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COPING STRATEGY AND SOCIAL SUPPORT DIFFERENCES AMONG
COPD PATIENTS: EFFECTS ON PSYCHOLOGICAL WELL BEING,
FUNCTIONAL STATUS, AND HEALTH CARE UTILIZATION

by

Terri Belville-Robertson

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Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
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Department of Psychology

Western Michigan University
Kalamazoo, Michigan
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COPING STRATEGY AND SOCIAL SUPPORT DIFFERENCES AMONG COPD PATIENTS: EFFECTS ON PSYCHOLOGICAL WELL BEING, FUNCTIONAL STATUS, AND HEALTH CARE UTILIZATION

Terri Belville-Robertson, Ph.D.

Western Michigan University, 1999

This descriptive study examined coping strategies and social support among thirty-three patients with moderate to severe Chronic Obstructive Pulmonary Disease (COPD) to assess relationships to psychological and functional status, and health care utilization. More specifically, the qualitative and quantitative differences in coping strategies and social support were examined in relation to anxiety, depression, activity level, and use of emergency and inpatient medical services. Subjects participated in a one-session screening that included a brief clinical interview, battery of questionnaires and exercise tolerance test. Health care utilization data were obtained from subjects' medical records. Subjects' primary support persons also provided collateral data on psychological well being, coping strategies, and social support. Data were analyzed using descriptive statistics, Pearson r correlations, and linear and stepwise multiple regression analyses.

Results indicated that 25% and 15% of the sample met criteria for clinical anxiety and depression, respectively. Subjects also had significant impairment in physical, emotional, and social functioning. However, the majority of subjects had

not been admitted to the emergency room or hospital for respiratory-related problems in the last year. Subjects were found to use a large number of coping strategies in effort to adjust to their COPD. Problem-focused strategies were used more often than emotion-focused or maladaptive strategies. Nevertheless, 50% of subjects used at least one maladaptive coping strategy. Subjects reported a high rate of social support, and perceived the quality of their support to be quite good. Instrumental social support was slightly more prevalent than emotional support for this sample.

Maladaptive coping strategies and pain were the best predictors of psychological well being in this sample. Mental disengagement and negative social support significantly predicted subjects' physical functioning. Additionally, negative social support significantly predicted respiratory-related hospitalizations. The number of emotion-focused coping strategies used by subjects best predicted the length of hospitalization. Collateral-reported social support also predicted the number of inpatient visits for subjects.

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Terri Belville-Robertson

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INTRODUCTION

In the past two decades, behavioral medicine has played an increasing role in the treatment of chronic illness. Chronic obstructive pulmonary disease (COPD) is a chronic illness that taxes patients physically, psychologically, and socially. Thus, in accordance with the biopsychosocial model which is a cornerstone of behavioral medicine, COPD warrants scientific study by both medical and behavioral science professionals alike (Burrows, 1985; Higgins & Thom, 1988; White, Andrews, Morgan & Downes-Vogel, 1979; Williams & Bury, 1989). Chronic Obstructive Pulmonary Disease (COPD) is a medical term for a constellation of chronic respiratory conditions characterized by impairment in the expiratory airflow system. While loss of lung function occurs naturally with age, COPD results when there is an abnormal decline of lung function (American Lung Association, 1990; American Thoracic Society, 1995; Rennard, 1998; Silverman et al., 1998). The diagnostic category of COPD most commonly refers to chronic bronchitis and emphysema. Asthma that is severe and irreversible with treatment is often difficult to distinguish from emphysema and chronic bronchitis, and is included in COPD. Patients with COPD may have one of these conditions, but more commonly a combination of two or more occur simultaneously.

Chronic bronchitis is a condition that involves inflammation and increased mucus production in the lining of the bronchial tubes, which in turn leads to further

inflammation and fibrosis, or scar tissue (Rennard, 1998). Over time, the fibrosis builds up and causes a narrowing of the small airways. A common symptom of chronic bronchitis is a productive cough. To diagnose chronic bronchitis, the condition must persist for a three month period over two consecutive years. Whereas chronic bronchitis is diagnosed clinically, emphysema is diagnosed based on physiological changes in the lungs (Celli, 1998; Petty, 1998; Rennard, 1998). Emphysema is a condition in which the walls of the alveoli, or airsacs, in the lungs are damaged and lose their elasticity. This loss of elastic recoil leads to decreased tension in the lungs and affects the lungs' ability to expel carbon dioxide. Increased effort at breathing only creates further expiratory pressure and causes the airway to collapse even more. Asthma is characterized by smooth muscle spasms, bronchospasms, in the bronchioles that results in a narrowing of the airway.

The onset of COPD is usually insidious, with gradual and prolonged damage to lung function occurring without noticeable symptoms. Symptoms typically develop in the fifth decade of life, when limitations to the expiratory airflow system reach a critical level. While there is variability with the age of onset and perceived severity of symptoms, in general patients experience shortness of breath when lung function, measured by forced expiratory volume in one second (FEV1), is below 2L. When lung function is below 1L, severe physical limitations result. The most common symptom of COPD is dyspnea, or the subjective sensation of breathlessness. Other characteristic symptoms include chronic cough, persistent phlegm production, fatigue, weakness, decreased endurance, and weight loss (Alonso, et al., 1992;

American Lung Association, 1990; Guyatt, Townsend, Berman & Pugsley, 1987; Kinsman et al., 1983; Shekleton, 1987). In later stages of COPD, memory dysfunction and temporary confusional and delusional episodes may be present secondary to hypoxemia, or inadequate oxygen to the brain (Buist, et. al, 1993; Kinsman, et al., 1983; Shekelton, 1987). The overall trend is that symptoms worsen as the disease progresses. Also, acute exacerbations tend to occur closer together and be more difficult to treat during the later stages of the illness.

COPD is an important health concern in the United States given its growing prevalence and associated health care costs. It is estimated that COPD affects approximately 14.8 million Americans (American Lung Association, 1990; Celli, 1998; Shekleton, 1987), making it the most common chronic lung disease in the United States. The prevalence rate of COPD has also been found to have increased by 42% since 1982 (Celli, 1998). Although COPD continues to afflict men more so than women, 4-6% versus 1-3% respectively, this gender difference is narrowing due to the growing number of women who have started and continued smoking, and higher rates of smoking cessation among men since 1960 (American Thoracic Society, 1995; Celli, 1998; Sherrill, Lebowitz & Burrows, 1990). Independent of smoking, the risk for COPD for both sexes increases with age (Sherrill et al., 1990).

With respect to epidemiology, there appears to be an inverse relationship between socioeconomic status (SES) and COPD morbidity (American Thoracic Society, 1995). This is most likely due to environmental differences in exposure to active and passive smoking, and household and occupational pollutants among lower

income groups. Racial differences have also been found with respect to COPD prevalence. COPD has been reported to occur more frequently in Caucasians than African Americans, primarily in men (Petty, 1998; Sherrill et al., 1990; Whittemore, Perlin, & DiCiccio, 1995). This difference has not held true for Caucasian and American Mexican populations (Sherrill et al., 1990). However, results from a recent large national health survey (Bang, 1993) found comparable rates of COPD among African-American adults aged 25-74 (n=585), with prevalence rates of 6.7% and 3.7% for males and females, respectively. Further, generalizability of early research on racial differences is limited by methodological weaknesses across studies. Many of the early study samples consisted of male military personnel (Damon, 1966; Murphy, Katz, & Massaro, 1962), which limits the generalizability of findings to females and non-military individuals. Also, the percentage of black subjects in some of the samples was much lower than the comparison group of white subjects (Damon, 1966), which may limit how representative the sample is to a general black population. Another limitation is that many of the studies did not control for environmental or social factors which may account for differences across racial groups for COPD (e.g. smoking habits, occupational exposure, dust in the home, air pollution). Even in studies that control for smoking habits, it can not be determined if the increased risk for COPD is inherent to race or a racial response to smoking (Beatty, Menkes, & Cohen, 1984).

COPD has also been associated with significant mortality. In 1991 it was estimated that COPD was the fourth leading cause of death in the United States and

caused 85,544 deaths, or 18 per 100,000 people (Celli, 1998; Silverman, et al., 1998). More concerning is the fact that the mortality rate of COPD increased by 72% from 1966-1986, making it the fastest growing cause of death. In comparison, the mortality rate of cardiac disease and stroke have decreased by 45% and 85%, respectively (Celli, 1998). Further, data from 1980-1985 suggest that the change in COPD mortality rate for females during this time period was 41.8%, and only 6.8% for males (Sherrill et al., 1990). This increase probably represents the larger number of women smoking over the past 30 years. As with morbidity, there is also an inverse relationship with SES and COPD mortality. This is likely due to differences in access to health care services among the poor.

Data from a large (n=5,887) population based, multi-center smoking cessation study of middle-aged mild-moderate COPD patients have suggested that females may also be more susceptible to ill effects of COPD (Buist et al., 1993). At baseline, the males (n=3,702) in this study, on average, had smoked longer, were heavier smokers, used more tobacco products, and were more likely to be exposed to occupational pollutants. However, the rate of disease symptoms and degree of disease severity were similar across genders (not significantly different). Strengths of this study are its large sample size, geographically diverse sample, homogeneous sample with respect to disease severity, higher rate of female participants, and standardized screening criteria for selection into the study across centers. A limitation to this otherwise well designed study is that minority groups were grossly underrepresented in the study population. The majority of the sample was Caucasian (96%), which may have been

a result of the recruitment methods. Thus, the generalizability of the study's findings are limited to middle-aged, Caucasian smokers with mild-moderate COPD.

Additionally, while the researchers assessed for presence or absence of occupational exposure to dust/fumes, they did not quantify the exposure. Thus, it is unclear if this factor could contribute to the gender difference noted above.

Other predictors for COPD mortality include increased age, severity of lung impairment, severity of hypoxemia (inadequate oxygen) and hypercapnia (excess carbon dioxide), and continued smoking. Patients with severe COPD have a 1-year survival rate of 70%, but only 5% survival at 10 years (American Thoracic Society, 1995).

Those most likely to be afflicted with COPD are individuals with a history of cigarette smoking. It is estimated that 80-90% of COPD is associated with cigarette smoking, with a strong positive correlation to amount smoked and age of onset (American Lung Association, 1993; American Thoracic Society, 1995; Rennard, 1998; US Department of Health and Human Services, 1984). Typically, COPD patients have smoked 20 cigarettes a day (1 pack) for 20 years before symptoms emerge. It has been postulated that smoking is linked to COPD by causing lung tissue destruction and impairing tissue repair. However, not all smokers will develop COPD. Even when controlling for duration and amount smoked, only 15% of cigarette smokers will develop COPD (American Thoracic Society, 1995; Buist, et al., 1993; Rennard, 1998; Silverman et al., 1998). This suggests that there may be an underlying genetic predisposition for COPD that is triggered by smoking.

Genetic transmission has been proven possible with a rare form of emphysema, alpha-1 antitrypsin deficiency, which accounts for less than 1% of COPD (Silverman et al., 1998). Alpha-1 antitrypsin is a protein made in the liver that is found in the lungs. This rare genetic form of emphysema is usually found in Caucasians, and is uncommon in African-American and Asian populations (American Thoracic Society, 1995).

A recent study looked at the genetic risk for COPD by evaluating patients with early-onset, severe COPD (n=44), without alpha-1 antitrypsin deficiency, and a subset of their first (n=204) and second (n=45) degree relatives (Silverman, et al., 1998). A control group (n=18), including their first and second degree relatives (n=12) was used for comparison. COPD subjects were recruited primarily through outpatient lung volume reduction or transplant programs, prior to surgery, based on FEV1 < 40% predicted and age < 53. Age and sex matched control subjects were recruited from a previous population-based study via the mail, and enrolled only if smokers or ex-smokers. All subjects were assessed in their homes and completed a respiratory questionnaire, lung function test (i.e. spirometry), and blood sample to rule out alpha-1 antitrypsin deficiency. T-tests and odds ratios were calculated to determine risk for abnormal lung function, and chronic bronchitis among COPD and control relatives.

Surprisingly, the majority of early-onset, severe COPD subjects were females (79.6%) in their late forties, which is unlike late onset severe COPD which predominates in males. Results indicated that COPD subjects reported a significantly higher rate of parental COPD than control subjects (almost 8 times more likely). First

degree relatives of the COPD subjects who had a history of smoking (current or past) had significantly lower lung function and three-times greater incidence of chronic bronchitis compared to control subjects' first degree relatives with similar smoking histories. There were no differences between the two groups of first degree relatives with age of onset of smoking, average amount smoked per day, number of other tobacco products used, or respiratory symptoms. No difference in lung function was found between the COPD and control subjects' first degree relatives if they were lifelong nonsmokers. Thus, the findings suggest that there is a familial risk for COPD that is expressed in response to cigarette smoking. However, it is not possible to conclude causality of the increased risk for first degree relatives of early-onset, severe COPD patients since shared environmental factors such as extent of childhood passive smoke exposure were not controlled for.

Other risk factors for the development of COPD include passive smoking, or second hand smoke, occupational and household exposure to dust, toxins, fumes, or irritants, air pollution, viral infections, and hyperresponsive airways (American Thoracic Society, 1995; Celli, 1998; Petty, 1998; Rennard, 1998; Robbins, Abbey, & LeBowtiz, 1993). Other factors which mediate the course of the illness are poor nutrition, low SES, alcohol, mucus hypersensitivity, and acute infections.

Since COPD is incurable, medical management aims to prevent the disease, slow the progression, and minimize symptoms. Accordingly, treatment commonly includes smoking cessation, medication, oxygen therapy, pulmonary rehabilitation, and proper nutrition. In the case of end stage pulmonary disease, lung volume

reduction surgery or lung transplant may be viable options.

Quality of Life Issues

Numerous studies have explored the impact of COPD on quality of living. Two studies have found COPD patients to have a normal or above average quality of life (Herbert & Gregor, 1997; Parsons, 1990). The majority of studies, however, have indicated that COPD patients rate their quality of life lower than patients with other chronic illnesses or healthy controls (McSweeney, Grant, Heaton, Adams, & Timms, 1982; Schrier, Dekker, Kaptein, & Dijkman, 1990; Sexton & Munro, 1988). There has been conflicting evidence on whether disease severity, measured by pulmonary functioning tests like FEV1, FVC or PaO2, is correlated with quality of life as measured by the Sickness Impact Profile [SIP] (Graydon, Ross, Webster, Goldstein, & Avendano, 1995; Jones, Baveystock, & Littlejohns, 1989; Kaplan, Attkins, & Timms, 1984; Mahler et al., 1992; McSweeney et al., 1980; McSweeney et al. 1982; Prigatano, Wright & Levin, 1984). To date, there is more evidence indicating that disease severity is significantly correlated with quality of life, suggesting that as the disease progresses so too does the negative effect on daily living. Typically physical functioning declines and disability may result in family, social and occupational roles (Graydon & Ross, 1995). For example, as the disease advances and patients require oxygen therapy, mobility is decreased. This often results in less independence as the ability to manage household tasks or self care, socialize outside the home, and maintain employment decreases, while dependence on family increases (Barstow,

1974; Graydon & Ross, 1995). It has even been reported that the social role loss experienced by patients with COPD is greater than those with peripheral vascular disease (Foxall, Ekberg, & Griffith, 1987). With respect to occupational role changes, COPD has been reported to be the second leading cause of disability among the United States working population (Post & Collins, 1981). Independently, emphysema has been reported to be the ninth leading chronic condition contributing to lack of activity, with 42% of emphysema patients reporting that their activities have been limited by the disease.

