

**PSYCHOLOGICAL WELL-BEING AND CHRONIC DISEASE:  
AN INVESTIGATION OF QUALITY OF LIFE  
IN PATIENTS WITH BEHÇET'S DISEASE**

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## ***ABSTRACT***

The main purpose of the present study was to investigate the effects of psychological actors, physical factors and personal characteristics on the dissatisfaction with medical condition and psychological well-being of patients with the chronic illness, Behçet's Disease. A causal model was derived from the more general theory of Lazarus and Cohen (1976) and it was hypothesized that the disease-related variables interacting with personal characteristics indirectly affect psychological well-being through psychological mediators.

The research was carried out in the Rheumatology Department of İstanbul University, Cerrahpaşa Medical Faculty. 69 male patients with Behçet's Disease (BD) were referred to the psychologist between April and July 1994, were given the Activities and Lifestyle Index, Trait Anxiety Inventory, Multidimensional Health Locus of Control Scale, Psychological Well-Being Scale.

Path analysis showed that the cognitive model emphasizing the mediating role of the psychological variables between environmental variables and psychological outcomes was not very useful in explaining the impact of BD on health satisfaction and the quality of life (QOL). Rather, the multiple regression equations which included not only psychological variables but also environmental variables were more successful in explaining health satisfaction and QOL. Although the causal model explained only 5% of the variance in dissatisfaction with health and 15% of the variance in the QOL, the equation including direct effects of psychological variables and environmental variables explained 36% of the variance in dissatisfaction with health and 23% of the variance in QOL. The investigation of the direct and indirect effect of variables via path analysis was discussed.

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## **1. INTRODUCTION**

Recent research indicates that patient-oriented variables such as the quality of life are as important for the evaluation of health status and interventions in patients with a chronic illness, as physician-oriented variables, like laboratory or radiographic assessments (Van Riel and Van Lankveld, 1993). Since cure is not a realistic expectation for those patients who suffer from a chronic illness such as Behçet's Disease (BD), enhancement of the quality of life is the most important component of the medical care outcome. Therefore assessment of factors that influence the perception of quality of life in chronic conditions is increasingly becoming a topic of research concern.

The focus of the present study was on answering the questions of how BD patients' perception of the quality of their lives and the satisfaction with their medical condition are affected by physical factors, psychological factors and personal characteristics. All factors were explored within a causal model (Burckhart, 1985) developed from the cognitive framework of Lazarus and Cohen (1976). Using this causal model, disease-related variables and personal characteristics were proposed to indirectly affect the perception of the quality of life and satisfaction with the medical condition through psychological mediators. The proposed psychological mediators were specifically trait anxiety, health locus of control orientations, and religious commitment. The illness-related variables included the duration of illness and functional disability. Lastly personal characteristics were age, marital status, employment and the educational level. The major focus of the present study is to explore whether psychological variables buffer or enhance the impact of disease related variables.

Living with a serious chronic illness creates subjective experiences including perceptions of control over illness and illness-related anxiety. These psychological factors

Living with a serious chronic illness creates subjective experiences including perceptions of control over illness and illness-related anxiety. These psychological factors might be closely tied to a patient's perception of life quality. Supporting this view, Burckhart (1985) found that psychological mediators, including perceived support, a negative attitude toward the illness, positive self esteem and internal control over health contributed directly to a higher quality of life in patients with arthritis. Moreover, she found that subjects perceiving a higher quality of life believed that control over health was their responsibility. Besides patients's beliefs in their own ability to control health, the belief that others can control health seems especially important since patients with a chronic illness rely on health professionals (Christensen, et al., 1991). Reid (1984) found that the perception of vicarious control through the actions of health care professionals was associated with the maintenance of positive adjustment even when personal control may not be possible. In addition to beliefs in internal control and powerful others, patients with chronic illnesses are potentially subject to unplanned and seemingly uncontrollable treatment outcomes which may lead to a greater belief in external control due to chance. It would be interesting to know more about how these control appraisals affect the quality of life of BD patients.

Studies suggest that increased anxiety levels may be evoked by the impact of chronic illness (Burish, Meyerowitz, and Carey, 1987), however researches supporting this claim are scarce (Anderson, et al., 1985). But, profiles of arthritis patients, similar to those of other chronic disease groups, were indicating emotionality, apprehension and worry, and tension above the average (Moldofsky, & Rothman, 1971; H. Robinson, Kirk & Frye, 1971; Anderson et al., 1985). Anxiety associated with chronic illness is regarded to result in a substantial reduction in the patients' quality of life (QOL), and consequently physical rehabilitation, return to work, leisure and social activities may also be affected (Taylor and Aspinwall, 1990).

The variable of "religious beliefs" is also regarded to have an active role in the chronically ill patients' perceptions of the quality of life. Inability to control illness and its

unpredictable nature may direct the patient to hope for help from external forces by religious acts such as praying... For example Elkins, Anchor, and Sandler (1979) have found that frequency of prayer and perceived effectiveness and importance of prayer were predictive of tension reduction. Freud pointed out that the essence of the higher religions is a search for a certain quality of life, and performance of religious acts brings feelings of peace and contentment (Sturgeon and Hamley, 1979).

Additionally, although the importance of personal characteristics such as age, marital status, educational level, employment status, is usually ignored, they are potential mediators for health-promoting or health-damaging behaviors (Matthews, 1989) and may affect the patient's life quality. Related to this view, the higher age in patients with rheumatoid arthritis was found to be significantly correlated to a lower status of life quality (Bendtsen and Hornquist, 1992).

Besides these patient variables (psychological, individual differences and personal characteristics), illness related variables such as duration, functional disability needs also further attention in considering the perceptions of the quality of life of patients with BD. Findings maintaining this view, suggest that the longer duration of rheumatoid arthritis, a chronic illness, was significantly correlated with a lower quality of life (Bendtsen and Hornquist, 1992) and that a relationship exists between physical features of systemic lupus erythematosus and perceived health status (Joyce, et al., 1989). La Borde and Powers (1980) have linked a lower level of life satisfaction in patients with osteoarthritis to chronic pain, decreased mobility, and preoccupation with the disease. Brown, Rawlinson, and Hills (1981) found that the degree of dyspnea, a specific physical variable, was correlated with decreased life satisfaction in persons with chronic obstructive pulmonary disease (COPD), and Mc Sweeny et al. (1982) linked pulmonary and cardiac functioning to the quality of life (QOL).

These illness-oriented variables seem to be essential in the assessment of the life quality of patients suffering from diseases with marked chronicity, such as BD. Although there exists many studies which linked specific disease related factors to QOL, the

statements about this link should be cautiously made, since the link may disappear when a number of psychological processes and other intervening variables such as increasing age (Mc Sweeney et al., 1982) , and lack of sufficient income (Levy & Wynbrandt, 1975) are taken into account. Personality characteristics including traits, coping dispositions, beliefs, attitudes, may mediate or modify the possible relationship between QOL and disease. For example, variables such as a negative affect (Bradburn, 1969) , lack of supportive relationships (Dimond, 1979; Crewe, 1980) , low self-esteem (Earle, Perricone, Maultsby, Perricone, Turner, & Davis, 1979) , and lack of personal control (Lewis, 1982) are among potential factors that may modify the link between the disease or disability itself and QOL. Burckhardt's study (1984) is virtually unique in providing evidence that psychological variables such as perceived support, a low negative attitude toward illness, positive self-esteem, and internal control over health have more of an impact on the QOL of chronically ill people than disease-related variables of pain and functional impairment. Additionally, Burckhardt (1984) emphasized the usefulness of working within a causal model in explaining the impact of a chronic illness on QOL to know more about the compound and causal effects of multiple factors which influence QOL in the chronically ill.

The present thesis sought to clarify the complex pattern of relations among disease-related factors, personal characteristics, psychological variables and QOL within a cognitive framework. Additionally, in Turkey, within the domain of Health Psychology, there has been little empirical investigation, concerning this population. The results may have practical value in the intervention and treatment strategies in relation to this specific disease, BD.

## **2. REVIEW OF THE LITERATURE**

### **2.1. BEHÇET'S DISEASE**

Behçet's Disease is a complex rheumatic disease with no known cause or cure. Nevertheless, studies pertaining to the understanding of possible etiologic and pathogenic mechanisms have resulted in a great deal of progress in the treatment of the condition and management of resulting complications in order to maximize patients' functioning (Yazıcı, et al., 1994). Clinical manifestations of this multisystem disease are oral ulceration, genital ulceration, skin lesions and inflammatory eye lesions. The cardinal diagnostic feature is recurrent oral aphthous ulceration. The most frequent cause of severe morbidity is inflammatory eye disease, leading to blindness in up to 20% of those affected (Yazıcı, and Barnes, 1992).

BD is an incurable but not life threatening chronic disease. It is a relapsing, remitting disease which typically follows a gradual reduction of disease activity after a few years. Besides its chronicity, the course of BD is variable and virtually unpredictable, and idiosyncratic. While some patients have painful or reduced vision, others may have complete loss of vision. In the relapse phase of the disease, patients may have difficulty in daily functioning, such as eating (because of herpes), watching TV, reading, dressing themselves, etc.

#### ***Prevalence***

The syndrome usually arises in the second or third decade of life. That is, it occurs infrequently before puberty or after the age of 40 years. The preponderance rate is about 1 to 1, and additionally B.D. runs a more severe course among males and especially among young males (Yazıcı, et al., 1986).

Although epidemiological studies are scarce, the available prevalence is approximately 1: 300.000 in Northern Europe and 1: 10.000 in Japan. The prevalence is higher in Mediterranean countries. In Turkey, prevalence rates of 10: 10.000 and

40: 10.000 have been reported based on 2 spot surveys of the adult population (Yurdakul et al., 1988).

## **2.2. CHRONIC ILLNESS AND PSYCHOLOGICAL FACTORS**

In studying the relationship of psychological factors to illness, various perspectives have been presented. The variability stems from viewing psychological factors as causal in the etiology of illness or as the outcome of illness once the disease is apparent (Krantz, & Glass, 1984).

### **2.2.1. Psychological individual differences as a causal factor in the etiology of disease:**

The first approach is based on the belief that intense emotions are effective enough to produce a severe physiological response and to result in several forms of organ pathology (Krantz, and Glass, 1984). Relatedly, psychological similarities in personality and characteristic types were reported among patients suffering from the same disease (Dunbar, 1943). There is also a respected body of research that investigates the relation of particular personality predispositions to specific diseases including hypertension, coronary artery disease, cancer, ulcers and rheumatoid arthritis. Before citing related specific studies, general models which explain the link of personality and individual difference variables to illness will be presented.

Nuclear Conflict Theory (Alexander, 1950) emphasized the role of unconscious conflicts and the emotions they produced in the beginning of specific diseases. Emotions such as anger, depression and anxiety were seen as generating from the specific psychological conflicts. A precipitating situation is viewed as the activator of these conflicts. Resulting emotions influence autonomic and endocrine responses that make a disease flare up.

The Specificity-of-Attitude Hypothesis (Grace, and Graham, 1952; Graham, 1972). Within this model, an association between attitudes and illness is assumed. This model proposed that the specific attitudes of patient at the time of symptom onset influenced the clinical course of the disease. Graham listed several statements of patients about the feelings of what was happening to them at the time of the symptom appearance and about what they wanted to do at that time.

The Helplessness-Hopelessness: The "Giving-up-Given-up Complex" (Engel, 1968; Schmale, 1972) emphasizes the psychological characteristics which influence susceptibility to illness of many types. The psychological state of helplessness and hopelessness was characterized as a precipitating factor in getting ill. The state of helplessness, a sense of psychological weakness and the individual's inability to cope with negative events result in illness.

Betz and Thomas (1979) emphasized more biologically based psychological variables which predispose individuals to general susceptibility to disease. This dispositional tendency called temperament was an affective rather than a cognitive variable. Three types were described; alpha types who are cautious, self reliant; beta types who are cool, spontaneous, articulate, adaptive; and gamma types who are over- or underactive, confused and moody (Gesell, & Ilg, 1943). The gamma types were at risk for developing a range of medical disorders over the next 30 years.

Findings on the disease prone personality indicates the existence of "a set of behaviors that occur in susceptible individuals given appropriately stressful and/or challenging situations" (Krantz, & Glass, 1984). For example individuals exhibiting Type A behavior syndrome were more likely to develop coronary heart disease (CHD) (Rosenman et al., 1975). These behaviors are described by Friedman and Rosenman (1959) as competitive drive, impatience, rapid speech, motor movements, and hostility. Among the components of Type A behavior, hostility is strongly related to CHD (Dembroski, Costa, 1987; Friedman, Booth-Kewley, 1987; Hecker, Chesney, Black, & Frautschi, 1988). Type A's respond with elevated physiological reactivity to stress

(Contrada et al., 1985; Krantz, & Manuck, 1984). They are more likely to have cerebrovascular and peripheral atherosclerosis, and are more prone to migraine and muscle contraction headache (Woods, Morgan, Day, Jefferson, & Harris, 1984). They exhibit higher levels of smoking and serum cholesterol and there is an increased risk of dying from cancer (Fox, Ragland, Brand, & Rosenman, 1987).

Although convincing research findings are lacking, there exist studies relating personality factors to the etiology of cancer. For example, psychological characteristics such as unconscious conflicts, inability to express negative emotions, lack of closeness to parents, and depression were proposed to be potential factors in the etiology of human cancer. However studies indicating inconsistent results outnumbered those indicating a link between the onset of cancer and personality traits. Methodological difficulties such as failure to control known risk factors for cancer (e.g., smoking, dietary factors, alcohol consumption, etc.), and not considering transitory states such as stressful life events make it difficult to draw causal propositions (Fox, 1978; Schmale, & Iker, 1971).

Augmented response to stressful events that evoke rises in blood pressure is an eminent characteristic of individuals diagnosed with or at risk for hypertension (Fredrikson & Matthews, in press). Suppressed rage or hostility are found as a predictor of hypertension by many researchers (e.g., Dimsdale et al., 1986; Harburg et al., 1973; James, 1987; Sommers-Flanagan, & Greenberg, 1989). However, the causes of high blood pressure is not due only to individual traits but also interactions of many factors. Genetic, sociocultural, behavioral and physiological bases of the disorder should be disregarded (Krantz, & Glass, 1984).

Like the possibility of hypertensive personality, the role of arthritic personality and psychological factors in the etiology of rheumatoid arthritis have not received empirical support (Anderson et al., 1985).

In terms of etiology, the convincing evidence about the relations of psychological factors to specific chronic diseases lacks support. Physiological, genetic and situational factors that predispose an individual to a particular disorder (Weiner, 1977) should be taken into account when correlating psychological factors associated with disease states.

### ***2.2.2. Psychological factors in the course and outcome of illness:***

The second approach placed emphasis on the role of psychological factors on the course and outcome of illness after the disease is present. Within this perspective, illness is conceptualized as a stressor and what a person thinks and does concerning the illness influences the subsequent course of the clinical course of the disease. In other words, physiological responses to the stress of illness were influenced through psychological factors. The importance of a person's interpretations are emphasized in determining the physiological reactions to illness. Specifically, the patient evaluates his illness as harmful, threatening or challenging and then, evaluates his personal and environmental resources that are available to reduce the threat (Cohen, & Lazarus, 1979; Krantz, Glass, Contrada, & Miller, 1981). After that, the patient engages in coping behaviors. The success of the coping behaviors is assumed to affect the course of the illness. In brief, psychological attributes are proposed to mediate the relationship between the stressful event (chronic illness) and the resulting physiological processes.

Various psychological difference variables have been associated with the clinical course of the disease and the clinical outcome. Depression was found to have an adverse effect on recovery (F. Cohen, and Lazarus, 1979; Primeau, 1988) and to decrease the wish for having treatment, and change internal physiological states (Krantz, 1980; Krantz, & Schulz, 1980). Researchers have also attempted to relate depression and depressed relationships (lack or loss of social support) to the development of cancer (Fox, 1978; Sklar, & Anisman, 1981). However inconsistent and consistent findings of subsequent studies regarding the suggested relationship prevent clarity (Zonderman, Costa, & McCrea, 1989; Fox, 1988; Joffrees, Reed & Nomura, 1985; Kaplan, & Reynolds, 1988; Keehn, 1980; Reynolds, & Kaplan, 1986; Thomas, & Duszynski, 1974).

Seligman's (1975) discussion of psychological state of helplessness may be helpful in understanding the association between depression and the outcomes of illness.

