### REVIEW OF LITERATURE

This chapter will present an overview of the literature found on the complexities associated with illness behavior and specifically abnormal illness behavior. The significance of the hand to man's lifestyle will be addressed along with the psychological complications that occur with hand injury. Much of the chapter will focus on the Illness Behaviour Questionnaire--its development, content, and relevant use in previous investigations.

#### Illness Behavior

In an attempt to build etiological theories concerning the various reactions to illness, and to bring treatment to persons attempting to cope with the consequences of illness behavior, David Mechanic proposed in 1961 his concept of illness behavior. This term referred "to the ways in which given symptoms may be differentially perceived, evaluated, and acted upon (or not acted upon) by different kinds of persons" (Mechanic, 1962:189). Some individuals will make light of signs and symptoms, shrug them off, seek no medical advice and return to the routine activities of life; others will respond to the slightest twinges of pain by quickly seeking medical care.

Parsons (1951) developed another concept that compounds the issue of illness behavior. The "sick role" was seen by Parsons as a partially and conditionally legitimized state carrying with it several obligations. An individual must show that he considers the sick role as basically undesirable, as one to be assumed reluctantly, and given up at the earliest opportunity. Secondly, society grants this role on the condition that the individual cooperates with the expert to whom he turns for diagnosis and treatment of his illness. When a person's illness has been confirmed by the medical profession and approved by those persons having influence over him (family, friends, employers), he occupies a special role in society. He may be relieved of his usual obligations as his sick role takes priority. The sick role, however, may not be granted if there appears to be inadequate evidence of a disease process (Parsons, 1951).

Mechanic's definition of illness behavior and Parson's conditions of the sick role imply that the physician, therapist, or other medical professional must decide whether a patient's behavior toward his illness or injury is appropriate or inappropriate. This is a particularly difficult task; every individual has his own idea of the sick role and appropriate illness behavior and physicians and therapists must have a clear idea of their personal feelings about this when involved with their patients.

Another dimension of illness behavior was depicted in Tomlinson's Venn diagram of interactions (see Figure 1).

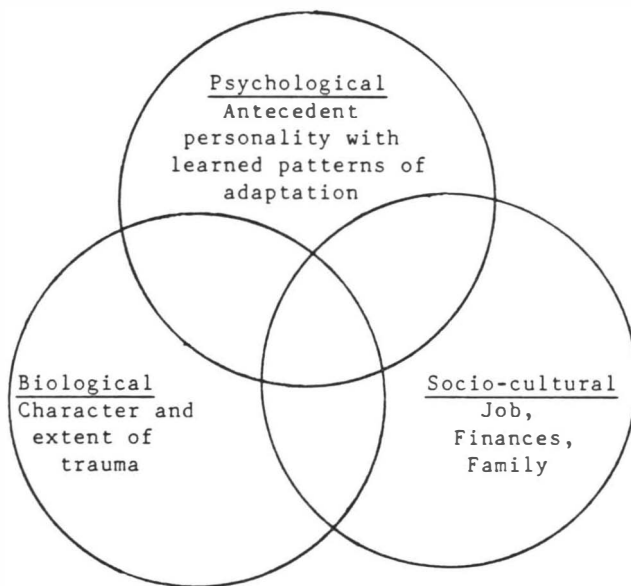


Figure 1

Venn Diagram of Interactions

From: "Psychiatric Complications Following Severe Trauma,"  
by W.K. Tomlinson, 1974, Journal of Occupational Medicine.  
p. 455.

Following trauma there is the interaction of the injury with the antecedent personality of the individual and with certain socio-cultural factors (Tomlinson, 1974).

The injury itself impairs the body and its ability to experience and manipulate the environment. This is especially true with loss of body parts or sensory and motor impairments (Fisher, 1960). There are biological and/or surgical considerations affecting the immediate threat to life and the degree of permanent disability related to the injury (Tomlinson, 1974).

The injury also disrupts the personality dynamics. The person will respond with pre-existing patterns of adaptations, his pre-existing defenses and coping mechanisms, and previous areas of psychological conflict. These are life learned patterns and people will respond with these learned and established patterns unless overwhelmed (Tomlinson, 1974).

An injury removes the person from normal social experiences and work situations. Those very things that give the patient most of his self-esteem--vocations and avocations--often require discontinuation or alteration. Hirshfeld, in 1963, discussed the various meanings of work. After reviewing 300 industrial accidents, he proposed that most individuals work (a) to give life a purpose, (b) to give them something to fill the hours, (c) to have social contact, and (d) to earn a living. Financial and social

loss does not mean the same to all individuals. The significance of a hand injury to an attorney or a salesman will differ from the same injury to a carpenter or skilled worker. Each will express illness behavior in a different way.

The Venn diagram of interactions suggests that the psychological response to trauma, and therefore the patient's behavior towards the injury, is determined by personality organization, the extent of disability, the financial resources, the support of family and friends, and the meanings of each of these aspects of life to the individual.

#### Illness Behavior as it Relates to

#### Upper Extremity Injury

There are behavioral reactions to hand injuries that are unique because of the special importance and meaning of the hand. Fisher, in 1960, discussed the evolutionary significance of the hand and the social role of the hand.

He states:

The main significance of the human hand lies in its being one member of a functional complex of hands, brain, and eyes. Man has paired organs fully in his field of vision and wholly freed from locomotor duties, in a stereoscopic-sighted big-brained mammal (p. 63).

The importance of the hand and upper extremity is also

reflected in the extensive cerebral representation governing it. The hands are our vehicles of expression. It is often with the hands that we express love, that we greet, that we acknowledge, that we encourage, that we kill (Grant, 1980; Cone & Hueston, 1974). We perform our activities of daily living with our hands. We pursue our vocations, and perhaps more importantly, our avocations, as bimanual creatures (Grant, 1980).

Because of the complex interactions of hand injury, attitudes, cultural premises, social support, and conflicts, we we would expect some moderate degree of psychic disruption when there is damage or loss to the hand. Following an injury, the patient usually experiences a period of dependency and decreased functioning during hospitalization and during the rehabilitation process (Cone & Hueston, 1974). Such enforced dependency and lack of activity could easily cause a degree of depression. Obviously, there will be an appropriate measure of anxiety as to the outcome of the injury upon the patient's lifestyle. It is common for there to be denial of the extent and degree of injury since denial is useful defense in the adaptive process. One must also expect an impact on the patient's body image. Body image is not static but is a dynamic representation capable of rearrangement. A person who places a great deal of value on his physical appearance or his body physique would be

expected to respond with emotional distress when such appearance is damaged (Tomlinson, 1974).

Cone and Hueston, in 1974, discussed the perception of a hand injury to a patient as an actual or threatened loss. The patient may see it in terms of loss of a part, loss of function, loss of appearance or loss of economic security. A patient's reaction to this loss follows the pattern of grief and mourning: denial, disbelief, depression, disorganization, and anger. When displaying normal illness behavior, an individual moves through this process to a phase of acceptance and rehabilitation and thus develops a more optimistic and positive view of himself, his injury and his future. These are the patients seen in hand and upper extremity centers who are compliant, who show progressive functional improvement, who learn to cope with their limitations and pain, and who regain for themselves a successful place in society.

It is not the patient who moves through the rehabilitation process at an expected pace that is largely the concern of this investigation. It is the individual who remains in the stage of grief and mourning, who shows prolonged depression and anxiety, who demonstrates anger and hostility towards family and those involved in his care, who displays pessimism, and who shows increased dependency and fatigue. This patient voices many somatic complaints-- the most frequent being prolonged or exaggerated pain. It



is this patient who increases the statistics of the chronically disabled. In the writer's experience, this patient seldom returns to previous vocational and avocational activities and is expressing abnormal illness behavior.

### Abnormal Illness Behavior

With Mechanic's definition of illness behavior in mind, Pilowsky (1969) defined "abnormal illness behavior" as a persistence of inappropriate or maladaptive illness behavior despite the presentation of a reasonably lucid explanation by the physician of the nature of the condition and the appropriate management to be undertaken, in terms suited to the socio-cultural background of the patient.

These abnormal behavior syndromes may fall into two categories: (a) those in which the patient's motivation for seeking the sick role is predominantly conscious, as in malingering and Munchausen's syndrome, and (b) those in which the patient's motivation for seeking the sick role is predominantly unconscious (Pilowsky, 1978). It is into the latter category that the pain patient is placed.

The concept of abnormal illness behavior provides a convenient framework in which to consider a number of syndromes where there is a fundamental discrepancy between the objective pathology present and the patient's response to it (Pilowsky, 1978). The chronic pain patient is a typical example since the ability to verify the presence and

intensity of pain is difficult. Such patients may receive diagnostic labels as functional illness, psychogenic pain, hysteria, conversion reaction, and psychosomatic illness, to name a few (Pilowsky, 1969).

Pain is "an unpleasant experience which we primarily associate with tissue damage or describe in terms of such damage or both" (Mersky, 1980:72). Since an individual's experience of pain is determined by many perceptual, cognitive, affective, interpersonal and cultural variables, a range of illness behavior would be likely in the pain patient population.