There is also evidence that psychological well being is associated with functional status in COPD patients (McSweeney et al., 1992; Prigatano et al., 1984). Moody, McCormick, and Williams (1991) assessed 45 COPD patients and reported that there was a significant negative correlation between functional ability and depression. Likewise, Yellowlees (1987) identified 4 case studies of COPD patients whose social and occupational functioning was more severely impaired than expected by objective medical severity indices. Yellowlees hypothesized that depression may be the intervening variable causing the disproportionate functional decline.

Familial Issues

As already alluded to, the life changes caused by COPD affect not just the patient but the patient's family as well. Borson, Barnes, and Kukull (1986) reported that marital separation and divorce were significantly associated with depression among COPD patients. The need for patients to rely on spouses for assistance with

household, financial, and social responsibilities has been linked with high rates of depression among spouses (Appleton, 1982; Sexton & Munro, 1985). In studies that have compared wives of COPD patients to non-COPD wives, the COPD wives self-reported higher levels of interpersonal tension, conflict, depression, stress, decreased life satisfaction, and health problems (Sandhu, 1986; Sexton & Munro, 1985; Williams, 1989).

Another study examined differences between loneliness, depression and social support among 30 COPD patients and their spouses (Keel-Card, Foxall & Barron, 1993). Results indicated that both patients and spouses had high rates of loneliness and depression. Using a clinical cutoff score of 16 on the Center for Epidemiological Studies- Depression Scale (CESD), the score used to detect depression in the general population, 53% (16 out of 30) of patients and 37% (11 out of 30) of spouses met criteria for depression. Likewise, 63% and 67% of patients and spouses, respectively, met criteria for a moderate to high level of loneliness. In fact, the mean loneliness score for this population was higher than reported elsewhere for cancer patients (Friedman, Florian, & Zernitsky-Shurka, 1989; Perry, 1990 both cited in Keel-Card et al., 1993). This speaks to the difficulty of living with COPD and to the psychosocial complications associated with the disease for both patients and spouses.

Another area of impairment that is surely related to quality of life but is not greatly discussed in the literature is sexual dysfunction. Conine & Evans (1981) revealed that sexual functioning of COPD patients can be greatly impacted by fear of dyspnea and bronchospasms. They reported that pressure to the chest can exacerbate

dyspnea, and the increased demand on the respiratory system can trigger coughing. Many individuals with COPD find it helpful to incorporate frequent "rest" intervals during sexual activity to decrease exertion to the respiratory system (Conine & Evans, 1981). In a sample of 23 patients with COPD, Agle & Baum (1977) found that 19 (out of the 23) self-reported sexual difficulties, including decreased libido and inability to achieve erection. Sexual dysfunction in this sample was associated with dyspnea and fatigue. No relationship with physiological sexual impairment was found. Fletcher & Martin (1982) also found male impotence to be associated with COPD. Moreover, Schover & Jensen (1988 cited in Rabinowitz & Florian, 1992) reported that COPD had a deleterious effect on sexuality for both male and female patients. In summary, changes in functional status can have various consequences for COPD patients and their loved ones.

Treatment/ Health Care Utilization

Since there is no cure for COPD, the goal for medical treatment is to provide relief of symptoms and to slow down the disease progression (Rabinowitz & Florian, 1992). In addition to smoking cessation, treatment commonly includes pulmonary rehabilitation, education on breathing techniques, bronchodilator drugs, antibiotics, corticosteroids, exercise, oxygen therapy, Alpha 1-Proteinase Inhibitor drugs (for genetic alpha-1 antitrypsin deficiency related emphysema), and lung reduction surgery. In the most severe cases, lung transplantation may be indicated. The issue of hospitalization is especially important for this population because it has been reported

that patients with COPD are generally hospitalized twice as long as patients with other respiratory diseases (Yellowlees, Alpers, Bowden, Bryant, & Ruffin, 1987). Undoubtedly, longer hospitalizations incur greater financial costs and utilization of medical resources.

Given the raising costs of health care, utilization has become an important issue for the health care system, patient, and third party payers. Health care utilization is increasingly being studied within the field of behavioral medicine. Traver (1988) evaluated 30 patients with COPD to assess the relationship between physical symptoms, quality of life and frequency of health care utilization. Subjects were classified as either low (n=15) or high (n=15) 'emergent' users of health care. 'Emergent' use was described as care obtained from health care providers via unscheduled or non-routine methods. More specifically, to be included in the high emergent group subjects had to meet at least one of the following: (1) two or more hospitalizations for pulmonary exacerbations in the past year, or (2) two or more emergency room visits for pulmonary exacerbations in the past year, or (3) frequent (> 3 per month) phone calls that the care provider judged as unnecessary. Those assigned to the low emergent group were those subjects who had no hospitalization or emergency room visits for pulmonary exacerbations in the past year and had infrequent calls to their physician that were deemed appropriate. Data analysis revealed no significant differences between the two groups with respect to gender, disease severity, home oxygen use, or CO₂ retention. Yet, the high emergent subjects were found to have more disease-related symptoms and poorer quality of life, as

measured by patients' Bronchitis- Emphysema Symptom Checklist (BESC) and Sickness Impact Profile (SIP) and families' Katz Adjustment Scale for Relatives (KAS-R) scores. Still more specifically, high emergent subjects were significantly different with respect to higher rates of irritability, anxiety, helplessness, nervousness, peripheral sensory complaints and alienation, and greater impairment with social interaction and social behavior. Furthermore, discriminant analysis yielded a prediction formula that could correctly identify group assignment with 80% accuracy. In short, this study would suggest that differences in how individuals cope with their illness and the degree of social connectedness they feel may significantly impact health care utilization. Thus, the need for efficient identification and treatment of psychosocial factors which may contribute, unnecessarily, to length of hospitalization is critical with this population.

Traver's (1988) study highlights an interesting point about the variability of the psychosocial adjustment observed in patients living with COPD. According to the research, even patients with the same level of disease severity do not necessarily exhibit the same degree of functional decline or psychiatric comorbidity (Anderson, 1995; Kinsman et al., 1993; Lee, Graydon & Ross, 1991; McSweeney et al., 1982; Prigatano et al., 1984; Rabinowitz & Florian, 1992; Sandhu, 1986). Thus, some patients are able to manage living with their illness better than others. For instance, Leidy and Traver (1996) reported that disease severity, measured by FEV1 % predicted, significantly predicts functional status; however, it only accounts for 4-9% of the variance. Clearly there are other variables that contribute to the differences

observed. Psychological functioning, disease-related symptoms, gender, neuropsychological functioning, and social support may account for some of the variance in functional status (Graydon & Ross, 1995; Greenburg, Ryan, & Bourlier, 1985; Lee et al., 1991; Leidy & Traver, 1995; Mahler, et al., 1992).

Psychological Morbidity

Given the changes in physical and social functioning that COPD patients must deal with, it is not surprising that psychological difficulties frequently occur. It has been reported that the psychological impact varies with disease severity, with more severe psychological consequences occurring during the more incapacitating stages of the illness (Oswald, Waller, & Drinkwater, 1970; Rabinowitz & Florian, 1992). Yet as with functional status, there is great variability across patients with regard to psychiatric symptoms. Research examining the incidence of psychological comorbidity among COPD patients indicates that anxiety and depression are most characteristic (Agle & Baum, 1977; Dudley, Glaser, Jorgenson, & Logan, 1980a; Kellner, Sarnet, & Pathak, 1992; Kinsman et al., 1983; Rabinowitz & Florian, 1992; Sandhu, 1986; Smoller, Pollack, Otto, Rosenbaum, & Kradin, 1996; Wise, Schiavone, & Sitts, 1988). However, prevalence estimates are variable across studies. This variability is likely to be related to methodological differences (e.g. heterogeneous disease severity, assessment techniques and instruments, sample size) across studies.

Anxiety

Early studies reported a high prevalence of anxiety among COPD patients. Using psychiatric interviews with 21 COPD patients, Agle, Baum, & Chester (1973) reported that 90% of subjects endorsed anxiety symptoms related to their dyspnea. Furthermore, Agle and Baum (1977) conducted clinical interviews with 23 male COPD patients involved in a pulmonary rehabilitation program and discovered that 96% of the sample (22 out of 23 subjects) had anxiety symptoms severe enough to interfere with performance in the rehabilitation program. Problems with these early studies, however, are the failure to use standardized psychometric instruments or stringent diagnostic criteria, and thus, report symptom prevalence rather than clinical disorders.

More recent studies have found significant, but lower rates of comorbid anxiety. Light, Merrill, Despars, Gordon, & Mutalipassi (1985) assessed 45 male veterans with severe COPD from a VA outpatient clinic to evaluate psychiatric comorbidity. Patients were excluded if they had received psychiatric medication in the two months prior to screening or had significant medical problems. The State-Trait Anxiety Inventory (STAI) was used to measure anxiety. Scores two standard deviations above the mean for a general medical population were used to diagnose an anxiety disorder. Results indicated that while 16% of the sample was symptomatic for anxiety, only 1 subject (2%) met criteria for an anxiety disorder. In a study of 50 severe COPD inpatients admitted to an acute respiratory unit, Yellowlees et al. (1987)

found that 34% of the sample met DSM-III diagnostic criteria for an anxiety disorder. Although patients were assessed once medically stable, it has been argued that this rate of anxiety may be an overestimation given that subjects were in the hospital recovering from an acute illness. Karajgi, Rifkin, Doddi, & Kolli (1990) improved on Yellowlees et al.'s (1987) study by assessing 50 outpatients with stable COPD for a lifetime prevalence of psychological morbidity using a structured clinical interview (i.e. SCID for DSM-III-R). Strengths of the study were that patients were medically stable at the time of interview, had no history of psychiatric treatment or organic brain syndrome, and were free of medications that could account for psychiatric symptoms. Results indicated that 42% of the sample met criteria for a past or current psychological diagnosis. Anxiety disorders occurred in 16% of the sample, with all 8 affected subjects symptomatic at the time of interview.

With respect to anxiety-related symptoms, review of the literature indicates that panic attacks and disorder are the most common among COPD patients (Karajgi et al., 1990; Kinsman et al., 1983; Perna, Bertani, Diaferia, Arancio, & Bellodi, 1994; Porzelius, Vest, & Nochomovitz, 1992; Sandhu, 1986; Spinhoven, Ros, Westgate, & Williams van der Does, 1994; Well, Golding & Burnam, 1989; Zandbergen et al., 1991). Porzelius et al. (1992) assessed 48 patients with COPD during a routine office visit to examine the relationship between respiratory function, catastrophic thoughts about anxiety, and panic. Results from their study indicated that 37% of the sample was positive for panic attacks, which were significantly associated with increased agoraphobic cognitions and bodily sensations. No significant difference was found

between those with and without a history of panic attacks on demographic, physiological, or physical activity variables.

In Yellowlees et al's. study (1987) mentioned above, 24% of the total sample (N=50) met criteria for panic disorder. This figure is higher than the 8% prevalence rate reported by Karajgi et al. (1990). However, an even higher rate has been reported more recently by Pollack et al. (1996) who assessed for panic attacks and disorder among 115 patients receiving pulmonary functioning testing. Patients were given a self-report checklist of panic disorder symptoms and a subsample of patients (n=25) underwent a clinical interview utilizing the Structured Clinical Interview for DSM-III-R (SCID). Comparison of the self report and clinical interview findings among this subsample indicated that 64% of those identified with either subthreshold panic disorder or panic disorder by the self-report measure were also positively diagnosed via the clinical interview. Even more remarkable was the finding that the rate of panic disorder among strictly the COPD patients within this subsample (n=25) was 67% (6 out of 9) versus 6.2% (1 out of 16) for the non-COPD respiratory patients. Results also indicated that there was no statistically significant difference between presence of panic attacks or disorder and severity of pulmonary functioning. Yet patients positive for panic attacks or disorder were more likely to report dyspnea at rest, irritable bowel symptoms, and difficulty swallowing.

Because the majority of the research on psychological disorders and COPD has been correlational, no conclusion can be made regarding the temporal relationship between COPD and psychological conditions. Given the many psychosocial changes

and losses that accompany the disorder it may be that depression and anxiety are consequent to these changes. However, it may be the case that the psychological disorder preceded the illness and has recurred or been exacerbated by the psychosocial stressors commonly associated with COPD. Norton & colleagues (1985; 1986) suggest caution should be taken when interpreting the above findings since they also found a 35-36% incidence rate of panic disorder among non-clinical student populations; indicating that the rate of panic in COPD patients may not be significantly different from the general population. Traver (1988) reported that statements by family members of COPD patients often support the notion that psychological symptoms represent premorbid problems.

To address this latter consideration, Zandbergen et al. (1991) assessed outpatient psychiatric patients with either panic disorder or obsessive compulsive disorder and found that 47% of the panic disorder subjects also had a respiratory disease compared to only 13% of the obsessive compulsive disorder patients. Similarly, Verburg, Griez, Meyer, and Pols (1995) interviewed 150 outpatient psychiatric patients with anxiety disorders and discovered that 42.7% of the panic disordered patients had a history of respiratory disease predating their psychiatric disorder (compared to 16.2% of patients with other types of anxiety disorders). The authors of these two studies concluded that there is a higher rate of comorbidity of anxiety disorders among pulmonary disorder patients than expected by incidence rates in the general population. A review article by Smoller et al. (1996) supports this conclusion, stating that the prevalence rate of panic attacks and panic disorder in the

general population is 10-15% and 2-4%, respectively. Comparatively, the prevalence rates among COPD patients has been shown to range from 16-96% and 8-67%, respectively (Agle & Baum, 1977; Karajgi et al., 1990; Light, Merrill, Despars, Gordon, & Mutalipassi, 1985; Pollack et al., 1996; Porzelius et al., 1992). Hence, this may indicate that anxiety and panic are consequences of the illness.