Feelings of helplessness are based on the subjects' perceived control over aversive events (e.g., serious illness). They perceive little control and feel themselves unable to escape, avoid and/or modify threatening stimuli (Averill, 1970; Seligman, 1975). It is evident that suffering from a serious chronic illness creates a stressful and uncontrollable situation. Patients experience not only physical constraints such as pain and discomfort, but also a variety of cognitive, emotional disturbances such as uncertainties about the future, family, employment and life style, fear of death, anxiety, depression. The more the patient views his illness as uncontrollable, the suggested effects of illness on the patient will be more harmful. Parallel to this, in cardiac patients, perception of harm, threat and loss were found to be the most important predictors of anxiety and depression (Waltz, Badura, Pfaff, and Schott, 1988).

Anxiety is commonly experienced by chronically ill patients (Derogatis et al., 1983; Hughes, 1987; Popkin et al., 1988). Welch-McCaffrey (1985) suggested various types of anxiety in people suffering from the chronic disease, cancer: These are waiting for test results, having cancer, uncomfortable procedures, the side effects of treatments, changing life-styles, dependency on health professionals and fear of reoccurrence of the disease.

The psychological factors involved are covered here briefly to show that they are effective in the etiology and on the course and outcome of disease. Knowledge of these factors are important since they can help health professionals to understand the impact of chronic illness and to develop strategies that enhance patient's QOL. In other words, the ultimate goal in health psychology is improving the QOL of patients suffering from a disease. If psychological factors are important in chronic illnesses, it is also important to determine which of their factors are most or least predictive of perceived QOL. The present study tries to answer this question. Before covering research on the psychological factors affecting QOL, a review of the literature on the concept of QOL is presented.

### 2.3. *WHAT IS QUALITY OF LIFE ?*

"Quality of life (QOL) is a complex and elusive concept" (Burckhardt, 1985, p.11) in the sense that many different definitions of it have been proposed and relatedly there has been little agreement about how to define and measure it (Taylor & Aspinwall, 1990). In the literature on chronic illness, prior to 1979, QOL was assessed by the mere presence and absence of the disease, or whether or not the patient was still living (Fayers and Jones 1983, Hollandsworth, 1988, Kaplan 1985).

Later studies indicated the importance of patient ratings in the assessment of QOL rather than medical indicators. Physicians' estimates of patients' QOL were found to be weakly correlated with patient ratings (Presant, 1984; Slevin, Plant, Lynch, Drinkwater and Gregory, 1988). Then with the growing recognition that the goal of medical care is to improve patients' QOL and to develop interventions that may improve QOL, QOL research instruments were created to assess "functional status", including items representing all the different ways diseases and disabilities might affect daily functioning. Examples of QOL measures assessing functional status are the Sickness Impact Profile (SIPS; Bergner, Bobbit, Carter, and Gilson, 1981), the Index of Daily Activities (ADL; Katz, Ford, Moskowitz, Jackson & Jaffee, 1983), the McMaster Health Index Questionnaire (MHIQ; Chambers, MacDonald, Tugwell, Buchanan & Kraag, 1982), the Cancer Inventory of Problem Situations (CIPS; Schag, Heinrich, and Ganz, 1983) and Karnofsky Performance Status measure for use with cancer patients (KPS; Grieco and Long, 1984), and the Arthritis Impact Measurement Scale (AIMS; Meenan, Gertman, Mason, 1982).

Although QOL as used here was limited to "health related" problems, i.e., to describe the impact of disease and disability upon daily functioning, other uses of the term are more general (Kaplan, 1985). For example, Meenan and Pincus (1987) defined QOL as the broadest of the three hierarchic major concepts which constitute "patient status". The other two concepts are health status and functional status. Usually, all these terms are assumed to be equivalent and therefore are used interchangeably. But, according to

Meenan and Pincus (1987), "QOL" incorporates health status as well as circumstances of living, including housing, recreation, work, environmental conditions, economic resources, and education (Campbell et al., 1976; Burckhardt, 1985). Being a less broad concept, "health status" is defined by the World Health Organization as a state of physical, psychological and social well being (WHO, 1958). Usually health status questionnaires include at least one scale to assess each of these 3 major dimensions. The least broad concept of the 3 outcome concepts is "functional status" which refers to the physical function dimension of health status, focusing only on physical performance.

The medical literature has generally been more concerned with the physical aspects of the QOL of patients with a chronic illness; especially functional status was seen as the most relevant to rheumatology. Functional status measures do not adequately assess limitations in personal or role functioning and mental health (Ware, 1984). Therefore more comprehensive evaluation scales were devised; besides longevity, symptoms, the presence of physiologic abnormalities and functional status, social factors, compliance, and satisfaction were also incorporated into the evaluation of QOL (Bell, 1990).

Psychologists have been concerned with the psychosocial aspects of QOL for some time, and they evaluated QOL according to a variety of outcomes. According to Taylor and Aspinwall (1990), one primary criterion involved measures of biochemical and physiological functioning. These measures have been examined as they relate to adjustment. If arousal level and its indicators, such as heart rate, pulse, skin conductivity, blood and urine levels of catecholamines and corticosteroids, are reduced, adjustment or coping with a stressful event, is judged to be better.

A second criterion of successful adjustment involves measurement of psychological distress; anxiety or depression level, such that when a person's anxiety and depression is low, adjustment is judged to be better (Taylor and Aspinwall, 1990). The length of time it takes people to return to their prestress activities is also one of the measures of successful adjustment, but this assumes a priori that a person's prior living is

an ideal one, and that change in the conduct of daily activities is a sign of unsuccessful adjustment. In chronic conditions, substantial life change may be an indicator of successful adjustment (Collins et al., in press; Taylor, 1983, cited in Taylor and Aspinwall, 1990).

There are a number of factors which have been identified as good predictors of low QOL such as life satisfaction (Taylor et al., 1985), unpleasant and debilitating treatments, such as chemotherapy and radiotherapy (Litchman, Taylor and Wood, 1987; Taylor et al., 1985), pain (Davis, Hess, Van Harrison and Hiss, 1987) and functional impairment (Anderson et al., 1985; Baum, 1982; Hughes and Lee, 1987; Lawrence and Christie, 1979; Parikh et al., 1988).

Despite the medical literature's emphasis on these physical predictors of QOL, which lead to a more physical definition of QOL, there are also studies which have been concerned with the psychological aspect of QOL. Dubos described QOL as "profound satisfaction from the activities of daily life" and then added that these are "value judgements that are highly subjective" (1976, p. 8). Gurin, Veroff and Feld (1960), Cantril (1965), and Bradburn (1969) derived a working definition of QOL from people's own perceptions of their happiness, satisfaction with life, or sense of well-being as indicators of QOL. For example within the framework proposed by Cantril (1965), cognitive appraisals of past, present and projected future satisfaction with life were stressed. These satisfactions are permeated with values that are meaningful to the individual and that can be compared with one another" (Laborde & Powers, 1980, p. 20). "To extend the range and heighten the quality of value satisfaction already experienced" (Cantril, 1965, p. 10) is a motivating factor for humans. Clearly, Cantril (1965) emphasizes the individual and subjective basis of a definition of QOL.

Young and Longman (1983) also emphasized patients' own evaluations of QOL rather than the objective interpretation of QOL. According to them, QOL is defined as the degree of the subjects' satisfaction with the life circumstances. Physiological as well as psychological and social factors that may affect an individual's perceived QOL were

evidently included in this definition. McCaffrey (1985) listed the following multidimensional measures; distress, performance level, freedom of pain, sexual activity, social dependence, life-style changes, time spent with medical system, ability to return to work, behavior, morale, freedom from stress; degree of happiness, degree of satisfaction, purpose of life, anxiety and self-esteem. McCaffrey (1985) also stressed the equivocality of QOL. What is important for one person may be quite different for another. Therefore measurement based on objective indicators of QOL seems inadequate.

In popular conception, QOL is a function of material well-being that adds to life satisfaction. The identification of social indicators such as educational achievement, occupation, etc., has been used by some social scientists to assess objectively the QOL (Campbell, 1976). This is an indirect method to approach the subjective evaluation of the experience of life. But in the assessment of QOL, a shift from the variables related to possessions to concerns that are essentially psychological was pointed out (Campbell, Converse, & Rodgers, 1976), since a sense of well-being goes beyond the necessity for material possessions and extends to less concrete aspects of life (Campbell, 1976). The less tangible aspects of life are influential on the satisfaction with life, which is defined as "the perceived discrepancy between aspiration and achievement" by Campbell (1976, p. 8).

Campbell, Converse and Rodgers, (1976) and Flanagan (1978) described specific domains that were characteristics of the QOL of American subjects and asked them to rate their level of satisfaction. These domains are; physical and material well-being; relations with other people; social community, and civic activities; personal development and fulfillment; and recreational activities. Bostick (1977) later showed that these domains were applicable to a physically disabled population.

Within the framework of the present thesis, QOL is defined as psychological well-being or satisfaction with one's life as a whole. Schwarz and Strack (1991) pointed out that when evaluating their general life satisfaction, individuals based their judgments on

their affective state at that time. However, to evaluate the satisfaction about specific domains of life, individuals based their judgment on comparison processes. For example, to evaluate one's health, a comparison with that of other people or with what one had earlier is considered, then one reports the judgment accordingly. But there are other factors affecting the reporting; face-to-face interviews rather than mail surveys (Smith, 1979), presence of a handicapped confederate, the sex of the interviewer (being from the opposite sex) increased the subjects' judgments of well-being (Strack, et al., in press).

## ***2.4. PSYCHOLOGICAL FACTORS AFFECTING QOL WITHIN THE CONTEXT OF CHRONIC ILLNESSES***

The role of psychological factors in QOL has long been of interest. Concern for the psychological well-being of the ill leads us to better understand the underlying mechanisms which create differences in managing chronic illness. In this regard, there is a growing consensus about the importance of individual differences in appraisal and emotional experience in effecting the perception of QOL of chronically ill patients.

### ***2.4.1. PERCEIVED CONTROL OVER ONE'S HEALTH STATUS***

Much of the perceived control research supports the idea that beliefs about control have important implications in a number of areas related to health, and earlier findings and recent studies suggest a positive link between health and perceived QOL (Palmore & Luikart, 1972; Markides & Martin, 1979; Johnson, Cloyd, & Wer, 1982). For example, it is known that perceived control is related to better emotional well-being, more successful coping with stress, better health and physiological outcomes, success at making behavior change and improved performance. Lewis (1982) pointed out the negative correlation between lack of personal control and QOL. Burckhardt (1985) found that internal control over health contributed directly to a higher QOL. With respect to psychological well-being, a more external orientation has been found to be directly linked to mood disturbance (Kilpatrick, Dubin, & Marcotte, 1974), depression (e.g. Calhoun,

Cheney, & Dawes, 1974) , anxiety (e.g. Watson, 1967), and lowered goal expectations (e.g. Strassberg, 1973).

### ***THE CONSTRUCT OF LOCUS OF CONTROL***

The locus of control construct (Rotter, 1966) is the most typical means of assessing control in health specific contexts. It is a personality characteristic that signifies the general control an individual has over life matters. The logic behind the use of locus of control measures is that a person perceives more control when the locus of control is "internal" --i.e. dependent upon the person's own behavior-- than when the locus of control is "external" -i.e. dependent upon the actions of another person, or a matter of fate, luck or chance--(Wallston, 1989, p.94). Supporting this assumption, Strickland found that internal expectancies are linked to a variety of positive health practices and increased physical and psychological functioning, although an external, particularly chance orientation, is associated with mood disturbance (Kilpatrick, Dubin, Markotte, 1974) , depression (Calhoun, Cheney and Dawes, 1974) , anxiety (Watson, 1967) , and lowered goal expectations (Strassberg, 1973) .

However, the assumption that internality is more related to perceived control than externality is open to discussion in the context of chronic illness since the belief that others can control health is especially important to maintain positive adjustment even when personal control may not be possible (Reid, 1984) . Relatedly, internals are described as being more oppositional, less conforming, and more resistant to influence by others than externals (Lefcourt, 1972) , and internals are found to leave the treatment program more frequently against medical advice (Archer, 1980) . The current results reflect internals as more independent. However, in case of chronically ill people independency does not seem to be an appreciated characteristic since their well-being seems to be linked also to acting in obedience to the health care providers' instructions.

The social learning theory (Rotter, 1954, 1982) postulated the locus of control orientation, external or internal, as a personality variable, an enduring trait (Wallston, 1989). The nature of Rotter's I-E scale (1966) implies unidimensionality such that if the individual believes that a positive cause / effect relationship exists between his activities and consequent outcomes he has an internal locus of control orientation. If he cannot endorse these internal beliefs, then he has to believe that outcomes are controlled by sources external to oneself like powerful others or by chance factors (Wallston, 1989).

According to Rotter (1954), generalized expectancies, such as locus of control, operate in novel situations in which the individual has not had enough experience to develop specific expectancies. He based this assumption on the formula in his theory which postulates that the potential for a given behavior to occur in a given psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement and the value of that reinforcement to the individual in that situation. However, Rotter (1979) put forward the importance of devising tests limited to a specific area, if the individual has a great deal of experience in that specific area, such as health where experience is abundant (Wallston, 1989).

Over the past decade, to assess perceived control, rather than generalized locus of control measures, more situation-specific, health-related locus of control measures are used in health specific contexts. Wallston, Wallston, and DeVellis (1978) developed the Multidimensional Health Locus of Control scales (MHLC), which provide a multidimensional assessment of beliefs about control over health. The MHLC scales retain the original internal control dimension but differentiate between external control as a function of powerful others (i.e., health care professionals) and external control due to chance. The internal health locus of control orientation assesses the degree to which one believes one's health status is influenced by one's own behavior. Individuals with higher scores on the IHLC are found to have a sense of responsibility for their own health (Wallston, and Wallston, 1982). PHLC measures the belief that others control one's

health, and finally CHLC assesses the belief that fate, luck or chance determine one's health status, or perceived "non-control" of health (Wallston, 1989).

There are inconsistent findings concerning the relation of locus of control orientation to psychological adjustment in chronic illness. For example, some findings suggest that an external locus of control is related to more positive adjustment (Burish et al, 1984; Jamieson, Wellisch, & Pasnau, 1978), although other findings suggest that an internal locus of control is associated with better adjustment (Devins et al., 1982; Poll & Kaplan De-Nour, 1980). These inconsistent results may result from the undifferentiated use of internal, powerful others and chance locus of control beliefs. Additionally, although both PHLC and CHLC constitute externality dimension, a high score on the PHLC dimension does not necessarily signify low perceived control. Especially in case of chronically ill people, it is realistic to believe that other people's actions can influence one's health status (Wallston, 1989). Supporting this view, Affleck et al. (1987) found that perceptions of personal control among arthritic patients with severe disease were associated with poor adjustment.

#### ***2.4.2. ANXIETY***

Chronic illness may affect not only physical functioning but also psychological well being (Burish & Bradley, 1983). Psychological disturbance, such as anxiety, associated with chronic illness may be a substantial detriment to the patient's quality of life and may further interfere with physical rehabilitation and return to work, leisure and social activities. Especially, BD's patients may be restrained from their usual contacts and friends due to BD imposed physical restraints. Life style alterations may affect their anxiety level which in turn affect their perceived life quality.

Clinical studies indicated that the patients suffering from the chronic illness, rheumatoid arthritis (RA), tended to score above average on measures of emotionality, apprehension, worry, and tension (Moldofsky & Rothman, 1971; H. Robinson, Kirk, &

Frye, 1971). A subgroup of RA patients (serumnegative patients) had higher scores on the anxiety scale of a Middlesex Hospital Questionnaire (Crown et al., 1975). Even when duration and severity of illness were controlled, they had been at greater risk for anxiety disturbances (Vollhardt et al., 1982). These studies reflect the fact that a chronic illness should be considered a mind/body illness with psychological issues affecting physical states and vice versa. Hence, for the patient suffering from a chronic disease, his overall quality of life may be negatively affected, when physiological as well as psychological factors are taken into consideration.

For chronically ill patients, anxiety frequently stems from the inability to know definitely the course of the disease. It is especially relevant for BD which usually does not follow a clear course, and no cure is yet known. The individual experiencing anxiety senses tension, nervousness, or a feeling of being upset (Lewis, 1982), and he may feel himself vulnerable and helpless. He may doubt relief of symptoms and his survival. In turn, anxiety may escalate and may affect negatively the patient's perceived QOL.

Rogalski and Paisey (1987) have found that life satisfaction was greater among older adults with low self-rated anxiety, and in good health. Despite the fact that trait and state anxiety were highly correlated ( $r=0.78$ ) and they both emerged as significant predictors of life satisfaction, the bulk of variance, 39%, was accounted for by trait anxiety scores. It was concluded that measures of self-reported life satisfaction reflected stable personality attributes.

Trait-anxiety refers to an individual's predisposition to respond anxiously across varied situations (Cattell and Scheier, 1961; Spielberger, 1966). This construct represents stable, transcontextual aspects of anxiety.