Each individual shows a different capacity to adapt to the stress of injury; some regain social integration, well-being, and productivity; others fail to adapt and manifest a chronic maladaptive response to injury and the rehabilitation process (Tomlinson, 1974). Cone and Hueston stated that the patient's adaptive capacity could be predicted from the extent, variety and depth of social relationships, his orientation towards the future and the way he has coped with normal life stresses in the past.

There are certain types of individuals who easily become problem patients. An adaptation of Tomlinson's potentially problematic patients follows:

1. Individuals predisposed to hostile response - the rehabilitation team is aware of hostility, but its genesis is uncertain. He may be hostile because he resents the forced dependent status of an injured patient and responds with overt resistance and hostility. He may be an individual with a paranoid orientation and thus sees the injury as a verification of his suspicions that this is a threatening, hostile world. He may be an individual who has authority conflicts and who perceives the surgeon and therapists as authority figures and thus responds with hostility. Hostility may also be the result of repressed hostility from an unfortunate past personal experience with medical practitioners (Tomlinson, 1974).

2. Individuals preoccupied with body image - these patients usually show accentuated emotional distress because their physique or beauty has been altered (Tomlinson, 1974).

3. Counter-dependent patients - there is a group of individuals who experience considerable past deprivation of normal needs for love, support, and care. To protect themselves, they develop defenses and adaptive patterns which make them highly independent, self-reliant, successful, overly controlled individuals. These patients, when injured, often either cannot accept the dependency state and their limitations or they develop an exaggerated and prolonged pattern of dependency centered around physical complaints that prevent return to their previous activity

level even when physical function has been restored (Nemiah, 1963).

4. Individuals experiencing existential crisis - this crisis usually occurs in middle life when a person is addressing himself to the purpose and direction of his life. He is aware of unfulfilled goals and aspirations. An injury at this time brings him to a point of facing his own mortality and he becomes fearful and depressed (Tomlinson, 1974).

5. Individuals involved in litigation - Hirshfeld, Nemiah and others have written extensively on this topic. Within the limits of this paper, it will be sufficient to note that these patients often have developed a need to continue with their symptoms. Many were sent to the physician by employers, lawyers, and insurance companies. Often a war exists between the patient and the insurance company, the employer, or the lawyer. Such patients are commonly hostile to the team who is trying to improve their symptoms (Hirshfeld & Behan, 1963).

6. Pain-prone individuals - Blumer and Heilbronn reported in 1981 on a study of 234 patients who came to the neurosurgery department at Massachusetts General Hospital seeking surgical intervention for continuous pain. They used a battery of personality and intelligence tests as well as a pain syndrome questionnaire. A profile of such patients was described from these tests. Clinical features

included continuous pain, desire for surgery, denial of emotional and interpersonal difficulties, idealization of family relationships, excessive activity prior to onset of pain, excessive passivity after onset of pain, depression, insomnia and lack of enjoyment of sex or recreation.

Psychological features included concealment and denial of conflict, infantile needs to depend and to be cared for, inability to cope with anger and hostility, and guilt complex. Many of these patients present a "super-normal" picture of mental health.

#### Illness Behaviour Questionnaire (IBQ)

The Illness Behaviour Questionnaire (IBQ) (see Appendix A) was constructed by Pilowsky and Spence in 1975 to assess illness behavior, particularly those attitudes that suggest inappropriate or maladaptive modes of responding to one's state of health (Pilowsky, 1971). The IBQ in its original form consisted of 52 items, and incorporated the 14 questions which formed the Whiteley Index of Hypochondriasis (Pilowsky & Spence, 1983). The questionnaire was first administered to 100 patients referred to the pain clinic or psychiatric service of a large metropolitan hospital in Adelaide, South Australia, for the management of pain that had not responded to conventional treatment. Seven meaningful dimensions of illness behavior resulted from this study (Pilowsky & Spence, 1975). Additional items were added to the 52-item

IBQ to provide a more reliable appraisal of the dimensions of abnormal illness behavior. The IBQ in current use is a self-report questionnaire consisting of 62 yes-no items which explore the illness behavior of the patient. The questions are largely concerned with the patient's attitudes and feelings about his illness, his perception of the reactions of significant others in the environment (including his doctor's) to himself and his illness, and the patient's own view of his current psychosocial situation (Pilowsky & Spence, 1975). The test takes approximately 20 minutes to complete and can be scored easily by a physical or occupational therapy staff member. Each patient obtains a raw score on each of the following seven factors or scales: (a) General Hypochondriasis, (b) Disease Conviction with Somatic Preoccupation, (c) Psychological versus Somatic Perception of Illness, (d) Affective Inhibition, (e) Affective Disturbance, (f) Denial, and (g) Irritability. Scoring is weighted in the direction of abnormal or maladaptive illness behavior, i.e., high scores are indicative of inappropriate ways of perceiving, evaluating, or acting upon one's state of health.

#### Validity and Reliability

Reliability and validity data were obtained from patients referred for management of chronic pain in Adelaide. Estimates of test-retest reliability for the seven scales are given in Table 1. Retests were done

Table 1

Test-retest Reliability - 62-Item IBQ

IBQ Scale	Correlations	N = 42 Sig. (p)
1. General hypochondriasis	0.87	.001
2. Disease conviction	0.76	.001
3. Psychological versus somatic concern	0.76	.001
4. Affective inhibition	0.67	.001
5. Affective disturbance	0.87	.001
6. Denial	0.86	.001
7. Irritability	0.84	.001

Note: From Manual for the Illness Behaviour Questionnaire (p. 36), by I. Pilowsky & N.D. Spence, 1983, Adelaide, South Australia: University of Adelaide.

between 1 week and 12 weeks after initial testing. All correlations were significant at  $p = .001$  (Pilowsky & Spence, 1983).

The validity of the IBQ was assessed by administering the IBQ to the patient's spouse, to be completed as they believed the patient should respond. Results are reported in Table 2. Correlations indicate a good degree of agreement between the illness responses of patients and the patient's response as perceived by the spouse;  $r = .50-.78$ ,  $p = .001-.002$  (Pilowsky & Spence, 1983).

The capacity of selected individual scales to discriminate between groups was tested by comparing the scores of an Adelaide pain clinic population with (a) an Adelaide general practice sample, and (b) a general hospital psychiatric ward sample. Validity scores for the pain clinic and the general practice sample are listed in Table 3. As seen in Table 3, the IBQ scales discriminated in the predictable direction. Pain patients scored higher on general hypochondriasis, disease conviction, and denial and lower on psychological versus somatic focussing (Pilowsky & Spence, 1983).

#### Seven IBQ Scales

A description of each of the seven factors (or scales) of the IBQ follows:

1. General hypochondriasis, characterized by phobic concern about one's state of health, multiple somatic



Table 2

Validity - 62-Item IBQCorrelations Between Patient's Scores andRelative/Friend's Scores

IBQ Scale	Correlations	N = 42 Sig. (p)
1. General hypochondriasis	0.50	.002
2. Disease conviction	0.57	.001
3. Psychological versus somatic concern	0.65	.001
4. Affective inhibition	0.59	.001
5. Affective disturbance	0.75	.001
6. Denial	0.78	.001
7. Irritability	0.56	.001

Note: From Manual for the Illness Behaviour Questionnaire (p. 37), by I. Pilowsky & N.D. Spence, 1983, Adelaide, South Australia: University of Adelaide.

Table 3

Validity of IBQ: Criterion Group DiscriminationAdelaide General Practice Population vs. Pain Clinic Population

IBQ Scales	General Practice (N = 147) $\bar{x}$ (s.d.)	Pain Clinic (N = 231) $\bar{x}$ (s.d.)	Significance
1. General hypochondriasis	1.44 (1.84)	1.94 (2.1)	p < .05
2. Disease conviction	1.59 (1.36)	3.43 (1.62)	p < .001
3. Psychological vs. somatic	1.99 ( .84)	.78 (1.05)	p < .001
4. Affective inhibition	2.46 (1.6)	2.26 (1.69)	ns
5. Affective disturbance	2.31 (1.62)	2.57 (1.73)	ns
6. Denial	2.93 (1.74)	3.64 (1.58)	p < .001
7. Irritability	2.45 (1.6)	2.62 (1.88)	ns

Note: From Manual for the Illness Behaviour Questionnaire (p. 55), by I. Pilowsky & N.D. Spence, 1983, Adelaide, South Australia: University of Adelaide.

complaints, increased anxiety, and some insight into the appropriateness of their concerns.

2. Disease conviction, characterized by preoccupation with the symptoms and the belief that he is seriously ill, often rejecting the medical opinion.

3. Psychological versus somatic perception of illness, characterized by the attitude that the patient is responsible for (and in fact deserves) the illness and may perceive the need for psychiatric rather than medical treatment.

4. Affective inhibition, describing difficulty in expressing personal feelings, especially negative ones, to others.

5. Affective disturbance, indicating acknowledgement of anxiety and depression.

6. Denial, characterized by refusal to admit the presence of problems in one's life and by the perception that their illness is the only difficulty in their lives.