The high rate of anxiety observed in this population may be related to dyspnea, the subjective experience of breathlessness, which is a common physical symptom of COPD (Gift, Plaut, Jacox, 1986; Oswald et al., 1970). It has been proposed that thoughts of suffocation and death trigger fear in the COPD patient, thereby contributing to further dyspnea. Thus, the catastrophic cognitions associated with dyspnea may increase subjective anxiety and create a cyclic effect leading to increased dyspnea (Littlefield, 1995; Sandhu, 1986). In fact, there has been several studies which suggest that the presence of anxiety among COPD patients is significantly related to catastrophic thoughts about physical symptoms rather than disease severity or functional status (Gaffney, Fenton, Lane, & Lake, 1988; Maragraf, 1993; Pollack et al., 1994; Sanderson, Rapee, & Barlow, 1989; Spinhoven, Onstein, Sterk, 1995; van der Molen & van den Hout, 1988; Whittal & Goetsch, 1995). Since the tendency to misinterpret physical symptoms in a catastrophic manner is, in part, a predictor of psychiatric comorbidity in this population, cognitive-behavioral psychological interventions seem a promising treatment (Gift, Moore & Soeken, 1992; Littlefield, 1993; Lisanasky & Clough, 1996; Renfroe, 1988).

Depression

In addition to anxiety, depression has also consistently been found to be a common psychological condition present among individuals living with COPD. Many speculate that the symptoms of depression represent an adjustment reaction to the stress of having a chronic, progressive illness (McSweeney et al., 1980; McSweeney et al., 1982; Sandhu, 1986). As the disease progresses, the risk for depression may increase as patients become more isolated, embarrassed, and fearful of expressing emotions because of the adverse effect "getting upset" may have on breathing (Yellowlees, 1987). Reported incidence rates of depression among COPD patients range from 16-76% (Agle & Baum, 1977; Gift & McCrone, 1993; Karajgi, et al., 1990; Light et al., 1985; McSweeney et al., 1980; Kinsman et al., 1983; Yellowlees, 1987), higher than the 12.6% prevalence estimate among general medical patients (Gift & McCrone, 1993). Methodological differences across studies, including the use of psychological assessment instruments such as the Beck Depression Inventory (BDI) which include target symptoms that overlap with medical symptoms of COPD, may contribute to this variability (Kinsman, et al., 1983; Light et al., 1985).

McSweeney et al. (1980) discovered that the rate of depression among a sample of COPD patients was much higher than that found in a matched control group at 42% versus 9%, respectively. This rate is supported by Light et al.'s (1985) study which also found a 42% prevalence rate of depression among a sample of 45

male veteran COPD patients. When stringent diagnostic criteria have been employed, however, lower rates have been reported. In Yellowlees et al.'s (1987) study, 16% of the sample met DSM-III-R criteria for depressive disorders, with Major Depression most prevalent (12%) followed by Dysthymia (4%). Similar results were found by Karajgi et al. (1990), who reported an 18% lifetime prevalence rate of mood disorders among 50 outpatient COPD patients who underwent a structured clinical interview. Of the nine subjects positive for mood disorders, five had previous Major Depression, three current Major Depression, and one current Dysthymia. Furthermore, DeCencio, Leshner, and Leshner (1968) compared patients with emphysema to normal subjects and found that depression was significantly greater among the COPD subjects. In fact, DeCencio and colleagues suggested that COPD patients experience higher rates of depression than do spinal cord injury patients. However, these researchers point out that COPD patients fare better than multiple sclerosis or rheumatoid arthritis patients with respect to depression. Some researchers have found higher rates of depression than anxiety among samples of COPD patients (Kinsman et al., 1983; Light et al., 1985) and in studies comparing COPD patients to normal populations (McSweeney et al., 1982) and family practice control patients (Kellner et al., 1992).

Early reports on depressive symptomatology among COPD patients suggest that symptoms are similar to psychiatric populations: sadness, tearfulness, decreased motivation, anhedonia, helplessness, hopelessness, suicide ideation and neurovegetative symptoms (Agle, Baum & Chester, 1973; Dudley, Glaser, Jorgenson, & Logan, 1980b). However, Covino, Dirks, Kinsman, & Seidel (1982 cited in Gift &

McCrone, 1993) evaluated depression patterns across 132 patients with a variety of chronic illnesses and discovered that there is a specific depressive profile among COPD patients typified by decreased self-esteem, denial of impulsivity, lack of self-confidence, and avoidance of spontaneity.

Age and gender differences have been reported among COPD populations with respect to psychiatric conditions. Kinsman et al. (1983) assessed disease symptoms among 146 patients with COPD using the BESC. Results indicated that female subjects had significantly greater incidence of feelings of anxiety, helplessness- hopelessness, and alienation. Subjects in this study were subdivided into three age brackets ranging from youngest (ages 52+ 8), middle (64+ 2), and oldest (72+ 3). Results further showed that the youngest group had more irritability and anxiety than the other two groups, and greater feelings of alienation than the oldest group. These results are consistent with other research demonstrating that older patients have fewer emotional difficulties and express more acceptance and determination than younger patients with COPD (McBride, 1993; Williams, 1989). In contrast, there is little information of the effects of gender difference on functional status (physical and social) in the literature. While two studies have tested for main gender effects and found gender to be nonsignificant (Guyatt et al., 1987; Keller, 1986), Leidy and Traver's (1995) results suggest there may be differences. Female subjects (n=45) reported more physical and psychosocial performance difficulties than men (n=45). Further, for females, a constellation of somatic symptoms was the best predictor of overall functional status. For men, the best predictor was dyspnea

measured immediately after a structured 12-minute walk. Although these researchers report gender differences, they recommend that future investigation is necessary to understand the extent to which men and women experience symptoms differently and how these perceptual differences may affect functional performance.

Given the risk for anxiety and depression, it is important that medical and behavioral science professionals working with individuals with COPD be prepared to detect symptoms and intervene quickly with appropriate treatment. Since there can be an overlap between the physical symptoms characteristic of COPD and symptoms of anxiety and depression (e.g. shortness of breath, lightheadedness, sleep problems, weight loss, fatigue, social withdrawal), accurate psychiatric diagnosis and appropriate treatment is often missed (Gift & McCrone, 1993; Rapp, Parisi, Walsh, & Wallace, 1988; Yellowlees, 1987). Gift & McCrone (1993) argue that it is important to better understand psychological comorbidity among COPD patients, because overlooked psychiatric problems complicate the treatment of chronic diseases. Thus, one of the challenges of the multidisciplinary teams who work with COPD patients is to efficiently detect and treat the psychosocial complications associated with the disease.

In the study by McSweeney et al. (1982) where results pointed to a significantly higher rate of depression in COPD versus normal subjects, the authors highlighted two main differences between the groups. COPD subjects had lower ego strength and little ability to cope flexibly. This later finding is of interest given the large body of literature that exists regarding stress, coping, and health. Yet

McSweeney and colleagues did not elaborate on the deficient coping style. Thus, it is unclear to what they are specifically referring. This is one weakness in the behavioral medicine literature, especially with respect to pulmonary disorders like COPD.

Review of the literature revealed only one study which operationally defined coping into specific measurable behaviors (Barstow, 1974), although this was a nonempirical study. Furthermore, among the limited number of studies which have empirically examined the quality of life of COPD patients only a few have looked at the role of social support as a coping strategy, and one has assessed specific coping behaviors *per se* (Anderson, 1995; Herbert & Gregors, 1997).

COPING AND PHYSICAL HEALTH

Perhaps the best known conceptual theory of psychological stress and coping comes from the work of Lazarus & Folkman (1984). They defined psychological stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). Thus, stress results when there is a discrepancy between the demands of the environmental event and an individual's coping resources. According to this theory, one adapts to stressful life events dependent on his or her appraisal of the situation and the availability of coping resources. Therefore, they propose that those individuals with many coping resources will cope more effectively with stressful events; and consequently, adapt better than those with few coping resources. Two critical coping resources identified by Lazarus and Folkman are health/ energy and social support. Individuals who possess greater health/ energy and social support are thought to have better adaptational outcomes. This theory further assumes that emotional responding can interfere with cognitive functioning, or the appraisal of a potentially stressful event. Hence, how one adapts to stressful events is likely to be affected by psychological functioning. Among COPD patients there is some evidence to suggest that psychological well-being does influence functioning (McSweeney et al., 1982; Prigatano et al., 1984). Finally, Lazarus and Folkman have described three adaptational outcomes: functioning

(occupational and social), life satisfaction, and somatic health.

Lazarus and Folkman (1984) acknowledge that physical illness can be a major source of stress. Chronic illness may have an even higher probability of being a stressor since coping resources may be overburdened by frequent demand. According to Lazarus and Folkman's theory, COPD specifically poses a stress risk because it typically causes fatigue and reduced stamina. Furthermore, the typical profile of COPD patients suggests that they are socially withdrawn and isolative (Barstow, 1974; Dudley et al., 1980a; Dudley, Wermuth & Hague, 1973; Leidy & Traver, 1996; McSweeney et al., 1982; Prigatano et al., 1984; Shekleton, 1987). Therefore, the two prominent coping resources identified by Lazarus and Folkman- health/ energy and social support- are generally compromised in this population.

Two main functions of coping have been identified in the literature: problem solving and emotional regulation (Cohen & Lazarus, 1979; Lazarus & Folkman, 1984; Lazarus & Launies, 1978 cited in Sarafino, 1990 ch. 5). Problem-focused coping is aimed at doing something to alter the stressor or expand the resources to deal with it (Carver, Sherier & Weintraub, 1989; Sarafino, 1990 ch. 5). Emotion-focused coping is aimed at reducing or controlling the emotional distress associated with the stressor. Carver et al. (1989) have suggested that distinguishing between problem and emotion-focused coping is too simplistic and that human coping to stress involves a variety of skills and strategies. Therefore, they have developed a self-report instrument (i.e. COPE) that measures 13 distinct types of coping strategies. In addition to classifying coping strategies as active-focused (problem-focused coping)

or emotion-focused, Carver and colleagues also indicate which strategies should facilitate adaptive and maladaptive coping.

The theoretical model of coping by Lazarus and Folkman (1984) has served as a foundation for research efforts focused on better understanding how COPD patients adjust to living with their illness. This line of research has centered on examining the influence of demographic (e.g. age, SES), disease severity (e.g. FEV1, dyspnea, symptoms) and psychosocial variables (e.g. depression, anxiety, self-esteem, optimism, and social support) on functioning and quality of life (Anderson, 1995; Lee et al., 1991; Leidy & Traver, 1995). Of interest, however, is that while the theoretical basis stems from Lazarus and Folkman's work, specific coping behaviors have been poorly operationally defined and studied. Moreover, in a recent review article on coping and health-related disability, coping strategies among spinal cord injury, stroke, end-stage renal disease, rheumatoid arthritis, and burn patients were examined; yet not one reference was made to a study with COPD patients (McColl & Skinner, 1995). Thus, there is some information on coping styles and differences with other medical populations, but such inquiry with COPD patients is limited. For example, in a study of spinal cord injury patients, denial and avoidance strategies were initially useful for patients, but at one year post-injury were found to be maladaptive. Emotional release strategies were also found to have no positive value for adjustment in this sample. A study of 170 patients with various medical problems (hypertension, diabetes, rheumatoid arthritis, and cancer) found similar results in that emotion-focused coping was related to poor adjustment (Felton, Revenson, &

Hinrichsen, 1984). Viney and Westbrook (1981) surveyed a mixed disability sample and found that patients favored action-oriented strategies that lead to feelings of self-control. Strategies least favored by these patients were escapism and fatalism. Other studies have supported the effectiveness of action-oriented, or problem-focused, over emotion-focused coping in adjustment to illness (Sinyor et al., 1986; McNett, 1987).

There also appears to be evidence that active, or problem-focused, coping strategies are most beneficial for psychiatric patients. Among psychiatric outpatients (n=604) suffering from clinical depression, active coping styles were found to be related to improved functioning and well being (Sherbourne, Hays & Wells, 1995). In fact utilization of fewer avoidant and greater active coping strategies was one factor significantly correlated with reduction in depressive symptoms and prevention of a new depressive episode.

One weakness, at least in the COPD literature, is that variables suggested to be beneficial to adjustment such as psychosocial 'assets' (Dudley et al., 1980a) are vaguely defined. Dudley and colleagues propose that psychosocial 'assets' include vital interest in life, adequate financial resources and housing, social support, ability to cope with modifications in the environment in an effective way, and ability to adapt to the environment when change is not possible. While ability to cope is definitely considered important, there is no elaboration by Dudley et al. (1980a) on how to measure this. While McSweeney (1988) suggests that coping ability be studied as a potential moderator of patients' responses to COPD, broad constructs like mastery, self-esteem, and optimism have appeared in the empirical literature more often than

specific behavioral coping strategies.

Descriptive research has attempted to classify strategies used by COPD patients to adjust to their illness. Dudley, Verhey, & Masuda (1969) followed 40 COPD patients over 4 years and concluded that patients with severe disease consistently used denial, repression, and isolation to cope with their disease. Barstow (1974) interviewed 11 patients with emphysema and using a phenomenologic approach found that 'planning ahead' (i.e. pacing oneself by taking rest periods and simplification of activities) was the most common coping technique. Another study of 30 COPD patients looked at the impact of disease on daily living and identified three broad categories of coping strategies used by patients: cognitive, behavioral and expressive (Chalmers, 1984). Cognitive strategies described those that involved thought processes as a means to adjust or cope with the effects of the disease. Examples of cognitive coping skills were normalization or minimization, comparison to others, reminiscing, and focusing on positive aspects of life. In contrast, behavioral strategies involved specific actions taken to adjust or deal with disease effects. Taking medication, making alterations in the environment, and avoiding triggers for an exacerbation were all examples of behavioral strategies. Last, expressive strategies involved expressing emotions or feelings. Consequently, Chalmers expanded the typology of coping to further differentiate between cognitive and behavioral forms of active coping.

Smith (1984 cited in Shekelton, 1987) used similar categories of coping, but referred to cognitive and behavioral strategies as 'instrumental' coping and emotional

strategies as 'palliative.' In a descriptive study using a sample of 40 stable patients with COPD, Smith employed the Jalowiec Coping Scale (JCS) to measure differences in coping styles. This was the first study to use a standardized coping assessment instrument to measure coping styles among COPD patients. Results indicated that these COPD patients used more instrumental than palliative coping strategies to deal with disease-related stress. Smith concluded that this knowledge should be considered when treating the psychosocial problems encountered in this population. Parsons (1990) also used the Jalowiec Coping Scale to assess coping and well-being among 38 severe COPD outpatients over a 1 year period. Results indicated that the type and use of coping strategies remained stable over one year. Well-being also remained moderately high at both pre and post measure. Unfortunately, this study did not assess the relationship between coping and well-being.

One study has examined the relationship between coping strategies and quality of life among COPD patients (Herbert & Gregors, 1997). Using a descriptive correlational design, Herbert & Gregors assessed 39 severe COPD patients with the Sickness Impact Profile (SIP) and Cantril's Ladder to measure quality of life, and the Jalowiec Coping Scale (JCS). The study indicated that subjects reported a high quality of life, but total coping scores were low. This suggested that subjects used the JCS coping strategies only minimally and did find them particularly helpful. The individual strategies that subjects used most often and found most helpful were: taking medications, keeping a sense of humor, trying to keep life as normal as possible, prayer/trust in God, handling things one step at a time. The most common

coping styles used and deemed helpful were optimistic (thinking positive and having a positive outlook), supportant (using support systems), and confrontive (confronting a situation and using constructive problem solving). Results also showed that coping strategies and quality of life were not significantly related. Thus, while descriptive research has attempted to outline coping patterns among COPD patients, empirical studies looking at the relationship between specific coping strategies and psychological functioning, functional status, quality of life, and health care utilization are lacking. Such research would greatly add to the literature.