### ***2.4.3. RELIGIOUS COMMITMENT***

There are a fairly large number of studies concerning religion and its influence on the quality of life; the consistent finding is that religious people tend to be more satisfied

with their lives than nonreligious people. Especially, church attendance was positively associated with various indicators of adjustment, happiness and satisfaction (Gurin et al., 1960; McCann, 1962; Spreitzer, et al., 1974, Clemente, & Sauer, 1976). Research has also shown that religion may be an effective way for having a longer and more meaningful life and for improving the quality of life (Hall, 1985). Additionally, Elkins, et al. (1979) have shown that religious commitments such as prayer, particularly frequency of prayer and perceived importance of effectiveness of prayer were found to be predictive of tension reduction. All these studies support the view that a religious faith adds something to an individual's life, whether in terms of personal meaning, social integration (Hadaway, 1978), or health. Rogalski and Paisey (1987) also found that life satisfaction scores were higher among retired respondents with high religious commitment. They explain the correlation between these variables such that strongly held religious beliefs may bring in themselves a fatalistic acceptance of hazards beyond personal control (Pretzel, 1966), and that religious fatalism may consequently act as a psycho-social buffer against stressors in adults of all ages (e.g. Caplan, 1981).

Besides those who advocate that religion functions as a resource, something which can help individuals to be happier with their lives, there are others who view religion as a compensation, something that persons tend to seek out in reaction to their misery. Campbell et al. (1976) in their study emphasized that religion may function to meet the needs of those suffering various sorts of deprivation. They stated that "people, whose life situations are, for other reasons, relatively unfortunate and who lack therefore even average feelings of well-being, may be more disposed to cling to religious values as a compensatory resource" (p. 370) and indicated a negative relationship between religious mindedness and QOL. However the findings by Campbell et al. (1976) were reanalyzed and it was shown that their interpretation was in error (Hadaway, 1978), the fact that religion has different meanings to individuals should not be forgotten; for some individuals, its primary function may be compensation rather than resource. Additionally, the relationship between religiosity and quality of life may differ in different religious traditions, such as in Islam or in various groups, such as among chronically ill.

## 2.5. ILLNESS-RELATED VARIABLES AFFECTING QOL

Victims of chronic illness, whatever the cause, experience some type of disability that requires changes in life-style. Such disability may result from the physiological changes caused by the illness or from the side effects of the treatment. Whatever the source, physiological and psychological deficits as manifestations of the impact of a given disability occur in varying degrees. Such disability disrupts the individual's activities associated with a full and productive life, and as a result the QOL may be diminished (Laborde, & Powers, 1980). Studies by Adams (1971) and Palmore and Luikhart (1972) have suggested a positive link between health and perceived QOL and health was found to be the strongest of all variables that relate to life satisfaction. Good health is known as one of the most frequent reasons given for happiness (Gurin, 1960).

Heidrich (1993), in her study examining the relationship between health and psychological well-being in elderly women, using a developmental perspective found that women in poor health had lower levels of well-being, regardless of age. Heidrich (1993) operationalized psychological well-being taking into account a multidimensional nature of well-being, consisting of purpose in life, personal growth, positive relations, and autonomy. Past empirical studies using nondevelopmental measures also indicate that poorer health in old age is related to higher levels of psychological distress and lower levels of life satisfaction and subjective wellbeing (Birren, & Renner, 1980; Costa & McCrae, 1984). In these studies, typically employed measures of psychological well-being are life satisfaction, (Neugarten, Havighurst, & Tobin, 1961), happiness (Bradburn, 1969), and subjective well-being (Diener, 1984).

A few researchers have been concerned with the effects of specific disease-related factors on QOL. Laborde and Powers (1980) compared the QOL of two groups of chronically ill patients; patients undergoing hemodialysis and patients with severe osteoarthritis. They found that patients with arthritis had a less satisfying life than patients undergoing chronic hemodialysis generally considered a threatening and unpleasant form of therapy. They related this surprising finding to chronic pain, and/or decreased mobility, living alone, and preoccupation with the illness state. All these stated factors

may have a greater impact on the sense of well-being than does a life-threatening illness that is not marked by pain.

In their investigation of chronic obstructive pulmonary disease (COPD) and life quality, McSweeny, Grant, Heaton, Adams, and Timms (1982) have reported that the QOL was impaired relative to healthy subjects on emotional functioning, social-role functioning, activities of daily living, and recreational activities. QOL showed statistically significant relationships with several physiological variables; pulmonary, cardiac functioning and exercise capability and neuropsychological functioning. Their heuristic model shows that COPD has direct effects on QOL by limiting exercise capability and mobility. In another study, Brown, Rawlinson and Hillis (1981) have found a specific disease variable, degree of dyspnea, to be related with decreased life satisfaction in persons with COPD.

## ***2.6. PERSONAL CHARACTERISTICS AFFECTING QOL***

Various studies showed that not only physical factors and psychological variables, but also personal characteristics play an important role in the perception of QOL of chronically ill patients. The importance of variables such as age, race, gender, education, and income is usually ignored despite their general role as potential mediators for health-promoting or health-damaging behaviors (Matthews, 1989) which affect perceived QOL.

In the Mc Sweeny et.al. (1982) study, it was found that age and socioeconomic status were possible moderators of the relationship of chronic obstructive pulmonary disease to life quality. They explained this result such that with increasing age, life quality may be affected by being subject to various illness related health restrictions and additionally aging may produce neurological deficits. Higher socioeconomic position may offer patients the possibility to cope better with the effects of disease because of the availability of material resources. Affluent persons may seek medical help promptly and may be exposed to less environmental hazards.

In considering the effect of age in specific chronic conditions, the ways people perceive aging and illness, lifelong beliefs and attitudes about health may influence responses to illness. Chronic illness indicates a negative and longlasting change in health status with the potential for diminishing the overall QOL because when getting older autonomy decreases, dependence to others increases. This may create a handicap for the perception of QOL (Hickey, & Stilwell, 1992). The presence of more serious and prolonged health problems may lead to a diminished sense of control and efficacy especially in older people. Therefore they may take a less active role in dealing with their illness conditions. Beisecker (1988) found that older people were more likely than younger people to rely heavily on medical professionals and assumed less responsibility for their health care.

QOL implies issues of independence, social contact, family cohesion, and participation in work, volunteer, or leisure activities. For older persons with chronic conditions these concepts are not taken for granted and many of these components of the quality of existence are lost. In a study with elderly women, older age was found to be associated with lower levels of a purpose in life, fewer goals, less potential for continued development (personal growth), and lower levels of intimacy and generativity (positive relationships) (Heidrich, 1993). For chronically ill people, the findings are expected to be worse.

Chronic conditions exhibit widely differing characteristics which may affect perception of QOL. In patients with BD, functional limitations and significant restrictions in basic activities of daily living due to oral ulceration, genital ulceration, skin lesions and inflammatory eye lesions are the essential characteristics of the disease. On the other hand, a favorable characteristic of BD is the gradual reduction of disease activity after a few years. BD is a relapsing and remitting disease and it follows a more severe course among males and especially among young males (Yazıcı, et al., 1986). Age related change in functional health is an important factor in understanding how the disease is related to an individual's overall health status and life-style.

For another chronic illness, cancer, age was negatively related with distress such that younger patients were more emotionally distressed than older (Vinokur et al., 1989). And additionally among individuals who are physically impaired, younger patients experienced greater deterioration in their mental health and well-being than similarly impaired older patients (Vinokur, Threatt, Vinokur-Kaplan, & Santariano, in press). In brief, younger patients are found to be at greater risk for adjustment difficulties (Andersen, 1992).

The educational level is another factor which necessitates consideration in examining psychological responses in the context of chronic illnesses. Pincus (1988) paid attention to the fact that both a formal educational level and health status was associated with some behavioral risk factors predisposing to the etiology and poor outcomes in most chronic diseases. The behavioral risk factors which can be stated are diet, smoking, compliance, efficiency in using medical services, problem solving capacity, sense of personal responsibility, capacity to cope with stress, life stress, social isolation (Ruberman, Weinblatt, Goldberg, Frank, Chaudhary 1984), health locus of control (Nicassio, Wallston, Callahan, Herbert, & Pincus, 1985), and learned helplessness (Callahan, Brooks, Pincus, 1988). Callahan & Pincus (1990) emphasized the use of the educational level as a risk factor for disease occurrence as well as a biological marker for disease severity rather than using it simply as a demographic marker.

In a study of 124 systemic lupus erythematosus patients, Callahan and Pincus (1990) found that the formal education level was associated with the clinical status in rheumatic and other chronic diseases; the clinical status of patients with less than 11 years was poorer than those with less than 12 years of formal education. Moreover, all differences remained significant when controlled for age, race, sex, and disease duration. The formal educational level appears to have a potential advantage over other socioeconomic status variables.

Formal education level was found to be related with mobility and mortality in patients with rheumatoid arthritis, cardiovascular disease (Pincus and Callahan, 1985, Callahan and Pincus, 1988) and back pain (Pincus, 1988).

In an older, disabled group, Boyle et. al (1981) found that internality correlated with greater educational attainment, while externality correlated with greater length of stay at the institution of veterans. Moreover, internal control was found to be partially associated with lower-rated functional disability.

The fact that unmarried individuals are characterized as among the lower-status group who have higher incidence and prevalence rates of mental illness and disturbance (Bachrach, 1975; Dohrenwend, 1979; Kohn, 1973) indicates that the variable of marital status differences should be considered in the context of negative events, such as chronic illness. Thoits (1987) explains the naming of unmarried people among the lower-status group from a psychosocial perspective such that marital status is an achieved status, a valued status. Since marriage is viewed as a desirable and normative state for adults, being unmarried is devalued. Silverman (1980) suggested that widows or widowers reported feelings of stigma due to their unattached status. And additionally, the unmarried may have fewer social and economic resources. For chronically ill people, being married may have a positive effect on their psychological well-being, if they believe that their spouses' support will ameliorate their condition.

Employment is another factor which should be considered in the context of health problems. For example, women reporting better health were more likely to be employed than those who experienced health problems (Waldron, 1980). Research shows that income is negatively associated with depression (Gore, Mangione, 1983). Employment may have a positive effect on well-being because of financial security. People can afford to seek professional help when health related problems arise, and this, in turn may lead to a better perceived QOL.

### **3. AN OUTLINE OF THE PRESENT THESIS WITHIN THE COGNITIVE FRAMEWORK DEVELOPED BY LAZARUS AND COHEN (1976)**

The cognitive paradigm put forward by Lazarus and Cohen in a 1976 paper provided the theoretical orientation for this study. They suggested that the effect of environmental variables (i.e., inputs to the person) on personal, adaptive results is mediated by psychological factors. Here, inputs are defined as variables among which are: 1) the physical surroundings that are essential for human life, 2) the social environment, 3) demographic traits, 4) specific adaptive problems. The last refers to major changes in life, ongoing, repetitive chronic events, such as a chronic illness. Adaptive results or outcomes stem from what a person thinks or does. These intervening processes activated within subjects are called mediators. In other words, these processes, through evaluating the information coming from the environment to the self, mediate a person's response to any environmental event which lead to adaptational outcomes. From this standpoint, adaptational outcomes are products of the way a person thinks about a stressful situation. This evaluative process is based on the person's past and present experiences, abilities and beliefs (Lazarus, et al., 1979) which constitute individual differences.

The suggested model emphasizes the role played by cognitive appraisal in the perception of QOL, whether it arises in the form of predispositions or in relation to the stressful event itself (chronic illness). Lazarus (1966) emphasizes the importance of "general belief systems in determining the appraisal process" (p. 134) when the stimulus cues are ambiguous. In the case of chronic illnesses, such as BD, of no known cause or cure, an ambiguous and uncertain situation is present for these patients. If the patient views generally the situation as manageable, subject to control, the appraisal of the psychological well-being or QOL will be affected accordingly. Recent research and theorizing on locus of control (Rotter, 1966; Lefcourt, 1976) underlies the importance of such general beliefs.

Within the present study, locus of control orientation is assumed to have a mediating effect on the psychological well-being of BD patients. Locus of control is viewed as an individual difference construct in perceiving reinforcement across a variety of situations as under personal control or the control of external forces such as luck, chance, or powerful others (Rotter, 1966).

There are also "existential belief systems, such as faith in God, fate or some higher natural order which creates meaning out of life" (Lazarus and Folkman, 1984, p.78). Beliefs in some higher purpose helps to answer inexplicable events such as suffering from a chronic illness. Patients may view their unavoidable condition as a learning experience by God. Therefore, acceptance of their condition gets easier. The role of functionality of religious beliefs in the support of health and therefore psychological well-being is an area which needs investigation. The religious commitment level is conceptualized as a personality variable. The tendency to have faith in God is expected to mediate QOL of BD patients.

Trait anxiety also can be conceived as a generalized personality variable. According to Lazarus (1966), a chronically anxious person believes that the environment is hostile, and that he is incapable of mastery. Various situations are considered as threatening and challenging. Being chronically ill can be thought as a threatening situation which is omnipresent. One of the probable consequences of being chronically anxious may be a decrease in QOL and satisfaction with medical condition. Within the present study, trait anxiety is viewed as a personality variable implying the tendency to respond with anxiety elevations to situations perceived as threatening with anxiety elevations (Spielberger, 1966) and is thought to have a mediating effect on QOL of BD patients. Consistent with this view, anxious subjects were found to hold a more pessimistic approach to their ability to control or cope with a threatening condition (Archer, 1979b). This kind of outlook may result in a lower QOL.

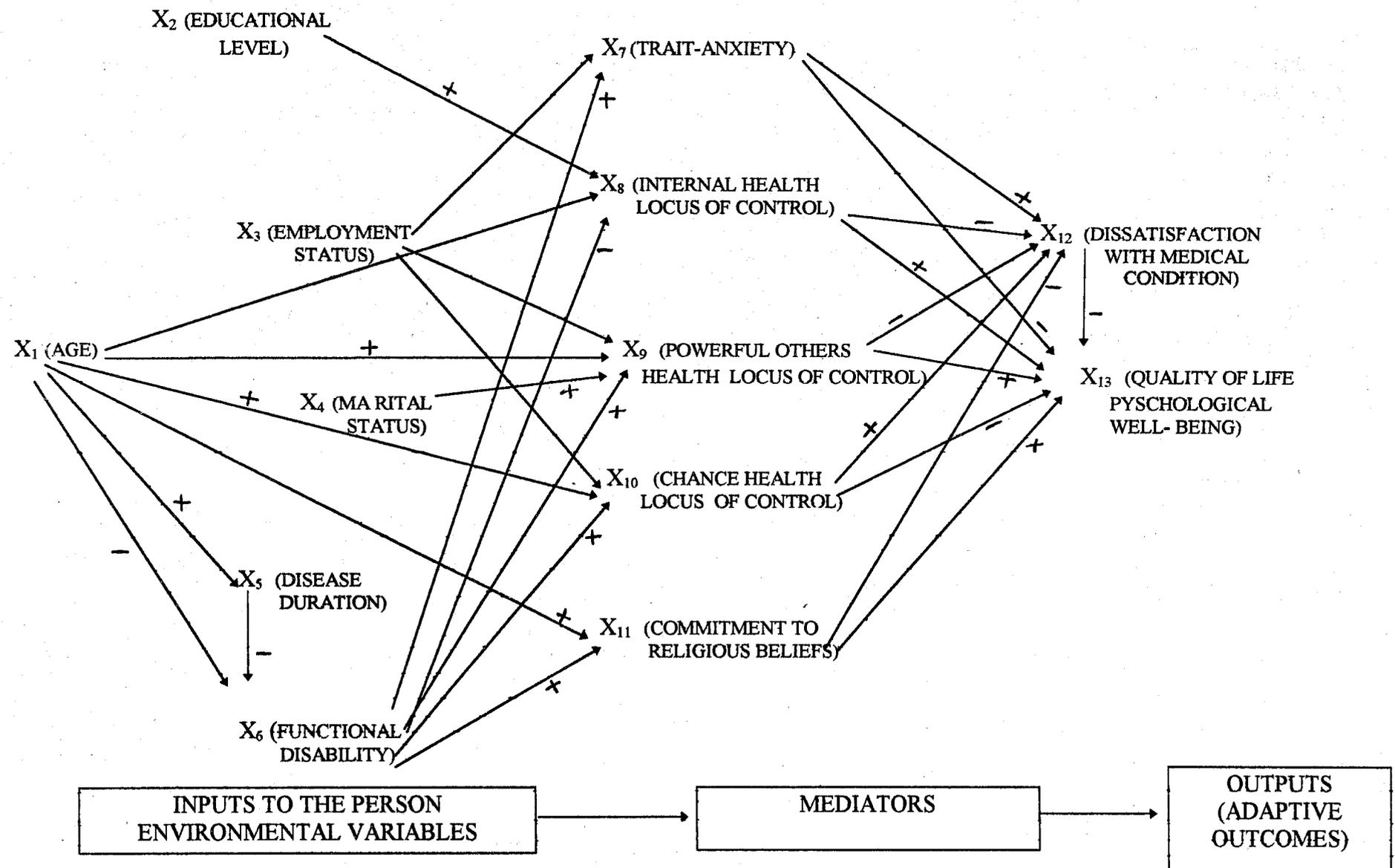
Within this model, the question of how individual differences stemming from locus of control orientations, religious commitment and trait anxiety, interact with

environmental conditions to determine the perceived quality of life of chronically ill patients will be answered. It is known that many factors affect QOL in patients suffering from a chronic illness, but, research on correlates of QOL is not sufficient for better understanding of the possible relationships among situational and personality factors. A path analysis model will permit investigation of the relative impact of factors as well as causal effects. It is plausible that the psychological well-being or QOL is indirectly influenced by environmental variables through psychological factors. For example, in chronically ill people, disease duration may indirectly influence QOL by diminishing sense of control and efficacy over their illness.