7. Irritability, related to anger and aggressiveness as a reaction to their pain--mostly seen in those under 40.

#### Predictive Studies Using IBQ

Most studies utilizing the IBQ have emanated from Australia under the authorship of Pilowsky and Spence. Several of their studies published in various journals appear to be the results of the initial research done in 1975 on 100 pain patients. The authors proposed the IBQ as a tool

predictive of abnormal illness behavior, using scales 1 (Hypochondriasis), 2 (Disease Conviction), 3 (Psychological versus Somatic), 5 (Affective Disturbance), and 6 (Denial) as discriminatory scales. In their initial research in 1975, they described the pain patient population from an evaluation of these five factors. They found the pain patient group to be convinced that there is an organic pathology, to have rejected a psychological basis for pain, to have difficulty expressing their feelings to others, especially negative ones, to be reluctant to acknowledge life problems, as being sad and anxious, and evidence of irritability and interpersonal friction. Abnormal illness behavior was later found to be unrelated to the presence or absence of organic pathology--thereby suggesting illness behavior may be dictated by events and feelings prior to the onset of pain (Pilowsky & Spence, 1975).

A related study (Pilowsky & Spence, 1976) of chronic pain patients concluded that the degree of chronicity is unlikely to play a major role in determining the illness behavior manifested by the pain patient, further supporting the premise that the factors affecting illness behavior were not a consequence of the pain, but probably were present prior to the onset of pain.

Data have been clustered to recognize non-neurotic attitudes and those showing abnormal illness behavior syndromes (Pilowsky & Spence, 1976). In 1977, the same

authors utilized the IBQ given to 134 general practice patients to identify the role of ethnicity in illness behavior; Greeks differed significantly from Anglo-Saxons on scales 1, 2, and 3, showing increased hypochondriasis, disease conviction, and decreased psychological view of illness (Pilowsky & Spence, 1977).

Several studies using the IBQ have been carried out by the University of Washington School of Medicine in Seattle, Washington. In a cooperative study with the University of Adelaide, the IBQ was used to screen general practice patients and pain clinic patients in both cities. A discriminant function which included scores on scales 2, 3, 6 and 7 was derived from the Seattle population. When this function was applied to the Adelaide population, the IBQ was found to have a sensitivity of 97% and a specificity of 73.55% (Pilowsky, Murrell & Gordon, 1979). This supports the hypothesis that the IBQ may be successfully utilized as a screening tool in general practice populations to identify patients manifesting abnormal illness behavior. Other studies in Seattle by Chapman and Bonica (1977, 1979) demonstrated the relationship between illness behavior and depression in pain patients. Scales 1, 2, 5 and 7 correlate with depression at a significance of  $< .001$ .

Use of the IBQ has focused on the chronic pain patient, but Byrne, in 1981, reported its use with survivors of myocardial infarctions. One hundred-twenty patients were

examined using the IBQ comparing cardiological outcome, occupational rehabilitation and IBQ scores. Several aspects of illness behavior, evidenced soon after the myocardial infarctions, were found to be predictive of outcome. Those with poor cardiological outcomes at eight months were more likely to have expressed concern about somatic functioning and recognition of contributory life stress soon after the initial infarction. Those failing to return to work at eight months were more likely than others to have accepted the sick role and expressed feelings of tension following the initial myocardial infarction.

Demjen, a Canadian, reported use of the IBQ with 94 patients suffering with chronic headache of various diagnoses. Illness behavior was not related to the diagnosis of headache but was related to the intensity of pain and the duration of pain (Demjen & Bakal, 1981).

A recent reported use of the IBQ was an attempt to differentiate conscious exaggerators of symptoms from normals and neurotics. The IBQ was administered to 82 conscious exaggerators, 82 normals, and 82 pain patients with neuroses. Four IBQ scales differentiated the three groups. A new 21-item scale was developed. It was suggested that, with further study on its predictive value, this scale may have considerable merit in assessing conscious exaggerators and compensation neurotics (Clayer, 1984).

The IBQ apparently can detect abnormal illness behavior. Can it assist therapists in knowing what course of treatment might be beneficial to the patient? Duvall (1982) used the IBQ with 92 myofascial pain patients referred by dentists and physicians to the Temporomandibular Joint and Facial Pain Center of the Medical College of Virginia School of Dentistry. Correlations were made between the IBQ scores and treatment preference. Four subgroups were established and hypothesized relationships to treatment were as follows:

1. Hypernormals (N=14) were identified as those patients with low scores on scale 3 and high scores on scale 6. These individuals present themselves as cheerful, hard workers without normal human problems except for severe pain. They tended not to want relaxation, information, or any kind of psychological treatment.

2. Abnormal illness behavior (N=13) were identified by high scale 1 and 2 scores. These are people with multiple complaints, and preferences for any type of treatment, a firm conviction of serious illness, and with little expectation of success with any treatment.

3. Angry unassertives (N=15) were identified by high scale 4 and high scale 7 scores. They had more discomfort with pain problems and good prognosis with psychological treatment. They represent the only subgroup to prefer antidepressant medications.

4. Normal illness behavior (N=24) included those patients with low scores on all IBQ scales.

It has been thus hypothesized that not only can the IBQ identify those patients who show abnormal responses to injury, but that it may also be helpful in deciding which treatment approach to use.

#### Summary

Illness behavior is determined by many psychological, social, cultural, and physical factors, many of which do or can pre-exist the onset of illness or injury. These factors cause individuals to react to illness in various ways. Some display abnormal illness behavior and remain in the sick role for a lengthy period of time, delaying the rehabilitation process and jeopardizing the functional outcome. The patient with the painful upper extremity often displays this maladaptive behavior. Early recognition of those displaying abnormal illness behavior is essential in the diagnosing and treating of the problem pain patient.

Although the review of literature revealed numerous studies on the pain population by the Australians and several by pain specialists in the United States, most of these studies reflected work with back pain, headache, and abdominal pain; no studies were identified using the painful upper extremity population exclusively.

All studies support the premise that the IBQ measures abnormal illness behavior and that it may be used as a



predictor of outcome when used as part of the evaluation process by a knowledgeable, skilled, experienced clinician.

## Chapter 3

### METHODOLOGY

An investigation of the illness behavior and the rehabilitation outcome of a sample of 20 patients with reported pain in the upper extremity was undertaken. The subjects, materials, and procedures for collecting and analyzing the data are described in this chapter.

#### Subjects

The sample of 20 subjects was obtained from outpatients referred to two private upper extremity/hand centers in Richmond, Virginia. Patients were admitted to the study in one of two ways--as acute pain patients or as chronic pain patients.

Patients were admitted to the study as acute pain patients with these criteria:

1. Chief complaint was pain.
2. Pain was present less than six months.
3. Patients had not received more than 10 previous hand therapy treatments.
4. Patients were at least 15 years of age.
5. Patients were not undergoing psychological therapy for pain problems.

Patients were admitted to the study as chronic pain patients with these criteria:

1. Chief complaint was pain.
2. Pain had been present six months or more.
3. Patients may have had numerous other physical therapy/occupational therapy treatments.
4. Patients were at least 15 years of age.
5. Patients may have been undergoing psychological treatments for pain problem.

### Materials

Subjects entering the study were given a test packet to complete. The test packet consisted of the Illness Behaviour Questionnaire (see Appendix A), a Biographical Sketch (see Appendix D), the Visual Analogue Scale for Pain (see Appendix C), and the consent form (see Appendix E).

The Illness Behaviour Questionnaire (IBQ) measured the state of a person's illness behavior. The Biographical Sketch was a form devised to collect demographic data, information about employment activities, avocational activities and activities of daily living. The Visual Analogue Scale was an unmarked 10 centimeter line that denoted the degree of intensity of pain as perceived by the patient, from "no pain" to "most severe pain possible."

The purpose of the study was explained to each patient by the clinician; the patient was asked to read, sign, and date the consent form with a witness present. Patients completed the packets unassisted in approximately 20 minutes. Patients entering the study under the acute pain criteria

completed the packet twice--initially (within one week) and again upon discontinuance from treatment at the center or when they had experienced pain for six months, whichever came first. Patients entering the study under the chronic pain criteria completed the packet only once.

After the patient completed the test packet, the investigator reviewed each patient's chart, gathering data related to attendance at therapy sessions and joint range and grip strength progression or regression. The information from the chart and from the test packet were used to categorize each patient as a problematic patient or as an aproblematic patient, according to the previously established criteria.

The researcher scored each scale of the Illness Behavior Questionnaire utilizing the IBQ Score Sheet (see Appendix B) and the guidelines in the Manual for the Illness Behaviour Questionnaire (Pilowsky & Spence, 1983).

#### Methods of Data Analysis

The null hypothesis for the primary research question was tested by use of the Van der Waerden Normal Scores Test; statistical method (Marascuilo & McSweeney, 1970).

Sub-hypothesis 1 was analyzed by the Wilcoxon signed rank test and sub-hypothesis 3 by the Chi-Square Test (Milton & Tsokos, 1983).

