

COPING BEHAVIOR AND QUALITY OF LIFE
IN YOUNG ADULTS WITH
CHRONIC ASTHMA

By

KEVIN ARTHUR HOMMEL

Bachelor of Arts

University of Central Oklahoma

Edmond, Oklahoma

1996

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May, 1999

FRUSTRATION

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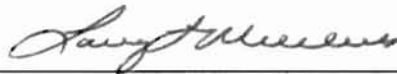
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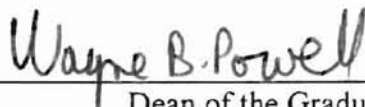
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Thesis Adviser







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ACKNOWLEDGMENTS

I would like to express my sincere appreciation to my major advisor and mentor, John M. Chaney, Ph.D. for his time, energy, guidance, and friendship. Your dedication to this study as well as my academic and professional development will always be remembered. I would also like to express my appreciation to my committee members, Larry L. Mullins, Ph.D. and C. Richard Potts, Ph.D. for their collaborative efforts, time, and invaluable suggestions which helped design and guide this study.

I would also like to express my gratitude to several people who have supported me throughout my academic pursuits and other areas of my life. To my father, your work ethic, integrity, and wisdom have been a constant source of inspiration. To my mother, your encouragement and intuition have helped guide me. To my sister, you have always kept me smiling. In addition, I would like to thank my friends who have supported me in many ways throughout the years.

Finally, I would like to thank the Department of Psychology and my colleagues for their support during these two years of study.

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CHAPTER I

INTRODUCTION

Asthma Description and Epidemiology

Chronic asthma is an illness characterized by intermittent, uncontrollable episodes of wheezing and shortness of breath due to the constriction of the bronchi which may be preceded by exposure to allergens such as pollen, bacteria, foods, dust, animal dander, etc. (Eiser, 1985). Asthma is one of the most common childhood chronic illnesses. However, this disease has received less psychological research attention, both in quality and quantity, than other chronic illnesses (Eiser, 1985). Characteristic features of asthma include its intermittent and unpredictable nature, its variable severity, and its reversible nature, such that respiratory distress only occurs during an attack and is reversed either spontaneously or as a result of treatment (Creer, 1982; Reene & Creer, 1985; Creer, Harm, & Marion, 1988). Prevalence rates range from 3.6% to 6.7% to 12% (Gergen, Mullally, & Evans, 1988; Burr, Butland, King, & Vaughan-Williams, 1989), depending on the definition of asthma diagnosis used. Moreover, approximately 9-15 million Americans suffer from asthma (Weiss, Gergen, & Hodgson, 1992; O'Hara, 1995). Age at onset varies from infancy to adulthood (Young, 1994).

Morbidity and Mortality

Morbidity and mortality are significant factors in asthma. Mortality rates for asthma are rising in the United States, and have been since the early 1970's (O'Hara, 1995; Celano & Geller, 1993). There are more than 4,000 deaths caused by asthma each year in the United States; a major factor in this mortality rate is likely to be the underestimation of severity of acute exacerbations of the illness (O'Hara, 1995). Asthma presents significant increasing financial concerns as well. In 1985, the total cost of asthma in the United States was approximately \$4.5 billion; in 1990, the cost of the illness in the United States reached \$6.2 billion, with 43% of this impact associated with emergency room visits, hospitalization, and death (Weiss et al., 1992). Clearly, asthma is a more severe chronic illness than is generally believed. In addition, asthma poses a threat to school and work absenteeism (Celano & Geller, 1993). Weiss et al. (1992) reported that in children aged 5-17, asthma accounted for approximately 10 million missed school days, and 3 million work days among adults 18 years old or older. Consequently, this problem may lead to decreased academic performance and work related difficulties (Celano & Geller, 1993; Gergen et al., 1988).

Psychological Comorbidity

In addition to being a significant and pervasive medical problem, asthma is also highly comorbid with emotional/psychological adjustment difficulties (Creer et al., 1988; Lehrer, Isenberg, & Hochron, 1993). Due to the unpredictability of the disease, individuals with asthma are required to attend and respond to internal cues such as tightness in one's

chest, which may lead to increased anxious behavior regarding their illness (Celano & Geller, 1993). In children, asthma has been associated with behavioral and school-related problems, social competency problems, and lower self-esteem (Hambley, Brazil, Furrow, & Chua, 1989). Further, Miller and Wood (1991) suggest that difficulties in dealing effectively with chronic illnesses such as asthma and potential difficulties in fulfilling developmental tasks can result in emotional impairment.

Interestingly, the etiology of asthma was once viewed as being psychological in nature (Creer, 1982). Although this causal theory has been discounted, psychological variables are considered to play a significant role in asthma in several ways. First, emotional reactions such as laughing or crying can be a contributing factor in the onset of asthma episodes (Celano & Geller, 1993; Creer et al., 1988). Indeed, these emotional triggers are recognized and monitored by asthmatics as indicated by Reene & Creer (1985), in which 65% and 42% of participants cited laughing and crying respectively as common triggers. Second, psychological variables influence the medical management of asthma, which contributes to psychological adjustment; these variables also appear to mediate the development of functional impairments such as absenteeism and cognitive deficits (Celano & Geller, 1993; Chaney et al., in press). Third, asthma symptoms and treatment may lead to emotional adjustment difficulties, particularly among those who have severe, chronic asthma (Celano & Geller, 1993). This type of comprehensive relationship has been observed in children in which asthma was associated with internalizing and anxious behaviors (Hamlett, Pellegrini, & Katz, 1992). More specifically, the prevalence of depression in asthma has been reported at 21% in college samples (Chaney et al., in press). In addition, Mullins, Chaney, Pace, and Hartman (1997) found

that nearly 40% of adult asthmatics evidenced clinically significant levels of psychological distress.

Quality of Life

One area of functional assessment in chronic asthma that has received attention in the literature is quality of life. Quality of life assessment provides a large amount of information about a person's level of functioning, especially in relation to emotional adjustment. However, it is a very complex and ill-defined psychological construct. The primary goal in measuring quality of life in asthma research is to provide a broad picture of how patients perceive the impact of their asthma on their lives (Creer & Bender, 1995). Unfortunately, the actual measurement of quality of life is much more difficult than one may expect. Creer and Bender (1995) indicate that this problem in measurement is probably due to the lack of consensus on a standard operational definition for quality of life.

Although there is no universally accepted definition of quality of life, there is general agreement that the construct involves several psychological components, including illness symptoms, income, impact on work, social life, sexual activity, physical activity, and emotional well-being (Creer & Bender, 1995; 1993). Anderson (1995) suggested that because there are individual differences in adaptation to chronic disease (i.e., some people adopt a passive and dependent role and others continue most if not all of their normal activities), there must be some intrinsic, intervening psychosocial variables between disease effects and quality of life. Indeed, Anderson, (1995) found that certain

psychosocial variables such as self-esteem, depression, and social support had direct effects on life quality in chronic obstructive pulmonary disease (COPD) patients.

Because of the obvious breadth of the quality of life construct, there has also been difficulty in developing a single instrument that gives justice to each of its individual components. Therefore, a battery approach has been suggested (Creer & Bender, 1993). This latter approach would involve an array of instruments aimed at measuring several of the components of quality of life.

Quality of life assessment is an important factor in asthma patient care. This type of assessment is utilized by physicians as a guide to patient management (McColl et al., 1995). Further, life quality assessment can be a major factor in developing psychologically oriented self-management programs which can help improve lung function (Hyland, Ley, Fisher, & Woodward, 1995). To further articulate, the primary functions of quality of life assessment in chronic illness in general are threefold. First, it yields an evaluation of current treatments and therapy specific to the illness. Second, it provides information for decisions by health care professionals about competing treatments. Third, quality of life assessment provides information about psychological and social functioning, and can help develop more focused and effective care in this area (Muthny, Koch, & Stump, 1990).

Coping Behavior

One construct of psychological adaptation to chronic illness that may be helpful in understanding quality of life is coping behavior (e.g., seeking social support, escape or avoidance of problems, regulation of emotions, etc.). Coping behavior has been proposed as a significant means of accounting for individual differences in adaptation to chronic

illness (Felton & Revenson, 1984). Moreover, coping becomes important early in life for persons with chronic disease. For instance, children report using coping as the primary strategy for adapting to chronic illness and the stress that accompanies it (Olson, Johansen, Powers, Pope, & Klein, 1993). Indeed, coping strategies have been associated with improved psychological functioning in a number of chronic illnesses. For example, Felton and Revenson (1984) found that coping strategies were directly related to adjustment in rheumatoid arthritis, cancer, hypertension, and diabetes. Moreover, problem-focused coping was associated with favorable adjustment, whereas emotion-focused coping was associated with unfavorable adjustment. In addition, Revenson and Felton (1989) found that coping efforts were related to increases in positive affect in a sample of rheumatoid arthritis patients. These authors further speculate that the affective state of a patient may influence functional disability through coping efforts, which may indicate that coping behavior plays a mediating role in adjustment to chronic illness.

Although the aforementioned researchers and numerous others have found effects of coping on adjustment to chronic illness, the process by which this occurs is not fully understood. Some researchers have considered coping as a buffering mechanism between illness-induced stress and quality of life (Muthny et al., 1990). This hypothesis is consistent with current cognitive diathesis-stress conceptualizations of asthma (e.g., Mullins et al., 1997). The relationship between coping and quality of life has received limited empirical attention. However, knowing more about the effect of different coping strategies in chronic illness may aid in improving quality of life by improving medical and psychological resources for patients (Muthny et al., 1990). Further, a specific evaluation of the effects of the different types of coping (i.e., problem-focused versus

emotion-focused) may provide a more comprehensive view of the relationship between coping and quality of life.