Using this theoretical perspective and research cited, variables were selected and put into a causal model. The model (Fig. 1) incorporates independent variables on the left, moderator variables in the middle and the dependent variables on the right. All things considered, moderator variables should be discerned as both dependent and independent variables with regard to the variables on their left and right. Thus, expected relationships could be clearly specified by positive/negative arrows. Additionally, dependent variables (dissatisfaction with medical condition and QOL) are considered to be linked to each other, and it was thought that the logical direction would be from satisfaction with medical condition to psychological satisfaction rather than the other way around. The explanation for this point of view is that a person's evaluation of life may be affected by one's appraisal of his/her physical condition, more specifically, the way the chronically ill person experiences his condition may either cause him to feel worse or better in general. The reason for putting satisfaction with health into the model is that a person's perception of his health was found to be the strongest variable related to life satisfaction (Palmore & Luikart, 1972). Moreover, in many studies, good health is the most frequent reason for being happy (Gurin, 1960).

Age, educational level, employment status, marital status, disease duration, and functional disability were selected to measure the impact of environmental inputs on satisfaction with the medical condition and QOL. At first, severity of illness was thought to be a factor which should be put into this causal model as inputs to the person. But,

**FIGURE 1**  
**THE HYPOTHESIZED CAUSAL MODEL**



obtaining a total severity score was not possible, since the disease has many facets which show variability from one person to the other. When the findings of the pilot study were considered it was found that, of the several symptoms of BD, severity of eye involvement accounted for the majority of the total explained variances in an overall functioning level. Since functional disability questions are mostly related to the vision of BD patients and therefore it includes in itself severity of eye involvement, it was decided that the variable, severity of eye involvement would not add much to the model. Only the variable of functional disability was selected in order to make the model more clear and simple. Functional disability is defined as inability to engage in routine daily activities.

Within the proposed causal model, dissatisfaction with the medical condition, QOL or psychological well-being are dependent variables. Age, education level, employment status, marital status, disease duration, functional disability are environmental inputs to the person. Psychological factors namely, locus of control orientations, trait anxiety, religious commitment are taken as intervening variables between environmental input variables on the one hand and dependent variables on the other. A major focus of the study is the investigation of psychological factors as intervening variables between environmental inputs and dissatisfaction with the medical condition and QOL.

Since there is little in Turkish literature on the impact of physical, psychological, and demographic factors on dissatisfaction with one's medical condition and QOL experienced by people with BD, we need to extrapolate from the literature review summarized above. Expected relationships between the dependent and the independent variables will be specified in the hypotheses section. Direct relationships within the model were indicated by unidirectional, positive/negative arrows. If no direct effect was expected, no arrow was drawn.

### ***AIMS OF THE PRESENT INVESTIGATION***

The overall aim is to investigate the effects of illness-related variables, personal characteristics, and psychological variables on dissatisfaction with health and a perceived

QOL. A major focus of the study is the investigation of psychological variables (health locus of control orientation, trait anxiety, commitment to religious belief) as an intervening variable between illness-related variables, personal characteristics and QOL.

In the light of the literature review summarized above, the following hypotheses were made:

The following are the hypotheses concerning the direct relationships between environmental inputs (personal characteristics and illness-variables) and psychological variables (health locus of control orientations, commitment to religious beliefs and trait anxiety) :

1. Based on the findings suggesting that with increasing age, patients relied more on external factors such as chance or powerful others (Ludenia and Donham, 1983; Wallston & Wallston, 1978; Mizrahi, 1993) , it was hypothesized that age has a direct positive effect on externality, such as powerful others and chance control over health and a direct negative effect on internality since older people are found to assume less responsibility for their health (Beisecker, 1988).
2. Additionally, it was also hypothesized that increasing age has a direct positive effect on religious commitment which is also implying a reliance on externality, on God.
3. Although chronic illness implies a negative and longlasting change in health status, for BD patients increasing age may have a direct negative effect on functional disability because BD follows a gradual reduction of disease activity after a few years and runs a more severe course among young males (Yazıcı, et al., 1986) .
4. Since findings show that employment status influenced locus of control and trait anxiety (Jones and Page, 1986; Kumral, 1979; Mizrahi, 1993) , it was hypothesized that nonemployment has a direct positive effect on trait-anxiety and on belief on powerful others and chance factors.

5. As researchers pointed out (Wallston & Wallston, 1978; Mizrahi, 1993), a positive direct relationship between personal control over health and educational level is hypothesized.

6. Marital status is hypothesized to have a positive direct effect on the reliance on significant others since married patients are more likely to have their partners' help or support in various areas of their lives, while the unmarried have to rely on themselves. Married chronic pain patients were found to believe in external factors for health control in Mizrahi's study (1993).

7. Disease duration is hypothesized to have a direct negative effect on the functional disability of BD patients since BD follows a gradual reduction of disease activity after a few years.

8. Since disability caused by illness disrupts the individual's daily activities, help or support from health professionals and other people gain importance. Therefore, functional disability is hypothesized to have a direct positive effect on reliance on externality, such as powerful others, chance factors and God.

9. Since chronic illness affect not only physical functioning but also psychological well-being (Burish & Bradley, 1983), it is relevant to expect that chronic dysfunction may cause depression, anxiety, apathy or related symptoms (Hickey & Stillwell, 1992). Therefore, it is expected a positive relationship between anxiety and functional disability.

The following are the hypotheses concerning direct relationships between psychological factors and dissatisfaction with the medical condition and perceived QOL:

10. Since patients with arthritis who had a reliance on internal control over their health were found to perceive higher QOL (Burckhardt, 1985), it was hypothesized a direct positive relationship between the internal locus of control orientation (IHLC) and perceived QOL and a negative direct relationship between IHLC and dissatisfaction with health.

11. Although there are various findings indicating that IHLC is associated with better psychological adjustment (Devins et al., 1982 ; Poll & Kaplan De-Nour, 1980) , there are also some other results suggesting a positive relationship between an external locus of control and psychological adjustment (Burish et al., 1984; Jamieson, Wellisch, & Pasnau, 1978) . In the case of chronically ill people, it is realistic to rely on the belief that others such as health professionals can control health (Christensen, et al., 1991) . Additionally reliance on such a belief influences one's health status in a positive direction (Wallston, 1990). Therefore, a direct positive relationship is hypothesized between powerful others control orientation (PHLC) and QOL, and a negative relationship between PHLC and dissatisfaction with the medical condition.

12. Variability and unpredictability of the course of BD may lead to greater belief in external control due to chance, and they may become more fatalistic. If one perceives his health status as dependent upon chance, luck or fate, he is not expected to engage in positive health practices (Strickland, 1978) . Consistent with this view, chance orientation was found to be associated with mood disturbance (Kilpatrick, et al., 1974), depression (Calhoun, et al., 1974), and lowered goal expectations (Strassberg, 1973) which may affect perceived QOL. Therefore, a negative direct relation between chance locus of control orientation (CHLC) and QOL and a positive relation between CHLC and dissatisfaction with health status is expected.

13. Adherence to religious beliefs is identified as an effective way for improving the quality of life (Hall, 1985) since religious commitment is related to better adjustment, happiness, satisfaction and tension reduction (Gurin et al., 1960; McCann, 1962; Spreitzer, et al., 1974; Clemente & Sauer, 1976, Rogalski & Paisey, 1987; Elkins, et al., 1979). Therefore it is hypothesized that religious commitment has a direct negative effect on dissatisfaction with medical condition and a positive effect on perceived QOL.

14. Since trait anxiety was found to be a significant predictor of life satisfaction (Rogalski & Paisey, 1987), a positive direct effect is expected between trait anxiety and dissatisfaction with health and a negative effect between trait anxiety and QOL.

The followings are the hypotheses concerning the indirect relationships between environmental input variables and perceived QOL and dissatisfaction with the medical condition via psychological variables:

15. Since disability which disrupts the individual's functioning associated with a full and productive life diminishes QOL (Laborde & Powers, 1980) , a negative relationship between the functional disability and the satisfaction with the medical condition and perceived QOL is expected. However, when mediating psychological variables are introduced, they may change the expected relationship. For example, subjects who believe strongly that they have the power to control their illness may perceive higher QOL compared to those who did not hold these beliefs even if the functional disability is present. In other words, belief in internal control over health may buffer the impact of functional disability on QOL and may intensify the negative effect of functional disability on dissatisfaction with the medical condition. Therefore functional disability is hypothesized to have an indirect effect on QOL and dissatisfaction with the medical condition via internal control orientation over health.

16. Based on the explanations stated in the 12th hypothesis, it is expected that functional disability has an indirect positive effect on dissatisfaction with the medical condition and an indirect negative effect on QOL via chance locus of control orientation.

17. Since commitment to religious beliefs increases life satisfaction (see 13th hypothesis) , it may decrease the negative impact of functional disability on QOL.

18. Since being anxious is known to affect life satisfaction negatively (Rogalski & Paisey, 1987) , the positive impact of functional disability on the dissatisfaction with the medical condition and the negative impact of QOL is thought to be enhanced through trait anxiety.

19. Based on the 11th hypothesis expecting a negative link between chance health locus of control orientation and perceived QOL, functional disability will have an indirect

negative effect on the perception of QOL and an indirect positive effect on dissatisfaction with the medical condition via chance locus of control orientation.

20. Based on the 4th and 5th hypotheses, a higher educational level and employment will have an indirect positive effect on QOL through the belief in internal control over health.

21. Based on the 6th hypothesis, marital status is expected to have an indirect negative effect on dissatisfaction with health and an indirect positive effect on QOL via reliance on powerful others. In other words, for a chronically ill patient, being married may have a positive effect on his psychological well-being if he believes in his spouse's help or support in improving his condition.

22. Mc Sweeney et al. (1982) have found that the contribution of age to life quality was relatively more important than the physiological state of COPD patients. They related this finding to the various kinds of complications that aging imposes. Additionally, older patients may have a less active role in dealing with their condition and in seeking alternative sources of satisfaction in life. Briefly, a negative link between age and life satisfaction is implied. Here, based on Beisecker's finding (1988) stating that older people were more likely than younger people to assume less responsibility for their health care, it is proposed that the positive impact of age on dissatisfaction with health status and negative impact of age on perceived QOL may be enhanced through a diminished sense of control over health.

23. Rogalski and Paisey's (1987) findings indicate a positive link between religious commitment and life satisfaction among older people, therefore it is hypothesized that the positive impact of age on dissatisfaction with medical condition and negative impact of age on perceived QOL is buffered via religious commitment.

## **4. METHODOLOGY**

### **4.1. SUBJECTS**

The research was carried out in the Department of Rheumatoid Illnesses of İstanbul University, Cerrahpaşa Medical Faculty. The patient group consisted of 69 male patients diagnosed as having definite Behçet's Disease. Data were collected on patients seen between April and June 1994. From the list of patients, registered on a given day, every third male patient who gave verbal consent to participate in the interview was included in the study. Only one patient refused to participate the interview. In this setting, all patients were seen regularly by a rheumatologist.

Ages ranged from 16 to 51 years with a mean of 33.870, with a standard deviation of 8.888. The distributions of educational level, occupational, employment, and marital status for the subject population are given in Table 1.

71% of the subjects were employed and 78% were married. In terms of educational level, the sample group was divided into four groups; 52% had attended primary school, 13% secondary school, 28% high school, only 5 patients had attended university. The numbers of years since the diagnosis of BD ranged from 4 to 300 months with a median of 58 months.

As additional information, most of the patients held nonprofessional jobs and were from a lower class background. Patients from the higher socioeconomic strata are underrepresented, and therefore generalizability of our findings are limited. The greater majority of patients used medication. Approximately half of the patients had problems with their vision level.

**TABLE 1. The distributions of subjects on personal characteristics**

	RANGE	FREQUENCY
AGE	16 - 51	69
	16 - 26	15
	27 - 36	25
	37 - 46	25
	47 or more	1
EDUCATION	5-15 years	69
	01-05 years	36
	06-08 years	9
	09-11 years	19
	12-15 years	5
DISEASE DURATION	4 - 300 months	69
	0 - 50 months	30
	51 - 100 months	22
	101 - 151 months	8
	151 months or more	9
EMPLOYMENT STATUS	no	20
	yes	49
MARITAL STATUS	no	15
	yes	54

## 4.2. DESIGN

An ex post facto, cross-sectional design was used in this study. Data were gathered at only one point in time. The dependent variables are the level of satisfaction with the medical condition and psychological well-being. Independent variables are the level of health locus of control, trait anxiety, religious beliefs, personal characteristics (age, educational level, employment and marital status), and illness-related factors (duration of illness and functional disability).

## 4.3. PROCEDURE

First the doctors' permission was obtained, then all subjects referred by the registration official to the psychologist were told that the study was done in cooperation between the Cerrapaşa Faculty and Boğaziçi University. After obtaining verbal consent, the investigator administered the scales assessing activities and life style, control beliefs related to health behavior, trait anxiety, religious beliefs and psychological well-being, individually, in a room reserved for this study at the hospital. Completion of the scale statements took approximately 30 minutes. Taking into consideration those patients who had difficulty in understanding or reading due to their reduced vision, the psychologist read aloud all instructions and items of the scales, in order to create equivalent conditions for all subjects. To establish rapport between the patient and the researcher, the patients were allowed to talk freely about their lives while responding to the scale items.

The instruments were presented in random order in order to eliminate the confounding effects of the presentation order of scales.

In the pilot study, besides the scales completed by the patients, the Behçet's Disease Current Activity Form was completed by each patient's primary rheumatologist who examined the subject on the same day. This form was developed by the Rheumatology and Rehabilitation Research Unit University of Leeds in 1994. It consists of the scoring of each clinical symptom of patients with BD. Clinical features include fatigue, headache,

oral ulceration, genital ulceration, skin lesions, painful joints, and gastrointestinal manifestations. These features were rated on a scale ranging from 0 to 4, based on the duration of symptoms, in which 0 = no symptoms, 4 = symptoms for 22-28 days. If eye involvement was present, it was rated on a scale ranging from 0 to 3, in which 0 = no eye involvement, 1 = red eye, 2 = blurred vision, 3 = painful eye. Nervous system and major vessel involvement were assessed by answering "yes" or "no" to the 4th and 5th questions reciprocally. All these scores were then converted by rheumatologist to a rating of symptoms' severity.

Additionally, patients were also asked to specify a global assessment of their overall functional status. They selected 1 of 4 responses to the question: "which of the following best describes you today?" The responses and ratings were: I can do everything I want to do = 1, I can do most of the things I want to do = 2, I can do some, but not all, of the things I want to do and, have many limitations = 3, I can do hardly any of the things I want to do = 4.

A multiple regression analysis was performed to establish which of the symptoms' severity might predict overall functional status. Eye severity was found to be the strongest predictor of the global functional status ( $\beta = .40$   $t = 3.719$   $p < .001$ ). However the variable, severity of eye involvement was excluded from the model, since the items of another variable, functional disability were mostly related to the vision of BD patients. Using a subdimension of functional disability, ie., severity of eye involvement as a variable would not add much to theory building. Therefore only the variable "functional disability" was selected to get the model clear and simple.

#### 4.4. MEASUREMENT INSTRUMENTS

##### *The psychological well-being scale:*

In this study, the perceived quality of life was conceptualized as a state of psychological well-being, and measured by a 7-point semantic differential scale developed by Campell, Converse and Rodgers in 1976 and used by Callan (1987).

The possible range was between 12-84, high points indicating more positive evaluations about oneself and life. The semantic differential was scored on a scale of 1-7, with 1 being the most negative score and 7 the most positive, the interval 4 being identified as neutral. The rating of 1 to 7 was distributed across each bipolar range. From the Turkish version of the scale prepared and used by Çanakçı (1992), only two adjectives were modified ("ideal" to "mükemmel", "yetkin, müktedir" to "güçlü, çareli") to eliminate the difficulty in the comprehension of these adjectives (See Appendix A).