## Chapter 4

### RESULTS

The results of the data gathered from the Illness Behaviour Questionnaire, the Biographical Sketch, and the Visual Analogue Scale are presented in this chapter. Analysis of the data from the IBQ concerning the research question and the three sub-questions is addressed as well as the characteristics of the 20 subjects. Characteristics of the sample are presented by demographic data, variability of diagnoses, and vocational, avocational and daily task activities.

#### Characteristics of Subjects

The sample consisted of 20 adult subjects, 13 women and 7 men, who were referred to one of two private physical therapy centers for treatment of pain in the upper extremity. The subjects ranged in age from 22 years to 69 years. When initially seen in the treatment centers, pain duration was ranged from 1 to 15 months. Table 4 lists the mean and standard deviations of the subjects' age and symptom duration according to sex.

All 20 patients were being treated for a chief complaint of pain. These complaints represented a variety of diagnoses as shown in Table 5. Subjects who entered the study as acute

Table 4

Characteristics of 20 Subjects with ChiefComplaint of Pain

	Age		Months with pain when initially seen	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.
Males (n= 7)	41	14.5	5.4	3.8
Females (n=13)	37	12.7	5.3	5.0

Table 5  
Specific Diagnosis of 20 Patients with  
Chief Complaint of Pain

Diagnoses	Number
Fractures (5)	
Metacarpals	1
Carpals	2
Radius/Ulna	1
Humerus	1
Tendonitis/Epicondylitis	7
Nerve Entrapment (4)	
Carpal Tunnel	1
Ulnar Nerve	1
Radial Tunnel	2
Amputation	1
Myofascial Pain	1
Sprain	1
Undiagnosed	1
<b>Total</b>	<b>20</b>

pain patients demonstrated a pain intensity mean of 6.67 as measured by the 10 centimeter Visual Analogue Scale at the initial visit; these patients presented a pain intensity mean of 3.79 at the time of discharge or at six months pain duration. Those patients who entered the study as chronic pain patients with pain duration of at least six months presented a pain intensity mean of 5.44 at their single testing.

The vocational, avocational, and daily task activities reported by the 20 subjects are recorded in Table 6 as a comparison between the acute pain patients and the chronic pain patients.

### Analysis of Data

#### Research Question

The initial scores of the 20 subjects on the seven scales of the Illness Behaviour Questionnaire were compared with the outcome classification as problematic or aproblematic patients. The analysis by the Van der Waerden Normal Scores Test demonstrated no significant differences between the scores of the problematic patients (n=5) and the scores of the aproblematic patients (n=15) except on scale 1, Hypochondriasis, which was significant at .05. Table 7 lists the mean score, the standard deviation, the range, and the test statistic for each scale.

#### Sub-question 1

The difference in the admission and discharge scores on



Table 6

Biographical Data on Patients Entering the Study as  
Acute Pain Patients or Chronic Pain Patients

Activities	Acute Pain Patients (N=12)		Chronic Pain Patients (N=8)
	Initial Visit	Discharge or 6 months	6 months or later
<u>Vocational</u>			
Unemployed	3	3	3
Working 100%	4	8	1
Working 75%	0	0	0
Working 50%	2	0	0
Working 25%	1	0	0
On leave of absence	2	1	4
<u>Avocational</u>			
Involved 100%	1	5	1
Involved 75%	2	2	1
Involved 50%	2	3	0
Involved 25%	1	1	2
Involved not at all	6	1	4
<u>Daily Living</u>			
Able to perform 100%	4	9	3
Able to perform 75%	5	1	4
Able to perform 50%	1	1	1
Able to perform 25%	2	1	0
Cannot perform at all	0	0	0

Table 7

Comparison of Problematic and Aproblematic Pain Patients'Initial Scores on IBQ

IBQ Scales	Problematic (n=5)			Aproblematic (n=15)			Test Statistic
	$\bar{x}$	S.D.	range	$\bar{x}$	S.D.	range	
Hypochondriasis (1)	0.20	0.48	0-1	1.87	1.96	0-8	-2.22*
Disease Conviction (2)	3.00	1.87	1-6	2.33	1.59	0-5	0.89
Psychological versus Somatic Perception (3)	1.00	1.00	0-2	1.33	0.62	0-2	-0.42
Affective Inhibition (4)	1.00	0.71	0-2	2.00	1.46	0-5	-1.50
Affective Disturbance (5)	1.40	2.07	0-5	2.67	1.91	0-5	-1.37
Denial (6)	3.20	2.05	1-5	2.80	1.97	0-5	0.26
Irritability (7)	1.60	2.07	0-5	3.07	1.79	0-6	-0.25

\*  $p \leq .05$

the patients' seven IBQ scales were analyzed using the Wilcoxon signed rank test. There was no significant difference on any scale between the admission scores and the discharge scores.

#### Sub-question 2

The difference between the acute and chronic pain patient groups' admission and discharge scores of the IBQ was subjected to analysis by the Van der Waerden Normal Scores Test. Data presented in Table 8 demonstrated that the difference between the admission and discharge scores of the acute patient group and the difference between the admission and discharge scores of the chronic patient group was insignificant on all scales except scale 3, Psychological versus Somatic Perception, which was significant at .05.

#### Sub-question 3

The relationship between the time the patient had experienced pain and his classification as a problematic or aproblematic patient was tested by the Chi-Square Test (see Table 9). The result was significant at .05.

The discussion of the results, the conclusions, implications for further study and suggested improvements follow in the next chapter.

Table 8

Comparison of Acute and Chronic Pain Patient Groups' Admission  
and Discharge Scores on IBQ

IBQ Scales	Chronic (n=3)			Acute (n=9)			Test Statistic
	$\bar{x}$ Diff.	S.D.	range	$\bar{x}$ Diff.	S.D.	range	
Hypochondriasis (1)	0.67	0.58	0-1	1.00	0.71	0-2	0.17
Disease Conviction (2)	0.67	0.58	0-1	0.89	1.05	0-3	0.23
Psychological versus Somatic Perception (3)	0.00	0.00	0-0	0.78	0.44	0-1	-1.93*
Affective Inhibition (4)	0.67	0.58	0-1	0.89	0.78	0-2	-0.45
Affective Disturbance (5)	1.33	1.15	0-2	1.56	1.24	0-3	-0.51
Denial (6)	0.67	0.58	0-1	1.33	1.12	0-3	-1.27
Irritability (7)	1.67	0.58	1-2	1.00	1.32	0-4	0.89

\*  $p \leq .05$

Table 9

Relationship Between Time Patient Has Experienced Pain and Classification as Problematic or Aproblematic

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	Problematic	Aproblematic	Total
Acute	0	9	9
Chronic	5	6	11
Total	5	15	20

---

$p \leq .05$

## Chapter 5

### DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

A discussion of the results of this research and the conclusions made are included in this chapter. Clinical implications for patient care involving the pain patient are addressed. Recommendations for improvement of this study and for further investigations are presented. This chapter is concluded by a summary of the study.

#### Discussion and Conclusions

The purpose of this study was to measure the illness behavior of acute and chronic upper extremity pain patients using the Illness Behaviour Questionnaire, to determine the rehabilitation outcome by preset criteria, and to determine the effectiveness of the IBQ in predicting the problem pain patient. This purpose was addressed through the testing of the research question and three sub-questions. This study was not able to support the use of the IBQ as a predictive tool.

In analyzing the data related to the basic research question, the only significant difference between the problematic and aproblematic patient scores was on the Hypochondriasis scale. Surprisingly, the aproblematic group scored the highest on this scale and all other scales except the Disease Conviction and Denial scales. This may have been

a result of a small problematic group (n=5) and the short duration of the chronic pain (mean symptom duration of 8.2 months). In comparing this study with Pilowsky's studies (1975, 1976, 1979), there are three significant differences. Pilowsky used at least 100 subjects in defining abnormal illness behavior; his patients had experienced pain for an average of 7.4 years (Pilowsky, 1975); he often used second order scales to assist him in classifying patients with abnormal illness behavior. It is possible that the IBQ, while quite sensitive to the long-term chronic pain patient, may not be as effective in predicting abnormal illness behavior in acute patients. A sample larger than 20 may prove the Illness Behaviour Questionnaire to be a predictive tool with this pain population, at least at a statistical level.

The issue of change in pre and posttest treatment scores was addressed in sub-questions number 1 and 2. No significant differences are noted between initial and discharge scores of individuals. This supports the theory of Pilowsky (Pilowsky & Spence, 1976) and Tomlinson (1974) that persons will respond with pre-existing patterns of coping and adapting to illness or injury. Change in this behavior would not then be expected to occur without treatment intervention.

When comparing the chronic group with the acute group, the only significant difference was in scale 3, Psychological

versus Somatic Perception of Illness, with the acute group showing the greatest change. This suggests that the chronic group would maintain its view that the problem was somatic. It is interesting to note that the greatest difference in the chronic group is on the Irritability scale, with that group scoring the highest. Weighting on this scale is based on age (40 years and younger) and may suggest that the more chronic the problem becomes, the less coping there is with the younger age group. The results concerning question 2 support the theory of pre-existing adaptation patterns.