Outline of Paper

The present paper examines the precise role of coping behavior in relation to emotional aspects of quality of life (i.e., depression and anxiety) in adaptation to chronic asthma. To accomplish this, a concise and comprehensive review of the literature is presented. First, a review of the literature pertaining to the treatment of chronic asthma is presented. Next, literature on the emotional aspects of chronic asthma is discussed. Then, quality of life in chronic illness is discussed with particular emphasis on the literature pertaining to asthma. A concise review of literature on coping behavior follows. This body of literature is quite expansive, so the focus is primarily on coping behavior in chronic illness, especially asthma. Finally, a study is proposed that will examine the direct and indirect (i.e., mediating) effects of coping behavior on quality of life in chronic asthma.

CHAPTER II

REVIEW OF THE LITERATURE

Treatment Issues in Chronic Asthma

The unpredictable and variable nature of asthma necessitates accurate and appropriate treatment. For example, there is a common misconception that children sometimes “outgrow” asthma (Eiser, 1985). However, it is more appropriate and useful to conceptualize asthma as three separate but related types. In child-onset type, asthma onset occurs in childhood and continues into adulthood. In adult-relapse type, symptoms onset during childhood, disappear for a period of time, but then recur in adulthood. In adult-onset type, symptoms start in adulthood with no prior history of childhood asthma (Oosaki, Mizushima, Kawasaki, Hoskino, & Kobayashi, 1994). These different types inherently necessitate different treatment protocols with regard to developmental issues, medication, and psychological interventions.

Medical Treatment

Medical management of asthma involves three primary methods of treatment. First, environmental control, which refers to reducing exposure to allergens in one’s environment (i.e., dust, animal dander, etc.), is critically important to asthma management. Second, if escape from allergens is impossible, immunotherapy (i.e., desensitization) may

be necessary (Young, 1994). Finally, a more common approach to managing asthma is pharmacological treatment. This involves the administration of prescription medication to alleviate or prevent asthma exacerbations. Common medications include beta₂-adrenergic agonists, theophylline, mast cell stabilizers, and corticosteroids. Beta₂-adrenergic agonists are bronchodilators that are effective at treating the early phases of an asthma exacerbation, but less effective in treating latter phases. Theophylline, (a bronchodilator related to caffeine) is more effective at treating all phases of exacerbations, especially when used in conjunction with corticosteroids. However, theophylline has caused adverse effects such as cardiac rhythm disturbances, stomach discomfort, and seizures, so it is used less commonly now (Celano & Geller, 1993). Mast cell stabilizers (e.g., cromolyn) is administered by inhalation, and has no significant side effects. Systemic corticosteroids are also used to treat asthma, but have potential side effects that may be quite serious. However, corticosteroids administered directly to the affected lung tissue have been developed recently, and are relatively free of adverse effects (Celano & Geller, 1993).

Regimen adherence is also a concern in the medical treatment of asthma. The extent to which a patient complies with the recommendations of his/her physician is influenced by a number of factors. Some common factors that influence adherence include psychological comorbidity of the patient and/or family, increasing disease symptomatology, development of disability produced by the disease, greater duration of treatment, number of medications and treatments prescribed, and treatment cost (Weinstein, 1998).

Psychological Treatment

There have been several psychological techniques applied to the treatment of chronic respiratory diseases. For example, psychosocial interventions commonly applied to chronic obstructive pulmonary disease include compliance with health care teams, development of new attitudes, promotion of positive approaches to life change, modification of interpersonal interactions, and psychotherapy or family/marital therapy (Rabinowitz & Florian, 1992). However, interventions applied to asthma focus more on symptom control. These treatments include relaxation training, biofeedback, and family therapy. Each of these approaches have shown improvement in various aspects of functioning, including improved pulmonary function, increases in heart rate and peak expiratory flow rate, and family stress management and utilization of health care resources (Lehrer, Sargunraj, & Hochron, 1992). The aim of these techniques have been to reduce the panic that so often accompanies an asthma attack, and to promote self-management (Lehrer et al., 1992).

The promotion of self-management in chronic illness has had a major impact on both the physical and psychological status of the patient. Self-management can be described as the daily tasks a person must face to control or reduce the impact of their disease on physical health. This inevitably necessitates coping with the psychosocial problems generated by chronic illness. Self-management requires sufficient knowledge of the disease in order to make informed decisions about treatment, performance of health promoting activities, and maintenance of psychosocial functioning (Clark et al., 1991).

Self-management programs in asthma have been effective in reducing morbidity

and increasing personal control of the illness (Boulet, Boutin, Cote, Leblanc, & Laviolette, 1995; Celano & Geller, 1993). These programs operate by educating asthma patients about their illness and coping strategies for both the long term effects and exacerbations of the illness. Moreover, asthma self-management programs generally include topics such as recognizing symptoms of attacks, administration of medications and managing side effects, relaxation upon exacerbation, recognition and response to symptoms that require emergency care, preventing exposure to triggers, normalizing physical and social activities, and effective communication with health care professionals (Celano & Geller, 1993). A recent evaluation of a self-management education program revealed that self-management of asthma can increase knowledge about asthma, reduce frequency of emergency room visits and absenteeism from work, and improve both emotional functioning and quality of life (Boulet et al., 1995). Moreover, these findings showed that mean scores of quality of life increased over a one year period. Colland (1983) revealed similar findings with a behavioral self-management program. Children who participated in this program showed improvements in asthma knowledge, symptom recognition, communication, compliance, and psychological variables such as self-esteem and self-efficacy. Overall self-management programs have become standard in comprehensive asthma treatment. They have been shown to be cost-effective, and have produced improved adjustment, medication compliance, and have decreased use of medical services (Lehrer et al., 1992).

Integration of Medical and Psychological Treatment

There has been a recent trend towards integration of medical and psychological treatment aspects into a biopsychosocial model of asthma treatment. Indeed, the

biopsychosocial approach is necessary because emotional, psychosocial, developmental, and family factors influence both disease manifestation and management. Such a model has recently been proposed which attempts to: 1) minimize the impact of disease on physical and emotional functioning, 2) achieve balance between disease management and quality of life, and 3) facilitate integrated functioning in one's psychosocial environment (Miller & Wood, 1991).

Emotional Adjustment in Chronic Asthma

Adjustment to chronic illness can produce stress on individuals, their family and friends, and can include a significant economic strain. With all of these factors, it is not surprising that people with chronic disease often experience emotional difficulties. Research has indicated that people who suffer from chronic illness are at increased risk for psychological symptoms such as decreased self-esteem, depression, and anxiety (Ireys, Werthamer-Larsson, Kolodner, & Gross, 1994; Patterson, 1988; Chaney et al., 1996, in press). It has been suggested that this may occur because individuals view their illness as negatively affecting most aspects of one's life (Ireys et al., 1994). Indeed, these authors found that young adults with chronic illness reported high levels of psychological symptomatology. Explanations as to why this population is at increased risk for psychological maladjustment have varied. One study that offers a plausible explanation for the etiology of emotional maladjustment examined the role of inevitable uncontrollable negative outcomes in the formation of psychological symptomatology (Andersen & Lyon, 1987). Results indicated that this type of contingency produced increases in anxiety and

depressive symptomatology. Moreover, increases in anxiety tended to co-occur with increases in depression.

Research on chronic asthma has indicated that individuals with this disease are at increased risk for psychological maladjustment (MacLean, Perrin, Gortmaker, & Pierre, 1992; Kashani, Konig, Shepperd, Wilfley, & Morris, 1988). Badoux and Levy (1994) found that asthmatics scored significantly higher on measures of somatization, obsession/compulsion, interpersonal sensitivity, hostility, paranoid ideation, psychoticism, anxiety, and depression. This poses significant problems in treating asthma because psychological/emotional maladjustment has been associated with poor control and compliance (Miller, 1987; Badoux & Levy, 1994). For example, higher levels of anxiety may influence steroid usage regardless of pulmonary function (Priel, Heimer, Rabinowitz, & Hendler, 1994).

A common emotional adjustment problem in many chronic illnesses is depression. Depression has been observed in several diseases such as rheumatoid arthritis (Frank et al., 1988, 1992; Frank, Chaney, Clay, & Kay, 1991), chronic urticaria (Badoux & Levy, 1994), and asthma (Chaney et al., in press; Mullins et al., 1997; Badoux & Levy, 1994; Miller, 1987). Prevalence rates of depression in asthma have been reported at 21% (Chaney et al., in press) and 25% (Miller, 1987). In addition, global distress prevalence has been reported at approximately 40% (Mullins et al., 1997; Badoux & Levy, 1994). Some of these affective states (i.e., depression and anxiety) have been found to increase as a function of age and illness severity (Viney & Westbrook, 1985; Silverglade, Tosi, Wise, & D'Costa, 1994). Moreover, it has been suggested that asthmatics are at increased risk

for depression regardless of the severity of their asthma (Miller, 1987). However, these findings have been met with some resistance.

Kashani et al. (1988) found that severity of asthma was largely unrelated to psychological malfunction. These authors suggest that differences in findings of the relationship between illness severity and psychological/emotional maladjustment may be a function of different assessment procedures for severity. Indeed, Kashani et al. (1988) assessed severity of asthma by the type and frequency of medication prescribed to the patient, an assessment procedure that is inconsistent and uncontrolled at best.

Overall, it appears that asthmatics are subject to affective distress. Lyketsos et al. (1984) found that asthmatics had significantly more dysthymic complaints than did controls. Moreover, these dysthymic states did not appear to be temporary emotional states, but rather pervasive symptomatology associated with their asthma. These findings are consistent with Silverglade et al. (1994) in which asthmatics displayed significant levels of depression and anxiety.

Anxiety is also an important factor in understanding asthma management (Viney & Westbrook, 1985; Lyketsos et al., 1984). Significantly high scores on measures of anxiety have been reported in asthmatics (e.g., Lyketsos et al., 1984), and anxiety in the form of panic has been reported as a common theme in asthma sufferers (Lehrer et al., 1993).