Dissatisfaction with the medical condition, personal characteristics, functional disability, and disease duration measures were obtained from the Activities and Life Style Index for patients with BD, which is partially adapted from the Activities and Life Style Index for patients with rheumatoid arthritis. The original index was developed by the Division of Rheumatology and Immunology at Vanderbilt University and has several versions. This is a simple 2 page self-report questionnaire. It was redesigned by a rheumatologist, Prof H. Yazıcı of Cerrahpaşa Medical Faculty, for this study. Questions are about functioning, health perceptions, and demographics (See Appendix B).

To assess *dissatisfaction with the medical condition*, patients were asked a single question which was scored on a scale of 1-4, in which 1 = very satisfied and 4 = very dissatisfied. There is evidence suggesting that a single-item to evaluate health related perceptions is a valuable tool; Cunny and Perri (1991) showed that the item "in general what would you say your health is excellent, very good, good, fair, or poor" was positively and significantly linked with the total score for a health related quality of life ( $r = .86$ ,

$p < .0001$ ). This item was one of the Medical Outcome Study (MOS) instrument (Stewart, et al., 1988) whose reliability estimates ranged from .87 to .95.

To assess *functional disability*, patients were asked to respond to questions concerning the difficulty in 3 activities of daily living by checking 1 of 4 levels of difficulty. The response coding scores are: "without any difficulty" = 1, "with some difficulty" = 2, "with much difficulty" = 3, "unable to do" = 4. The 3 questions were prepared by a rheumatologist expert in the subject of BD. The total functional disability score was expressed as the mean score for the 3 responses, which range from 1 to 4.

The Activities and Life Style Index also included questions about age, occupation, educational level, marital status and the duration of illness. Duration of illness was obtained by asking the patient the time since diagnosis. The results were all converted to months.

The *religious beliefs* were measured with a scale constructed for this study by the present investigator. This was a 4-item scale designed to assess general religious beliefs independent of bias that might be related to being a member of different religions; eg. "I try to accomplish religious requirements", "I pray", "I am a religious man", "I obey to the religious prohibitions". Respondents were asked to rate 4 items on a 4 point response scale ranging from 1 (almost never) to 4 (almost always). The possible range is between 4 and 16, high points indicating higher commitment to religious beliefs. Items were checked by the supervisors of the present thesis (See Appendix C).

The *internal, powerful others and chance control over health* variables were measured by the Multidimensional Health Locus of Control Scale (MHLCS) developed by Wallston et al. (1978). The MHLCS consists of 18 items of three separate dimensions of locus of control beliefs related to health behavior. These are internal, chance, powerful others health locus of control. Two alternate forms (A and B), each consisting of three 6-item subscales, and a third version which is a combined form of A and B, consisting of 12

items are available. Form A of the instrument was used in the present thesis. The responses to the three subscales were given on a 6-point response scale ranging from 1 (strongly disagree) to 6 (strongly agree). The possible score range is between 6 and 36 for each of the subscales. The internality dimension (IHLC) assessing patients' beliefs that they are in control of their fate or destiny, was measured by the sum of the 6 items, whose numbers were 1, 6, 8, 12, 13, 17. The "externality" dimension (EHLC) was measured by two subscales: The "chance" subscale (CHLC) assessed the degree of control that patients believe other things and people have over their own life situation. Item numbers 2, 4, 9, 11, 15, 16 determined the CHLC. The "powerful others" subscale (PHLC) rated the degree to which patients believe medical professionals influence the outcome of the illness and treatment. Item numbers 3, 5, 7, 10, 14, 18 formed PHLC.

MHLC has adaptations for specific populations. For the present study, the version for assessing perceived control of chronic pain, the Pain Locus of Control (Toomey, 1991), translated into Turkish by Mizrahi (1993) was revised for patients with BD. The modification involved changing all references to pain to a corresponding reference to BD. For example; "I am responsible for my pain" became "I am responsible for the worsening of my illness". Other than these slight wording changes, the original MHLC remained intact. Items related to BD were checked by a rheumatologist (See Appendix D).

The three 6-item MHLC subscales showed the alpha reliabilities ranging from .683 to .767 (Wallston et al., 1978). Additionally, in psychiatric patients discharged from inpatient or day hospital facilities, alpha reliabilities for IHLC, PHLC, CHLC were respectively .81, .79, and .79 (Wall, Hinrichsen, and Pollack, 1989). Predictive validity have been demonstrated through correlations between health status and MHLC scores. Health status correlated positively with IHLC ( $r = .403$ ,  $p < .001$ ) and negatively with CHLC ( $r = -.275$ ,  $p < .01$ ), and did not correlate with PHLC ( $r = -.055$ ) (Wallston et al., 1978). Discriminant and convergent validity of the IHLC were reported; the subscale correlated moderately ( $r = .56$ ) with another internal locus of control scale and was statistically independent or negatively correlated with the external scales of the MHLCS (Burckhardt, 1985). Moreover, Wallston et al. (1978) reported that IHLC and PHLC

scales are statistically independent, and IHLC and CHLC were negatively, and PHLC and CHLC positively correlated. But Russell and Ludenia (1983) derived contradictory findings from intercorrelation matrix; CHLC scale were found to be independent of PHLC and IHLC Scales, while PHLC and IHLC Scales were demonstrated to be positively correlated.

To assess subjects' level of *trait anxiety*, the trait anxiety measure of State-Trait Anxiety Inventory (STAI) developed by Spielberger, Gorsuch, and Lushene (1970). The scale includes 20 short statements rated on a 4-point Likert format ranging from 1 (almost never) to 4 (almost always) to assess individual differences in anxiety proneness, by asking the individual to describe how he feels and behaves generally. The possible range is between 20 and 80, high points indicating an increase in trait-anxiety level (See Appendix E).

STAI is a standardized instrument for the Turkish population (Öner and LeCompte, 1982). It was found applicable to youngs, adults, organically and psychiatrically ill patients and even to illiterate people. STAI is a valid and reliable instrument, the English version of the Trait Anxiety Scale showed alpha reliabilities ranging from .86 to .92. In its Turkish version, Öner and Lecompte (1982) reported correlations that are between .83 and .87.

## 5. DATA ANALYSIS

In the present study, the impact of physical, psychological, and personal characteristics on the dissatisfaction with the medical condition and the perception of QOL from a sample of chronically ill people was explored within a causal model. The model proposed is a recursive path-model which assumed that "instantaneous reciprocal action of variables" (Duncan, 1966) do not occur. In other words, psychological variables are assumed to be dependent on physical and demographic variables rather than being determinants of them.

In this two stage path analysis model, "QOL" and "dissatisfaction with medical condition" are dependent variables. "Age", "educational level", "employment status", "marital status", "disease duration", "functional disability", are exogenous variables, the total variation of which is supposed to be related to variables outside the model (Land, 1969). Psychological variables (internal, chance, powerful others health locus of control orientations, trait anxiety, religious beliefs) were hypothesized to play an intervening role between exogenous and endogenous variables. The means and standard deviations of all variables and zero-order correlations which represent the total standardized association between variables were given in Table 2.

The essence of path analysis is based on the decomposition of a zero-order correlation coefficient between an exogenous predictor and an endogenous variable into a direct effect; an indirect effect through an intervening variable; and an indeterminate or joint effect resulting from an unanalyzed correlation with other predictor variables (Alwin & Hauser, 1975; Finney, 1972). By using this decomposition, it is possible to calculate the direct effects of the predictor variables on dependent variables and their indirect effects through intervening variables. Since the present model focuses on the investigation of psychological variables, path analysis will permit to see the indirect effects of environmental variables on dissatisfaction with the

**TABLE 2. Means, standard deviations, and zero-order correlations of all the variables in the path model.**

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>	X <sub>9</sub>	X <sub>10</sub>	X <sub>11</sub>	X <sub>12</sub>	X <sub>13</sub>
X <sub>1</sub> (AGE)		-.03	.14	.62**	.53**	.21	-.15	-.06	.22	.01	.11	.05	-.01
X <sub>2</sub> (EDUCATIONAL LEVEL)			.05	-.13	.07	-.27	-.52**	-.19	-.32*	-.40**	-.34*	.05	-.01
X <sub>3</sub> (EMPLOYMENT STATUS)				.20	.06	-.42**	-.05	.08	.04	-.10	-.03	-.35*	.27
X <sub>4</sub> (MARITAL STATUS)					.29*	.06	.01	-.01	.13	.12	.18	.26	-.04
X <sub>5</sub> (DISEASE DURATION)						.19	-.07	-.12	.09	.08	-.01	-.03	-.23
X <sub>6</sub> (FUNCTIONAL STATUS)							.16	-.03	.20	.29*	.10	.28	-.20
X <sub>7</sub> (TRAIT ANXIETY)								.25	.32**	.47**	.46**	.06	-.03
X <sub>8</sub> (IHLC)									.42**	.05	.43**	-.09	.18
X <sub>9</sub> (PHLC)										.08	.36*	-.18	.15
X <sub>10</sub> (CHLC)											.23	.00	-.22
X <sub>11</sub> (RELIGIOUS COMMITMENT)												-.05	.03
X <sub>12</sub> (DISSATISFACTION WITH HEALTH)													-.28*
X <sub>13</sub> (QUALITY OF LIFE)													
means	33.87	7.77	.71	.78	73.99	5.03	50.36	27.09	29.64	21.06	8.77	2.35	60.97
standard deviations	8.89	3.29	.46	.42	67.91	2.43	7.84	4.74	4.10	6.76	2.54	.10	10.83

\*p < .01

\*\*p < .001

medical condition and perceived QOL through psychological variables. To compute indirect effects, first of all, hypotheses related to direct relations should be converted into statistical equations.

Based on Figure 1, in which expected unidirectional relationships were shown, equations concerning each dependent variable in the proposed model predicting "QOL" and "dissatisfaction with the medical condition" were formed. An equation is comprised of a dependent variable and independent variables which are hypothesized to have an effect on the dependent variable and a term representing residual ( $\epsilon$ ) variables outside the model. For each independent variable in the equation, a path coefficient ( $\beta$ ) specified the amount of expected change in the dependent variable as a result of a unit of change in the independent variable. Equations are represented below:

For disease duration:

$$X_5 = \beta_{5,1} X_1 + \epsilon_5$$

For functional disability:

$$X_6 = \beta_{6,1} X_1 + \beta_{6,5} X_5 + \epsilon_6$$

For trait anxiety:

$$X_7 = \beta_{7,3} X_3 + \beta_{7,6} X_6 + \epsilon_7$$

For internal health locus of control:

$$X_8 = \beta_{8,2} X_2 + \beta_{8,1} X_1 + \beta_{8,6} X_6 + \epsilon_8$$

For powerful others health locus of control:

$$X_9 = \beta_{9,1} X_1 + \beta_{9,6} X_6 + \beta_{9,3} X_3 + \beta_{9,4} X_4 + \epsilon_9$$

For chance health locus of control:

$$X_{10} = \beta_{10,1} X_1 + \beta_{10,6} X_6 + \beta_{10,3} X_3 + \epsilon_{10}$$

For religious beliefs:

$$X_{11} = \beta_{11,1} X_1 + \beta_{11,6} X_6 + \epsilon_{11}$$

For dissatisfaction with medical condition:

$$X_{12} = \beta_{12,7} X_7 + \beta_{12,8} X_8 + \beta_{12,9} X_9 + \beta_{12,10} X_{10} + \beta_{12,11} X_{11} + \epsilon_{12}$$

For quality of life (psychological well-being):

$$X_{13} = \beta_{13,12} X_{12} + \beta_{13,7} X_7 + \beta_{13,8} X_8 + \beta_{13,9} X_9 + \beta_{13,10} X_{10} + \beta_{13,11} X_{11} + \beta_{13,12} X_{12} + \epsilon_{13}$$

Multiple regression analysis was conducted to derive path coefficients. At each stage, a dependent variable was regressed on the variables which were hypothesized to have an effect. First, a simplified path diagram of direct effects for all variables was obtained by eliminating predictors whose beta's were smaller than .10 (See Fig. 2). Only path coefficients (standardized partial regression coefficients) having a beta greater than .10 were drawn. This was done due to the small sample size and to expand noteworthy trends (See Figure 2). Additionally, since regression analysis requires variables to be measured at the interval level, two categorical variables, marital and employment status, were transformed into continuous ones by using dummy variables.

In Table 3, a general decomposition of zero-order correlations into path coefficients for dependent variables are presented. More specifically, in column A, total correlation is presented, in column B, direct effects, in column C indirect effects through intervening variables, in column D indeterminate effects resulting from unanalyzed correlation among other predictor variables.

**TABLE 3. Decomposition of total covariance (zero-order correlations) into path coefficients for dissatisfaction with medical condition and for quality of life.**

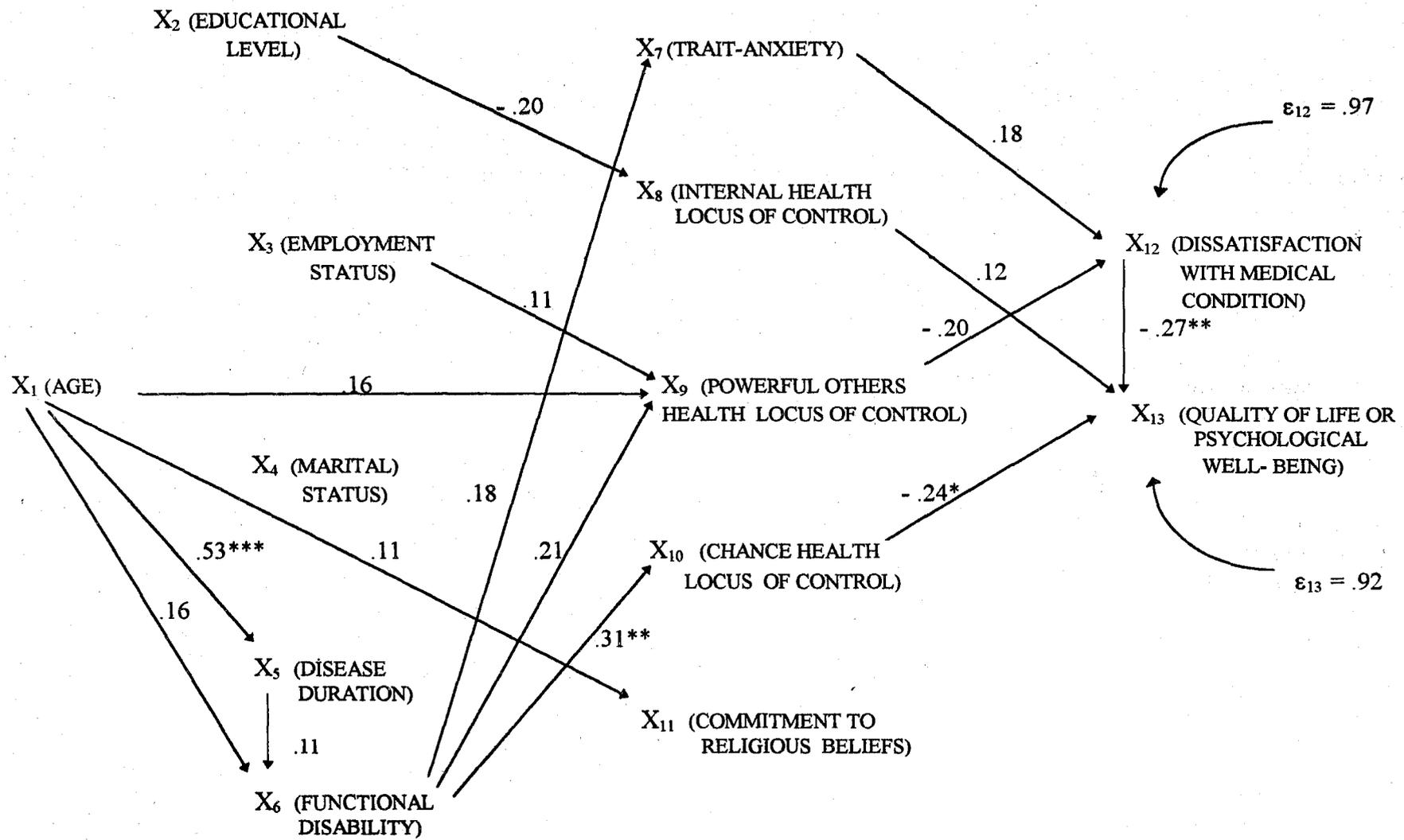
BIVARIATE RELATIONSHIP	TOTAL CORRELATION (A)	DIRECT EFFECT (B)	INDIRECT EFFECT (C)	TOTAL EFFECT (B + C) (D)	NONCAUSAL EFFECT (A - D)
X <sub>12</sub> X <sub>1</sub>	.05	0	-.03	-.03	.08
X <sub>12</sub> X <sub>2</sub>	.05	0	0	0	.05
X <sub>12</sub> X <sub>3</sub>	-.35*	0 (-.36*)	-.02	-.02	-.33 ↓
X <sub>12</sub> X <sub>4</sub>	.26	0 (.41**)	0	0	.26 ↓
X <sub>12</sub> X <sub>5</sub>	-.03	0	-.001	-.001	-.03
X <sub>12</sub> X <sub>6</sub>	.28	0 (.19)	-.01	-.01	.29 ↓
X <sub>12</sub> X <sub>7</sub>	.18	.18	0	.18	0
X <sub>12</sub> X <sub>8</sub>	-.09	0	0	0	-.09
X <sub>12</sub> X <sub>9</sub>	-.18	-.20	0	-.20	.02
X <sub>12</sub> X <sub>10</sub>	0	0	0	0	0
X <sub>12</sub> X <sub>11</sub>	.05	0	0	0	.05
X <sub>13</sub> X <sub>1</sub>	-.01	0	-.01	-.01	0
X <sub>13</sub> X <sub>2</sub>	-.01	0	-.02	-.02	.01
X <sub>13</sub> X <sub>3</sub>	.27	0 (.19)	.01	.01	.26 ↓
X <sub>13</sub> X <sub>4</sub>	-.04	0	0	0	-.04
X <sub>13</sub> X <sub>5</sub>	-.23	0 (-.23)	-.01	-.01	-.22 ↓
X <sub>13</sub> X <sub>6</sub>	-.20	0 (.01)	-.07	-.07	-.13 ↓
X <sub>13</sub> X <sub>7</sub>	-.03	0	-.05	-.05	.02
X <sub>13</sub> X <sub>8</sub>	.18	.12	0	.12	.06
X <sub>13</sub> X <sub>9</sub>	.15	0	.05	.05	.10
X <sub>13</sub> X <sub>10</sub>	-.22	-.24	0	-.24	.02
X <sub>13</sub> X <sub>11</sub>	.03	0	0	0	.03
X <sub>13</sub> X <sub>12</sub>	-.28*	-.27	0	-.27	-.01