In comparing classification of problematic and aproblematic patients with the symptom duration classification of chronic and acute, statistical significance is noted. All problematic patients were chronic patients with symptom duration of at least six months; however, only 45% of the 11 chronic patients became a "problem pain patient." All but one patient who entered the study as acute patients with symptom duration less than six months were aproblematic patients. This suggests that the chronicity of pain encourages abnormal illness behavior. The study by Pilowsky and Spence (1976) concluded that it was unlikely that the degree of chronicity played a major role in determining illness behavior. The present study, however, supports the study by Demjen (1981) that illness behavior was related to duration of pain. The results of sub-question 3 data led to the conclusion that by addressing the physical



problem of the patients early, patients would most likely proceed through the rehabilitation process as expected with realistic functional outcomes.

The descriptive data concerning the 20 subjects revealed several interesting points:

1. Pain intensity as measured by the 10 centimeter unmarked line decreased in the acute patients to a level lower than the chronic patients, suggesting that pain can be treated more effectively early in its course than later as the problem becomes chronic.

2. The number of acute patients returning to various work levels was greater than with the chronic patients. Table 6 reports four acute patients working full time prior to treatment; post-treatment eight (67%) were involved in full-time vocational activity. Only one (12.5%) chronic patient had returned to full-time employment.

3. The return to avocational activities was greater with acute patients than with chronic. In Table 6, three acute patients, prior to treatment, were engaged in 75% or more of leisure activities; this progressed to seven (58.3%) post-treatment. Two (25%) chronic patients had returned to similar levels.

4. The return to activities of daily living was greater with the acute patient than the chronic. In Table 6, four acute patients were functioning at 100% of their daily living tasks prior to treatment. Following treatment, five

more had returned to full involvement of these activities (total of 75%). Three (37.5%) chronic patients were performing 100% of these activities.

Based on the results of the descriptive data of the subjects, this investigator concludes that patients with a pain duration of less than six months, when involved in a physical therapy program, will demonstrate a lower incidence of abnormal illness behavior. Following physical treatment, they will show decreased pain, increased return to employment levels, increased involvement with leisure activities, and increased ability to perform the necessary tasks of daily living.

### Conclusions

#### Null Hypothesis

Based on the data in this study, the null hypothesis could not be rejected. There was no significant difference between the aproblematic pain patients' IBQ scores and the problematic pain patients' IBQ scores except on the Hypochondriasis scale.

#### Sub-Null Hypothesis 1

Based on the data in this study, the sub-null hypothesis 1 could not be rejected. There was no significant difference in the patients' initial IBQ scores and the patients' IBQ scores at discharge.

### Sub-Null Hypothesis 2

Based on the data in this study, the sub-null hypothesis 2 could not be rejected. There was no significant differences between the pre and post treatment IBQ scores for the acute patient group and the pre and post treatment IBQ scores for the chronic patient group except on the Psychological versus Somatic scale.

### Sub-Null Hypothesis 3

Based on the data in this study, the sub-null hypothesis 3 could be rejected. There was a significant relationship between the length of time patients experienced pain and their classification as a problematic or aproblematic patient.

### Clinical Implications

This study strongly suggests that early physical intervention in the treatment of pain may reduce physical and functional limitations and may assist the patient in returning to a productive lifestyle. Further implications may be to involve the patient early in an interdisciplinary team effort to recognize the problem pain patient, to implement effective psychological therapy, and to ultimately alter abnormal illness behavior.

### Recommendations for Further Study

Several recommendations may be suggested for improvements in this study. The most limiting factor in this research was the small sample size of 20 subjects. This research could be more valuable if replicated using a

larger sample size, increasing the chronic group and acute group sizes to 20 each. This could result in a larger population of problem patients, and the Illness Behaviour Questionnaire might then predict the problem pain patient.

The criteria used to classify the patient as problematic or a problematic need adjustment. Although the clinicians treating the patients classified the patients the same as the investigator in 75% of the cases, the other 25% may have been incorrectly classified by the investigator and in this sample size of 20 could have affected the outcome. A replication of this study with revised criteria constructed by several expert clinicians may greatly alter the results of the study.

Improvement would also be noted by a clearer distinction between the acute and chronic pain patient in order to prevent the groups from being classified inappropriately. Acute patients could be classified as those with pain four months or less and chronic patients as those with pain six months or more.

This investigator recognizes further areas of study that have been generated from this research.

1. The IBQ could be used to compare the illness behavior of the upper extremity injury patients with those of a general population. Writers, Fisher (1960), Grant (1980), Cone and Hueston (1974) have stated that illness behavior may be unique with upper extremity involvement.

2. A study of the illness behavior of a homogeneous diagnostic pain population could be undertaken using the IBQ, for example, Carpal Tunnel Syndrome patients exclusively or amputees exclusively.

3. A comparison of the IBQ scores and Minnesota Multiphasic Personality Inventory (MMPI) scores on a given population would be revealing; this would represent both state and trait characteristics, i.e., depression or hypochondriasis, and would also help validate the IBQ.

4. Physical and occupational therapists could also assess illness behavior early, intervene immediately with indicated psychological and physical treatments, and document a change in illness behavior and functional outcome.

#### Summary of the Study

The illness behavior of 20 patients with reported pain in the upper extremity was investigated using the Illness Behaviour Questionnaire. Symptom duration determined their status as acute or chronic pain patients. All 20 patients were receiving treatment for their pain at two private physical therapy centers. Pre-set criteria determined their outcome as problematic or aproblematic patients. The relationship between their illness behavior, as determined by the scores on the seven scales of the IBQ and their classification as a problematic or aproblematic patient, was assessed. Characteristics of each outcome group as related to the chronicity of pain was also addressed. The purpose

was to determine the effectiveness of this questionnaire as a tool for predicting abnormal illness behavior of "the problem pain patient" from this sample of upper extremity problems.

This research does not support the use of the IBQ as a predictive tool of abnormal illness behavior using the investigator's criteria of problematic/aproblematic outcome; however, several important indications can be made from analysis of the data. Addressing the pain problem early after symptom onset may decrease the number of chronic statistics and increase functional outcome. This study also indicates that illness behavior does not change from admission to discharge; this supports previous literature that illness behavior may not be due to the experience of pain itself, but to pre-existing methods of coping and adapting to injury or illness. Early recognition of the problem pain patient and appropriate treatment is necessary to alter this abnormal illness behavior. A holistic approach to treating the pain patient must be considered; medical personnel must treat the injured as well as the injury. The IBQ was not meant to replace a clinical evaluation; it could, however, supplement the clinical assessment and facilitate the diagnostic and evaluative process.

Cone and Hueston (1974:107) said:

The adaptive capacity of the individual, together with surgical judgment and expertise, determine the eventual functioning of the hand injured patient...the surgeon and his staff have the ability to modify patients' reactions to injury and to facilitate rehabilitation through psychoprophylaxis.

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APPENDICES

## Appendix A

DATE \_\_\_\_\_

NAME \_\_\_\_\_

Illness Behaviour Questionnaire

Here are some questions about you and your illness. Circle either YES or NO to indicate your answer to each question.

- |  |     |    |
|--|-----|----|
| 1. Do you worry a lot about your health?   | YES | NO |
| 2. Do you think there is something seriously wrong with your body?                                   | YES | NO |
| 3. Does your illness interfere with your life a great deal?  | YES | NO |
| 4. Are you easy to get on with when you are ill?   | YES | NO |
| 5. Does your family have a history of illness?   | YES | NO |
| 6. Do you think you are more liable to illness than other people?                                    | YES | NO |
| 7. If the doctor told you that he could find nothing wrong with you, would you believe him?          | YES | NO |
| 8. Is it easy for you to forget about yourself and think about all sorts of other things?            | YES | NO |
| 9. If you feel ill and someone tells you that you are looking better, do you become annoyed?         | YES | NO |
| 10. Do you find that you are often aware of various things happening to your body?                   | YES | NO |
| 11. Do you ever think of your illness as a punishment for something you have done wrong in the past? | YES | NO |
| 12. Do you have trouble with your nerves?  | YES | NO |
| 13. If you feel ill or worried, can you be easily cheered up by the doctor?                          | YES | NO |
| 14. Do you think that other people realize what it's like to be sick?                                | YES | NO |
| 15. Does it upset you to talk to the doctor about your illness?                                      | YES | NO |
| 16. Are you bothered by many pains and aches?  | YES | NO |
| 17. Does your illness affect the way you get on with your family or friends a great deal?            | YES | NO |
| 18. Do you find that you get anxious easily?   | YES | NO |
| 19. Do you know anybody who has had the same illness as you?   | YES | NO |
| 20. Are you more sensitive to pain than other people?  | YES | NO |
| 21. Are you afraid of illness?   | YES | NO |
| 22. Can you express your personal feelings easily to other people?                                   | YES | NO |
| 23. Do people feel sorry for you when you are ill?   | YES | NO |