Social Support, Psychological Well Being, and Illness

One specific coping resource that has been widely researched within the field of behavioral medicine is social support (see Cohen & Syme, 1985 for a review). Numerous studies have reported that social support is related to greater psychological well being and physical health (Cohen & Wills, 1985; McColl & Skinner, 1995; Sherbourne & Hays, 1990; Wallston, Alagna, DeVillis, & DeVillis, 1983). A lack of social support has likewise been associated with poorer mental health and the development of psychopathology (Andrews, Tennant, Hewson, & Vaillant, 1978; Areshensel & Freddericks, 1982; Brown & Harris, 1978 cited in Coyne & DeLongis, 1986; Henderson, Byrne, & Duncan-Jones, 1982 cited in House & Kahn, 1985; Kessler & McLeod, 1985; Kessler et al., 1985; Williams, Wane, & Donald, 1981).

In a very interesting controlled study, Arnetz et al. (1983) examined the psychoendocrine and metabolic effects of social isolation. In a sample of 60 elderly

subjects in a senior citizen residential setting, these researchers exposed half of the subjects to a social activation treatment program and the other half served as a no treatment control group. Subjects were blind to the fact that they were being exposed to an experimental condition. The study looked at differences in blood samples and psychosocial measures at baseline and 3 and 6 months post-treatment. The rate of social interaction was assessed by daily ratings from staff and an occupational therapist, and from direct patient self-report. Pre-post measures indicated that the rate of social interaction significantly increased (three times greater) for the treatment group, but not for the control group. This suggested that the treatment condition achieved its purpose, to increase socialization. Results also indicated that the plasma levels of testosterone, dehydroepiandrosterone and estradiol increased significantly in the treatment group over the six month period compared to the control group. The most pronounced difference was within the first three months of the treatment. These anabolic hormones are thought to be health promoting under stressful conditions. Additionally, there was a significant group difference with respect to hemoglobin A1C level, a slow reacting measure of plasma glucose. The treatment group had a significant decrease in hemoglobin A1C compared to the control group over the six months. The study concluded that the social isolation experienced in real life may be associated with negative health related changes via psychoendocrine effects.

It has been theorized that social support may have either a direct or buffering effect on health (Cohen & Syme, 1985; Sarafino, 1990 ch. 4). The direct hypothesis states that the benefits of social support occur regardless of stress level; whereas the

buffering hypothesis proposes that social support modifies the deleterious health effects of high levels of stress. According to a review of the literature by Cohen and Syme (1985), support has been found for both theories. Direct effects are linked with measures of integration into a social network and buffering effects to availability of resources to aid in managing the stressor.

Similar to coping, typologies of social support have been proposed. The most commonly cited distinctions are emotional, informational, and instrumental support (Cohen & Syme, 1985; Sarafino, 1990 ch. 4). Emotional support occurs when others are available to talk and listen to an individual's problems in a manner that is caring, empathetic, and validating. Emotional support offers a sense of reassurance, acceptance, and love. Informational support involves others providing information, advice, and guidance about how to manage a problem. Instrumental (or tangible) support involves the direct assistance from others. With instrumental support, others lend help by performing various activities like household chores, child care, lending money, running errands, transportation, and providing material goods. For an overview of the other proposed functions of social support (status, companionship, motivation) one should refer to Cohen and Syme (1985).

Social support may be beneficial for medical patients in that it may provide: tangible assistance, a gauge for social comparison and feedback regarding one's progress, reduction in anxiety secondary to the belief that one is cared for, understood, and worthy, emotional release and resolution of feelings, or modification of attitudes and behaviors toward a healthier lifestyle (DiMatteo & Hays, 1981). In fact there is

some evidence to show that social support enhances recovery, increases adherence to treatment recommendations, and promotes psychological adjustment among medical populations (Revensen et al., 1991; Wallston et al., 1983; Wortman & Conway, 1985).

With respect to the different types of social support that are most effective for adjustment to physical illness, the literature reveals contradictory findings. There is some evidence to suggest that instrumental, versus emotional, support is more beneficial. For example, Seeman (1984 cited in Cohen & Syme, 1985b) found that instrumental support in comparison to emotional support was significantly associated with less coronary artery disease. Nevertheless, in another sample of cancer patients, 90% self-reported that emotional support was the most helpful to them in coping with their illness (Dunkel-Schetter, 1981 cited in Wortman & Conway, 1985). Research also suggests that instrumental support, versus informational and emotional, is linked to lower incidence of depression in the elderly (Schaefer, Coyne & Lazarus, 1981). Given that the onset of COPD usually occurs in the fifth to sixth decade of life, this finding may be significant for this medical population as well.

While physically ill individuals actually have a high need for support, it is not uncommon for the ill individual to have difficulty obtaining adequate support from others (Wortman, 1984). A study by Peters-Golden (1982) which examined perception of social support among breast cancer patients illustrates this point. Results revealed that 75% of the sample stated that people treated them differently after diagnosis, 72% felt misunderstood by others, and over 50% indicated others

avoided or feared them. A similar trend was found in a study assessing social relationships among hemodialysis patients (O'Brien, 1980). O'Brien reported that the quality of social support deteriorated and feelings of alienation and estrangement increased over time. In fact, telling a patient to cheer up, minimizing the problems/concerns, failing to understand the illness, and babying the patient are typically viewed by patients as unhelpful and potentially harmful (Wortman & Lehman, in press cited in Wortman & Conway, 1985). Social support may also be viewed as negative when it's not desired or needed, doesn't match patients' needs, or is critical of patients' coping efforts (Revensen et al., 1991). In all fairness, however, it should be noted that those supporting chronically ill individuals may experience their own stress, sadness, and anger as consequences of the frustrations, demands, challenges, and life disruption that is caused by the disease (Wortman & Conway, 1985). Therefore, it is likely that supporters will demonstrate both positive and negative behaviors when interacting with an ill loved one (Bloom, 1981; Dunkel-Schetter & Wortman, 1982; Pearlin, 1982 all cited in Wortman & Conway, 1985).

Researchers have begun to look at both the positive and negative aspects of social support. For example, Revensen et al. (1991) defined positive support as that which provides affect, affirmation or aid, and problematic support as that which is viewed by the recipient as non-supportive even if the giver's intentions are good. Utilizing this dichotomy of social support, these researchers evaluated the effect of each type of social support on depression among 101 rheumatoid arthritis patients. Results indicated that all subjects reported some degree of problematic support from

at least one social support network member. While the difference between levels of positive and problematic support were statistically significant (frequency of positive support was greater), the two were not significantly correlated ($r = -0.10$). Thus, in this sample these two types of support appeared to be independent of one another. In other words, high levels of positive support were not necessarily related to lower levels of problematic support (or vice versa). Each was independently related to depression as well, although those with greater positive support were less depressed; whereas those with greater problematic support were more depressed. Furthermore, problematic support was found not to cancel out the beneficial effect of positive support on mood. Last, the strongest association to depression was a social network comprised of problematic support with little positive support. In short, Revensen and colleagues concluded that social support can potentially serve as a source of stress and a buffer for those coping with a chronic illness.

Contradictory findings regarding the positive effect of social support on health have also been documented in the literature (Thoits, 1982; Wallston et al., 1983). Some have hypothesized that the basis for these negative results stems from personality differences among patients. Husaini, Neff, Newbrough, and Moore (1982) suggested that perhaps social support has been found harmful because asking for help occurs as a last resort for those individuals unable to cope effectively via other means. Somewhat more plausible is Gottlieb's (1983) idea that these negative findings are a result of individuals who lack social competence and excessively seek help. Perhaps another explanation is the issue of type and quality of support rendered.

The presence of support persons is not necessarily sufficient to shield patients from the negative effects of the stress of a chronic illness. It seems reasonable to expect that the perceived quality of these relationships would also play a determining role in whether the type of support offered is beneficial. Because the nature of the relationship with the social support person is likely to be a critical factor in the efficacy of the support rendered, both positive and negative aspects of social support should be assessed in future research (Wortman & Conway, 1985).

Social Support and COPD

With respect to COPD, only three studies have examined the effects of social support on adjustment to the disease (Anderson, 1995; Graydon & Ross, 1995; Lee et al., 1991). Lee et al. (1991) measured general perceived social support among oxygen-dependent COPD patients using the Personal Resource Questionnaire (PRQ). Results from this study indicated social support and functioning were significantly correlated such that patients with greater perceived social support had significantly less disruption in their functioning compared to those with less perceived social support. Social support had a similar, but somewhat stronger, relationship with psychological well-being. However, stepwise multiple regression analysis failed to show that social support accounted for a significant amount of variance in functioning. Yet, the authors recognized that one limitation of the study was the small sample size ($n=30$). Therefore, they cautioned generalizing the findings until replication with a larger sample size produced similar results.

A follow-up study by Graydon and Ross (1995) accomplished this goal, by assessing 143 COPD patients (52 oxygen dependent, 91 non-oxygen dependent) to examine the influence of symptoms, lung function, and social support on functioning. The level of physiological impairment, as measured by FEV1% predicted, ranged in this sample from 13%- 48% with a mean level of 30.59%. Correlational analysis revealed that perceived social support was significantly (negatively) related to mood and functional problems for both patients receiving oxygen and those free of oxygen therapy. Further, multiple regression analysis using mood as the dependent variable and lung function, symptoms, and perceived social support as the predictor variables revealed that for both groups of subjects social support, along with symptoms, accounted for a significant portion of the variance. Thus, difference in perceived social support was a significant predictor of mood. Overall, path analyses revealed that social support indirectly affected functional status via its influence on mood and symptoms. In other words, patients who self-reported greater perceived social support had a more positive mood and fewer symptoms, two factors which were directly related to improved functioning. Interestingly however, these results were only true of non-oxygen dependent patients. For those receiving oxygen, social support was not a significant predictor of functional status. Based on these results, Graydon and Ross suggest that increasing social support may be an effective treatment strategy for COPD patients, especially for those not yet requiring oxygen. They speculate that social support may be beneficial because it facilitates emotional adjustment and compliance to the medical regimen, which in turn may result in better

control of symptoms.

Another study by Anderson (1995) also utilized a larger sample size ($n=126$) in exploration of the direct or indirect effects of demographic, psychosocial, and disease variables on quality of life of COPD patients. Perceived social support was also measured in this study by the PRQ. Results suggested that perceived social support, assessed as a mediator or coping resource, did have a direct positive effect on quality of life.

One additional study compared the difference between COPD patients and spouses on loneliness, depression and social support (Keel-Card et al., 1993). Results indicated that patients who were more satisfied with their social support were significantly less lonely ($r = -0.48$) and depressed ($r = -0.51$). However, size of the social support network was not significantly related to loneliness and depression. This would suggest that the qualitative rather than the quantitative nature of social support may be the critical factor for COPD patients.

Anderson (1995) recommended that future research needs to examine social support further in an effort to better understand the specific kinds of support that lead to improved life quality for COPD patients. Graydon and Ross (1995) also questioned the 'type' of social support that may be beneficial for COPD patients. They cite Janson-Bjerklie, Carrieri and Hudes (1986) who found social support to be positively correlated to level of dyspnea, suggesting negative consequences for social support. Others have also raised the issue of whether social support serves as an effective or ineffective coping strategy for the medically ill (Tilden & Galyen, 1987).

As previously mentioned, it may be the case that family and friends have good intentions, but their support efforts are actually perceived as unhelpful or negative (Dudley et al., 1980b). Following Revensen et al.'s (1991) work, it seems reasonable to gain a better understanding of not only the type of support rendered, but also the quality of the support. This seems especially fitting for COPD patients since descriptive research has suggested that these patients tend to be withdrawn secondary to embarrassment about symptoms and perhaps, as a protective maneuver to decrease the risk of emotional upset exacerbating symptoms (Burns & Howell, 1969). One would assume that if the quality of the relationship with primary support persons is positive, patients may feel more comfortable with their symptoms and less fearful of conflict precipitating an acute episode of dyspnea. In short, even though social support has been theorized to be a critical coping resource enabling individuals to manage environmental stressors, very little is actually known about how this coping mechanism may aid COPD patients. An empirical investigation of the effects of specific types and quality of support on psychological well being, functional status, and health care utilization would, therefore, address this limitation. Eventually this field will benefit from greater attention to experimental study which manipulates these variables as independent variables.

SELF-REPORT MEASURES AND BEHAVIORAL MEDICINE RESEARCH

As in any research, behavioral medicine researchers have been wary of self-report instruments. In the late 70's and early 80's there was some evidence that illness self-reports lead to overestimation of acute conditions and were susceptible to effects of psychological distress (Tessler & Mechanic, 1979 and Verbrugge, 1980 both cited in Sarason, Sarason, Potter & Antoni, 1985). Yet, contradictory findings have also been reported suggesting that, in addition to convenience, self-report of illness has adequate reliability and is significantly related to objective information provided by physicians (Brook et al., 1979 cited in Sarason et al., 1985). More recently, Lee et al. (1991) found subjective measures of health status (i.e. BESC) were better predictors of functional status of COPD patients than objective measures (i.e. FEV1). Kaplan, Ries, Prewitt and Eakin (1994) also concluded that a simple self-report measure of self-efficacy could provide significant information about health status for a sample of 199 patients with COPD.

In a recent study, 51 patients with COPD, and their families were asked to complete questionnaires on how the patient was functioning (Leidy & Traver, 1996). To accomplish this, patients filled out the Sickness Impact Profile (SIP) and a family member completed the Katz Adjustment Scale for Relatives (KAS-R). Analysis of the data revealed that family members' perception of socially expected activities on the KAS-R correlated significantly to patients' ratings of general and physical

functioning on the SIP. However, correlational analysis of patients' and family members' ratings of psychosocial symptoms yielded the finding that patient perception of psychosocial functioning was independent from the family members'. Leidy and Traver concluded that there may be a perceptual discrepancy between how COPD patients and their family members view the patients' adjustment to the illness, at least with respect to psychosocial symptoms. Yet, this finding is inconsistent with other research. There appears to be evidence that family members have a remarkable ability to accurately describe and also discriminate among psychiatric symptoms often used by clinicians to identify and treat adjustment disorders in patients (Jackson et al., 1992; Katz & Lyerly, 1963). Also, Traver (1988) found that COPD patients' relatives' perceptions of psychiatric symptoms and dissatisfaction with free-time activities actually helped predict patients who were high emergent users of health care services independent of disease severity. Therefore, the mixed results from Leidy and Traver (1996) may also suggest that collateral data from someone who observes the patient frequently in the natural environment may provide valuable insight into psychological functioning that would otherwise be overlooked by health care providers relying solely on patient self-report.