↓ indicates the greatest differences between total correlation and total effect which were not explained by the causal model  
 ( ) indicates the results of direct effects between the environmental and dependent variables of new equations

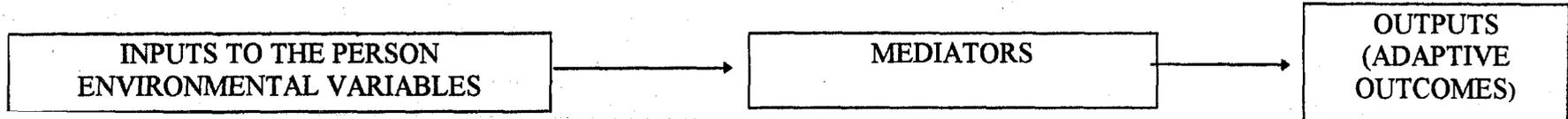
X<sub>13</sub> = quality of life, X<sub>12</sub> = dissatisfaction with medical condition, X<sub>11</sub> = religious beliefs, X<sub>10</sub> = CHLC, X<sub>9</sub> = PHLC, X<sub>8</sub> = IHLC, X<sub>7</sub> = trait anxiety, X<sub>6</sub> = functional disability, X<sub>5</sub> = disease duration, X<sub>4</sub> = marital status, X<sub>3</sub> = employment status, X<sub>2</sub> = educational level, X<sub>1</sub> = age

\*p < .01, \*\*p < .001

**FIGURE 2**  
**SIMPLIFIED PATH DIAGRAM OF DIRECT EFFECTS**



\*p < .1  
 \*\*p < .05  
 \*\*\*p < .001



By using the scores on Table 3, it would be possible to see whether further investigation of additional equations were needed. The variance between the scores of total correlation and total effect of bivariate relationships would indicate whether the model based on indirect effects of environmental variables through intervening variables was successful in explaining the impact of chronic illness on dissatisfaction with the medical condition and QOL. The greater the difference between them, the less the model was useful. Then, a model based on the direct effects of environmental variables on dependent variables should be investigated.

The findings of the above stated equations necessitated the investigation of new equations related to the prediction of dependent variables. The equations are presented below:

For dissatisfaction with medical condition:

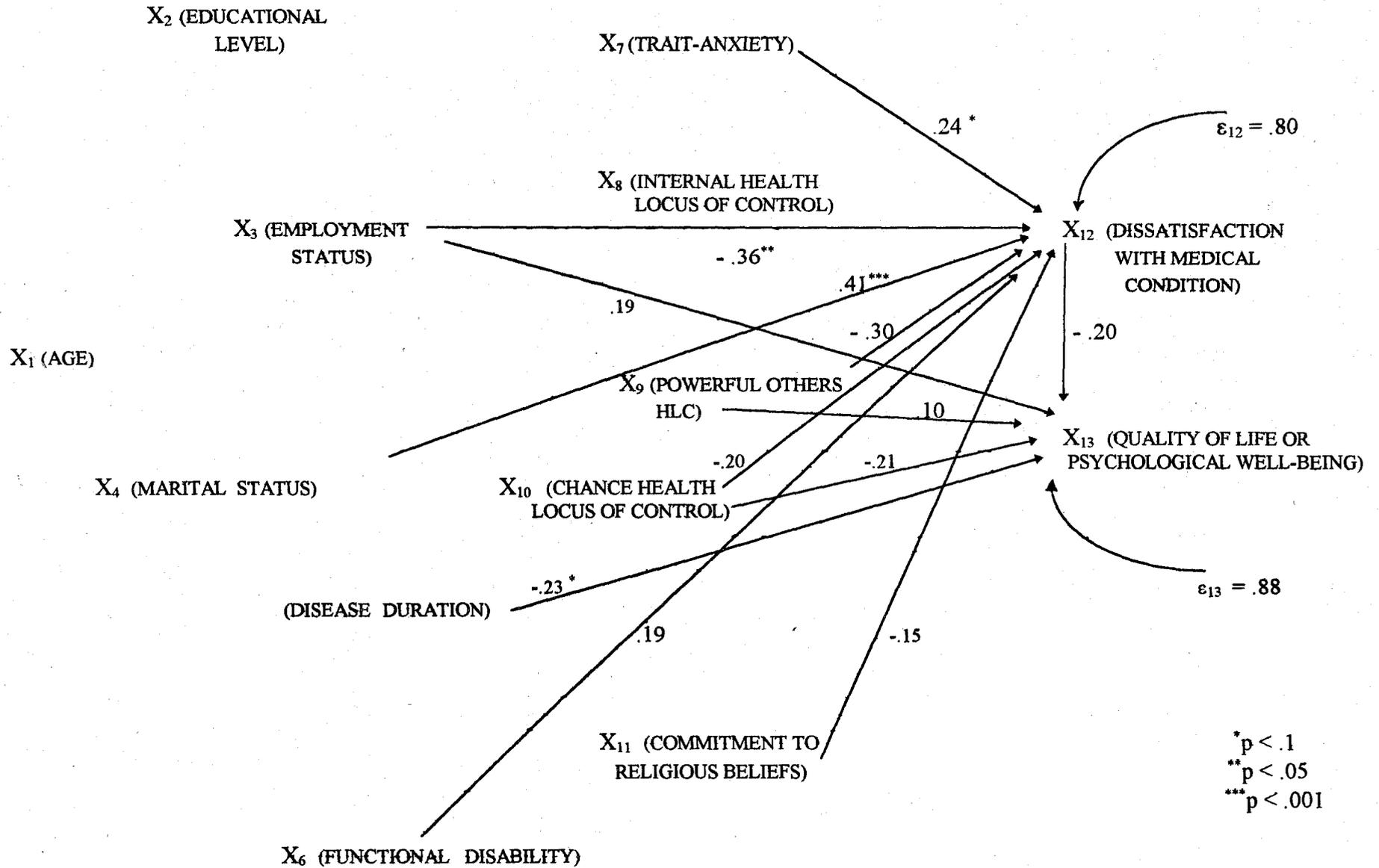
$$X_{12} = \beta_{12,3} X_3 + \beta_{12,4} X_4 + \beta_{12,6} X_6 + \beta_{12,7} X_7 + \beta_{12,8} X_8 + \beta_{12,9} X_9 + \beta_{12,10} X_{10} + \beta_{12,11} X_{11} + \epsilon_{12}$$

For quality of life:

$$X_{13} = \beta_{13,3} X_3 + \beta_{13,5} X_5 + \beta_{13,6} X_6 + \beta_{13,7} X_7 + \beta_{13,8} X_8 + \beta_{13,9} X_9 + \beta_{13,10} X_{10} + \beta_{13,11} X_{11} + \beta_{13,12} X_{12} + \epsilon_{13}$$

A simplified path diagram of the new equations showing the direct effects of environmental and psychological variables on dependent variables are presented in Figure 3.

**FIGURE 3**  
**SIMPLIFIED DIAGRAM OF DIRECT EFFECTS OF ENVIRONMENTAL & PSYCHOLOGICAL**  
**VARIABLES ON DEPENDENT VARIABLES**



## 6. RESULTS

The results of multiple regression equations related to the prediction of dependent variables showed that the cognitive model emphasizing the mediating role of psychological variables between environmental variables and psychological outcomes was not very useful in explaining the impact of BD on health satisfaction and QOL. For dissatisfaction with the medical condition, mediating variables (PHLC and TA) explained 5% of the variance ( $\beta_{12,9} = -.20$   $t = -1.43$   $p = .1575$ ;  $\beta_{12,7} = .18$   $t = 1.191$   $p = .2380$ ). For QOL, mediating variables (CHLC and IHLC) including the variable "dissatisfaction with medical condition" totally explained 15% of the variance in QOL ( $\beta_{13,10} = .12$   $t = .911$   $p = .3658$ ;  $\beta_{13,8} = -.24$   $t = -1.766$   $p = .0822$ ;  $\beta_{13,12} = -.27$   $t = 2.223$   $p = .0299$ ).

Rather, the multiple regression equations which included not only psychological variables, but also environmental variables were more successful in explaining health satisfaction and QOL. The environmental variables which were added to the equations were those which showed greater discrepancy between the total correlation and the total effect of each environmental variable with dependent variables (see Table 3). The greater the difference between them (noncausal effect), the smaller is the impact of indirect effects of environmental variables via mediating psychological variables. Therefore, it is plausible to investigate also the direct effects of these environmental variables on dependent variables.

### *Dissatisfaction with the medical condition:*

The results showed that the equation including psychological variables and three environmental variables (functional disability, marital status, employment status) explained a 36% variance in dissatisfaction with the medical condition. In other words, the increment in the health dissatisfaction of BD patients due to three environmental variables was 31%. The finding concerning the equation relating to the dissatisfaction with the medical condition indicated that the significant predictors for this variable were marital status,

employment status, PHLC, TA, CHLC, functional disability and commitment to religious beliefs ( $\beta_{12,4} = .4$   $t = 3.697$   $p < .001$ ;  $\beta_{12,3} = -.36$   $t = -3.02$   $p < .01$ ;  $\beta_{12,9} = -.30$   $t = -2.41$   $p < .05$ ;  $\beta_{12,7} = .24$   $t = 1.87$   $p < .1$ ;  $\beta_{12,10} = -.20$   $t = -1.606$   $p < .1135$ ;  $\beta_{12,6} = .19$   $t = 1.56$   $p = .1251$ ;  $\beta_{12,11} = -.15$   $t = -1.176$   $p = .2441$  respectively). The results specified a negative relationship among dissatisfaction with the medical condition and CHLC, PHLC, employment status and commitment to religious beliefs. Patients who were employed, committed to religious beliefs, and who relied on external control over their health were less dissatisfied with their condition. Those patients who were married, functionally disabled and highly anxious were more dissatisfied with their health.

### *Quality of Life*

The finding concerning the equation consisting of environmental variables in addition to psychological variables explained 23% of the variance in QOL. When the percentage explained by that equation was compared with the equation consisting of only psychological variables, it was seen that the increment due to environmental variables was 8%. However one of the three environmental variables, functional disability was not one of the significant predictors of QOL, although it was for health dissatisfaction. The strongest predictors of QOL were disease duration, CHLC, dissatisfaction with medical condition, employment status, and PHLC ( $\beta_{13,5} = -.23$   $t = -1.85$   $p < .1$ ;  $\beta_{13,10} = -.21$   $t = -1.48$   $p = .1446$ ;  $\beta_{13,12} = -.20$   $t = -1.551$   $p = .1263$ ;  $\beta_{13,3} = .19$   $t = 1.39$   $p = .1703$ ;  $\beta_{13,9} = .10$   $t = .719$   $p = .4752$  respectively). Patients with BD who reported a longer disease duration, who were dissatisfied with their medical condition and who relied on chance factors control over their health experienced a lower QOL. Those patients who were employed and who believed in powerful others control over their health perceived a higher QOL. It is remarkable that functional disability had no direct significant effect on QOL.

Briefly, the multiple regression analysis showed that the direct effects of functional disability, marital status, and employment status on dissatisfaction with the medical condition, and the direct effects of employment status and disease duration on QOL were stronger than their indirect effects via psychological variables. While quite small, only the

indirect effect of functional disability on QOL was relatively stronger than its direct effect on QOL ( $\beta_{13,6} = -.07 > \beta_{13,6} = -.01$  respectively).

When the indirect effects of other environmental variables are compared, the level of functional disability of BD patients had the largest indirect effect on their perception of QOL ( $\beta_{13,6} = -.07$ ). This indirect negative contribution was primarily through the mediating variables -CHLC; PHLC and dissatisfaction with the medical condition; and trait anxiety and dissatisfaction with the medical condition. That is, patients with higher levels of functional disability tended to believe in chance factors for health control and those who had higher CHLC scores experienced a lower QOL ( $\beta_{13,10} \cdot \beta_{10,6} = (-.24) (.31) = -.07$ ). CHLC enhanced the negative effect of functional disability on QOL.

Another way of the indirect effect of functional disability on QOL is through trait anxiety (TA) and dissatisfaction with the medical condition. That is, functionally disabled patients tended to have higher levels of TA, and those who were highly anxious had greater dissatisfaction with their medical condition, in turn, dissatisfied patients experienced a lower QOL ( $\beta_{13,12} \cdot \beta_{12,7} \cdot \beta_{7,6} = (.18) (.18) (-.27) = -.01$ ).

The other indirect effect of functional disability on QOL is through PHLC and dissatisfaction with the medical condition. That is, functionally disabled patients who have a greater reliance on powerful others for their health control were less dissatisfied with their medical condition and in turn scored higher levels of QOL. The powerful others health locus of control orientation suppressed the negative effect of functional disability on QOL ( $r = -.20$ ;  $\beta_{13,12} \cdot \beta_{12,9} \cdot \beta_{9,6} = (.21) (-.20) (-.27) = .01$ ). The net effect of PHLC on QOL is positive.

The indirect effects of other predictors on the dependent variables were too small to mention. Additionally, in the model, the residual paths for dependent variables are presented with single-headed arrows (see Figure 2 and Figure 3). They represent effects of variables not under consideration in the given model. Reasons for these large residuals will be discussed later.

Briefly, the above results were the main findings of the present study. They emphasize direct relationships between environmental and dependent variables through psychological variables, rather than the indirect effects of environmental variables through psychological variables.

### *Additional Findings*

In this section, findings related to each multiple regression equation concerning the direct relationships between environmental and intervening psychological variables are given (see Figure 2). Then the results related to the prediction of outcome variables (dependent variables) are presented.

Age explained 28% of the variation in disease duration ( $\beta_{5,1} = .53$   $t = 5.099$   $p < .001$ ). Older subjects reported longer disease duration.

Further results indicated that 5% of the variance in functional disability was accounted for by age and disease duration ( $\beta_{6,1} = .16$   $t = 1.11$   $p = .2704$ ;  $\beta_{6,5} = .11$   $t = .74$   $p = .4614$  respectively). When we analyze the relative contributions of the predictors, it is noted that disease duration explained about 4% of the variance in functional disability and that age explained an additional 1% on top of that. Thus, older subjects with a longer disease duration reported more functional disability.

3% of the variance in trait anxiety scores of BD patients was explained by their functional disability level ( $\beta_{7,6} = .18$   $t = 1.345$   $p = .1831$ ). Functionally disabled patients reported higher levels of anxiety. Being employed was the other variable in the equation, and was deleted because of its nonsignificance.