This notion suggests that anxiety is not a persistent emotional problem for individuals with asthma. However, when an exacerbation occurs, or even when an individual is exposed to a trigger which has the potential to cause an exacerbation, anxiety dramatically increases and is manifest as panic. Indeed, many symptoms of a panic attack may be present in an individual with asthma during an exacerbation such as increased heart

rate, perspiration, etc. Unfortunately, because these panic attack symptoms can appear the same as asthma symptoms, it is difficult to determine whether the panic attack symptoms are caused by biological or emotional difficulties.

In general, there is little information about the prevalence of anxiety in asthma. This lack of information on prevalence may have resulted because anxiety may be maintained at subclinical levels except during an exacerbation or during the events leading to an exacerbation. Therefore measurements of anxiety may misrepresent the actual influence of anxiety in asthma.

Quality of Life in Chronic Asthma

Treatment effectiveness is often assessed via clinical indices such as airway functioning, symptoms, and hospitalizations. However, these indices do not provide comprehensive information regarding the daily physical, emotional, social, and occupational functioning of individuals with asthma (Juniper, 1998). Thus, assessment of quality of life can provide valuable information and influence treatment. The two methods of quality of life assessment have several advantages and disadvantages. Generic quality of life measures allow comparison across diseases. However, these measures are not as responsive to change and do not focus adequately on a specific area of interest. Disease-specific quality of life measures are more responsive to change and provide more detailed information for the specific disease, making them more clinically sensible. However, these measures do not allow comparison across diseases (Juniper, 1998).

Quality of life is generally conceptualized as a multidimensional construct which assesses aspects such as impact on work or school, symptomatology, sexual, social,

physical, and emotional functioning (French, Christie, & Sowden, 1994; Creer & Bender, 1993; 1995). In addition, the nature of quality of life assessment varies slightly according to the disease under investigation. For example, assessment in chronic obstructive pulmonary disease includes aspects such as wage-earning ability, alteration of role within family, independence, and social activities (Rabinowitz & Florian, 1992). Further, a common construct that purports to measure similar aspects of functioning as quality of life is illness intrusiveness. This construct has been conceptualized as measuring interference with continued involvement in activities and interests across life domains such as work, family and marital relations, recreation, etc. (Devins, Edworthy, Guthrie, & Martin, 1992).

Quality of life has been indicated as an important subjective assessment for treatment considerations in rheumatoid arthritis (Zautra et al., 1995) as well as in asthma (McCull et al., 1995). Moreover, some people choose not to undergo life-extending treatments if it is likely that quality of life will be diminished significantly (Levine, 1990).

Life quality has been the focus of many studies with several chronic diseases. Decreased quality of life has been shown to correlate with decreased positive affect and increased negative affect in rheumatoid arthritis (Zautra & Hempel, 1984), and is directly affected by self-esteem and depression (Anderson, 1995). In addition, distress is associated with poor life quality over long periods of illness (Fawzy et al., 1993). Further, depression associated with chronic obstructive pulmonary disease was found to have a significant negative impact on quality of life; effects were also found for age and disease severity (Anderson, 1995). Overall, it appears that emotional adjustment in asthma is a significant factor in quality of life assessment (Boulet et al., 1995).

One of the most important and affected aspects of life quality in adults, particularly college students, is that of absenteeism or school interference (Colland, 1993; Boulet et al., 1995) and health care utilization. A comprehensive retrospective survey examining these factors in students age 18 to 25 (Jolicoeur, Boyer, Reeder, & Turner, 1994) found that asthma caused significant interference with college activities and attendance. Moreover, the average number of missed days in one semester was 2.8; extrapolating this to one year, students may miss an average of almost 6 days. More important to the study of chronic asthma are the findings regarding patient education and management. These findings showed that the majority of college students with asthma have never received any education about their disease or effective management training, and do not utilize health services appropriately (Jolicoeur et al., 1994). It is apparent that poor disease management coupled with inadequate utilization of health care services are likely to affect quality of life.

It is not entirely clear, however, what all of the variables are that affect quality of life in asthma. Indeed, it has been suggested that many other constructs are involved in determining life quality in asthma (Hyland, Bellesis, Thompson, & Kenyon, 1996). It has also been suggested that coping research, which indicates that cognitive and emotional components are distinct, may be a valuable addition in assessing quality of life. More specifically, this addition would aid in assessment in that cognitive and emotional constructs, which are influenced by coping strategies, independently affect life quality (Hyland et al., 1996).

Coping Behavior in Chronic Asthma

An important component of asthma management is the development of effective coping strategies. Coping behavior refers to efforts by an individual or family directed at maintaining or restoring balance between demands and resources. Such behavior may function to reduce demands, increase or maintain resources, redefine meanings of situations to make them more manageable, and manage unresolved stress (Patterson, 1988). Cohen and Lazarus (1979) outlined five primary coping tasks. These include 1) reducing harmful environmental conditions and enhance prospects of recovery, 2) tolerating or adjust to negative events, 3) maintaining a positive self-image, 4) maintaining emotional adjustment, 5) continuing satisfying interpersonal relationships.

Lazarus and Folkman (1984) refer to coping at the psychological level as a process of managing internal or external demands that are assessed as taxing or exceeding personal resources. There are two primary types of coping strategies. Problem-focused coping refers to actively doing something constructive about harmful, threatening, or challenging conditions. Emotion-focused coping refers to regulating emotions, whether the focus of such regulation is overt behavior and expression, biological disturbance, subjective distress, or a combination of the three (Lazarus & Folkman, 1984). Simply stated, coping strategies focus on regulating distress (emotion-focused), or managing the problems causing the distress (problem-focused) (Olson et al., 1993).

Coping behavior is important to the management of chronic illness. Interventions may be specifically aimed at teaching adequate coping styles in order to achieve a less anxious and more realistic view of patients' illness (Schlosser & Havermans, 1992;

Colland, 1993). In addition, research indicates that family coping has the largest impact on psychological adjustment of children diagnosed with either diabetes or asthma (Hamlett et al., 1992). Further, cognitive coping strategies are particularly important because in many situations encountered throughout the course of certain illnesses, behavioral accommodation or adaptation is impossible or inappropriate (Olson et al., 1993). Tansella (1995) outlined the importance of effective coping to the management of chronic illness. It was suggested that adjustment to chronic illness depends on the availability and utilization of coping resources, and that the lack of resources is a risk factor for the development of emotional maladjustment. Coping resources may include previous coping experience, beliefs, interpersonal skills, intelligence, personality, family and social support. Tansella (1995) further suggests that effective coping alleviates emotional distress; if coping is ineffective, distress persists and may even increase.

Felton and Revenson (1984) illustrated the importance of effective coping in their investigation on coping and psychological adjustment in rheumatoid arthritis, cancer, hypertension, and diabetes. The results indicated that across diseases, problem-focused coping was related to decreased negative affect, whereas emotion-focused coping was related to poor psychological adjustment. These results are consistent with Revenson and Felton (1989), and Zautra et al. (1995) in which rheumatoid arthritis patients with high levels of pain and limitation exhibited passive coping behaviors that were associated with more negative affect and less positive affect.

One aspect of some chronic illnesses such as asthma is the control or changeability of stressors that accompany the disease. Vitaliano, DeWolfe, Maiuro, Russo, and Katon (1990) investigated the changeability of a stressor in relation to coping and depression.

The results of this study indicated that patients with physical health problems utilized problem-focused coping strategies when the situation was appraised as changeable, and that problem-focused coping was inversely related to depression. Further, those who displayed emotion-focused coping scored higher on measures of depression. These findings are also supported by Tansella (1995).

Because of the intermittent and uncontrollable nature of asthma exacerbations, it is important for patients with asthma to develop effective coping strategies. MacLean et al. (1992) suggested an educational approach to developing effective coping strategies for asthma patients. This approach may include teaching how medications work, how to use self-relaxation techniques, and how to avoid harmful stimuli. This approach is consistent with findings that suggest that increasing understanding of asthma and self-care methods improves coping processes (Perrin, MacLean, Gortmaker, & Asher, 1992). MacLean et al. (1992) further suggest that often there is little that can be done about the negative life events encountered by asthma patients, but that cognitive coping strategies may help individuals manage their illness more effectively.

Problem-focused coping strategies have been found to have lasting effects on reducing affective distress in chronic illnesses such as cancer (Fawzy et al., 1993). In addition, Fawzy et al. also found that coping strategies had positive immediate and long-term effects on quality of life. Similarly, interventions for chronic pain that focus on coping skills, nature of pain, and relaxation can be effective in reducing distress and aversiveness and severity of such pain (Baum, Herberman, & Cohen, 1995). Finally, a model of the effects of coping processes on quality of life has been postulated by Muthny

et al. (1990) in which coping acts as a buffer between stress induced by illness factors and quality of life outcome in cancer patients.

Summary

Treatment of chronic asthma can be complicated by comorbid emotional maladjustment. Indeed, increased anxiety has been associated with inappropriate medication use (Priel et al., 1994) and depression and anxiety appear to increase with age and illness severity (Viney & Westbrook, 1985; Silverglade et al., 1994). However, inconsistent measurement method of illness severity and emotional adjustment has produced inconsistent results regarding their role in chronic asthma. Nevertheless, depression seems to be a significant problem in asthmatics regardless of illness severity (Miller, 1987). Also, the lack of information on the prevalence of anxiety in asthma renders the available information tenuous.

Another variable that is important to the treatment of asthma is the subjective assessment of quality of life. Although it has received little focus in treatment consideration, emotional adjustment is an important aspect of life quality. Further, quality of life in college students appears to be affected by this population's lack of appropriate health care utilization and education about disease management (Jolicoeur et al., 1994). However, the range of factors that may affect quality of life is not entirely clear. Assessment of coping behavior has been suggested as a means for understanding determinants of life quality.