The measurement of social support poses a slightly different issue. It has been argued that in order for social support to be effective, it has to be perceived as present and satisfactory (House, 1981). Thus, the only way to measure perceived social support is via self-report instruments. Antonucci and Israel (1986) looked at "veridicality," or the agreement between recipient and providers' perception, on

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CONCLUDING STATEMENT

In summary, some COPD patients with equivalent lung pathology adjust better, remain active, and do not overuse medical care. However, anxiety and depression are common in COPD patients. Clearly, personality, cognitive predisposition, and environmental factors can influence an individual's interpretation of illness-related events and ability to cope. Psychological variables such as anxiety, depression, coping strategies, and availability and quality of social support are also likely to impact how disabled COPD patients are and how they use medical care. While active, or problem-focused, coping has been shown to be effective in other illnesses, there is very limited data on COPD patients. Further, social support has been shown to be helpful in adjustment to COPD, but optimal type of social support is unclear. Thus, further research is needed to delineate the quantitative and qualitative aspects of coping and social support related to adjustment in this population.

Purpose Statement

The primary goal of the present study was to examine coping strategies and social support among moderate to severe COPD patients to assess the relationship to psychiatric well being (anxiety and depression), functional status, and health care

utilization (number of ER visits and hospitalizations, and length of inpatient stay). More specifically, the study looked at the differences in the number and types of coping strategies used by patients in relation to level of anxiety and depression, functional status, and health care utilization. It also explored the differences in the amount, type and perceived quality of social support in relation to anxiety and depression, functional status, and health care utilization. A secondary goal was to examine the concordance of collateral data obtained from primary support persons compared to patient self-report data in predicting psychiatric symptoms, functional status, coping, and social support.

Hypotheses

The proposed hypotheses which were tested in the present study were as follows:

1. Patients who report using a greater number of coping strategies in the management of their illness (as measured by the COPE) will have less anxiety and depression (as measured by the HADS), greater functional status (as measured by the SF-36, CRQ, & Six Minute Walk), and less health care utilization (as measured by the number of ER visits and inpatient hospitalizations, and length of inpatient stays in the past year) compared to those patients who use fewer coping strategies.
2. With respect to the type of coping strategies utilized, patients who report a greater number of problem-focused strategies (as measured by the COPE) will have less anxiety and depression (as measured by the HADS), greater functional status (as

measured by the SF-36, CRQ, & Six Minute Walk), and less health care utilization (as measured by the number of ER visits and inpatient hospitalizations, and length of inpatient stays in the past year) compared to those patients who report using a greater number of emotion or avoidance-focused strategies (as measured by the COPE).

3. Patients who report greater perceived social support (as measured by the COPE, SPS, & QRI) will have less anxiety and depression (as measured by the HADS), greater functional status (as measured by the SF-36, CRQ, & Six Minute Walk), and less health care utilization (as measured by the number of ER visits and inpatient hospitalizations, and length of inpatient stays in the past year) compared to those patients who report less perceived social support. However, this relationship will be stronger for patients who identify greater perceived instrumental (i.e. instructional and tangible) social support versus emotional social support (as measured by the COPE and SPS).

4. With respect to the perceived quality of the social support received, patients who perceive their social support to be more positive (as measured by the QRI) will have less anxiety and depression (as measured by the HADS) greater functional status (as measured by the SF-36, CRQ, & Six Minute Walk), and less health care utilization (as measured by the number of ER visits and inpatient hospitalizations, and length of inpatient stays in the past year) compared to those patients who perceive their social support to be more conflictual (as measured by the QRI).

METHODS

Sample

Subjects were recruited through weekly pulmonary functioning testing in the Outpatient Pulmonary Clinics in the Henry Ford Health System in Detroit Michigan. There was no monetary reimbursement for participation, nor was direct advertisement utilized to recruit subjects. Inclusionary criteria for enrollment into the study included moderate ($FEV1 \leq 49\%$ predicted and $FEV1/FVC \leq 65$) to severe ($FEV1 \leq 35\%$ predicted and $FEV1/FVC \leq 65$) COPD diagnosed by spirometry utilizing the criteria of the American Thoracic Society (1995). For patients who had a pre and post-bronchodilator score, the best $FEV1\%$ predicted score was used to determine enrollment. Patients were excluded from the study if they were under 18 years old, exhibited cognitive deficits which suggested that they were unable to comprehend the questionnaires, or had other severe illnesses (e.g. cancer, multiple sclerosis) which might confound the issues of the study. Cognitive ability was determined informally during the recruitment phone conversation, and in some cases where deficits were suspected, by a Mini-Mental Status Exam.

During a twelve month period, 81 patients qualified for the study. Of these, 47% (n=38) declined to participate in the study and 2% (n=2) were excluded based on suspected cognitive deficits. The most common reasons for refusal to participate

were: lack of time (n=10), no specific reason (n=9), lack of transportation (n=8), uninterested (n=7), and physically unable (n=4). Of the remaining 41 patients who verbally agreed to participate, 5 (12%) repeatedly missed their scheduled appointments and 3 (7%) were found to be cognitively impaired. Thus, the final sample consisted of 33 (41% of eligible patients) moderate to severe COPD outpatients from a large metropolitan HMO. One subject died during the course of the study from a respiratory-related infection.

For purposes of gaining collateral information, each subject was asked to identify one primary support person to complete a battery of questionnaires. Support persons for 23 subjects (70%) completed and returned the collateral packet. The nature of the relationships between the subject and support person were as follows: spouse (n=11, 48 %), family member (n=11, 48%), and friend/neighbor (n=1, 4%).

Comparison Between Participants and Nonparticipants

To examine whether there were significant differences between patients in the study versus those who opted not to participate, independent sample t tests were computed on demographic variables. Results indicated that participants were not significantly different from nonparticipants with respect to any of the demographic variables. See Table 1 for group comparisons using a 2-tailed test with $\alpha = .01$.

Setting

The majority of subject data collection sessions were completed at the Henry

Ford Center for Athletic Medicine, which houses the Pulmonary Rehabilitation Program and provides easy access and free parking for patients, and the Outpatient Pulmonary Clinic at Henry Ford Hospital. A small number of subjects were seen at the Lakeside and West Bloomfield Henry Ford Medical Center satellites, at the request of patients who had transportation difficulties and were unable to travel to the main hospital campus.

Table 1
Participant (N=33) and Nonparticipant (N=40) Group
Comparisons on Demographic Variables

<i>Variable</i>	<i>t value</i>	<i>df</i>	<i>p value</i>
Age	1.944	71	.056
Gender	-.977	71	.332
Ethnicity	.099	71	.922
FEV1	.033	71	.974
Marital Status	-.180	71	.857
Currently Smoking	----	----	----
Pack Years	1.723	71	.089
	.996	67	.323

* Significant at the .01 level

Materials and Apparatus

Brief Clinical Interview

All subjects participated in a semi-structured interview to assess relevant demographic and illness-related information. Inquiries about subjects' age, sex,

educational level, marital status, housemates, disability status, employment status, current medications, premorbid psychiatric history, recent history of panic attacks, and sleep hygiene/ disturbance secondary to dyspnea occurred during this interview (see Appendix A).

Chronic Respiratory Questionnaire

Subjects were also orally administered the Chronic Respiratory Questionnaire (CRQ; Guyatt, 1986), a 19-item multi-part instrument developed to assess disease specific health status. The CRQ has four subscales including dyspnea, fatigue, emotional functioning, and mastery. The CRQ is scored by summing the raw scores of items within each subscale. Test-retest reliability over 12 weeks with the CRQ has been shown to be good with patients whose disease state is stable (Guyatt, Thompson, & Berman, 1985). Further, its sensitivity to disease state change has been good as evidenced by score changes in the expected direction with patients whose treatment produced improved respiratory status. Also, the CRQ has been shown to be moderately correlated to the 6-Minute Walk Test and patient global ratings of dyspnea, fatigue, and emotional status (Guyatt, Berman, Townsend, Pugsley & Chambers, 1987; Guyatt, Townsend, Keller, Singer, & Nograid, 1991). It has also been compared to other related measures (i.e Transition Dyspnea Index, Oxygen Cost Diagram, Rand Dyspnea Index, & Rand Quality of Life) in a study of 28 COPD patients which assessed the outcome of a respiratory rehabilitation program. The *t* value for differences in baseline versus follow-up scores on each questionnaire

showed that the CRQ t values for each subscale were similar to the Transition Dyspnea Index ($p < .001$), but greater than the remaining measures. Thus, the CRQ was shown to be a valid measure of QOL (Guyatt et al., 1987).

Self-Report Measures

Hospital Anxiety and Depression Scale (HADS)

This paper and pencil instrument consists of 14 items that assess for depression and anxiety among medical patients (Zigmond & Snaith, 1983). The HADS can be completed in approximately 2-6 minutes and is generally well accepted by patients (Herrmann, 1997). Subjects are asked to rate the frequency of various depression and anxiety symptoms within the past week. Responses are scored from 0 to 3 points for each subscale and summed to yield an overall anxiety and depression score ranging from 0- 21 points. Authors of the instrument suggest that for each scale, a score of 7 or less indicates the absence of a psychiatric condition, scores of 8-10 are considered borderline or possible cases, and scores of 11 or greater indicate definite presence of clinical depression or anxiety. One benefit of using the HADS over other psychiatric questionnaires (i.e. BDI) with medical patients is that the HADS is sensitive to mild forms of psychiatric disorders and therefore avoids the floor effect often seen with these other questionnaires (Herrmann, 1997). Also, physical symptoms which may be common to psychological distress and medical illness, for example dizziness, headache, weight loss, and sleep disturbance were not

included on the HADS; therefore reducing the risk of false positives among medical patients.

Interitem reliability for the HADS is acceptable for the two subscales at 0.80 to 0.93 for the anxiety and 0.81 to 0.90 for the depression subscales (Jack, Walker, Morley, Hanks, & Finlay-Mills, 1987; Leung, Ho, Kan, Hung, & Chen, 1993; Moorey et al., 1991). Test-retest reliability has also been shown to be satisfactory with high correlations ($r > 0.80$) up to a 2 week interval (Elliott, 1993; Kurer, Watts, Weinman, Gower, 1995 cited in Herrmann, 1987; Prettyman, Cordle, & Cook, 1993; Salkovskis, Storer, Atha, & Warwick, 1990; Visser et al., 1995). Scale scores have also been correlated with blind ratings by psychiatrists with fair to excellent results: Anxiety = .70 ($p < .001$) and Depression = .74 ($p < .001$) (Zigmond & Snaith, 1983). Numerous studies have shown that the ability of the HADS to detect psychiatric cases is quite similar to other self-report scales, indicating that it has adequate convergent validity (see Herrmann, 1997 for a review). In fact, among medical patients, HADS scores appear to be more normally distributed than scores on the State-Trait Anxiety Inventory (STAI) or Beck Depression Inventory (BDI) (Clark & Steer, 1994; Millar, Jellicic, Bonke, & Asbury, 1995).

COPE

The COPE is a 60-item multidimensional coping inventory developed to assess different ways in which people respond to stress (Carver, Scheier, & Weintraub, 1989). The COPE, a paper and pencil instrument, has 15 scales that are

classified into 3 main categories of coping. Problem-focused coping strategies include active coping, planning, suppression of competing activities, restraint coping, and seeking instrumental social support. Emotion-focused coping strategies include seeking emotional social support, positive reinterpretation, acceptance, denial, and turning to religion. Maladaptive coping strategies include focus on and venting of emotions, behavioral disengagement, and mental disengagement. Two supplementary scales, alcohol/ drug use and humor, were added to the instrument after its inception. Less psychometric data is available for these two scales and the authors regard them as exploratory. Nevertheless, review of the coping literature suggests that each has merit as a specific coping strategy and hence, it seemed warranted to include them in the present study. The COPE takes approximately 15 minutes to complete.

The COPE was selected for this study rather than the Ways of Coping-Revised (Folkman & Lazarus, 1985), which has been used in past research with medical patients, for several reasons. First, the sentence stems of the COPE items can be modified to measure coping traits or situational strategies during a time-limited fashion (i.e. during a period in the past or period up to the present). For the present study, the COPE directions and items were reworded to assess how patients have been coping with their chronic obstructive pulmonary disease since diagnosis. Responses are scored on a 4-point Likert scale (1-4) ranging from least to greatest use, respectively. Second, the COPE measures a greater number of conceptually distinct coping strategies, including responses considered to be maladaptive. Third, the COPE distinguishes between instrumental and emotional social support.

The COPE has been shown to have acceptable internal consistency with Cronbach's alpha coefficients above .60 for all scales except mental disengagement [.48] (Carver, Scheier, & Weintraub, 1989). Test-retest reliability has also proven to be adequate in two separate samples (Carver, Scheier, & Weintraub, 1989). In a study of 89 college students retested after 8 weeks, the test-retest correlations across all scales ranged from .48 to .86. Another sample of college students (n=116) was retested after 6 weeks and test-retest correlations similarly ranged from .42 to .89. Likewise, there is evidence that the COPE has adequate convergent and discriminant validity. Carver, Scheier, and Weintraub (1989) administered the COPE and a variety of personality measures (i.e. optimism, pessimism, controllability, self-esteem, locus of control, hardiness, Type A behavior, trait anxiety, monitoring, blunting, and social desirability) to a group of college students. The personality traits assessed were conceptually thought to suggest a preference for either active/ problem-focused coping or a tendency to adjust to stressful life events in a maladaptive manner. Results indicated that active coping, planning, denial and behavioral disengagement were associated with several conceptually related personality qualities. Thus, findings suggested that coping strategies hypothesized to be functional were correlated to personality qualities commonly regarded as beneficial, while those less functional were inversely related. Evidence of discriminate validity stemmed from three findings: (1) correlations between personality variables and coping strategies were not overly strong, (2) COPE scales were not strongly correlated to the social desirability scale, and (3) the COPE scales were relatively unrelated to another measure of coping

styles included in the study (i.e. monitoring and blunting).

Social Provisions Scale (SPS)

The SPS is a social support measure which assesses general perceived social support (Cutrona & Russell, 1987). The SPS was developed to assess six relational provisions identified by Weiss (1974): guidance, reliable alliance, reassurance of worth, social integration, attachment, and opportunity to provide nurturance. Further, these six provisions can be divided into two types of support- instrumental [i.e. reliable alliance and guidance] and emotional [i.e. reassurance of worth, attachment, social integration, and nurturance] (Baron, Cutrona, Hicklin, Russell, & Lubaroff, 1990). The SPS consists of 24 items, including 4 questions for each of the six subscales. Among the subscales, two questions describe the presence and two the absence of the provision. Subjects are asked to rate the degree to which each question describes their current social relationships. Items are rated on a 4-point Likert scale (1-4) ranging from strongly disagree to strongly agree. For scoring, questions worded to represent an absence of a provision are first reverse scored, and then all 24 items are summed for a total score. Subscale scores are also obtained by summing the four items within each subscale after reverse scoring select items. The SPS takes approximately 10 minutes to complete.