The only predictor of the internal locus of control over health orientation was the educational level. Other variables in the equation which were deleted were age and functional disability. Educational level contributed 4% to the explained variance in IHLC, but it was negatively associated with the IHLC, a finding contradictory to those reported in many other studies ( $\beta_{7,2} = -.20$   $t = -1.580$   $p = .1190$ ). This finding needed further

investigation. A t-test was conducted to compare subjects' IHLC scores; it was found that there was no significant difference in the IHLC scores of subjects with regard to the educational levels ( $t(67) = .48, p < .05$ ). Thus, it is concluded that IHLC was not related to educational level of patients.

The finding concerning the equation relating to PHLC indicated that the strongest predictors for this variable were functional disability, age and employment status ( $\beta_{9,6} = .21, t = 1.54, p = .1283$ ;  $\beta_{9,1} = .16, t = .987, p = .3272$ ;  $\beta_{9,3} = .11, t = .770, p = .4442$  respectively). Marital status made no significant contribution to PHLC orientation. Further the above mentioned contributors taken together explained 8% of the variance in PHLC scores. To sum, older, employed patients with functional disability reported more reliance on powerful others control over their health.

For the variable CHLC orientation, only functional disability explained 8% of the variance ( $\beta_{10,6} = .31, t = 2.281, p = .0258$ ). Functionally disabled patients reported higher reliance on chance factors for their health. Other variables age and employment status were deleted because of their nonsignificance.

Age was the strongest contributor to religious commitment ( $\beta_{11,1} = .11, t = .918, p = .3620$ ). Older subjects were more committed to religious beliefs.

For dissatisfaction with the medical condition, among the predictors in the equation, only PHLC and TA explained 5% of the variance. Those patients who did not rely on powerful others control over their health and who scored higher levels of anxiety were more dissatisfied with their medical condition ( $\beta_{12,9} = .20, t = -1.43, p = .1575$ ;  $\beta_{12,7} = .18, t = 1.191, p = .2380$ ).

For the variable of QOL, dissatisfaction with the medical condition, CHLC and IHLC orientations made significant contributions and totally explained 15% of the variance in QOL ( $\beta_{13,12} = .27, t = -2.223, p = .0299$ ;  $\beta_{13,10} = -.24, t = -1.766, p = .0822$ ;  $\beta_{13,8} = .12, t = .911, p = .3658$ ). Patients who relied on chance factors and were dissatisfied with their

health experienced a lower QOL, although patients who believed that they had the power to make themselves well had a higher QOL.

### *Summary*

In this section, the results stated will be summarized according to the hypotheses given in the introduction chapter. Firstly, the results concerning the direct relationships between environmental variables and intervening psychological variables were presented.

First and second hypotheses stated that a positive relation exists between age and PHLC, and religious beliefs, and CHLC, and a negative relation between age, and IHLC. The results showed that with increasing age, patients relied more on a belief in powerful others control over their health and on God or religious commitment. But no relation was found between age and IHLC, and CHLC.

A positive effect of increasing age on functional disability was found although in the 3rd hypothesis, a negative relation between them was expected based on the characteristics of BD which runs a less severe course after a few years.

Hypothesis 4 stated that nonemployment has a positive effect on trait anxiety, and on belief on powerful others, and on chance factors. The results did not confirm this hypothesis; it was found that employed patients relied more on PHLC. A negative relation was expected.

Hypothesis 5 stated that a positive relationship exists between educational level and IHLC. This was not confirmed, it was found that as the educational level of patients increased, subjects tended to experience less sense of control over their health.

Hypothesis 6 stated that marital status has a positive effect on PHLC. No relation was found between them.

Hypothesis 7 stated that disease duration has a negative effect on functional disability. This was not confirmed. A positive relation between them was found.

Hypotheses 8 and 9 postulated a positive relation between functional disability and externality dimensions of HLC, and trait anxiety. It was found that if the patients' functional disability level increased, anxiety level and reliance on externality, ie., belief on chance factors and powerful others control over health increased. Thus the hypotheses were confirmed.

Secondly, the results concerning direct relationships between intervening psychological factors and dependent variables are presented below:

Hypothesis 10, 11, 12, 13, and 14 postulated a positive relation between QOL and IHLC, and PHLC, and religious beliefs, and a negative one between QOL and CHLC, and TA. Moreover a positive relation between dissatisfaction with the medical condition and TA, and CHLC, and a negative relation between dissatisfaction with health and PHLC, and IHLC, and religious beliefs were expected. The hypotheses were partly confirmed. It was found that as TA level increased, patients' dissatisfaction level also increased, and when reliance on a belief of powerful others control over their health increased, patients were less dissatisfied with their medical condition. Additionally, a negative effect between the dissatisfaction with the medical condition and QOL was found.

Among the psychological variables, only IHLC and CHLC were found to have a direct relationship on QOL. As subjects believed strongly that control over their health was their responsibility, they experienced higher QOL. Parallel to this finding, patients' greater reliance on chance factors' control over their health led to a perception of a lower QOL.

The variable "commitment to religious beliefs" was found to have no significant effect on dependent variables.

Finally, as stated in the beginning of the result chapter, the findings concerning indirect relationships between environmental variables and dependent variables via psychological variables showed nonsignificant results.

Findings concerning the direct effects of environmental variables on dependent variables are presented below.

The results showed that married and functionally disabled patients were more dissatisfied with their medical condition. Additionally, employed patients experienced lower dissatisfaction with their health.

The results showed that employed patients experienced a higher QOL. However patients who reported longer disease duration scored a lower QOL.

## 7. DISCUSSION

The main purpose of the present study was to identify the impact of psychological, and physical factors and personal characteristics on health satisfaction and psychological well-being or QOL experienced by BD patients. In this study, a path-analysis model was employed to define and explain the interrelationships among the variables. The path model was based on a cognitive framework developed by Lazarus and Cohen (1976) who suggested that psychological factors played the intervening role between environmental input variables (physical factors and personal characteristics) and adaptive outcomes (health satisfaction and QOL). Thus, the mode permits investigation of direct and indirect effects of independent variables on the dependent variables.

As one of the major findings, based on the indirect effects of exogenous (i.e. environmental) variables, the simplified path-model emphasizing the mediating role of the psychological variables between environmental variables and psychological outcomes was not found to be successful in explaining the impact of BD on health satisfaction and the perception of QOL of patients with BD. Therefore, rather than the indirect effects of variables, their direct effects on dependent variables with respect to the hypotheses will be discussed.

First, the possible explanations for this finding should be discussed. Large residuals in the path diagram call for the incorporation of additional variables into the prediction system. The literature supports that there are an abundant number of variables associated with QOL and health satisfaction in chronically ill people. The variables chosen for the present study are also known to influence QOL. However, they are not found to be those that have the greatest potential for explanation and theory building. Yet the fact that certain relationships concerning many correlates of life satisfaction or QOL may disappear when one of more factors are controlled should not be forgotten (Markides & Martin, 1979; Edwards & Klemmack, 1973). Secondly, the inclusion of health dissatisfaction which is itself a subdimension of QOL, can be criticized. It is evident that if BD patients

were dissatisfied with their medical condition, they would tend to experience a lower QOL. In the present study also, dissatisfaction with health succeeded to be the strongest significant predictor of QOL. However, dissatisfaction with the medical condition was included in place of a measure of "actual" health, since health satisfaction was found to be a more important determinant of life satisfaction as a whole compared to "actual" health status (Medley, 1978). Maddox & Douglas (1973) reported that self-reported health can be used as a proxy for "actual" health rated by physicians. Additionally, based on the causal model, dissatisfaction with the medical condition perceived by the patient was considered as an adaptive failure resulting from the environment-person interaction. In other words, here, it is concentrated on identifying the way patients evaluate their health and thereby the mechanism that might affect this adaptational outcome in these patients.

### ***DISCUSSION RELATED TO HYPOTHESIS***

The first hypothesis predicted that older patients would rely more on external factors such as chance or powerful others and less on internal factors. The results showed that older patients relied more on powerful others control over their health. They generally tended to experience more external control in terms of powerful others. This is consistent with the findings of Ludenia & Donham (1983), Wallston & Wallston (1978), Mizrahi (1993), Beisecker (1988), and Hickey, et al. (1991) who suggest that older subjects believe that one's family, friends or health-care providers control one's health. This result shows that older BD patients may need special communication or care from care providers to direct them about their symptoms. Therefore, the training of health care providers to address the needs of older people becomes an important issue.

The second hypothesis predicted that the age of a patient has a direct positive effect on commitment to religious beliefs. The result showed that older patients were indeed more religious. One possible explanation for this finding is that reliance on God may be an alternative way of relying on external factors. Religious acceptance of things beyond personal control such as suffering from a chronic disease with no known cure, may act as

a psychosocial buffer against the stress in older people (Caplan, 1981). Commitment to religious belief may motivate older patients and may guide them away from the situation. Therefore, the health-care providers should also know how to sustain this motivation in older patients and how to use it to improve their treatment regimen.

Hypothesis 3 predicted that with increasing age BD patients would be less functionally disabled. This prediction was based on the characteristics of BD which runs a less severe course after a few years (Yazıcı et al, 1986). Contrary to this expectation, the results showed that older patients were more functionally disabled. This finding is consistent with the characteristics of other chronic conditions: For example, osteoarthritis and COPD become painful over time. They affect one's activity level and lead to progressive functional limitations (Hickey & Stilwell, 1981). But it should be noted that an accurate assessment of a physical health status is very difficult in older patients since functional impairment may be due to the aging process as well as the nature of their illnesses. It is possible that these results reflect a functional disability due to the aging process since BD follows a more severe course in young men. With increasing age, there may be sensory impairment, nutritional deficiency that resemble the disease, or the dosage of the medication may lose its effect. Some older patients may not report some symptoms, believing them to be unimportant. Therefore, older BD patients should be well informed about the growing dependency on others which results from functional disability. Their perceptions and beliefs about aging and health require careful consideration.

The fourth hypothesis predicted that unemployment has a direct positive effect on trait anxiety and belief in powerful others, and chance factors control over health. Contrary to expectations, the results showed that employed patients relied more on powerful others' control over their health. A possible explanation for the finding that the PHLC was more common among employed subjects may be due to insufficient financial security. Patients may be obliged to work, but may have an inadequate income, and therefore rely more on the help of other people. In addition to this, the great majority of patients held nonprofessional positions, implying an insufficient salary. Therefore, the patient may feel incompetent, overly dependent on the help of others, and guilty of not

meeting his family's financial needs. Similarly, Çanakçı (1992) found that a professional job helped women to feel psychologically satisfied, compared to those who have a non-professional job. The non employed on the other hand apparently have reasons for their non-employment which satisfy them and make them less anxious.

Hypothesis 5 predicted a positive direct relationship between IHLC and the educational level. However, surprisingly the result indicated that as the educational level of the patients rose, the subjects tended to experience a lower sense of control over their health. This finding is not congruent with the results of other research which suggests that health internality correlated with higher educational level (Boyle & Sielski, 1981; Wallston & Wallston, 1978; Mizrahi, 1993). In addition, Pincus (1988, p. 1458) supposed that "low education is a composite / surrogate variable which identifies behavioral risk factors predisposing to the etiology and poor outcomes in most chronic disease." However, the results of the present study surprisingly revealed a negative effect of educational level on IHLC. A possible explanation for this finding may be that education offers occupational opportunities in the career of a man, but we see that the majority of these patients did not have professional jobs. If higher education does not provide them with more satisfying occupations, this may lead to a decrease in self-competence and then to a diminished sense of control. Additionally, it should be noted that the number of patients who had a formal educational level of more than 11 years is only 5. Thus the sample lacked the heterogeneity necessary to produce sufficient variance for educational level to explain health locus of control.

Hypothesis 6 predicted a positive relationship between marital status and PHLC since married patients are assumed to have their partners' help or support in various areas of their lives while the unmarried have to rely on themselves. However, this hypothesis was not confirmed. Possibly, an explanatory factor is the absence of sufficient variation with respect to the unmarried population; the majority of subjects were married. It should be added that when the direct relationships between the environmental and dependent variables were considered, married status was the variable whose effect was greatest on dissatisfaction with the medical condition. In other words, married patients were more

dissatisfied with their health. It can be concluded that married patients do not believe that their spouse would ameliorate their condition, or they may feel that they are a burden for their family.

Hypothesis 7 predicted a negative direct effect on the functional disability of BD patients based on the characteristics of BD which follows a gradual reduction of disease activity after a few years. The same explanation concerning age and functional disability is valid for this unexpected finding.

Hypothesis 8 predicted that functional disability had a direct positive effect on reliance on externality such as PHLC, CHLC and God. As expected, the results showed that functionally disabled patients were more inclined to the externality dimension of the health locus of control. They rely on the health-care provider, significant others or chance factors. The implication of this finding is that as functionally disabled BD patients may assume less responsibility for their health, others' personal reactions and behavioral responses to the patient gain importance. They become dependent on others or they become passive in regards to their illness perceiving non-control of health since they think that their health is determined by fate, luck, or chance. This being the case, they would not on their own engage in any action to improve their condition.

From another point of view, this reliance on external dimensions may not necessarily have negative implications for the patient. If one is functionally disabled, this shows that he is acutely ill, then it is beneficial and realistic to hold the belief that especially health-care providers can influence one's health status. Then, the patient would be more compliant and engage in the activities recommended by professionals. At that point, the health-care providers should be directive. Moreover, they can inform the patient's family and friends about the way to direct him. For some circumstances high scores on the CHLC dimension may be adaptive. If the patient is acutely functionally disabled and there is nothing that can be done to change his situation, then holding high CHLC beliefs may be beneficial rather than developing unrealistic expectations and subsequently being demoralized (Burish et al., 1984).

The ninth hypothesis predicted that functionally disabled BD patients would have higher trait-anxiety scores. This hypothesis was confirmed. Progressive functional limitations enhance the trait-anxiety level of patients. It is consistent with the finding that poor health, regardless of age, is related to anxiety and depression (Heidrich, 1993). The implication of this finding is that health-care providers should attend to the trait anxiety level of the functionally disabled BD patients. They should provide them with anxiety management strategies to improve their condition. If anxiety is left untreated, it may worsen a patient's life by interfering with physical treatment, any eventual return to work, leisure and social activities (Taylor & Aspinwall, 1990).

Hypothesis 10 predicted a direct positive relationship between IHLC and perceived QOL and a negative relationship to the dissatisfaction with the medical condition. The results showed consistency with Burckhardt's (1985) finding which suggests that subjects who maintained a sense of control over their health, relied on their personal efforts, and believed that they could make their health condition better were found to experience a higher QOL. When we trace the path back to the earliest variable, we see that the higher the educational level, the lower the IHLC. Educated subjects tended to experience less sense of internal control over their health which led to a perception of lower QOL. Thus, the educational level suppressed the impact of IHLC on QOL.

Hypothesis 11 predicted a positive relationship between PHLC and QOL and a negative relationship between PHLC and dissatisfaction with the medical condition. Results indicated that subjects who relied on powerful others control over their health, who held the belief that their family, friends or health-care providers controlled their health experienced lower levels of dissatisfaction with their condition. This finding is consistent with some studies which also found a positive relationship between external health locus of control and psychological adjustment (Bursch et al., 1984 ; Jamieson, Wellish & Pasnau, 1978). In the case of chronically ill people, it is realistic to believe in others help such as health professionals (Christensen et al., 1991). Moreover, Wallston (1990) emphasizes the fact that reliance on such a belief influences one's health status in a positive direction. Tracing the path back to the earliest variables, we see that both functional disability,

employment status, and age contributed to the explanation of this finding. Older, functionally impaired and employed patients generally tended to experience more external control in terms of powerful others, which led to less dissatisfaction with the medical condition. PHLC does not have a direct relation with QOL. It has a net positive effect on QOL through dissatisfaction with medical condition.

Hypothesis 12 predicted a negative relationship between CHLC and QOL and a positive relationship between CHLC and health dissatisfaction. One of the major findings concerning the effects of psychological variables on QOL was that subjects who believed strongly that their health status was determined by fate, luck or chance experienced a lower QOL. Those who scored high on the CHLC dimension perceived low control over their health. The possible explanation for this finding may be that the variable and unpredictable nature of the course of BD enhanced reliance on this orientation and fatalistic thinking became dominant. If one perceives his health status as dependent upon chance, luck or fate, he is not expected to engage in positive health practices since he believes that whatever he does will be useless (Strickland, 1978). Many studies showed that chance orientation is related to disturbance (Kilpatrick et al., 1974), depression (Calhoun et al., 1974) and lower goal expectations (Strassberg, 1973). Treatment that requires autonomous behavior is not likely to be effective especially for externally chance oriented patients. Cognitive-behavioral treatment packages may enable patients to deal more effectively with the negative aspects of their illness.

The simplified path diagram of direct effects gives additional information. According to the model, the higher the functional disability, the higher the reliance on chance factors for health control. The inability to perform daily activities increased belief in external control in terms of chance. When tracing the path back to the earliest variables in the model, age was found to have a direct and indirect effect via disease duration on functional disability. Patients with BD, in general, tend to believe in chance factors when they are functionally disabled, but older people with a longer duration of disease hold these beliefs more strongly because of greater functional disability.