Research indicates that coping behavior has the largest impact on psychological adjustment in asthma (Hamlett et al., 1992). Further, problem-focused coping has been

related to decreases in negative affect, whereas emotion-focused coping has been related to poor psychological adjustment. It has been suggested that effective coping strategies may help asthmatic patients manage their illness more effectively (MacLean et al., 1992). Coping behavior has also been found to have positive immediate and long-term effects on quality of life in cancer patients (Fawzy et al., 1993) and chronic pain patients (Baum et al., 1995). Further, coping behavior has been suggested as a mediating variable affecting quality of life (Muthny et al., 1990). Finally, although there is preliminary empirical evidence regarding the effects of coping behavior on quality of life, this hypothesis has yet to be examined in chronic asthma.

CHAPTER III

THE PRESENT STUDY

The present study was designed to investigate the relationship between coping strategies and both asthma-specific quality of life and two emotional quality of life indices, anxiety and depression. In addition, utilizing Baron and Kenny's (1986) cognitive mediation model, anxiety and depression were examined as potential mediators in the coping-asthma quality of life relationship. For a variable to be considered a mediator, four criteria must be met: 1) the predictor variable (i.e., coping) must be related to the outcome variable (i.e., quality of life), 2) the potential mediator variables (i.e., anxiety and depression) must be related to the outcome variable after controlling for the predictor variable, 3) the predictor variable must be related to the potential mediator variables, and 4) the relationship between the predictor and outcome is no longer significant after controlling for the mediator variables. Finally, anxiety and depression were examined as potential moderators of the relationship between coping and asthma quality of life. For a variable to be considered a moderator, the interaction of the predictor variable and moderator variable must be significantly related to the outcome variable. In addition, it is desirable that the moderator not demonstrate direct effects on either the predictor or outcome variables in order to provide a clear interpretation of the interaction term. The following hypotheses and research questions were examined in the present study:

Hypothesis One

Participants who use more problem-focused coping strategies will report better asthma-specific quality of life.

Research Question One

Is the relationship between problem-focused coping and better asthma-specific quality of life direct, or is it mediated by anxiety and depression?

Hypothesis Two

Participants who use more emotion-focused coping strategies will report poorer asthma-specific quality of life.

Research Question Two

Is the relationship between emotion-focused coping and poorer asthma-specific quality of life direct, or is it mediated by anxiety and depression?

The aforementioned hypotheses are consistent with previous findings on problem-focused and emotion-focused coping behavior (e.g., Folkman & Lazarus, 1980; Felton & Revenson, 1984; Revenson & Felton, 1989; Zautra et al., 1995). In addition, examination of the proposed mediator models would provide information regarding the predictive utility of cognitive coping strategies and subjective measures of psychological distress (i.e., anxiety and depression).

CHAPTER IV

METHOD

Participants

Participants were 46 (25 male, 21 female) young adults between the ages of 18 and 25 ($M = 20$, $SD = 1.69$) with childhood onset chronic asthma. Participants were recruited from undergraduate psychology classes, flier advertising, and the Student Health Center at Oklahoma State University. The sample was composed primarily of Caucasian participants (87%), followed by African American (6.5%), Native American (2.2%), Asian (2.2%), and Biracial (2.2%). Participants qualified for inclusion in the study if they: 1) experienced their first asthma episode or were diagnosed with asthma prior to the age of 12, and 2) were receiving treatment for their asthma at the time of the investigation. To verify evidence of long-standing asthma, participants reported their age at diagnosis ($M = 5$ years, $SD = 3.26$), and illness duration was calculated ($M = 15$ years, $SD = 3.98$). The majority of participants described their asthma as perennial (56.5%). The sample was evenly distributed (50/50) between Stage 2 (Moderate Asthma) and Stage 3 (Severe Asthma) levels of asthma severity.

Undergraduate psychology class participants were offered two points of extra class credit for compensation of their participation. Those that were recruited from other

sources (i.e., flier advertising or Student Health Center) were offered monetary compensation of \$5.00 for their participation.

Instruments

Background Information Questionnaire

A questionnaire was designed to obtain the following information: age, sex, ethnicity, education level, parents' education level, marital status, occupation (and spouses occupation if applicable), parents' occupation, living arrangement, prescription medication information, current treatment status, asthma-related counseling, age at diagnosis, type of asthma (i.e., seasonal or perennial), health care utilization, self-assessment of control over disease, and interference of disease with school/work (See Appendix A).

Ways of Coping Questionnaire (WOCQ)

The WOCQ (Folkman & Lazarus, 1980) is a 66-item instrument designed to assess the coping strategies an individual employs when encountered with stressful circumstances. The items measure the frequency with which each strategy is used on a 0 to 3 scale. Items are grouped into eight separate coping scales; raw scores represent the extent to which each type of coping is used whereas relative scores describe with percentages the proportion of effort represented for each type of coping. The WOCQ has been shown to be a reliable (i.e., Cronbach's alpha for the eight scales ranged from .61 to .79) and valid measure (Folkman & Lazarus, 1980). In the present sample, internal consistencies (Cronbach, 1951) for emotion-focused and problem-focused coping were

.83 and .75, respectively. Prior studies examining coping processes in chronic illness populations have utilized the WOCQ effectively (e.g., Revenson & Felton, 1989). For the purpose of the present study, raw scores were used, and the eight scales were divided into two broader scales, problem-focused and emotion-focused, in a manner consistent with previous research (Miller, Gordon, Daniele, & Diller, 1992).

Living With Asthma Questionnaire (LWAQ)

The LWAQ (Hyland, Finnis, & Irvine, 1991) is a 68-item questionnaire used to assess quality of life in asthma patients. The items measure the extent to which each statement applies to the individual on a 0 to 2 scale. The LWAQ is designed such that higher scores indicate poorer perceived quality of life. The instrument covers the following 11 domains of asthma life experience: social/leisure, sport, holidays, sleep, work and other activities, colds, mobility, effects on others, medication usage, sex, and dysphoric states and attitudes. Scores for this instrument can be derived three ways. First, an overall score can be derived by summing the 68 items and dividing by the number of questions which have either a “very true”, “slightly true” or “untrue” response. Second, the scores for each of the 11 domains can be calculated as with the overall score. Finally, the instrument can be analyzed in terms of four constructs: an 18-item avoidance construct, a 19-item distress construct, an 11-item preoccupation construct, and a 15-item activities construct (Hyland, Kenyon, & Jacobs, 1994). In the present study, the total quality of life score was utilized as the outcome measure. The LWAQ has been shown to be a reliable (i.e., test-retest reliability = .95) and valid measure of asthma quality of life (Hyland, Finnis, & Irvine, 1991). Internal consistency for the present sample was .95.

The Inventory to Diagnose Depression (IDD)

The IDD (Zimmerman & Coryell, 1987) is a 17-item instrument used to assess the severity of major depression symptomatology according to DSM IV criteria (APA, 1994). Each of the items on the IDD is a group of five statements that combine to measure the severity of a single depressive symptom on a 0 to 4 scale. In the present study, the overall index of depressive symptomatology was derived by summing the items. Zimmerman and colleagues have shown the IDD to be a reliable (i.e., split-half reliability = .91, and Cronbach's alpha = .92) and valid measure of depression (Zimmerman & Coryell, 1987, 1988, 1994; Zimmerman, Coryell, Wilson, & Corenthal, 1986). Internal consistency for the present sample was .78. Prior studies have also demonstrated the utility of the IDD in assessing depressive symptomatology in chronic illness populations (Chaney et al., 1996; Frank et al., 1991, 1992).

Beck Anxiety Inventory (BAI)

The BAI (Beck, Epstein, Brown, & Steer, 1988) is a 21-item instrument used to assess anxiety severity in adults and adolescents. The items measure both cognitive and somatic symptoms associated with anxiety on a 0 to 3 scale. An index of anxiety can be derived by summing the items on the instrument. Scores ranging from 0-7 are considered to be within the minimal range; scores between 8-15 indicate mild anxiety; scores between 16-25 indicate moderate anxiety; and scores between 26-63 indicate severe anxiety. The BAI has been shown to be a reliable (i.e., internal consistency = .92, and test-retest

reliability = .75; Beck et al., 1988) and valid measure of anxiety. Internal consistency for the present sample was .81.

Illness Severity Assessment Interview

Illness severity was assessed via semi-structured interview and pulmonary function assessment. The interview involved a series of questions designed to determine asthma severity stage (i.e., mild, moderate, severe, or respiratory failure) (e.g., O'Hara, 1995). As part of this staging criteria, a measure of peak expiratory flow rate (PEFR) assessed with a MiniWright Peak Flow Meter (Model # 3103001) was included in the assessment (See Appendix B). Peak flow measurements were taken three times for each subject during the session. The highest measurement taken from the peak flow assessment was used in the illness severity assessment. Overall illness severity was determined according to the number of criteria met for a given stage. Assignment to a given stage required the individual endorse more than 50% of the items representative of that stage.

Procedure

Participants recruited from undergraduate psychology classes completed a brief information sheet designed to determine qualification for the study; those recruited from other sources were briefly interviewed to determine qualification. Each participant was scheduled for an individual appointment subsequent to recruitment for the study. At the beginning of each appointment, the participant first read and signed an informed-consent form. Next, the participant completed a brief screening questionnaire that assessed current asthma symptomatology (See Appendix C). The participant was then instructed on

measurement procedure of the peak expiratory flow meter, allowed a practice trial, rested for a period of one minute, and then he/she was instructed to complete the measure again for the recorded trial. Next, the participant was interviewed for assessment of illness severity. After the interview, a second PEFr measurement was recorded. Following illness severity assessment, each participant completed the background information questionnaire, WOCQ, LWAQ, IDD, and BAI respectively. Then, a final PEFr measurement was recorded. Finally, the participant was debriefed. During the debriefing, the participant received an explanation of the nature and purpose of the study, and was allowed to ask questions relevant to the study.

CHAPTER V

RESULTS

Preliminary Analyses

Preliminary analyses were conducted to identify potential group differences in quality of life across a number of demographic and disease parameters. Quality of life did not vary as a function of gender [$t(44) = -1.15, p = .256$], illness severity [$t(44) = -1.94, p = .059$], seasonal versus perennial asthma [$t(44) = -1.62, p = .113$], or history of prior psychological treatment [$t(44) = .027, p = .978$]. Although the relationship between illness severity and quality of life only approached significance [$r(46) = .28, p = .06$], illness severity did account for approximately 8% of the variance in quality of life. As a result, illness severity was included as a covariate in the primary analyses to allow for a more conservative test of the independent effects of psychosocial variables on quality of life. Table 1 shows descriptive statistics on study variables; zero-order correlations are presented in Table 2.