Previous research with the SPS has demonstrated that the reliability of the total support score is quite good among elderly adults (.92), with reliabilities of the 4-item subscales ranging from .76 to .84 (Cutrona, Russell, & Rose, 1986). Internal

consistency for the total support score is relatively high, ranging from .85 to .92 across a variety of populations (Cutrona, Russell & Rose, 1986). Intercorrelations among subscales range from .27 to .74 (Baron, Cutrona, Hicklin, Russell, Lubaroff, 1990). While validity data for the SPS is not available for the population of interest in the present study, it has been established among adolescent mothers (Cutrona, 1984), the elderly (Cutrona, Russell & Rose, 1986), public school teachers (Russell, Altmaier & Van Velzen, 1987), and hospital nurses (Constable & Russell, 1986). Russell & Cutrona (1987 cited in Cutrona & Russell, 1987) assessed 242 college students using the SPS and other social support measures (e.g. Social Support Questionnaire, Index of Socially Supportive Behaviors, and a measure of attitudes toward use of social support). Results indicated that the correlations between the SPS score and other measures of social support were all positive and statistically significant. These correlations were much higher than those between the SPS and measures of mood (e.g. depression), personality (e.g. introversion-extroversion, neuroticism), and social desirability. Thus, these findings support both convergent and discriminative validity for the SPS.

Quality of Relationships Inventory (QRI)

The QRI is a 25-item instrument that assesses the supportive and conflictual aspects of a singular important relationship (Pierce, Sarason, & Sarason, 1991). Thus, whereas the SPS is a measure of general social support, the QRI indicates the respondent's perception of support from a specific relationship. The QRI consists of

three subscales, including support, depth, and conflict dimensions. The support subscale (7 items) measures the extent to which the respondent can rely on the identified support person for assistance in a variety of situations. The depth subscale (6 items) assesses the extent to which the respondent believes that he/ she and the identified support person are committed to the relationship and positively value it. Last, the conflict subscale (12 items) reflects the extent to which the respondent experiences angry or ambivalent feelings toward the identified support person. Respondents rate each item on a 4-point Likert scale representing the degree to which each item applies to the relationship. Each subjects' identified support person also completed the QRI as a collateral measure. The QRI can be completed within approximately 10 minutes. Higher scores on the support and depth scales and lower scores on the conflict scale indicate greater social support. High scores on the conflict scale suggest nonsupportive relationships.

Internal reliability alpha coefficients for the QRI subscales have been reported to be satisfactory among a sample of undergraduate college students who rated their relationship with their mother, father, and a friend [support= .83 to .88, conflict = .88 to .91 and conflict= .83 to .86] (Pierce, Sarason, & Sarason, 1991). High test-retest reliability over a 4-month period has also been demonstrated, with test-retest correlations across subscales ranging from .66 to .82, with an average correlation of .75 (Pierce, 1994). The QRI has also been shown to have discriminant validity when compared to the Parental Bonding Instrument (PBI), a measure of the quality of early attachment bonds (Pierce, Sarason, & Sarason, 1991).

Short Form-36 Health Survey (SF-36)

The SF-36 provides a measure of perceived general health status (Ware & Sherburne, 1992). This measure will provide an estimate of the impact of COPD on daily living using a 4-week retrospective reference period. The SF-36 consists of 36 items which are scored on various Likert rating scales. The SF-36 items comprise 9 scales including physical and social functioning, physical and emotional role limitations, mental health, bodily pain, vitality, overall general health, and health transition (improvement). Scoring the SF-36 involves reverse scoring certain items, and then summing across all items in each scale. Higher scores indicate more positive health status for all scales. The SF-36 can be completed in 10 minutes or less.

There is considerable research on the psychometric properties of the SF-36 and results demonstrate acceptable reliability and validity (Brazier et al., 1992; McHorney, Ware, Rogers, Raczedk, & Lu, 1992; Stewart, Hays, & Ware, 1988). The SF-36 manual includes a detailed review of the psychometric research and findings (Ware, Snow, Kosinski, & Gandek, 1993).

Social Readjustment Rating Scale (SRRS)

The SRRS is a 43-item scale developed to quantify stressful life events (Holmes & Rahe, 1967). The SRRS was included to assess and control for other possible life stressors which may contribute to the variance in the dependent measures

being studied. Subjects are asked to check items that they have experienced during the past 12-months. Each item has a mean value ranging from 11 to 100, with higher values representing events necessitating greater psychological adjustment. To score the SRRS, the mean score for each endorsed item is summed to yield an overall score. The SRRS has shown to have satisfactory reliability and validity (Holmes & Masuda, 1974) and can be completed rather quickly in less than 5 minutes.

Visual Analog Scale (VAS)

The VAS is used to measure dyspnea, or the subjective sensation of breathlessness (Gift, Plaut & Jacox, 1986). The VAS was given to patients before and after the Six-Minute Walk Test, to rate the intensity of their perceived shortness of breath over the past 2 weeks (baseline) and immediately following the Six Minute Walk. The VAS consists of a 100 mm vertical bar with the top labeled "worst imaginable" and the bottom "none at all". Subjects are instructed to place a horizontal line across the bar at the position they believe appropriately expresses their level of dyspnea. The intensity of dyspnea is defined as the distance (in mm) from the bottom of the bar to the subject's horizontal mark.

The VAS has been reported to have good test-retest reliability in the same subjects (Adams, Chronos, Lane & Guz, 1985). Previous studies using the VAS as a measure of dyspnea have shown that the measure changes in expected directions during exercise or hypercapnia (Chonan, Mulholland, Leiter, Altose & Cheniack, 1990) and with the treatment of dyspnea (Gift, Plaut & Jacox, 1986).

Behavioral Measures

6-Minute Walking Test

The 6-Minute Walking Test is an objective measure of exercise tolerance and exertional dyspnea (Guyatt et al., 1985). This test involves having patients walk as far as possible on a 100-foot course over 6 minutes. Subjects are asked to "give it their very best effort to cover as much ground as possible," but are given permission to stop and rest if necessary during the test. No further instruction or encouragement is given. To score the 6-Minute Walking Test, the total distance walked (in feet) within the 6 minutes is merely measured. If a patient stops to rest or is stopped due to oxygen desaturation, the timer continues and thus, will negatively affect the score received.

The 6-Minute Walking Test has been found to correlate highly with the 12-Minute Walking Test ($r=.995$) and is a commonly used variant (Butland, Pang, Gross, Woodcock, & Geddes, 1982). The 12-Minute Walking Test is widely accepted and has been shown to be sensitive to changes in exercise capacity following pulmonary rehabilitation programs. Performance on this test is a function of several factors including endurance, respiratory function, cardiovascular fitness, and motivation (ZuWallack, Patel, Reardon, Clark, & Normandin, 1991).

Health Care Utilization

Subjects' medical records were reviewed to assess COPD-related health care services during the year preceding the interview. Utilization data included the frequency of emergency room visits and inpatient hospitalizations, as well as length of inpatient stays within the last year.

Collateral Measures

For purposes of this study, a modified version of the HADS and the COPE were given to each subjects' identified primary support person as collateral measures. Accordingly, the sentence stems of the HADS and COPE items were minimally reworded to reflect a collateral source rating (e.g. HADS- "I feel tense or wound up" was changed to read "Your spouse/ significant other/ family member/ friend feels tense or wound up"; COPE- "I have been trying to grow as a person as a result of the experience" was changed to read "He/she has been trying to grow as a person as a result of the experience"). No psychometric data is available for use of the HADS or COPE in this manner. Support persons were also asked to complete the QRI, a measure of the quality of the relationship with the subject.

Procedures

Subjects in the present study were a subset of moderate to severe COPD patients screened for a larger study examining the effectiveness of a cognitive-

behavioral treatment for anxiety and disproportionate dyspnea. Thus, subjects in the present study may also have qualified and subsequently participated in the treatment study. The data for this study was collected before any intervention took place. Subjects were recruited from the Outpatient Pulmonary Clinics in the Henry Ford Health System in Detroit, Michigan. Names and medical record numbers of all consecutive patients receiving a $FEV1 \leq 49\%$ predicted and $FEV1/FVC \leq 65$ (moderate to severe range) on pulmonary functioning testing during a 12-month period were obtained from the Pulmonary Clinic staff on a weekly basis by the student investigator.

Once potential subjects were identified, they were contacted as soon as possible by phone and informed of the study (see Appendix B for phone script). If patients met inclusionary criteria (i.e. 18 years of age or older, able to read, absence of cognitive deficits, and absence of other severe physical illness), it was explained that participation involved a 2- hour session in which they would take part in a brief interview, fill out a number of questionnaires, and complete a short exercise test. Additionally, subjects were instructed that they would be asked to provide a name, address and phone number of a primary support person who would be willing to complete a supplemental packet of questionnaires. In an effort to facilitate participation in this study (and the larger treatment study), patients who refused to provide this support person information were not disqualified from participating. Potential subjects were further informed that they would be asked to give the researchers permission to review their medical records (related to COPD). Finally,

potential subjects were told that at the end of the 2- hour screening session they may be asked to take part in another study, assessing the effectiveness of a brief treatment for anxiety. For patients who voluntarily agreed to participate in the study, effort was made to schedule their data collection session within 2 weeks. However, due to the physical limitations and ambulatory difficulties experienced by this population, many patients were scheduled according to their next outpatient visit, which was typically within 8 weeks of initial phone contact.

At data collection sessions, patients were greeted by the researcher and allowed an opportunity to review participation requirements and ask questions. If subjects agreed to participate they read and signed a consent form (see Appendix C). The consent form indicated that participation was voluntary and confidential, and that patients had the right to terminate the data collection session at any point without penalty. Subsequent to signing the consent form, subjects took part in a brief semi-structured interview in which demographic and illness specific information was obtained and the CRQ administered. The student investigator was trained on the CRQ by a doctoral level Clinical Psychologist who has previous experience with the instrument. Next, subjects completed the self-report questionnaire packet including the Hospital Anxiety and Depression Scale (HADS), COPE, Social Provisions Scale (SPS), Quality of Relations Inventory (QRI), Short-Form Health Survey (SF-36), and Social Readjustment Rating Scale (SRRS). Because it took most patients 1 hour to complete this packet and patients fatigued easily, it was found necessary in most cases to send the self-report packet to subjects at the time of scheduling to complete at

home and bring to the data collection session, or allow patients to take incomplete questionnaires home and return via the mail within 2 days. Phone follow-up was used to track receipt of the questionnaires.

Additionally, subjects completed a 6-Minute Walk, an exercise tolerance test, as an objective measure of functional status. Before and after the 6-Minute Walk, subjects were asked to rate their subjective level of dyspnea using the VAS. All 6-Minute Walks were conducted in a pre-measured stretch of hallway. Subjects who required oxygen during exercise, were instructed to bring and use their own oxygen during the Six-Minute Walk. Prior to enrolling subjects, the student investigator was trained on how to conduct the 6-Minute Walk by Sandy Truesdell R.N., the director of the Pulmonary Rehabilitation Program at Henry Ford Hospital. The 6-Minute Walk is a routine test used in Pulmonary Rehabilitation with this patient population, and no life threatening complications were encountered. As precautionary measures, however, the student investigator had access to an on-site nurse and supplemental oxygen at each data collection site.

As part of the 6-Minute Walk, subjects were hooked to a pulse oximeter which monitored heart rate and oxygen saturation level. The pulse oximeter computed and printed the average heart rate and oxygen saturation level every 60 seconds. At the end of the 6 minutes, it printed a summary report that provided the mean heart rate and oxygen saturation level, as well as the highest and lowest scores for these two measures. The target for oxygen saturation is 90 and above. When a subject's oxygen saturation level dropped below 89 (desaturated), the subject was

instructed to stop walking and begin pursed-lip breathing until the saturation level rose to 90 or above. Pursed-lip breathing is a technique that helps the lungs work more efficiently and reduces feelings of breathlessness. It is accomplished by inhaling slowly through the nose, puckering the lips, and slowly exhaling.

With respect to collateral data, every attempt was made to schedule subjects' data collection sessions at a time also convenient for the identified primary support person. However, this was possible with only two subjects (5%). Thus, the majority of collateral questionnaire packets were mailed to the subject with an instructional coversheet (see Appendix D) and self-addressed and stamped return envelope. The collateral data packet included: modified versions of the Hospital Anxiety and Depression Scale (HADS) and COPE, and the Quality of Relations Inventory (QRI). All instruments could be completed in approximately 30 minutes. Phone follow-up with the subject and/or identified support person was used to facilitate receipt of the collateral packet when not received within 2 weeks.

During all phases of data collection effort was taken to keep patients on task and minimize extraneous conversation. Time was allotted at the end of the data collection session to answer questions and debrief subjects (and support persons). Any patient found to be suffering from significant depression was given a referral to the Outpatient Psychiatry Department and the primary care physician was notified. Patients identified to have comorbid anxiety, were offered the opportunity to take part in the adjunct treatment study, and if deemed appropriate, referral was made to their primary care physician for a medication (i.e. anxiolytic) evaluation.

Following the data collection session, health care utilization data was obtained from MIMS, a computerized hospital record system for the Henry Ford Health System. Data included the number of respiratory related emergency room visits, inpatient hospitalizations, and days in the hospital during the previous 12 months.

Confidentiality of Data

To ensure the privacy of subjects, data collection sessions at each site took place in a private office or conference room. In the two cases where the subjects' support persons accompanied them to the data collection session, the spouse was escorted to a nearby, private area to complete the packet of collateral measures.

To protect subject confidentiality, the signed consent forms were stored in a separate, secured location from subjects' raw data. Subjects were given a copy of the consent form for their own reference. Additionally, all data collected from subjects and support persons were identified with a subject code number rather than name. A master list was developed that contained subjects' identifying information (name, address, number, support person's name and number) and code number. This master list was kept by the student investigator in a separate, secured location from subjects' data. Further, all data was stored in a locked filing cabinet, secured in a locked office at the Clara Ford Pavilion- 3rd floor (CFP-3) during the course of the study. This is the location of the Consultation-Liaison Psychiatry Department and office of the primary investigator. All data including questionnaires, master list, computer disks containing coded data and data summarizations, and statistical printouts, will be kept

in their original form in the Psychology Clinic at Western Michigan University for a minimum of three years and destroyed thereafter. In the event that data from the study are published, this holding period will be extended for an additional five years following publication.

Research Design

This descriptive study employed a one session quantitative design including self-report, behavioral and collateral measures treated as continuous variables. It was conducted as an adjunct to a larger treatment study approved by the Human Subject Institutional Review Board at Henry Ford Hospital (see Appendix E). The project was also approved by the Human Subjects Institutional Review Board at Western Michigan University (see Appendix F).

Analysis

Descriptive statistics (frequency, percentages, means, mean differences, ranges, standard deviations) were used to describe the sample with respect to the presence and severity of psychiatric symptoms, frequency and type of coping strategies, amount and type of social support, level of functional status, and frequency and length of health care utilization.