- |   |     |    |
|---|-----|----|
| 24. Do you think that you worry about your health more than most people?  | YES | NO |
| 25. Do you find that your illness affects your sexual relations?  | YES | NO |
| 26. Do you experience a lot of pain with your illness?  | YES | NO |
| 27. Except for your illness, do you have any problems in your life?   | YES | NO |
| 28. Do you care whether or not people realize you are sick?   | YES | NO |
| 29. Do you find that you get jealous of other people's good health?   | YES | NO |
| 30. Do you ever have silly thoughts about your health which you can't get out of your mind, no matter how hard you try?                               | YES | NO |
| 31. Do you have any financial problems?   | YES | NO |
| 32. Are you upset by the way people take your illness?  | YES | NO |
| 33. Is it hard for you to believe the doctor when he tells you there is nothing for you to worry about?   | YES | NO |
| 34. Do you often worry about the possibility that you have got a serious illness?   | YES | NO |
| 35. Are you sleeping well?  | YES | NO |
| 36. When you are angry, do you tend to bottle up your feelings?   | YES | NO |
| 37. Do you often think that you might suddenly fall ill?  | YES | NO |
| 38. If a disease is brought to your attention(through the radio, television, newspapers or someone you know), do you worry about getting it yourself? | YES | NO |
| 39. Do you get the feeling that people are not taking your illness seriously enough?  | YES | NO |
| 40. Are you upset by the appearance of your face or body?   | YES | NO |
| 41. Do you find that you are bothered by many different symptoms?   | YES | NO |
| 42. Do you frequently try to explain to others how you are feeling?   | YES | NO |
| 43. Do you have any family problems?  | YES | NO |
| 44. Do you think there is something the matter with your mind?  | YES | NO |
| 45. Are you eating well?  | YES | NO |
| 46. Is your bad health the biggest difficulty of your life?   | YES | NO |
| 47. Do you find that you get sad easily?  | YES | NO |

- |  |     |    |
|--|-----|----|
| 48. Do you worry or fuss over small details that seem unimportant to others? | YES | NO |
| 49. Are you always a co-operative patient?                                   | YES | NO |
| 50. Do you often have the symptoms of a very serious disease?                | YES | NO |
| 51. Do you find that you get angry easily?                                   | YES | NO |
| 52. Do you have any work problems?   | YES | NO |
| 53. Do you prefer to keep your feelings to yourself?                         | YES | NO |
| 54. Do you often find that you get depressed?                                | YES | NO |
| 55. Would all your worries be over if you were physically healthy?           | YES | NO |
| 56. Are you more irritable towards other people?                             | YES | NO |
| 57. Do you think that your symptoms may be caused by worry?                  | YES | NO |
| 58. Is it easy for you to let people know when you are cross with them?      | YES | NO |
| 59. Is it hard for you to relax?   | YES | NO |
| 60. Do you have personal worries which are not caused by physical illness?   | YES | NO |
| 61. Do you often find that you lose patience with other people?              | YES | NO |
| 62. Is it hard for you to show people your personal feelings?                | YES | NO |

Appendix B  
ILLNESS BEHAVIOR SCORE SHEET

Initial  Discharge  6 mos.

NAME \_\_\_\_\_ AGE \_\_\_\_\_

Question No.	Scored Response						
	Scale 1	Scale 2	Scale 3	Scale 4	Scale 5	Scale 6	Scale 7
2		Yes					
3		Yes					
4							No
7		No					
9	Yes						
10		Yes					
11			Yes				
12					Yes		
16			No				
17							Yes
18					Yes		
20	Yes						
21	Yes						
22				No			
24	Yes						
27						No	
29	Yes						
30	Yes						
31						No	
32	Yes						
35		No					
36				Yes			
37	Yes						
38	Yes						
41		Yes					
43						No	
44			Yes				
46			No				
47					Yes		
51							Yes

The following questions (53-62) have been added to the original Illness Behavior Questionnaire in order to consolidate the last 5 scales.

53				Yes			
54					Yes		
55						Yes	
56							Yes
57							
58				No			
59					Yes		
60						No	
61							Yes
62				Yes			
AGE							< 40
FINAL PROFILE							



NAME \_\_\_\_\_

DATE \_\_\_\_\_

Appendix C  
Visual Analogue Scale for Pain

Mark on this line the amount of pain you are experiencing.

The most intense pain imaginable



No pain

64  
Clinic:  
HMC   
HMS   
UES

Appendix D

FOR OFFICE USE ONLY

BIOGRAPHICAL SKETCH

DATE:

NAME:

AGE:

MALE

FEMALE

SINGLE

MARRIED

WIDOWED

DIVORCED

SEPARATED

CHILDREN?

YES

NO

EMPLOYMENT:

EMPLOYED

UNEMPLOYED

OCCUPATION: \_\_\_\_\_

If employed, are you now

Working 100% of time

Working 75% of time

Working 50% of time

Working 25% of time

On leave of absence

HOBBIES (please list): \_\_\_\_\_

Are you now involved

With 100% of these activities

With 75% of these activities

With 50% of these activities

With 25% of these activities

Not at all

ACTIVITIES OF DAILY LIVING: (Such as dressing, cooking, washing, eating, etc.)

Are you now able to perform

100% of these activities

75% of these activities

50% of these activities

25% of these activities

None of these

Appendix E  
CONSENT FORM

I grant permission to Suzanne Seay, R.P.T., to include me in her study. I understand that I will be answering on paper some questions concerning how I feel about my pain problem and how I perceive others feel about it. I will do this when I am first seen in Physical Therapy, and again at the time I complete Physical Therapy or at six months.

I understand I can ask questions about the study at any time and I may withdraw from this study at any time. I also understand that my identity will not be made known; however, the results from the testing may be used for publication or teaching purposes.

I have been given a copy of the consent form.

---

Patient's Signature

---

Parent's signature if patient is under 17.

---

Witness

---

Date

## Appendix F

A Publishable Article Written According to the  
American Physical Therapy Association Style Manual

ILLNESS BEHAVIOUR QUESTIONNAIRE AS A PREDICTOR OF PROBLEMATIC  
AND APROBLEMATIC PATIENTS WITH A PAINFUL UPPER EXTREMITY

Suzanne S. Seay

Otto D. Payton

Ann P. Van Sant

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### Abstract

The purpose of this study was to measure the illness behavior of acute and chronic upper extremity pain patients using the Illness Behaviour Questionnaire (IBQ), to determine the rehabilitation outcome by pre-set criteria, and to determine the effectiveness of the seven scales of the IBQ in predicting the problem pain patient. Each subject completed a self-administered test packet which included the IBQ. Each was identified by the investigator as a problematic or as an aproblematic patient using information in the medical chart. Patients entering the study with acute pain (n=12) had less pain upon discharge and returned more quickly to activities of vocation, avocation and daily living than did the chronic pain patients (n=8). Statistical analysis of the IBQ scores of the problematic and aproblematic patients did not support the use of the IBQ as a predictor of the problem pain patient.

The painful upper extremity is a devastating economic and social problem for many patients treated by physical and occupational therapists. Long-term painful injuries result in loss of work time, loss of involvement in avocational activities, and loss of function in tasks of every day living.<sup>1,2</sup> Many patients require extended periods of rehabilitation--often in specialized upper extremity centers. The surgical techniques of repair, implantation, and reconstruction have advanced to a level of technical sophistication, as have the technical skills of physical therapists and occupational therapists. Yet, the factors involved in the psychological reaction to injury have not been so well studied or documented.

Interest in the ability to predict the rehabilitative outcome of the patient with a painful upper extremity arises from my clinical experience with the upper extremity pain patient. Many patients with painful upper extremity injuries move through the rehabilitation process in an expected and timely manner--once again becoming productive, satisfied members of society. Others, however, despite the degree of physical injury or disease, require many weeks and months of therapy. These problem patients often express pain as their chief complaint. They subjectively report little or no improvement in symptoms; they are often overly depressed, angry, pessimistic, even hostile. They voice many somatic complaints and make many demands. In my experience they

seldom return to previous vocational and avocation activities. It is these patients that drain the therapist, both emotionally and technically. These patients have apparently accepted the sick role,<sup>3</sup> and are expressing abnormal illness behavior.

David Mechanic reminds us that individuals may perceive the same symptoms but react to them differently.<sup>5</sup> Some individuals will make light of signs and symptoms, shrug them off, seek no medical advice and return to the routine activities of life; others will respond to the slightest twinges of pain by quickly seeking medical care and by allowing the sick role to take priority in their life.

These various responses to injury or illness are determined by the personality organization, previously learned methods of coping with illness, the extent of disability, the financial resources, the support of family and friends, and the meanings of each of these aspects of life to the individual.<sup>6</sup>

Injuries to any part of the body may cause some degree of abnormal illness behavior, but the hand itself has special importance to the body and injury to it may elicit a greater response. Because of the dexterity of the hand in performing vocational and avocational activities,<sup>7</sup> its expressiveness in displaying emotions,<sup>8,9</sup> and its support in building the body image,<sup>6</sup> the body's behavior or response to injury may be intensified.



Pain is a complex issue. Its very presence is often questioned. It is difficult to describe and to document. An individual's experience of pain is determined by many perceptual, cognitive, affective, interpersonal and cultural variables, and a range of illness behavior would be likely in the pain patient population. Each patient shows a different capacity to adapt to the stress of injury; some regain social integration, well-being, and productivity; others fail to adapt and manifest a chronic maladaptive response to injury and the rehabilitation process.