Primary Analyses

Hypothesis One

Participants who use more problem-focused coping strategies will report better asthma-specific quality of life. A hierarchical regression equation was constructed to test this hypothesis to examine the independent contribution of problem-focused coping to asthma quality of life after controlling for the effects of illness severity (see Table 3). Illness severity was statistically controlled by entering it in step 1 of the equation, and problem-focused coping was entered in step 2. Results of this analysis indicated that problem-focused coping was not predictive of better asthma quality of life (F change = .65, $p > .05$).

Research Question One

The proposed research question involved examining the mediational properties of anxiety and/or depression in the relationship between problem-focused coping and better asthma quality of life. However, the relationship between problem-focused coping and better asthma quality of life was nonsignificant, nullifying further mediator analyses.

Hypothesis Two

Participants who use more emotion-focused coping strategies will report poorer asthma-specific quality of life. A hierarchical regression equation was constructed to test this hypothesis to examine the independent contribution of emotion-focused coping to asthma quality of life after controlling for the effects of illness severity. Illness severity was

statistically controlled by entering it in step 1 of the equation, and emotion-focused coping was entered in step 2. Results of this analysis indicated that emotion-focused coping was not predictive of poorer asthma quality of life (F change = 1.86, $p > .05$).

Research Question Two

The proposed research question involved examining the mediational properties of anxiety and/or depression in the relationship between emotion-focused coping and poorer asthma quality of life. However, the relationship between emotion-focused coping and poorer asthma quality of life was nonsignificant, nullifying further mediator analyses.

Exploratory Analyses

Correlational analyses on several variables (see Table 3) indicated that, among other relationships, both depression and anxiety were significantly related to asthma quality of life ($r = .31$, $p < .05$; $r = .49$, $p < .01$, respectively). Subsequently, a series of four exploratory regression analyses were conducted to examine potential moderator effects of depression and anxiety on the relationship between coping and quality of life.

Exploratory Analysis One

A hierarchical regression equation was constructed to examine the interaction of emotion-focused coping and depression on asthma quality of life. Illness severity was statistically controlled by entering it in step 1 of the equation. In step 2, the main effects of emotion-focused coping and depression were entered simultaneously; the interaction term (i.e., emotion-focused coping X depression) was entered in step 3. Results revealed that

the interaction of emotion-focused coping X depression made a nonsignificant contribution to asthma quality of life, F change = .278, $p > .05$.

Exploratory Analysis Two

A hierarchical regression equation was constructed to examine the interaction of emotion-focused coping and anxiety on asthma quality of life. Illness severity was statistically controlled by entering it in step 1 of the equation. In step 2, the main effects of emotion-focused coping and anxiety were entered simultaneously; the interaction term (i.e., emotion-focused coping X depression) was entered in step 3. Results revealed that the interaction of emotion-focused coping X anxiety made a nonsignificant contribution to asthma quality of life, F change = .564, $p > .05$.

Exploratory Analysis Three

A hierarchical regression equation was constructed to examine the interaction of problem-focused coping and depression on asthma quality of life. Illness severity was statistically controlled by entering it in step 1 of the equation. In step 2, the main effects of problem-focused coping and depression were entered simultaneously; the interaction term (i.e., problem-focused coping X depression) was entered in step 3. Results revealed that the interaction of problem-focused coping X depression made a nonsignificant contribution to asthma quality of life, F change = .316, $p > .05$.

Exploratory Analysis Four

A hierarchical regression equation was constructed to examine the interaction of problem-focused coping and anxiety on asthma quality of life. Illness severity was statistically controlled by entering it in step 1 of the equation. In step 2, the main effects of problem-focused coping and anxiety were entered simultaneously; the interaction term (i.e., problem-focused coping X anxiety) was entered in step 3. Results revealed a main effect for anxiety ($t = 3.06, p < .01$). However, this main effect was qualified by a significant problem-focused coping X anxiety interaction. This interaction contributed a significant 11% of unique variance to asthma quality of life (F change = 7.147, $p < .05$). Examination of this interaction revealed that both high and low problem-focused copers demonstrated poorer quality of life with increased anxiety. More importantly, individuals endorsing greater problem-focused coping styles showed a sharper decrease in quality of life under conditions of greater anxiety (see Figure 1).

CHAPTER VI

DISCUSSION

The purpose of the present study was twofold. The first objective was to examine the relationship between coping and asthma quality of life in individuals with long-standing asthma. Second, this study attempted to examine the emotional aspect of asthma quality of life via measurement of affective states (i.e., anxiety and depression). Two hypotheses regarding the roles of problem-focused and emotion-focused coping in asthma quality of life and two research questions regarding the roles of anxiety and/or depression were examined.

Summary of Findings

Analysis of Hypothesis 1 revealed that the proposed relationship between higher problem-focused coping and better asthma quality of life was nonsignificant. Subsequent testing of the mediating roles of anxiety and/or depression in the coping-quality of life association was not possible, as criterion one for testing mediator relationships was not met (e.g., Baron & Kenny, 1986). Analysis of Hypothesis 2 revealed that the proposed relationship between higher emotion-focused coping and poorer asthma quality of life was nonsignificant. Similar to Hypothesis 1, examining anxiety and/or depression as potential mediators in the coping-quality of life relationship was not possible.

There are a couple of possible reasons why the proposed relationships between coping and asthma quality of life were not supported in the present study. It may be that because the quality of life measure was a global measure (i.e., examining several aspects of life quality), it was not sensitive enough to highlight subtle, yet salient, relationships that existed. Indeed, a more specific measure of quality of life (e.g., illness intrusiveness or impact on activities of daily living) may have demonstrated these relationships. In addition, the quality of life measure used contains items that form four constructs, including a 19-item distress construct. It may be that removal of these 19 items for the analyses would have provided a more accurate assessment of the relationship between coping and asthma quality of life. Indeed, the overlapping variance between the two measures resulting from similar items may have contaminated the proposed relationships.

Although results did not support these hypotheses, several relationships did exist among the variables of interest. For example, both depression and anxiety demonstrated significant direct associations with quality of life (see Table 1). Subsequently, exploratory analyses were performed to assess the combined influence of anxiety and coping, as well as depression and coping on asthma quality of life.

Exploratory analyses revealed that the respective interactions of emotion-focused coping X depression, emotion-focused coping X anxiety, and problem-focused coping X depression each made nonsignificant contributions to asthma quality of life. However, the interaction of problem-focused coping and anxiety contributed a significant portion of unique variance to asthma quality of life beyond the influence of illness severity. This finding suggests that anxiety serves as a moderating variable in the relationship between problem-focused coping and asthma quality of life. More specifically, these results suggest

that use of problem-focused coping is a reliable predictor of better asthma quality of life in individuals with chronic asthma who are experiencing lower levels of anxiety. However, under high levels of anxiety, the use of problem-focused coping is associated with poorer asthma quality of life.

The finding that problem-focused coping predicted asthma quality of life as a function of subjective levels of anxiety may represent a specific type of relationship. Indeed, it may be that coping is related to asthma quality of life only under certain psychosocial circumstances. Such an explanation may lend support to the notion that anxiety in asthma is manifest as panic, becoming severe only under disease fluctuations. This explanation may also account for the observed reduction in shared variance between depression and asthma quality of life after controlling for illness severity. Specifically, coping behavior may provide valuable information about overall functioning (i.e., quality of life) when anxiety levels are known, but not when only depressive symptomatology is known.

Further, it may be that anxiety is maintained at subclinical levels until an exacerbation in symptoms occurs. Thus, the present findings would suggest that, due to the transient nature of anxiety in asthma, individuals who utilize problem-focused coping may only be able to do so at times when their attention is not focused on anxiety provoking stimuli such as an exacerbation of symptoms or the anticipation of an exacerbation after exposure to potential triggers. This interpretation would suggest that more focus should be directed towards conceptualization and treatment of anxiety more so than coping behavior.

Treatment Implications

The findings in the present study may have considerable treatment implications. First, because psychological adjustment in asthma can affect treatment (e.g., Miller, 1987; Badoux & Levy, 1994; Priel, et al., 1994), the main effect observed for anxiety on asthma quality of life takes on particular importance. The influence of anxiety on asthma quality of life is especially robust when one considers that this effect was seen after the variance attributed to illness severity had been statistically controlled. Further, the same effect was not observed for depression. Although depression was initially associated with asthma quality of life, this relationship was no longer observed after illness severity was statistically controlled. Thus, results indicate that anxiety and depression should be treated as distinct measures of psychological adjustment in asthma populations, and that particular attention should be focused on assessment of anxiety in making treatment recommendations.

Second, the finding that problem-focused coping predicted better asthma quality of life under low levels of anxiety, but poorer asthma quality of life under high levels of anxiety, suggests that treatment involving modification of coping strategies should be sensitive to the individual's level of anxiety, and the nature of increases in anxiety (e.g., if increases only occur during an exacerbation). Moreover, these findings provide further support for behavioral self-management techniques in the comprehensive treatment of asthma (Boulet et al., 1995). Indeed, aspects of self-management such as relaxation training may help to reduce the influence of anxiety in asthma, and thus allow the individual to utilize problem-focused coping more effectively.