To better understand the relationships between the various dependent variables (psychiatric symptoms, coping strategies, perceived social support, functional status, health care utilization, and collateral data), Pearson r correlations

were calculated. Subsequently, linear multiple regression analyses were run to determine (a) the proportion of variance in psychiatric well being accounted for by coping strategies, perceived social support, and functional status; (b) the proportion of variance in functional status accounted for by coping strategies, perceived social support, and psychiatric symptoms; and (c) the proportion of variance in health care utilization accounted for by coping strategies, perceived social support, psychiatric symptoms, and functional status. Stepwise multiple regression analyses were also conducted, when a model was found to be significant in order to better understand the unique contribution of dependent variables in predicting psychiatric well being, functional status, and health care utilization.

When appropriate, similar multiple regression analyses were run with the collateral data as the predictor variables to determine (a) the proportion of variance in patient-reported psychiatric well being accounted for by collateral estimates of coping strategies, perceived social support, and functional status; (b) the proportion of variance in patient-reported functional status accounted for by collateral estimates of coping strategies, perceived social support, and psychiatric symptoms; and (c) the proportion of variance in patient-reported health care utilization accounted for by collateral estimates of coping strategies, perceived social support, psychiatric symptoms and functional status. As with the patient self-report data, stepwise multiple regression analyses were employed with collateral data to determine whether each variable, independently, added significantly to the prediction of the dependent variables when a model was found to be significant.

With multiple regression, there is a rule of thumb used to determine sample size. The rule is the total sample size should be at least 10 times the number of independent variables to be included in the final model. With a sample of 33 subjects, 3 independent variables could be included in the regression model. The testing level for all analyses was reduced to 0.01, instead of 0.05, to take into account the large number of correlations that were computed.

RESULTS

Preliminary Analyses

Subjects

The sample was well represented by both genders, with 52% of the subjects being female (n=17) and 49% male (n=16). The mean age of the sample was 58.55 years (SD \pm 12.89, range 29-82). Approximately two-thirds of the subjects were Caucasian (n=21, 63%), while one-third were African-American (n=12, 36%). The majority of the sample was married (n=17, 52%) and lived with family (n=24, 72%). Seventy-six percent (n=25) of the sample was unemployed, with only 8 subjects actively working at the time of interview. Of those unemployed, 48% (n=12) stopped working secondary to their COPD and 44% (n=11) were on permanent disability. An additional 6% were on a leave of absence from work due to their COPD. Fifty-five percent of the sample (n=18) were SSD or SSI recipients.

Disease-related information for subjects is listed in Table 2. The frequency and percentage of comorbid physical conditions reported by subjects is listed in Table 3. In the four cases of cancer, all were prostate cancer that had been treated previously and were considered to be in remission. Because none of these patients were receiving cancer treatment at the time of interview and deemed medically stable, all were included in the study.

Table 2

Disease-Related Characteristics of Study Sample (N=33)

<i>Variable</i>	<i>n</i>	<i>%</i>	<i>Mean</i>	<i>SD\pm</i>	<i>Range</i>
Type of disease:					
Emphysema	13	39			
Severe asthma	8	24			
Emphysema + asthma	6	18			
Emphysema + Chronic Bronchitis	2	6			
All three	4	12			
FEV1% Predicted Score			37.64	7.54	22-49
Disease Severity:					
Moderate	16	48			
Severe	17	52			
Oxygen	12	36			
Dose			2L ATC*		
Smoking Status:					
Current smokers	5	15			
Ex-smokers	26	79			
Lifelong nonsmokers	2	6			
Years smoked			28.67	17.27	0-63
Amount smoked			1 ppd**	0.79	0-3
Pack years***			37.40	34.72	0-126

* 2 Liters 24 hours a day

** Packs per day

* ** Number of years smoked x number of packs per day

Only a minority of subjects had attended a pulmonary rehabilitation program in the past (n=8, 24%). Although only 27% reported a history of psychiatric treatment, 42% admitted to taking psychiatric medications at some point in their lives. Additionally, 8 subjects (24%) were taking psychiatric medications at the time of interview, including antidepressant (n=5) and anxiolytic (n=7) medications. However, almost 40% of the sample admitted to experiencing panic attacks in the

month prior to interview (n=13). Among subjects who experienced panic attacks, 31% reported daily occurrences (n=4).

Table 3
Prevalence of Comorbid Physical Conditions
(N=33)

<i>Type of illness</i>	<i>Frequency</i>	<i>Percentage</i>
Arthritis	16	48.5
Hypertension	9	27.3
Heart Disease	8	24.2
Stomach Disease	5	14.7
Cancer	4	11.8
Diabetes	4	11.8
Liver Disease	1	2.9
Kidney Disease	1	2.9
Other*	15	45.5

* Included thyroid disease (n=1, 3%)

Psychological Status

The mean self-reported and collateral HADS Total, Anxiety, and Depression scores can be found in Table 4. The mean self-reported HADS Anxiety and Depression scale scores for the sample were below the proposed clinical cutoff score of 11. However, using a criterion score of ≥ 11 , 25% (n=8) of the sample met criteria for definite clinical cases of anxiety. Another 36% (n=12) had scores between 8-10, indicating probable cases of anxiety. Ten subjects (30%) had anxiety scores within the normal range, however, only one subject denied any anxiety symptoms. The rate

Table 4
Self-Reported and Collateral HADS Scores
(N=33)

<i>HADS</i>	<i>Mean</i>	<i>SD±</i>	<i>Range</i>
Self-Reported:			
Total	16.06	7.08	3-34
Anxiety	9.00	4.06	0-18
Depression	7.06	3.79	1-16
Collateral			
Total	15.70	3.64	4-27
Anxiety	8.35	4.24	0-17
Depression	7.35	3.64	1-14

of definite cases of clinical depression was somewhat lower ($n=5$, 15%), although 36% ($n=12$) of the sample scored in the probable range. Fifteen subjects (45%) scored within the normal range on the depression scale. Thus, a significant minority of subjects were clinically anxious and depressed, with anxiety being slightly more prevalent. A large number of subjects met subthreshold levels for psychological distress.

Collateral HADS anxiety ratings were significantly correlated to patient self-reported anxiety ($r=.551$, $p=.006$), although concordance for depression and HADS Total score was nonsignificant. Overall, support persons rated patients slightly more depressed and less anxious.

Results of the SRRS, which assesses for life stressors over the past 12 months, revealed that of the 32 subjects completing the instrument, the mean number of

stressors in the last year was 5.88 ($SD \pm 3.97$, range 1-15). The mean SRRS total score was 168.19 ($SD \pm 113.54$, range 12-443), indicating that patients had been faced with multiple stressors requiring significant psychological effort to cope during the preceding year. Twelve subjects (36%) had a total SRRS score between 150 and 300, which suggests a 51% risk for physical illness within the next two years. An additional 4 subjects (12%) had total scores over 300, indicating an 80% chance of getting sick over the next 2 years (McFarlane, Norman, Streiner, & Roy, 1983; Sarason, Sarason, Potter, & Antoni, 1985).

Coping Strategies

The mean utilization score for each of the 15 COPE subscales is listed in Table 5. Higher scores indicate more frequent use of the coping strategy. Results indicated that the most frequently used coping strategies for this sample were acceptance, active-coping, planning, religion, and positive reinterpretation and growth. Those strategies used least often were alcohol/ drug use, denial, behavioral disengagement and humor. The thirteen primary subscales can be classified into problem-focused (5), emotion-focused (5), or maladaptive (3) coping. The type of coping to be used most frequently was problem-focused ($\chi = 10.29$), followed by emotion-focused ($\chi = 9.83$), maladaptive ($\chi = 8.02$), and supplemental ($\chi = 6.08$). To gain an understanding of the total number of coping strategies used, and the total

Table 5

Frequency of Individual Coping Strategies Used (N=32)

<i>COPE Subscale</i>	<i>Mean</i>	<i>SD</i>	<i>Range*</i>	<i>Type**</i>
Acceptance	12.75	2.30	7-16	E
Active Coping	11.78	2.69	5-16	P
Planning	11.25	3.16	4-16	P
Religion	10.38	4.31	4-16	E
Positive Reinterp. & Growth	10.31	2.97	4-16	E
Suppression Competing Activities	10.16	3.33	4-16	P
SS-Instrumental	9.44	3.47	4-15	P
SS-Emotional	9.41	2.86	5-15	E
Restraint Coping	8.81	2.60	4-14	P
Venting Emotions	8.59	3.03	4-16	M
Mental Disengagement	8.41	2.26	4-15	M
Humor	7.09	3.77	4-16	S
Behavioral Disengagement	7.06	2.56	4-13	M
Denial	6.29	2.85	4-14	E
Alcohol/ Drug Use	5.06	2.84	4-16	S

* Range of possible scores for each subscale = 4-16

** P= Problem-Focused, E= Emotion-Focused, M= Maladaptive, S=Supplemental

number by category (i.e. problem-focused, emotion-focused, vs. maladaptive), an inclusionary subscale score of ≥ 8 (i.e. used at least "a little of the time") was used. Results indicated that the sample used a total of 10 coping strategies, on average, in their efforts to adjust to their pulmonary illness ($\chi = 9.69$, $SD \pm 2.7$, range 1-14). By category, the mean number of strategies used was as follows: problem-focused ($\chi = 4.0$, $SD \pm 1.3$, range 0-5), emotion-focused ($\chi = 3.5$, $SD \pm 1.07$, range 1-5), and

maladaptive ($\chi=1.7$, $SD=1.1$, range 0-3). Accordingly, subjects tended to use more problem-focused strategies than emotion-focused strategies. Nevertheless, patients also used, on average, 2 out of 3 possible maladaptive strategies suggestive of ineffective coping efforts.

More specifically, 42% ($n=14$) of the subjects who completed the COPE used all 5 problem-focused strategies at least “a little of the time.” However, 6% of subjects ($n=2$) denied using any of the problem-focused coping strategies. In contrast all subjects reported using at least one emotion-focused coping strategy, and the majority (61%, $n=20$) used 3-4 emotion-focused strategies. Of concern, is the fact that only 19% of the sample ($n=6$) reported never using any of the maladaptive coping strategies, whereas 50% ($n=16$) used 1-2 maladaptive strategies and 31% ($n=10$) all three. Additionally, four subjects (12%) admitted to using alcohol and drugs as a way of coping with their illness. And one-third of subjects employed humor as a coping technique ($n=11$, 33%).

Social Support

Subjects perceived themselves as having good social support, with a total SPS mean score of 78.38 ($SD\pm 9.31$, range 53-95). The possible range for the SPS total score is 24-96 and 4-16 for the six individual subscales. Higher scores indicate greater perceived social support. Table 6 contains mean scores for the SPS and the QRI subscales. While both instrumental (i.e. reliable alliance, guidance) and

emotional support (i.e. attachment, reassurance of worth, social integration, nurturance) were found to be prevalent, subjects perceived their social support to be slightly more of the instrumental type. In others words, on average, subjects felt that they had people in their lives that they could count on for tangible assistance or advice when faced with life stressors. They also seemed to feel valued, emotionally connected with others, socially interactive, and responsible for others well being.

The overall quality of subjects' relationships with their identified primary support person was quite good. The sample mean scores for QRI Support was 3.35 ($SD \pm 0.533$, range 2-4), QRI Depth 3.52 ($SD \pm 0.48$, range 2- 4), and QRI Conflict 2.01 ($SD \pm 0.67$, 1-4) based on responses from 31 subjects. The possible range for

Table 6

SPS and QRI Mean Social Support Subscale Values

<i>Type of Social Support</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
SPS (n=32)			
Reliable Alliance	13.94	2.12	7-16
Guidance	13.41	2.20	8-16
Attachment	13.25	1.88	9-16
Reassurance Worth	12.75	1.98	9-16
Social Integration	12.59	2.06	7-16
Nurturance	12.50	1.81	9-16
QRI (n=31)			
Support	3.35	.533	2-4
Depth	3.52	.477	2-4
Conflict	2.01	.670	1-4

each subscale is 1-4. This suggests that subjects perceived their primary support person to be quite a bit helpful in providing assistance in a variety of situations. They also valued the relationship to be very important. However, these relationships were not free of conflict, as the majority ($n=17$, 57%) of subjects perceived there to be “a little” conflict in their relationship with the support person. In fact, 5 subjects (15%) felt there was “quite a bit” of conflict in the relationship and 2 subjects (6%) reported there was “very much” conflict with their support person. Unfortunately, these results do not shed light onto the temporal relationship of the interpersonal conflict to the onset of COPD. There was a significant correlation between the total number of life stressors in the past 12 months and total stress score from the SRRS and use of instrumental social support as a coping mechanism ($r=.515$, $p=.003$, $r=.505$, $p=.003$, respectively). This may suggest a tendency for COPD patients to rely on family and friends when faced with disease-related stress and general life stress, thereby overtaxing support persons and creating tension or conflict in the relationship.

Disease-Related Quality of Life

Results from the CRQ are based on responses from 32 subjects, since one subject passed away prior to completing this measure. The sample mean scores for the CRQ subscales are listed in Table 7. These scores suggest that on average, the sample believed that they can control their disease a “good bit of the time,” but feel anxious, depressed, embarrassed, and displeased with their life “some of the time.” Subjects also perceived themselves to be short of breath and fatigued “quite a bit,”

although breathing was slightly more impaired than energy level. There was also much less variability with dyspnea scores compared to the other three subscales.

Table 7
CRQ Mean Subscale Scores (N=32)

<i>CRQ Subscale</i>	<i>Mean</i>	<i>SD\pm</i>	<i>Range</i>	<i>Possible Range</i>
Mastery	14.94	3.62	9-23	5-35
Emotional Function	13.16	5.40	5-23	4-28
Fatigue	28.72	9.33	12-43	7-49
Dyspnea	17.78	5.85	5-28	4-28

General Health Status

To assess general perceived health status, the SF-36 raw scores were transformed into 0-100 scale scores, which allows scores to be interpreted as the percentage of the total possible score achieved. Transforming the scores in this manner is clinically useful because it allows for comparisons across scales and with published norms from other populations. Higher scores on the SF-36 indicate more positive health status. Results of the sample means for each subscale are located in Table 8 and compared with norms from a general population sample, as well as a medical population of COPD patients with comorbid hypertension (Ware et al., 1993). On average, subjects in the present sample reported that they were quite limited in performing basic physical activities, and their physical health significantly

interfered with work or other daily activities. Social functioning was also viewed to be significantly impaired. While subjects also perceived their work and daily activities to be impaired by emotional problems, they rated their overall mental health to be less troublesome. In addition to feeling tired and worn out, they viewed their general health as poor, and expected it to get worse. Subjects had the least amount of impairment with respect to physical pain.