Hypothesis 13 predicted that religious commitment had a direct-negative effect on the dissatisfaction with the medical condition, and a direct positive effect on QOL. However, the results did not confirm the hypothesis. We can conclude that rather than commitment to external beliefs, which can be viewed as an alternative way of externality, patients prefer to believe in chance factors.

Hypothesis 14 predicted a negative-direct effect between TA and QOL and a positive-direct effect between TA and dissatisfaction with the medical condition. Consistent with the findings of Rogalski and Paisey (1987) it was found that as the TA level increased the subjects' dissatisfaction level also increased. Patients who were more anxious were more dissatisfied with their health and the more dissatisfied the patient was, the lower the QOL he experiences. The path showed that especially functionally disabled people tended to be more anxious, but older people with a greater endurance of disease may be more susceptible to TA because of greater functional disability.

The clinical implication of these findings is that locus of control orientation affect how a person perceives QOL and his health status (Wallston, 1989). The health locus of control orientations influence the patients' experience of chronic illness. Moreover, the orientation preferred may hinder treatment of the illness. HLC is an attractive concept since it has the potential for intervention against high-risk behavior for health and life satisfaction. Knowledge about such concepts could help health-care providers to develop realistic goals with their patients and strategies for increasing QOL. For example from the results of the present study we know that for BD patients one of the external HLC orientations, PHLC, signifies a positive direction for enhancement of QOL. On the other hand, CHLC signifies a negative direction. Internal orientation plays a major role in determining the perception of QOL. Sense of internal control positively affects health since it increases coping efforts and persistence, it provides one with a positive self-image and reduces distress (Bandura, 1977; Lefcourt, 1976; Thompson, 1981). Perception of control is known to have a facilitating effect on adjustment to chronic illness (Taylor et al., 1984; Strickland, 1978; Reed, 1989), although some contradictory findings exist (Averill, 1973; Thompson, 1981; Reed, 1989). F. Cohen & Lazarus (1983) and Folkman (1984)

suggested that perceiving control in an uncontrollable situation is not healthy and it may result in maladaptive outcomes. Chronic illness is such a situation; the patient does not have complete control. However, some aspects of illness may be controllable and perceiving control over these aspects may result in adaptive outcomes. Health-care providers should inform the patient about the controllable aspects of an illness to enhance their sense of control, since it helps adjustment to stress (Averill, 1973; Gal & Lazarus, 1973). Patient education programs proved to be useful in increasing the knowledge about the disease, in reducing anxiety and increasing patients' feelings of purpose in life (Johnson, 1982). Coping skills training also was found to enhance perceptions of control (Telch & Telch, 1986), when it was compared with supportive group therapy.

For PHLC-oriented patients, social reinforcement from external factors may be useful. They may obey professionals' recommendations easily, such as medical treatment or hospitalization. On the other hand, internally oriented patients may have trouble complying with the dependent nature of such treatments, seeing them as a challenge to their personal sense of control. Clum et al. (1979) also found that internally oriented patients stayed in the hospital, for the same operation, for a shorter period of time compared to the externally-oriented. Lower psychosocial morbidity was found to be related to high IHLC (Burgess, Morris, Pettingale, 1988) and to beliefs that one has the power to exert direct control over an illness (eg. Affleck, Tennen, Pfeiffer, Fifield, 1987; Jenkins, & Pargament, 1988; Taylor, Hichtman, & Wood, 1984). Low levels of helplessness in rheumatoid arthritis patients were related to superior psychological and behavioral functioning and reduced symptom severity (Stein, Wallston, Nicassio, & Castner, 1988).

About the determinants of HLC, Rotter (1975) advises that parents should be a model for their children on the subject of taking care of themselves. They should attend to how their children practice healthy behaviors, because early experiences related to early habits and past reinforcement help to develop belief in the efficacy of self-care.

Overall, rather than specific or global treatment regimens, individualized treatment approaches seem to be much more advantageous and more cost-effective in enhancing QOL. Treatment planning, regimens should be based on patients' expectancies, beliefs, personality repertoires. The individual interpretations of his illness situation affect coping and emotional, physiological and behavioral reactions.

The results of the present study should be interpreted and evaluated within some restriction. The sample size was small and composed of only male BD patients, from lower SES. This limits the extent to which the results can be seen as generalizations. This study was an attempt to investigate the impact of a chronic illness within a cognitive model. We believe that using a path model is a movement in the right direction since such an approach is more explanatory; going beyond analysing correlates of QOL, this approach allows researchers to investigate not only direct effects but indirect effects as well.

We advise future researchers to suggest more refined models of QOL by examining other possible psychological variables in the intervening role, and to apply such models to other populations. Finally, since only male BD patients were included in the study, the role of gender may be examined in future research.

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## APPENDIX B

### Activities and Life Style Index

Tıptaki son arařtırmalar, kiřilerin gnlk yařamlarına dair bilgilerin sađlık durumu kontrollerinde, rntgenler ve kan testleri kadar nemli olduđunu ve romatizmal deđerlendirmeye katılması gerektiđini gstermektedir. Bu yzden ařađıdaki soruları cevaplandırmanız istenmektedir. řu anki durumunuzun en iyi gstergesi olan bu bilgileri ancak sizden temin edebiliriz. Sizinle ya da durumunuzla ilgisi olmadıđını dřnseniz bile ltfen her soruya cevap vermeye alıřınız. Dođru ya da yanlıř cevap diye bir řey yoktur. Ltfen iinizden geldiđi gibi cevap veriniz.

Ltfen ařađıdaki soruları cevaplayınız.

Evinize gazete girer mi? Evet \_\_\_ Hayır \_\_\_

Gazete okur musunuz? Evet \_\_\_ Hayır \_\_\_

Ltfen ařađıdaki sorulara en uygun TEK cevabı belirtiniz.

1. řU ANDA ařađıdakileri yapabiliyor musunuz?

	hi zorlanmadan	biraz zorlanarak	olduđca zorlanarak	yapamı- yorum
a. Gazetede ki normal yazıları -sadece bařlıkları- okuyabiliyor musunuz?	_____	_____	_____	_____
b. Televizyon seyrediyor musunuz?	_____	_____	_____	_____
c. Yemek yiyebiliyor musunuz?	_____	_____	_____	_____
d. (bayanlar iin) Yemek piřirebiliyor musunuz?	_____	_____	_____	_____

2. BUGN, BİR AY NCESİNE gre kendinizi nasıl hissediyorsunuz? Ltfen sadece birini iřaretleyiniz.

- \_\_\_ Bugn, bir ay ncesine gre ok daha iyi.  
 \_\_\_ Bugn, bir ay ncesine gre daha iyi.  
 \_\_\_ Bugn, bir ay ncesiyle aynı.  
 \_\_\_ Bugn, bir ay ncesine gre daha kt.  
 \_\_\_ Bugn, bir ay ncesine gre ok daha kt.

3. Ařađıdakilerin hangisi, sizin BUGNK durumunuzu en iyi řekilde anlatmaktadır?

- \_\_\_ Yapmak istediđim her řeyi yapabiliyorum.  
 \_\_\_ Yapmak istediđim bir ok řeyi yapabiliyorum.  
 \_\_\_ Yapmak istediklerimin bazılarını yapabiliyorum, ancak ođu zaman zorlanıyorum.  
 \_\_\_ Yapmak istediklerimin hemen hi birini yapamıyorum.

4. Sađlık (tıbbi) durumunuzdan ne kadar memnun musunuz? Ltfen sadece birini iřaretleyiniz.

- \_\_\_ ok memnunum.  
 \_\_\_ Biraz memnunum.  
 \_\_\_ Pek memnun deđilim.  
 \_\_\_ Hi memnun deđilim.

5. Kendinizi yorgun hissediyor musunuz?

- \_\_\_ Hi yorgun hissetmiyorum.  
 \_\_\_ Pek yorgun hissetmiyorum.  
 \_\_\_ Biraz yorgun hissediyorum.  
 \_\_\_ ok yorgun hissediyorum.

6. Sabahları kalkınca kendinizi yorgun hissediyor musunuz?

- Hiç yorgun hissetmiyorum.  
 Pek yorgun hissetmiyorum.  
 Biraz yorgun hissediyorum.  
 Çok yorgun hissediyorum.

7. Sabahları uyandıığımızda, kendinizi tutuk (ya da "tutulmuş") hissediyor musunuz?

- Evet  Hayır

8. Eğer cevabınız "evet" ise, tutukluğunuzun (mümkün olduğunca) geçmesi ne kadar zaman alıyor?

- dakika veya  saat

9. GEÇEN HAFTA, durumunuzdan dolayı ne kadar ağrınız vardı? Aşağıdaki çizgi üzerinde belirtiniz.

Ağrım yok \_\_\_\_\_ Had safhada çok ağrım var.

10. GEÇEN HAFTA, midenizle ya da sindirim sisteminizle ilgili (bulantı, hazımsızlık sancısı, şişkinlik, ağrı... gibi bir sorunuz oldu mu? Aşağıdaki çizgi üzerinde belirtiniz.

Sorunum olmadı \_\_\_\_\_ Çok sorunum oldu.

Lütfen aşağıya son iki haftada aldığınız bütün ilaçları yazınız. (Doğum kontrol hapları, aspirin ya da doktora sormadan aldığınız diğer ilaçları da ekleyiniz.)

İlacın adı	Dozajı (biliniyorsa)	Günde kaç kere
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Lütfen aşağıdaki soruları cevaplayınız.

Şu anki işiniz nedir? (Eğer çalışmıyorsanız, geçmişteki işiniz ne idi?)

Evde sizinle birlikte başka kaç kişi yaşıyor? \_\_\_\_\_

Eş  Oğullar, kızlar  Ebeveyn  Yalnız  Diğer

Şu anda, (size uygun olanların hepsini belirtiniz)

- Tam gün çalışıyorum.  Öğrenciyim.  
 Yarım gün çalışıyorum.  Özürlüyüm.  
 Ev kadınıyım.  Diğer (belirtiniz)  
 Emekliyim.

En son hangi okulu bitirdiniz?

- İlkokul  
 Ortaokul  
 Lise  
 Üniversite  
 Diğer (belirtiniz)

Behçet hastalığı teşhisi ne zaman konmuştu? \_\_\_\_\_ (ay ve yıl olarak)

Adı ve soyadı \_\_\_\_\_

Bugünün tarihi \_\_\_\_\_ saat \_\_\_\_\_

Adres ve telefon (ev): \_\_\_\_\_

Cinsiyet:  Erkek  Kadın

Medeni hali:  Bekar  Evli  Ayrı  Boşanmış  Dul

Doğum tarihi: \_\_\_\_\_

## APPENDIX C

### Religious Beliefs

	hemen hiç	bazen	çoğu zaman	her zaman
1. Dini gerekleri (vecibeleri) yerine getiririm.	_____	_____	_____	_____
2. Dua ederim.	_____	_____	_____	_____
3. Dindar bir insanım.	_____	_____	_____	_____
4. Dini yasaklara uyarım.	_____	_____	_____	_____

## APPENDIX D

### MHLC

Bu anket hastalığınız konusuna bakış açınızı belirlemek amacıyla düzenlenmiştir. Her madde katıldığınız veya katılmadığınız bazı inançları ifade etmektedir. Her cümlenin yanında 'kesinlikle katılmıyorum' ile 'kesinlikle katılıyorum' arasında değişen bir ölçek vardır. Her madde için, kendinizi en iyi şekilde ifade eden ölçeği seçiniz. Lütfen her madde için bir tek ölçek seçiniz. Bu ölçek kişisel inançlarınızı ölçtüğünden, cevapların doğru ya da yanlış olması söz konusu değildir.

Lütfen her maddeyi dikkatlice dinleyip cevaplayınız, fakat hiçbirini için çok zaman harcamayınız. Her maddeyi diğerlerinden bağımsız olarak cevaplamaya gayret ediniz. Seçiminizi yaparken önceki cevaplarınızdan etkilenmeyin. Sizce olması gereken şekilde değil de, kendi inançlarınız doğrultusunda cevap vermeniz çok önemlidir.

1 kesinlikle katılmıyorum

2 katılmıyorum

3 pek katılmıyorum

4 biraz katılıyorum

5 katılıyorum

6 kesinlikle katılıyorum

1. Eğer hastalığım kötüleşirse, ne kadar çabuk

iyileşeceğimi kendi davranışlarım belirler.

1 2 3 4 5 6

2. Ne yaparsam yapayım, eğer hastalığım

kötüleseyse kötüleşir.

1 2 3 4 5 6

3. Hastalığımdan kaçınmanın en iyi yolu,

doktorumla düzenli bir şekilde görüşmemdir.	1	2	3	4	5	6
4. Hastalığımın kötüleşip kötüleşmemesi tesadüflere bağlıdır.	1	2	3	4	5	6
5. Kendimi iyi hissetmediğim zamanlarda, bir tıp doktoruna başvurmam gerekir.	1	2	3	4	5	6
6. Sağlığım kontrolüm altındadır.	1	2	3	4	5	6
7. Ailemin hasta veya sağlıklı olmamda rolü büyüktür.	1	2	3	4	5	6
8. Hastalığım kötüleştiğinde suç bendedir.	1	2	3	4	5	6
9. Ne kadar çabuk iyileşeceğim büyük ölçüde şansa bağlıdır.	1	2	3	4	5	6
10. Sağlıklı olmam doktorların elindedir.	1	2	3	4	5	6
11. Sağlıklı olmam büyük ölçüde şanslı oluşumdandır.	1	2	3	4	5	6
12. Sağlığımı en çok kendi yaptıklarım etkiler.	1	2	3	4	5	6
13. Kendime iyi bakarsam, hastalıktan kaçınabilirim.	1	2	3	4	5	6
14. Genellikle bir rahatsızlığı atlattığımda, bunun sebebi insanların (örneğin, doktorların, hemşirelerin, ailenin, arkadaşların) bana iyi bakmalarıdır.	1	2	3	4	5	6
15. Ne yaparsam yapayım, hastalanma olasılığım kuvvetlidir.	1	2	3	4	5	6
16. Eğer alımda yazılıysa sağlıklı kalabilirim.	1	2	3	4	5	6
17. Doğru olan şeyleri yaparsam, sağlıklı kalabilirim.	1	2	3	4	5	6
18. Sağlığım konusunda yapabileceğim tek şey, doktorumun söylediklerini yapmaktır.	1	2	3	4	5	6

## APPENDIX E

### *Kendini Değerlendirme Anketi*

**YÖNERGE:** Size, kişilerin kendilerine ait duygularını anlatmada kullandıkları bir takım ifadeler okuyacağım. Her ifadeyi dinleyin, sonra da genel olarak nasıl hissettiğinizi, verilen ölçeğe göre ( hemen hiç, bazen, çok zaman, her zaman), size uygun olanını seçerek belirtiniz. Doğru ya da yanlış cevap yoktur. Herhangi bir ifadenin üzerinde fazla zaman sarfetmeksizin genel olarak nasıl hissettiğinizi gösteren ifadeyi seçiniz.

	hemen hiç	bazen	çok zaman	her zaman
1. Genellikle keyfim yerindedir.	1	2	3	4
2. Genellikle çabuk yorulurum.	1	2	3	4
3. Genellikle kolay ağlarım.	1	2	3	4
4. Başkaları kadar mutlu olmak isterim.	1	2	3	4
5. Çabuk karar veremediğim için fırsatları kaçırırım.	1	2	3	4
6. Kendimi dinlenmiş hissedirim.	1	2	3	4
7. Genellikle sakin, kendime hakim ve soğukkanlıyım.	1	2	3	4
8. Güçlüklerin, yenemeyeceğim kadar biriktiğini hissediyorum.	1	2	3	4
9. Önemsiz şeyler hakkında endişelenirim.	1	2	3	4
10. Genellikle mutluyum.	1	2	3	4
11. Herşeyi ciddiye alır ve endişelenirim.	1	2	3	4
12. Genellikle kendime güvenim yoktur.	1	2	3	4

13. Genellikle kendimi emniyette hissederim.	1	2	3	4
14. Sıkıntılı ve güç durumlarla karşılaşmaktan kaçınırım.	1	2	3	4
15. Genellikle kendimi hüzünlü hissederim.	1	2	3	4
16. Genellikle hayatımdan memnunum.	1	2	3	4
17. Olur olmaz düşünceler beni rahatsız eder.	1	2	3	4
18. Hayal kırıklıklarımı öylesine ciddiye alırım ki, hiç unutamam.	1	2	3	4
19. Aklı başında ve kararlı bir insanım.	1	2	3	4
20. Son zamanlarda kafama takılan konular beni tedirgin eder.	1	2	3	4