Methodological Considerations

These implications should be considered in light of several methodological limitations. First, the sample was comprised of a demographically limited, self-selected portion of the population in which most participants were Caucasian, middle-to-upper-middle class, college educated individuals. Thus, the sample may represent a select portion of the asthma population that possesses more effective self-management behavior, and is consequently more adept at coping with their illness. However, utilization of a homogeneous college-aged sample can also be viewed as a strength of the present study. Indeed, research in asthma indicates that college students with asthma, although often readily accessible, are understudied in favor of child or adolescent populations (Jolicoeur et al., 1994, Mullins et al., 1997). Moreover, studies have indicated that college students represent a population lacking in asthma education and training, resulting in many disease-related difficulties such as hospitalization, absenteeism, and psychological comorbidity (Friday & Fireman, 1988). Nevertheless, generalization of these findings to clinical, or non-college samples should be made cautiously.

Second, the measures employed in the primary analyses as the independent and dependent variables were all self-report in nature. The utilization of self-report measures may have resulted in significant associations due to shared method variance rather than to the hypothesized associations between the predictor and outcome variables (Coyne & Gotlib, 1983). This argument would suggest that no associations among the variables exist, and that the significant relationships observed were simply artifacts of the measurement method. However, because the vast majority of associations among these

variables were nonsignificant, it is unlikely that the observed associations were due to method variance. Further, the assessment of illness severity was conducted via a semi-structured interview, and included physiological measurements of pulmonary functioning. Thus, the measurement of illness severity in the present study may be more valid than in previous studies utilizing general self-report estimates in the absence of objective physiological indices.

Finally, the cross-sectional nature of the present study does not allow for speculation regarding temporal relationships between coping, anxiety, and asthma quality of life. It may be that the chronic nature of asthma has a cumulative effect on the role of anxiety, such that anxiety has a more pervasive effect on quality of life over time. Moreover, the variable, intermittent, and uncontrollable nature of this illness may inhibit the ability to effectively cope with the transient influence of anxiety in individuals with asthma. Indeed, the present findings suggest that the persistence of anxiety would likely affect the utilization of problem-focused coping, thus leading to poorer long-term quality of life in individuals with asthma.

Recommendations for Future Research

Future research should address the role of coping and anxiety in quality of life utilizing prospective designs. It is likely that the highly variable nature of asthma makes accurate assessment of certain psychological variables difficult when they are not measured on several occasions over time. Further, these variables should be examined in clinical samples, across diverse socioeconomic, education, and ethnic groups. Such sampling would significantly enhance the generalizability of findings.

In addition, alternatives to broad-based quality of life assessment should be considered. For example, the lack of association between coping and quality of life observed in the present study may have resulted from the general nature of information provided by the quality of life measure utilized. Alternatives to this may include assessing more specific dimensions of quality of life such as illness intrusiveness which measures disruptions in lifestyle and the extent to which illness interferes with involvement in valued activities and interests (Devins et al., 1992).

Overall, the results of the present study provide initial evidence regarding the role of anxiety and coping in asthma quality of life. It is suggested that behavioral self-management treatment research be expanded to involve a greater focus on management of anxiety and modification of coping behavior in asthma. Such improvements in the comprehensive treatment of asthma may serve to decrease the morbidity and mortality associated with this illness.

REFERENCES

Anderson, K. L. (1995). The effect of chronic obstructive pulmonary disease on quality of life. Research in Nursing & Health, 18, 547-556.

Andersen, S. M., & Lyon, J. E. (1987). Anticipating undesired outcomes: The role of outcome certainty in the onset of depressive affect. Journal of Experimental Social Psychology, 23, 428-443.

Badoux, A., & Levy, D. A. (1994). Psychologic symptoms in asthma and chronic urticaria. Annals of Allergy, 72, 229-234.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173-1182.

Baum, A., Herberman, H., & Cohen, L., (1995). Managing stress and managing illness: Survival and quality of life in chronic disease. Journal of Clinical Psychology in Medical Settings, 2(4), 309-333.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, 56(6), 893-897.

Boulet, L. P., Boutin, H., Cote, J., Leblanc, P., & Laviolette, M. (1995). Evaluation of an asthma self-management education program. Journal of Asthma, 32(3), 199-206.

Burr, M. L., Butland, B. K., King, S., & Vaughan-Williams, E. (1989). Changes in asthma prevalence: Two surveys 15 years apart. Archives of Disease in Childhood, *64*, 1452-1456.

Celano, M. P., & Geller, R. J. (1993). Learning, school performance, and children with asthma: How much at risk? Journal of Learning Disabilities, *26*(1), 23-32.

Chaney, J. M., Uretsky, D. L., Mullins, L. L., Doppler, M. J., Palmer, W. R., Wees, S. J., Klein, H. S., Doud, D. K., & Reiss, M. J. (1996). Differential effects of age and illness duration on pain-depression and disability-depression relationships in rheumatoid arthritis. International Journal of Rehabilitation and Health, *2*(2), 101-111.

Chaney, J. M., Mullins, L. L., Uretsky, D. L., Pace, T. M., Werden, D., & Hartman, V. (in press). An experimental examination of learned helplessness in older adolescents and young adults with long-standing asthma. Journal of Pediatric Psychology.

Clark, N. M., Becker, M. H., Janz, N. K., Lorig, K., Rakowski, W., & Anderson, L. (1991). Self-management of chronic disease by older adults. Journal of Aging and Health, *3*(1), 3-27.

Cohen, F., & Lazarus, R. S. (1979). Coping with the stresses of illness. In G. C. Stone, F. Cohen, & N. E. Adler (Eds.), Health Psychology. San Francisco: Jossey-Bass.

Colland, V. T. (1993). Learning to cope with asthma: A behavioral self-management program for children. Patient Education and Counseling, *22*, 141-152.

Coyne, J. & Gotlib, I. (1983). The role of cognition in depression: A critical review. Psychological Bulletin, *94*, 472-505.

Creer, T. L., & Bender, B. G. (1993). Asthma. In R. J. Gatchel and E. B. Blanchard (Eds.), Psychophysiological disorders. Washington, DC: American Psychological Association.

Creer, T. L., & Bender, B. G. (1995). Recent trends in asthma research. In J. Goreczny (Ed.), Handbook of health and rehabilitation psychology. New York, NY: Plenum Press.

Creer, T. L. (1982). Asthma. Journal of Consulting and Clinical Psychology, *50*(6), 912-921.

Creer, T. L., Harm, D. L., & Marion, R. J. (1988). Childhood asthma. In D. Routh (Ed.), Handbook of pediatric psychology (pp. 162-189). New York, NY: Guilford.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, *16*, 297-334.

Devins, G. M., Edworthy, S. M., Guthrie, N. G., & Martin, L. (1992). Illness intrusiveness in rheumatoid arthritis: Differential impact on depressive symptoms over the adult lifespan. The Journal of Rheumatology, *19*(5), 709-715.

Eiser, C. (1985). The psychology of childhood illness. New York, NY: Springer-Verlag.

Fawzy, F. I., Fawzy, N. W., Hyun, C. S., Elashoff, R., Guthrie, D., Fahey, J. L., & Morton, D. L. (1993). Malignant melanoma: Effects of an early structured psychiatric intervention, coping, and affective state on recurrence and survival 6 years later. Archives of General Psychiatry, *50*, 681-689.

Felton, B. J., & Revenson, T. A. (1984). Coping with chronic illness: A study of illness controllability and the influence of coping strategies on psychological adjustment. Journal of Consulting and Clinical Psychology, *52*(3), 343-353.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, *21*, 219-239.

Frank, R. G., Beck, N. C., Parker, J. C., Kashani, J. H., Elliott, T. R., Haut, A. E., Smith, E., Atwood, C., Brownlee-Duffeck, M., & Kay, D. R. (1988). Depression in rheumatoid arthritis. The Journal of Rheumatology, *15*, 920-925.

Frank, R. G., Chaney, J. M., Clay, D. L., & Kay, D. R. (1991). Depression in rheumatoid arthritis: A re-evaluation. Rehabilitation Psychology, *36*(4), 219-230.

Frank, R. G., Chaney, J. M., Clay, D. L., Shutty, M. S., Beck, N. C., Kay, D. R., Elliott, T. R., & Grambling, S. (1992). Dysphoria: A major symptom factor in persons with disability or chronic illness. Psychiatry Research, *43*(3), 231-241.

French, D. J., Christie, M. J., & Sowden, A. J. (1994). The reproducibility of the childhood asthma questionnaire: Measures of quality of life for children with asthma aged 4-16 years. Quality of Life Research, *3*, 215-224.

Friday, G., & Fireman, P. (1988). Morbidity and mortality of asthma. Pediatric Allergy and Disease, *35*, 1149-1155.

Gergen, P. J., Mullally, D. I., & Evans, R. (1988). National survey of prevalence of asthma among children in the United States, 1976 to 1980. Pediatrics, *81*, 1-7.

Hambley, J., Brazil, K., Furrow, D., & Chua, Y. Y. (1989). Demographic and psychological characteristics of asthmatic children in a Canadian rehabilitation setting. Journal of Asthma, *26*(3), 167-175.

Hamlett, K. W., Pellegrini, D. S., & Katz, K. S. (1992). Childhood chronic illness as a family stressor. Journal of Pediatric Psychology, *17*, 33-47.

Hyland, M. E., Bellesis, M., Thompson, P. J., & Kenyon, C. A. P. (1996). The constructs of asthma quality of life: Psychometric, experimental and correlational evidence. Psychology and Health, *12*, 101-121.

Hyland, M. E., Finnis, S., & Irvine, S. H. (1991). A scale for assessing quality of life in adult asthma sufferers. Journal of Psychosomatic Research, *35*(1), 99-110.

Hyland, M. E., Kenyon, C. A. P., & Jacobs, P. A. (1994). Sensitivity of quality of life domains and constructs to longitudinal change in a clinical trial comparing selmeterol with placebo in asthmatics. Quality of Life Research, *3*, 121-126.

Hyland, M. E., Ley, A., Fisher, D. W., & Woodward, V. (1995). Measurement of psychological distress in asthma and asthma management programmes. British Journal of Clinical Psychology, *34*, 601-611.

Ireys, H. T., Werthamer-Larsson, L. A., Kolodner, K. B., & Gross, S. S. (1994). Mental health of young adults with chronic illness: The mediating effect of perceived impact. Journal of Pediatric Psychology, *19*(2), 205-222.