Several questions arise. Is the individual's reaction to an injury or illness solely a reaction to the current injury or does it also involve pre-existing psychological factors? Is there a way to recognize the problem pain patient early in the rehabilitation process? Is it possible to give patients a psychological test prior to treatment in a hand center that can predict the success or failure of treatment for their hand injury? It was with these questions in mind that I initiated this study.

The intent of the study was to measure the illness behavior of upper extremity pain patients using the Illness Behaviour Questionnaire<sup>10</sup> to determine their rehabilitation outcome, to assess the relationship between their illness behavior and their outcome using the above information, and to determine the effectiveness of this questionnaire as a tool for predicting the problem pain patient. The hypotheses

of the research were as follows:

1. There is a difference between the aproblematic pain patients' scores and the problematic pain patients' scores on the Illness Behaviour Questionnaire (IBQ).
2. The patient's scores on the IBQ change from the initial visit to discharge from treatment.
3. There is a difference between the initial and discharge IBQ scores for the acute patients and the initial and discharge scores for the chronic patients.
4. There is a relationship between the length of time patients experienced pain and their classification as a problematic or aproblematic pain patient.

#### TERMINOLOGY

The terminology unique to this investigation is defined in this section.

Problematic patients. Problematic patients are those patient who meet four or more of the following criteria:

1. Pain is greater than 4 on the 10 centimeter Visual Analogue Scale.
2. Patient has not returned to 50% of the number of pre-injury vocational activities.
3. Patient has not returned to 50% of the number of pre-injury avocational activities.
4. Patient has not returned to 75% of the number of pre-injury activities of daily living.

5. Patient has missed one-third or more of treatment sessions or has discontinued himself.
6. Range of motion, as measured with a goniometer, has shown at least  $10^{\circ}$  regression or lack of improvement in involved joints, at least one-third of the time.
7. Grip strength, as measured with a dynamometer, has shown at least 1 kilogram regression or lack of improvement, at least one-third of the time.

Aproblematic patients. Aproblematic patients are those who meet fewer than 4 of the above criteria.

Acute pain. Acute pain is pain that the patient has experienced for less than 6 months.

Chronic pain. Chronic pain is pain that the patient has experienced for 6 months or more.

Painful upper extremity. Painful upper extremity is any painful condition in which the pain is perceived as being located in the gleno-humeral joint or distal to it and that may be labelled as a pain syndrome. The patient's chief complaint is pain. This may include diagnoses or undiagnosed painful conditions, but does not include the expected, short-term local pain associated with most hand injuries.

## METHOD

### Subjects

The sample consisted of 20 adult subjects, 13 women and 7 men, who were referred to 1 of 2 private physical therapy centers for treatment of pain in the upper extremity.

The subjects ranged in age from 22 years to 69 years. When initially seen in the treatment centers, pain duration was reported from 1 to 15 months. These complaints of pain represented a variety of diagnoses: 5 fractures, 7 tendonitis/epicondylitis, 4 nerve entrapments, 1 amputation, 1 sprain, 1 myofascial pain, and 1 undiagnosed complaint.

Patients were admitted to the study in one of two ways--as acute pain patients or as chronic pain patients.

Patients admitted to the study as acute pain patients met these criteria:

1. Chief complaint was pain.
2. Pain was present less than 6 months.
3. Patients had not received more than 10 previous hand therapy treatments.
4. Patients were at least 15 years of age.
5. Patients were not undergoing psychological therapy for pain problems.

Patients admitted to the study as chronic pain patients met these criteria:

1. Chief complaint was pain.
2. Pain had been present 6 months or more.
3. Patients may have had numerous other physical therapy/occupational therapy treatments.
4. Patients were at least 15 years of age.
5. Patients may have been undergoing psychological treatments for pain problem.

Subjects who entered the study as acute pain patients (n=12) demonstrated a pain intensity mean of  $6.67 \pm 2.90$ , as measured by the 10 centimeter Visual Analogue Scale at the initial visit; these patients presented a pain intensity mean of  $3.79 \pm 3.21$  at the time of discharge or at 6 months pain duration. Those patients who entered the study as chronic pain patients (n=5) presented a pain intensity mean of  $5.44 \pm 2.65$  at their single testing. The vocational, avocational, and daily task activities reported by the 20 subjects are recorded in Table 1.

#### Materials

Subjects entering the study were given a test packet to complete. The test packet consisted of the Illness Behaviour Questionnaire, a Biographical Sketch, the Visual Analogue Scale for Pain, and the Consent Form. The Biographical Sketch is a form devised to collect demographic data-- information about employment activities, avocational activities and activities of daily living. The Visual Analogue Scale is an unmarked 10 centimeter line that denotes the degree of intensity of pain as perceived by the patient, from "no pain" to "most severe pain possible."

The Illness Behaviour Questionnaire (IBQ) in current use is a self-report questionnaire consisting of 62 yes-no items which explore the illness behavior of the patient. Pilowsky and Spence<sup>10</sup> constructed the IBQ in 1975 to assess illness behavior, particularly those attitudes that suggest

inappropriate or maladaptive modes of responding to one's state of health. The questions are largely concerned with the patient's attitudes and feelings about his illness, his perception of the reactions of significant others in the environment (including his doctor's) to himself and his illness, and the patient's own view of his current psychosocial situation.<sup>10</sup> Each patient obtains a raw score on each of the 7 IBQ factors or scales. Scoring is weighted in the direction of abnormal or maladaptive illness behavior, i.e., high scores are indicative of inappropriate ways of perceiving, evaluating, or acting upon one's state of health.

A description of each of the 7 scales of the IBQ<sup>10,11</sup> follows:

1. General hypochondriasis scale characterizes phobic concern about one's state of health, multiple somatic complaints, increased anxiety, and some insight into the appropriateness of their concerns.
2. Disease conviction scale characterizes preoccupation with the symptoms and the belief that he is seriously ill, often rejecting the medical opinion.
3. Psychological versus somatic perception of illness scale characterizes the attitude that the patient is responsible for (and in fact deserves) the illness and may perceive the need for psychiatric rather than medical treatment.

4. Affective inhibition scale describes difficulty in expressing personal feelings, especially negative ones, to others.
5. Affective disturbance scale indicates acknowledgement of anxiety and depression.
6. Denial scale characterizes refusal to admit the presence of problems in one's life and by the perception that their illness is the only difficulty in their lives.
7. Irritability scale relates to anger and aggressiveness as a reaction to their pain--mostly seen in those under 40.

Validity and reliability information is available upon request.

#### Procedure

The purpose of the study was explained to each patient by the clinician. The patient was asked to read, sign, and date the consent form with a witness present. Patients completed the packets unassisted in approximately 20 minutes. Patients entering the study under the acute pain criteria completed the packet twice--initially (within 1 week) and again upon discontinuance from treatment at the center or when they had experienced pain for 6 months, whichever came first. Patients entering the study under the chronic pain criteria completed the packet only once.

Upon completion of the test packet by the patient, I reviewed each patient's chart, gathering data related to attendance at therapy sessions and joint range and grip strength progression or regression. The information from the chart and from the test packet were used to categorize each patient as a problematic patient or as an aproblematic patient, according to the previously established criteria.

Each scale of the Illness Behaviour Questionnaire was scored utilizing the IBQ Score Sheet and the guidelines in the Manual for the Illness Behaviour Questionnaire.<sup>11</sup>

#### Data Analysis

The Van der Waerden Normal Scores Test was used to test the first and third hypotheses. The second hypothesis was analyzed by the Wilcoxon Signed Rank Test and the fourth hypothesis by the Chi-Square Test. All comparisons were evaluated at the .05 level of significance.

#### RESULTS

##### Problematic and Aproblematic Patients' Scores

The initial scores of the 20 subjects on the 7 scales of the Illness Behaviour Questionnaire were compared with the outcome classification as problematic or aproblematic patients. The analysis by the Van der Waerden Normal Scores Test demonstrated no significant difference between the scores of the problematic patients and the scores of the aproblematic patients except on scale 1, Hypochondriasis, which was significant at .05. Table 2 lists the mean score,



the standard deviation, the range, and the test statistic for each scale.

#### Admission and Discharge Scores of Individuals

The difference in the admission and discharge scores on the patients' 7 IBQ scales was analyzed using the Wilcoxon Signed Rank Test. There was no significant difference on any scale between the admission scores and the discharge scores.

#### Admission and Discharge Scores of Acute and Chronic Patient Groups

The difference between the acute and chronic pain patient groups' admission and discharge scores of the IBQ was subjected to analysis by the Van der Waerden Normal Scores Test. Data presented in Table 3 demonstrated that the difference between the admission and discharge scores of the acute patient group and the difference between the admission and discharge scores of the chronic patient group was insignificant on all scales, except scale 3, Psychological versus Somatic Perception, which was significant at .05.

#### Pain Duration and Classification as Problematic or Aproblematic Patient

The relationship between the time the patient had experienced pain and his classification as a problematic or aproblematic patient was tested by the Chi-Square Test (Table 4). The result was significant at .05.