Jolicoeur, L. M., Boyer, J. G., Reeder, C. E., & Turner, J. (1994). Influence of asthma or allergies on the utilization of health care resources and quality of life of college students. Journal of Asthma, *31*(4), 251-267.

Juniper, E. F. (1998). Quality-of-life measures. In H. Kotses and A. Harver (Eds.), Self-Management of Asthma. New York, NY: Marcel Dekker, Inc.

Kashani, J. H., Konig, P., Shepperd, J. A., Wilfley, D., & Morris, D. A. (1988). Psychopathology and self-concept in asthmatic children. Journal of Pediatric Psychology, 13(4), 509-520.

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. In W. D. Gentry (Ed.), Handbook of behavioral medicine (p. 282-325). New York, NY: The Guilford Press.

Lehrer, P. M., Isenberg, S., & Hochron, S. M. (1993). Asthma and emotion: A review. Journal of Asthma, 30(1), 5-21.

Lehrer, P. M., Sargunraj, D., & Hochron, S. (1992). Psychological approaches to the treatment of asthma. Journal of Consulting and Clinical Psychology, 60(4), 639-643.

Levine, R. J. (1990). An ethical perspective. In B. Spilker (Ed.), Quality of life assessments in clinical trials (pp. 153-162). New York, NY: Raven Press.

Lyketsos, G. C., Karabetsos, A., Jordanoglou, J., Liokis, T., Armagianidis, A., & Lyketsos, C. G. (1984). Personality characteristics and dysthymic states in bronchial asthma. Psychotherapy and Psychosomatics, 41, 177-185.

MacLean, W. E. Jr., Perrin, J. M., Gortmaker, S., & Pierre, C. B. (1992). Psychological adjustment of children with asthma: Effects of illness severity and recent stressful life events. Journal of Pediatric Psychology, 17(2), 159-171.

McColl, E., Steen, I. N., Meadows, K. A., Hutchinson, A., Eccles, M. P., Hewison, J., Fowler, P., & Blades, S. M. (1995). Developing outcome measures for ambulatory care: An application to asthma and diabetes. Social Science and Medicine, 41(10), 1339-1348.

Miller, A. C., Gordon, R. M., Daniele, R. J., & Diller, L. (1992). Stress, appraisal, and coping in mothers of disabled and nondisabled children. Journal of Pediatric Psychology, *17*(5), 587-605.

Miller, B. D. (1987). Depression and asthma: A potentially lethal mixture. Journal of Allergy and Clinical Immunology, *80*(3), 481-486.

Miller, B. D., & Wood, B. L. (1991). Childhood asthma in interaction with family, school, and peer systems: A developmental model for primary care. Journal of Asthma, *28*(6), 405-414.

Mullins, L. L., Chaney, J. M., Pace, T. M., & Hartman, V. L. (1997). Illness uncertainty, attributional style, and psychological adjustment in older adolescents and young adults with asthma. Journal of Pediatric Psychology, *22*(6), 871-879.

Muthny, F. A., Koch, U., & Stump, S. (1990). Quality of life in oncology patients. Psychotherapy and Psychosomatics, *54*, 145-160.

O'Hara, M. M. (1995). Understanding asthma: Why it happens and how to assess your adult patient. Journal of the American Academy of Physician Assistants, *8*, 20-35.

Olson, A. L., Johansen, S. G., Powers, L. E., Pope, J. B., & Klein, R. B. (1993). Cognitive coping strategies of children with chronic illness. Developmental and Behavioral Pediatrics, *14*(4), 217-223.

Oosaki, R., Mizushima, Y., Kawasaki, A., Hoskino, K., & Kobayashi, M. (1994). Clinical features of adult-relapse asthma in comparison with those of child-onset asthma and adult-onset asthma. Journal of Asthma, *31*(5), 339-345.

Patterson, J. M. (1988). Chronic illness in children and the impact on families. In C. S. Chilman, E. W. Nunnally, & F. M. Cox (Eds.), Chronic illness and disability (pp. 69-107). Newbury Park, CA: Sage Publications.

Perrin, J. M., MacLean, W. E. Jr., Gortmaker, S. L., & Asher, K. N. (1992). Improving the psychological status of children with asthma: A randomized controlled trial. Developmental and Behavioral Pediatrics, *13*(4), 241-247.

Priel, B., Heimer, D., Rabinowitz, B., & Hendler, N. (1994). Perceptions of asthma severity: The role of negative affectivity. Journal of Asthma, *31*(6), 479-484.

Rabinowitz, B., & Florian, V. (1992). Chronic obstructive pulmonary disease: Psychosocial issues and treatment goals. Social Work and Health Care, *16*(4), 69-86.

Reene, C. M., & Creer, T. L. (1985). Asthmatic children and their families. In M. Wolraich & D. K. Routh (Eds.), Advances in developmental and behavioral pediatrics. Greenwich, CT: JAI Press.

Revenson, T. A., & Felton, B. J. (1989). Disability and coping as predictors of psychological adjustment to rheumatoid arthritis. Journal of Consulting and Clinical Psychology, *57*(3), 344-348.

Schlosser, M., & Havermans, G. (1992). A self-efficacy scale for children and adolescents with asthma: Construction and validation. Journal of Asthma, *29*(2), 99-108.

Silverglade, L., Tosi, D. J., Wise, P. S., & D'Costa, A. (1994). Irrational beliefs and emotionality in adolescents with and without bronchial asthma. The Journal of General Psychology, *121*(3), 199-207.

Tansella, C. Z. (1995). Psychosocial factors and chronic illness in childhood. European Psychiatry, *10*, 297-305.

Viney, L. L., & Westbrook, M. T. (1985). Patterns of psychological reaction to asthma in children. Journal of Abnormal Child Psychology, 13(4), 477-484.

Vitaliano, P. P., DeWolfe, D. J., Maiuro, R. D., Russo, J., & Katon, W. (1990). Appraised changeability of a stressor as a modifier of the relationship between coping and depression: A test of the hypothesis of fit. Journal of Personality and Social Psychology, 59(3), 582-592.

Weinstein, A. G. (1998). Adherence. In H. Kotses and A. Harver (Eds.), Self-Management of Asthma. New York, NY: Marcel Dekker, Inc.

Weiss, K. B., Gergen, P. J., & Hodgson, T. A. (1992). An economic evaluation of asthma in the United States. The New England Journal of Medicine, 326(13), 862-866.

Young, G. (1994). Asthma: Medical issues. In R. Olson, L. Mullins, J. Gillman, & J. Chaney (Eds.), The sourcebook of pediatric psychology. Needham Heights, MA: Allyn & Bacon.

Zautra, A. J., Burleson, M. H., Smith, C. A., Blalock, S. J., Wallston, K. A., DeVellis, R. F., DeVellis, B. M., & Smith, T. W. (1995). Arthritis and perceptions of quality of life: An examination of positive and negative affect in rheumatoid arthritis patients. Health Psychology, 14(5), 399-408.

Zautra, A. J., & Hempel, A. (1984). Subjective well-being and physical health: A narrative literature review with suggestions for future research. International Journal on Aging and Human Development, 19, 95-110

Zimmerman, M., Coryell, W., Wilson, S., & Corenthal, C. (1986). Evaluation of symptoms of major depressive disorder: Self-report vs. clinician ratings. Journal of Nervous and Mental Disease, 174, 150-153.

Zimmerman, M., & Coryell, W. (1987). The inventory to diagnose depression (IDD): A self-report scale to diagnose major depressive disorder. Journal of Consulting and Clinical Psychology, *55*(1), 55-59.

Zimmerman, M., & Coryell, W. (1988). The validity of a self-report questionnaire for diagnosing major depressive disorder. Archives of General Psychiatry, *45*, 738-740.

Zimmerman, M., & Coryell, W. (1994). Screening for major depressive disorder in the community: A comparison of measures. Psychological Assessment, *6*, 71-74.

APPENDIXES

APPENDIX A

BACKGROUND INFORMATION QUESTIONNAIRE

1. Age: _____
2. Sex: M F
 1 2
3. Ethnicity: 1 Caucasian
 2 African American
 3 Native American
 4 Hispanic
 5 Asian
 6 Biracial; Specify: _____
 7 Other; Specify: _____
4. Highest level of education attained: 1 Middle School
 2 High School
 3 Some College; Specify number of
 years: _____
 4 College Degree
 5 Post-Graduate Degree
5. Marital Status: 1 Never married
 2 Married
 3 Divorced
 4 Cohabitation (living with partner)
 5 Widowed
 6 Other: _____
6. Number of children: _____
7. Occupation: _____
 Spouse's Occupation: _____
8. Parent's Occupation: Father: _____
 Mother: _____

9. Parent's highest level of education:

Father: 1 Middle School
 2 High School
 3 Some College; Specify number of years: _____
 4 College Degree
 5 Post-Graduate Degree

Mother: 1 Middle School
 2 High School
 3 Some College; Specify number of years: _____
 4 College Degree
 5 Post-Graduate Degree

10. Living Arrangement: 1 Live alone
 2 Live with one person
 3 Live with two or more people

11. Are you currently taking any psychoactive medication (e.g., antidepressants, anti-anxiety)?

Yes No
 1 2

12. Do you have another chronic illness in addition to asthma? Yes No
 1 2

IF YES, please specify type(s) of condition(s): _____

13. Have you ever received any type of psychological counseling/therapy?

Yes No
 1 2

14. Have you ever received counseling directly related to your asthma?

Yes No
 1 2

15. Are you currently taking any medications for your asthma (e.g., Ventolin, oral steroids, etc.)?

Yes No
 1 2

IF YES, please specify type(s) of medication(s): _____

16. Please indicate the number of visits to your physician due to your asthma in the past 6 months: _____

17. At what age did you have your first asthma attack? _____

18. At what age were you diagnosed with asthma? _____

19. Do you have asthma attacks only during a certain season (SEASONAL) or throughout the entire year (PERENNIAL)?

SEASONAL
1

PERENNIAL
2

20. How severe do you think your asthma has been in the past year?

1	2	3	4	5	6	7
Mild		Moderate		Severe		Respiratory Failure

21. How controllable do you think your asthma is?

1	2	3	4	5	6	7
Entirely Uncontrollable		Somewhat		Mostly Controllable		Entirely Controllable

22. Please indicate the number of school and/or work days you have missed in the last 6 months: _____

23. Do you currently utilize health services on campus (i.e., student health center)?

Yes	No
1	2

IF NO, do you have a physician locally?	Yes	No
	1	2

APPENDIX B

ILLNESS SEVERITY ASSESSMENT INTERVIEW

1. How many asthma exacerbations do you have in a given week? This may be qualitatively different from what you consider to be an "attack". _____
2. How many episodes of nighttime coughing do you have in a given month?