## DISCUSSION

The primary purpose of this study was to determine the effectiveness of the IBQ in predicting the problem patient with upper extremity pain. I addressed this purpose through the testing of the 4 research hypotheses. This study is not able to support the use of the IBQ as a predictive tool. The greatest limitation of this study is the sample size of 20 which limited the number of problematic patients. A larger sample may prove the IBQ to be a predictive tool with this pain population, at least at a statistical level.

The only significant difference between the problematic and aproblematic patient scores is on the Hypochondriasis scale (Table 2). Surprisingly, the aproblematic group scored the highest on this scale and all other scales except the Disease Conviction and Denial scales. This may have been a result of a small problematic group (N=5) and the short duration of the chronic pain (mean symptom duration of 8.2 months). In comparing this study with Pilowsky's studies<sup>10,12-14</sup> there are three significant differences. Pilowsky used at least 100 subjects in defining abnormal illness behavior; his patients had experienced pain for an average of 7.4 years;<sup>10</sup> he often used second order scales to assist him in classifying patients with abnormal illness behavior. It is possible that the IBQ, while quite sensitive to the long-term chronic pain patient, may not be as effective in predicting abnormal illness behavior in acute patients.

No significant differences are noted between initial and discharge scores of individuals. This supports the theory of Tomlinson<sup>6</sup> that persons will respond with pre-existing patterns of coping and adapting to illness or injury. Change in this behavior would not then be expected to change without intervention to modify their behavior.

When comparing the chronic group with the acute group (Table 3), the only significant difference is in scale 3, Psychological versus Somatic Perception of Illness, with the acute group showing the greatest change. This suggests that the chronic group would maintain its view that the problem was somatic. It is interesting to note that the greatest difference in the chronic group's admission and discharge scores is on the Irritability scale, with that group scoring higher than the acute group. Weighting on this scale is based on age (40 years and younger) and may suggest that the more chronic the problem becomes, the less coping there is with the younger age group. These results also support the theory of pre-existing adaptation patterns.<sup>6</sup>

In comparing classification of problematic and aproblematic patients with the symptom duration classification of chronic and acute (Table 4), statistical significance is noted. All problematic patients were chronic patients with symptom duration of at least 6 months; however, only 45% of the 11 chronic patients became "a problem pain patient." All but one patient who entered the study as acute

patients with symptom duration less than 6 months were aproblematic patients. This suggests that the chronicity of pain encourages abnormal illness behavior. The study by Pilowsky and Spence<sup>13</sup> concluded that it was unlikely that the degree of chronicity played a major role in determining illness behavior; however, the present study supports the study by Demjen and Bakal<sup>15</sup> that illness behavior was related to duration of pain. The results led to the conclusion that by addressing the physical problems of the patients early, patients would most likely proceed through the rehabilitation process as expected with realistic functional outcomes.

The descriptive data concerning the 20 subjects reveals several interesting points:

1. Pain intensity as measured by the 10 centimeter unmarked line decreased in the acute patients to a level lower than the chronic patients, suggesting that pain can be treated more effectively early in its course than later as the problem becomes chronic.
2. The number of acute patients returning to various work levels was greater than with the chronic patients. Table 1 reports four acute patients working full time prior to treatment; post-treatment 8 (67%) were involved in full-time vocational activity. Only one (12.5%) chronic patient had returned to full-time employment.

3. The return to avocational activities was greater with acute patients than with chronic. In Table 1, 3 acute patients, prior to treatment, were engaged in 75% or more of leisure activities; this progressed to 7 (58.3%) post-treatment. Two (25%) chronic patients had returned to similar levels.
4. The return to activities of daily living was greater with the acute patient than the chronic (Table 1). Four acute patients were functioning at 100% of their daily living tasks prior to treatment; following treatment, 5 more had returned to full involvement of these activities (total of 75%). Three (37.5%) chronic patients were performing 100% of these activities.

#### Clinical Implications

This study strongly suggests that early physical intervention in the treatment of pain may reduce physical and functional limitations and may assist the patient in returning to a productive lifestyle. Further implications may be to involve the patient early in an interdisciplinary team effort to recognize the problem pain patients, to implement effective psychological therapy, and to ultimately alter abnormal illness behavior.

#### Recommendations for Further Research

In addition to replication of this study with adjustments in sample size and revision of classification

criteria, further areas of study have been generated from this research.

1. The IBQ could be used to compare the illness behavior of the upper extremity injury patients with those of a general population; writers<sup>7-9</sup> have implied that illness behavior may be unique with upper extremity involvement.
2. A study of the illness behavior of a homogeneous pain population could be undertaken using the IBQ, for example, Carpal Tunnel Syndrome patients exclusively or amputees exclusively.
3. A comparison of the IBQ scores and Minnesota Multiphasic Personality Inventory (MMPI) scores on a given population would be revealing; this would represent both state and trait characteristics and would also help validate the IBQ.

Ultimately, the purpose of this study would be accomplished if physical and occupational therapists would assess illness behavior early, intervene immediately with indicated psychological and physical treatments, and document a change in illness behavior and functional outcome.

#### CONCLUSIONS

Based on this study of 20 patients with reported pain in the upper extremity, I could not support the use of the IBQ as a predictive tool of abnormal illness behavior using my criteria of outcome; however, several important conclusions

are made from analysis of the data.

1. Based on the data in this study, the null hypothesis could not be rejected. There was no significant difference between the aproblematic pain patients' IBQ scores and the problematic pain patients' IBQ scores except on the Hypochondriasis scale.

2. Based on the data in this study, the sub-null hypothesis 1 could not be rejected. There was no significant difference in the patients' initial IBQ scores and the patients' IBQ scores at discharge.

3. Based on the data in this study, the sub-null hypothesis 2 could not be rejected. There was no significant difference between the pre and post treatment IBQ scores for the acute patient group and the pre and post treatment IBQ scores for the chronic patient group except on the Psychological versus Somatic scale.

4. Based on the data in this study, the sub-null hypothesis 3 could be rejected. There was a significant relationship between the length of time patients experienced pain and their classification as a problematic or aproblematic patient.

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Table 1  
Biographical Data on Patients Entering the Study as Acute Pain Patients or Chronic Pain Patients

Activities	Acute Pain Patients (N=12)		Chronic Pain Patients (N=8)
	Initial Visit	Discharge or 6 months	6 months or later
Vocational			
Unemployed	3	3	3
Working 100%	4	8	1
Working 75%	0	0	0
Working 50%	2	0	0
Working 25%	1	0	0
On leave of absence	2	1	4
Avocational			
Involved 100%	1	5	1
Involved 75%	2	2	1
Involved 50%	2	3	0
Involved 25%	1	1	2
Involved not at all	6	1	4
Daily Living			
Able to perform 100%	4	9	3
Able to perform 75%	5	1	4
Able to perform 50%	1	1	1
Able to perform 25%	2	1	0
Cannot perform at all	0	0	0

Table 2

Comparison of Problematic and Aproblematic Pain Patients' Initial Scores on IBQ

IBQ Scales	Problematic (n=5)			Aproblematic (N=15)			Test Statistic
	$\bar{x}$	S.D.	range	$\bar{x}$	S.D.	range	
Hypochondriasis (1)	0.20	0.48	0-1	1.87	1.96	0-8	-2.22*
Disease Conviction (2)	3.00	1.87	1-6	2.33	1.59	0-5	0.89
Psychological versus Somatic Perception (3)	1.00	1.00	0-2	1.33	0.62	0-2	-0.42
Affective Inhibition (4)	1.00	0.71	0-2	2.00	1.46	0-5	-1.50
Affective Disturbance (5)	1.40	2.07	0-5	2.67	1.91	0-5	-1.37
Denial (6)	3.20	2.05	1-5	2.80	1.97	0-5	0.26
Irritability (7)	1.60	2.07	0-5	3.07	1.79	0-6	-0.25

\*  $p \leq .05$

Table 3  
Comparison of Acute and Chronic Pain Patient Groups' Admission and Discharge Scores on IBQ

IBQ Scales	Chronic (N=3)			Acute (N=9)			Test Statistic
	$\bar{x}$ Diff.	S.D.	range	$\bar{x}$ Diff.	S.D.	range	
Hypochondriasis (1)	0.67	0.58	0-1	1.00	0.71	0-2	0.17
Disease Conviction (2)	0.67	0.58	0-1	0.89	1.05	0-3	0.23
Psychological versus Somatic Perception (3)	0.00	0.00	0-0	0.78	0.44	0-1	-1.93*
Affective Inhibition (4)	0.67	0.58	0-1	0.89	0.78	0-2	-0.45
Affective Disturbance (5)	1.33	1.15	0-2	1.56	1.24	0-3	-0.51
Denial (6)	0.67	0.58	0-1	1.33	1.12	0-3	-1.27
Irritability (7)	1.67	0.58	1-2	1.00	1.32	0-4	0.89

\*  $p \leq .05$

Table 4  
Relationship Between Time Patient Has Experienced  
Pain and Classification as Problematic or  
Aproblematic

	Problematic	Aproblematic	Total
Acute	0	9	9
Chronic	5	6	11
Total	5	15	20

\*  $p \leq .05$

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VITA