3. Would you characterize your exercise tolerance level as:
 - 1 Good
 - 2 Lower than normal
 - 3 Limited
 - 4 Unable to exercise
4. Do you experience symptoms between asthma exacerbations (e.g., wheezing)?
 - 1 Yes
 - 2 No
5. Do typical asthma exacerbations respond to bronchodilators (e.g., inhalers)?
 - 1 Always
 - 2 Not always
6. Do you feel that asthma symptoms affect your sleep, activity level, or work performance?
 - 1 Yes
 - 2 No
7. Do you sometimes experience chest tightness or coughing?
 - 1 Yes
 - 2 No
8. How many times per year do you seek urgent or emergency care? This does not necessarily refer to the number of visits to a hospital emergency room. _____
9. How often do you experience wheezing?
 - 1 Daily
 - 2 Weekly
 - 3 Monthly
10. Would you characterize your exacerbations as sudden and/or severe?
 - 1 Yes
 - 2 No
11. Do you require steroids in the medical management of your asthma?
 - 1 Yes
 - 2 No

APPENDIX C

PULMONARY FUNCTIONING QUESTIONNAIRE

Are you currently experiencing any tightness in your chest? Yes No

Are you currently experiencing any difficulty breathing? Yes No

Are you currently experiencing any audible wheezing? Yes No

APPENDIX D

TABLES AND FIGURE

Table 1

Descriptive Statistics for Study Variables

Measures	<u>M</u>	<u>SD</u>	Internal Consistency*
Ways of Coping			
EF Coping	7.53	2.64	.83
PF Coping	7.88	2.61	.75
Quality of Life	.51	.28	.95
Depression	9.39	5.74	.78
Anxiety	10.04	5.43	.81
Illness Severity	2.50	.51	

Note. * Internal consistency was computed with Cronbach's alpha (1951).

Table 2

Zero-order Correlations for Study Variables

	1	2	3	4	5
1. EF Coping					
2. PF Coping	.33*				
3. QOL	.21	.06			
4. Depression	.18	.03	.31*		
5. Anxiety	.40**	-.03	.49**	.57**	
6. Illness Severity	.07	-.19	.28	.20	.38*

Note. EF Coping = emotion-focused coping;
 PF Coping = problem-focused coping;
 QOL = quality of life.

* $p < .05$

** $p < .01$

Table 3

Hierarchical Multiple Regression Analyses Examining the Contribution of Coping Behavior and Emotions to Asthma Quality of Life

Equation	Step	Variables	t For Within Step Predictors	R ² Change for Step	F Change
<u>Primary Analysis</u>					
1	1	Illness Severity	1.94	.08	3.75
	2	PF Coping	.81	.01	.65
	2	EF Coping	.04	.04	1.86
<u>Exploratory Analysis</u>					
1	1	Illness Severity	1.94	.08	3.75
	2	EF Coping	1.10	.09	2.23
		Depression	1.59		
	3	EF Coping X Depression	.53	.01	.28
2	2	EF Coping Anxiety	.23 2.72	.17	4.77
	3	EF Coping X Anxiety	-.75	.01	.56
3	2	PF Coping Depression	.71 1.73	.08	1.85
	3	PF Coping X Depression	.56	.01	.32
4	2	PF Coping Anxiety	.75 3.06*	.18	5.08
	3	PF Coping X Anxiety	2.67*	.11	7.15*

Note. Step 1 is the same in all equations and is shown only once for the Primary Analyses and Exploratory Analyses.

EF Coping = emotion-focused coping;

PF Coping = problem-focused coping.

* $p < .05$

** $p < .01$

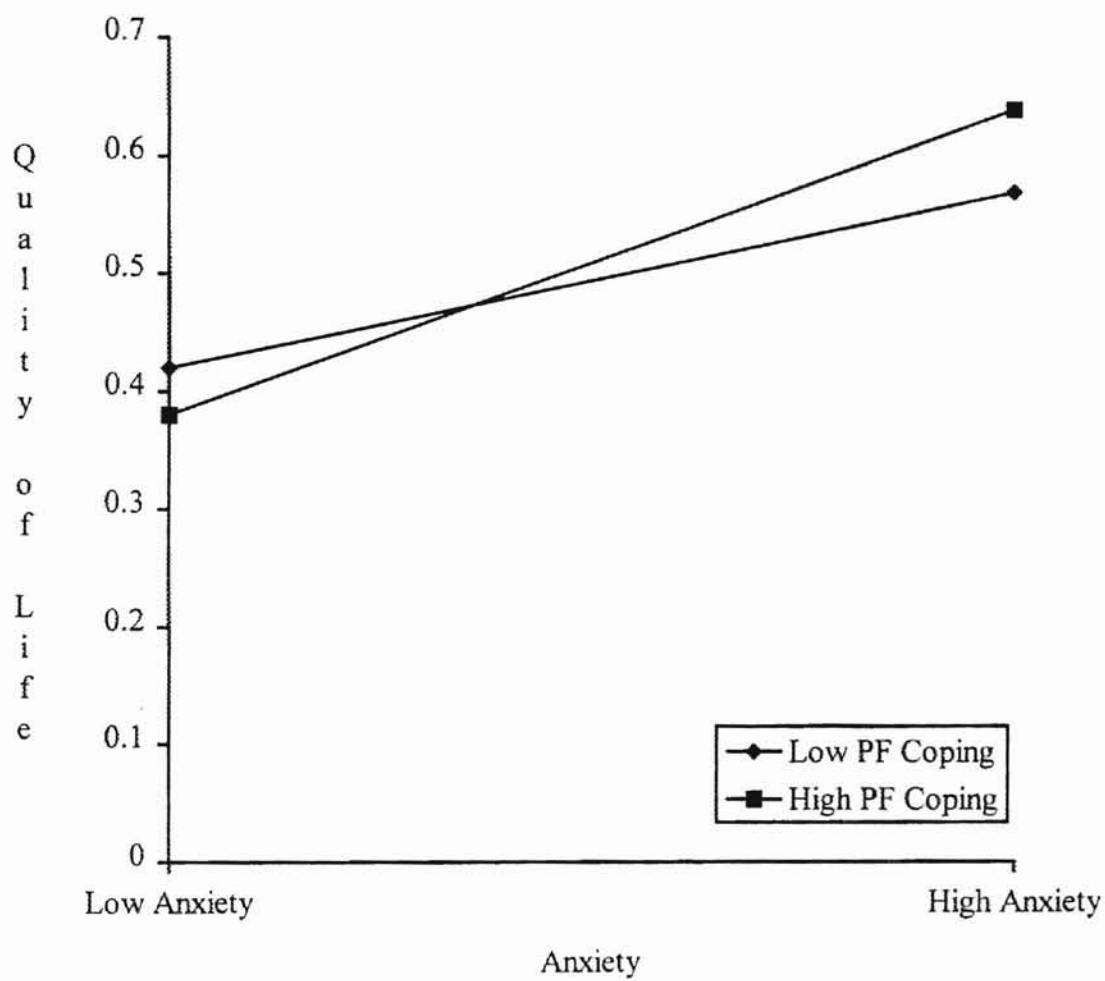


Figure 1. Interaction of Problem-Focused Coping x Anxiety on Asthma Quality of Life

Note: Higher scores on the quality of life measure indicate poorer quality of life.

APPENDIX E

IRB APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 07-07-98

IRB #:AS-98-070

Proposal Title: COPING BEHAVIOR AND QUALITY OF LIFE IN YOUNG ADULTS WITH
CHRONIC ASTHMA

Principal Investigator(s): John M. Chaney, Kevin A. Hommel

Reviewed and Processed as: Expedited

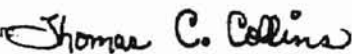
Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT
NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE
APPROVAL PERIOD.

APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR
PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE
SUBMITTED FOR BOARD APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Signature 

Date: July 14, 1998

Interim Chair of Institutional Review Board
and Vice President for Research

cc: Kevin A. Hommel

VITA

Kevin Arthur Hommel

Candidate for the Degree of

Master of Science

Thesis: COPING BEHAVIOR AND QUALITY OF LIFE IN YOUNG ADULTS
WITH CHRONIC ASTHMA

Major Field: Psychology

Biographical:

Education: Graduated from Putnam City High School, Oklahoma City, Oklahoma in May, 1992; received a Bachelor of Arts degree in Psychology from the University of Central Oklahoma, Edmond, Oklahoma in May, 1996; Completed the requirements for the Master of Science degree with a major in Clinical Psychology at Oklahoma State University in May, 1999.

Experience: Research assistant in the Department of Psychology at the University of Central Oklahoma for Jill Devenport, Ph.D. and Lorraine K. Youll, Ph.D., 1995-1996 and 1995-1997, respectively; research assistant in the Department of Psychology at Oklahoma State University for John M. Chaney, Ph.D., 1997 to present; employed by Oklahoma State University, Department of Psychology as a teaching assistant and graduate instructor; Oklahoma State University, Department of Psychology, 1997 to present.

Professional Memberships: American Psychological Association, Association for the Advancement of Behavior Therapy, Southwestern Psychological Association, Oklahoma Psychological Association.