In comparison to the general population, which included non-institutionalized adults aged 18-94, the study sample showed significantly more impairment in health status and functioning across all subscales. This finding is not surprising given that the general population sample included young, healthy adults, whereas the present

Table 8

Comparison of SF-36 Sample Mean Scores (N=33) to a Hypertensive COPD Sample* (N=85) and General Population Sample* (N=2,474)

<i>SF-36 Subscale</i>	<i>Mod-Severe COPD</i>	<i>HTN COPD</i>	<i>General Population</i>
	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>
Physical Functioning	25.15	56.91	84.15
Social Functioning	46.18	71.82	83.28
Role- Physical	23.43	34.38	80.96
Role- Emotional	39.58	59.73	81.26
Pain	62.50	54.82	75.15
General Health	33.55	45.29	71.95
Energy	36.21	44.95	60.86
Mental Health	60.00	68.06	74.74

* (Ware, 1993)

sample included older adults with a chronic medical problem. Therefore, one sample t-tests were calculated comparing the means for the current sample against the norms from the hypertensive COPD population. Results indicated that the present sample had significantly more impairment in physical ($t=-9.043$, $p = .000$) and social ($t=-5.44$, $p= .000$) functioning, and perceived their general health to be worse ($t=-3.69$, $p=.001$). While not significantly different, there was a trend for the current sample to report less pain than the hypertensive COPD group.

Exercise Tolerance

Results for the 6-Minute Walk are based on 28 subjects, due to the fact that walks could not be performed with 5 subjects (15% of sample). Reasons for missing scores for these subjects were as follows: refusal to complete the test ($n=2$), physically too weak to walk ($n=1$), death ($n=1$), and pulse oximeter unavailable ($n=1$). Mean score for the 6-Minute Walk was 885.27 feet. ($SD \pm 403.49$ ft., range 210-1600 ft.). There was a large amount of variability in distance walked across subjects, yet the difference between those with moderate versus severe disease was nonsignificant ($t=1.02$, $df= 26$, $p=.319$). In summary, 8 subjects walked less than 500 feet, 10 subjects walked 500-1000 feet, and another 10 subjects were able to walk over 1000 feet. Twenty-five subjects who completed 6-Minute Walks completed a dyspnea VAS before and after walking. The baseline mean VAS dyspnea score was 53.12 mm. ($SD \pm 18.47$ mm., range 25-81 mm.). The VAS is scored on a 0-100 mm. scale, with higher score indicating more intense shortness of breath. Following the 6-

Minute Walk, the mean VAS dyspnea score was 57.88 mm. ($SD \pm 22.36$ mm., range 20-88 mm.). Thus, subjects did not rate their dyspnea to be significantly worse following the six minutes of exercise ($t=.917$, $df=24$, $p=.368$).

Health Care Utilization

Review of medical records showed that the majority of subjects had not been to the emergency room in the year preceding participation in the study ($n=24$, 73%). However, 9 subjects (27%) had been admitted to the emergency room within the past year. Among those with at least one visit to the emergency room, the mean number of visits was 3, with a range of 1-8. Seventy percent of the sample had not been admitted to the hospital within the preceding year ($n=23$). Yet, 10 subjects were hospitalized with the mean number of stays being 1.5, with a range of 1-4. Of those with at least one hospitalization, the mean length of stay was 4 days, with a range of 1.5-9 days. There was a positive correlation between the number of emergency room visits and inpatient hospitalizations ($r=.631$, $p=.000$) and length of stay ($r=.460$, $p=.007$).

Relationships Between Variables

To examine whether utilization of a greater number of coping strategies was significantly related to improved psychological and functional status, and lower rates of health care utilization, Pearson r correlations were examined for related variables. Total number of coping strategies and HADS Anxiety ($r=.600$, $p=.000$) and

Depression ($r = .566$, $p = .001$) were significantly correlated. However, the nature of the correlation suggests that the greater the number of coping strategies used by subjects, the worse their psychological functioning. This was also the trend for the CRQ Emotional ($r = -.623$, $p = .000$) and SF-36 Mental Health ($r = -.546$, $p = .001$) subscales. While total number of coping strategies was unrelated to 6-Minute Walk performance, it was significantly negatively correlated with the CRQ Fatigue subscale ($r = -.582$, $p = .001$) and six of the SF-36 subscales: physical functioning ($r = -.634$, $p = .000$), social functioning ($r = -.600$, $p = .000$), role-physical ($r = -.699$, $p = .000$), role-emotional ($r = -.643$, $p = .002$), pain ($r = -.593$, $p = .000$), and energy ($r = -.589$, $p = .000$). As with psychological status, functional status appeared to be more impaired as the number of coping strategies employed increased. Number of coping strategies was unrelated to all measures of health care utilization ($r = .056$, $p = .760$; $r = .276$, $p = .127$; $r = .341$, $p = .056$).

Further examination of type of coping employed by subjects revealed that the number of maladaptive coping strategies used was significantly correlated with increased rates of anxiety ($r = .605$, $p = .000$) and depression on the HADS ($r = .760$, $p = .000$). The relationship appeared to be stronger for depression than anxiety. Maladaptive strategies included mental and behavioral disengagement, and focus on and venting of emotions. Mental disengagement is defined as psychological disengagement from the goal with which a stressor is interfering, through daydreaming, sleep, or self-distraction. Behavioral disengagement would include giving up, or withdrawing efforts, to attain the goal with which a stressor is

interfering. Focus on and venting of emotions is characterized by an increased awareness of one's emotional distress and concomitant tendency to ventilate those feelings (Carver, Scheier, & Weintraub, 1989). The number of problem and emotion-focused strategies were nonsignificantly related with respect to psychological status. Use of humor as a coping technique was also significantly correlated with depression on the HADS ($r = .479$, $p = .006$).

Number of maladaptive coping strategies and use of humor were also significantly correlated with impaired functional status, as shown in Table 9. The number of emotion-focused strategies used was unrelated to functional status, although the greater use of problem-focused strategies was significantly correlated

Table 9
Relationship Between Type of Coping and Functional Status

<i>Functional Status Measure</i>	<i># of Maladaptive Strategies</i>		<i>Humor</i>	
	<i>r</i>		<i>r</i>	
SF-36				
Energy	-.705*			
General Health Perception	-.643*			
Role-Emotional	-.643*			
Physical Functioning	-.510*			
Social Functioning	-.508*			
Pain	-.494*		-.483*	
CRQ				
Fatigue	-.790*			
Mastery	-.650*			

*Significant at $p \leq .01$

with impairment in physical functioning ($r = -.479$, $p = .006$) and role-physical ($r = -.572$, $p = .001$) subscales of the SF-36. Inspection of the data showed that there were no outliers to explain these unexpected findings. There was no association between type of coping and performance on the 6-Minute Walk. However, the number of emotion-focused coping strategies used was significantly correlated with length of hospitalization ($r = .491$, $p = .004$). Individual coping techniques found to be significantly associated ($p < .01$) with psychological and functional status are shown in Table 10.

The relationship between degree of social support, measured by both the SPS Total score and QRI Support subscale, and psychological status (HADS Anxiety and Depression) was found to be nonsignificant ($r = .124$, $p = .499$; $r = .167$, $p = .360$; $r = -.156$, $p = .401$; $r = -.227$, $p = .220$, respectively). Social support was also unrelated to all measures of functional status, except energy, which was significantly associated with QRI Support ($r = .471$, $p = .008$). Results also failed to show a significant relationship between perceived social support and use of health care services.

With respect to the quality of social support, the QRI Depth and Conflict subscales were not significantly related to HADS Anxiety and Depression. Perceived negative social support, as measured by the QRI Conflict subscale, was found to correlate significantly with physical functioning ($r = -.502$, $p = .004$) and role-physical ($r = -.488$, $p = .006$) subscales on the SF-36. Since higher scores on the SF-36 represent better functioning, these negative correlations suggest that increased conflict with the primary support person is associated with greater functional impairment. QRI

Conflict was also significantly negatively correlated with CRQ Mastery ($p = -.538$, $p = .002$), indicating that increased interpersonal conflict is associated with lower

Table 10

Individual Coping Strategies Significantly* Related to
Psychological and Functional Status

	<i>Problem-Focused</i>	<i>Emotion-Focused</i>	<i>Maladaptive</i>
Psychological Status:			
HADS-A	Planning (.472)	Denial (.474) Emot-SS (.451)	Venting (.587) Venting (.513)
HADS-D			
SF-36 MH			
Functional Status:			
Soc Fx	Restraint (-.513)	Denial (-.482)	
Pain			
Energy			
Phys Fx			
GenHlth			
			Mental-Dis (-.528)
			Behav.-Dis (-.512)
			Venting (-.621)

* Significant at $p \leq .01$

disease management self-efficacy. The quality of social support was unrelated to distance walked during the 6-Minute Walk Test. Of interest, however, was the finding that negative social support (QRI Conflict) was significantly related to the number of hospitalizations ($r=.479$, $p=.006$). The nature of this relationship was such that as the degree of conflict increased so did the number of inpatient visits. There was also a trend ($p = .05$) for QRI Conflict to be positively correlated with the number of emergency room visits in the past year.

Concordance Between Self-Report and Collateral Data

The degree to which patient self-report and collateral sources of data agreed was examined by correlating responses between patients and support persons on measures of mood (HADS), coping (COPE), and social support (QRI). Results are listed in Table 11. There was a high concordance rate for HADS Anxiety ($r= .551$, $p= .006$), COPE-denial ($r= .584$, $p= .004$), COPE-religion ($r= .671$, $p= .001$), and QRI-Conflict ($r=.606$, $p= .003$). The strongest agreement was on how often patients use religion as a means of coping with their illness. There was also high concordance on the degree of conflict in the relationship, suggesting awareness by both parties of the negative aspects of the relationship. Support persons were also in agreement with patients regarding how often patients use denial to cope with their medical illness and the degree of anxiety that patients were recently experiencing.

The lack of concordance across the majority of coping strategies suggests that

Table 11

Concordance Between Patient-Self Report and Collateral
Report on Mood, Coping, and Social Support (N=23)

<i>Measure</i>	<i>Pearson (r)</i>
HADS	
Anxiety	.551*
Depression	.256
Total	.412
COPE	
Problem-Focused:	
Active Coping	.315
Planning	.229
Seeking Instrumental Social Support	.458
Suppression of Competing Activities	.181
Restraint Coping	-.073
Emotion-Focused:	
Positive Reinterpretation & Growth	.247
Acceptance	.276
Denial	.584*
Seeking Emotional Social Support	.369
Religion	.671*
Maladaptive:	
Mental Disengagement	.044
Behavioral Disengagement	.273
Focus on & Venting of Emotions	.298
Supplemental:	
Humor	.299
Alcohol/ Drug Use	.180
QRI	
Support	.457
Depth	.266
Conflict	.605*

*Significant at the $p < .01$ level

patients and support persons have differing views on how patients are managing their illness. In the four cases where a support person rated the patient as clinically

depressed (HADS-D score > 11), there was only 25% agreement with how the patient rated himself/ herself. Thus, it appeared that support persons viewed patients to be more depressed than patients acknowledged.

Predictors of Psychological and Functional Status, and Health Care Utilization

To assess which variables best predicted psychological and functional status and health care utilization, only variables that significantly correlated with each dependent measure were considered for the regression models. Entering the total number of coping strategies used and SF-36 Physical Functioning score as independent variables produced a significant model that explained 42% of the variance in HADS-Total score ($R^2 = .416$, $F(31) = 10.34$, $p = .000$). Further stepwise multiple regression showed that only the total number of coping strategies used was a significant predictor of psychological status, accounting for 41% of the variance ($R^2 = .408$, $F(31) = 20.65$, $Beta = .638$, $p = .000$). However, an alternative unproposed model that included fatigue, pain, and number of maladaptive coping strategies was found to better predict psychological status ($R^2 = .682$, $F(30) = 19.339$, $p = .000$). Stepwise multiple regression analysis showed that the number of maladaptive coping strategies and pain significantly accounted for 67% of the variance ($R^2 = .670$, $F(30) = 28.42$, $Beta = .520$, $-.426$, $p = .000$), with individual significant contributions of 53% and 14%, respectively.

The Physical Functioning subscale of the SF-36 was used as the measure of functional status in the multiple regression analyses since it was found to be more

strongly related to the other dependent variables than the 6-Minute Walk Test. Using the SF-36 Physical Functioning score as the dependent variable and mental disengagement (specific coping strategy), QRI-Conflict, and HADS-Depression as the independent variables produced a significant prediction model. These independent variables significantly accounted for 59% of the variance in functional status ($R^2 = .590$, $F(29) = 12.47$, $p = .000$). Further stepwise multiple regression analysis showed that mental disengagement significantly predicted 32% of the variance, while QRI-conflict significantly contributed to another 20% of the variance in functional status ($R^2 = .520$, $F(29) = 14.65$, $Beta = -.490, -.451$, $p = .000$).

The only variable to significantly predict the number of respiratory-related hospital visits for this sample was QRI-Conflict ($R^2 = .229$, $F(30) = 8.63$, $Beta = .479$, $p = .006$). In other words, negative social support accounted for 23% of the variance in number of respiratory-related hospitalizations. The nature of the relationship was such that as patients reported greater conflict with their primary support person, the number of hospitalizations rose. Furthermore, the number of emotion-focused coping strategies employed ($R^2 = .241$, $F(31) = 9.506$, $Beta = .491$, $p = .004$) significantly predicted 24% of the variance in the length of inpatient hospitalization. Thus, patients who used more emotion-focused strategies were more likely to stay in the hospital longer.

Collateral Data as Predictors of Psychological and Functional Status, and Health Care Utilization

The only collateral variable that was significantly correlated with patient-reported psychological status, functional status or health care utilization was QRI-Support. The degree of social support, as assessed by the support persons, was significantly correlated ($r = -.540$, $p = .008$) with the number of respiratory-related inpatient hospitalizations for subjects. In other words, the more social support subjects had, as reported by primary support persons, the less often subjects went into the hospital for respiratory-related reasons. When collateral reported QRI-Support was entered as an independent variable in a regression model, with number of inpatient visits as the dependent variable, it was found to significantly predict 29% of the variance in this health care utilization measure ($R^2 = .291$, $F(22)$, $Beta = -.540$, $p = .008$).

DISCUSSION

The rate of psychological comorbidity in this sample suggests that a significant proportion of subjects were clinically anxious (25%). As other studies have found (Karajgi, et al., 1990; Yellowlees, et al., 1987), this rate of anxiety is higher than seen in the general population (15%). Anxiety was also more prevalent in this sample than depression (15%), which has also been the trend in previous research (Agle & Baum, 1977; Karajgi, et al., 1990; Yellowlees, et al., 1987). Given that 40% of subjects reported having a panic attack in the past month despite 24% of the sample being on psychiatric medication, suggests that this sample of patients is not well controlled by medication alone. It may be the case that the doses of these medications are not at a therapeutic level or that patients are noncompliant with their use. Interestingly, a greater number of subjects reported taking a psychiatric medication than receiving formal psychiatric treatment. This may mean that patients had received antidepressant or anxiolytic medication from a primary care physician or family doctor, without adjunct psychotherapy. Perhaps this population would benefit from adjunctive cognitive-behavioral therapy which has been shown to be quite effective in managing anxiety disorders, including panic disorder.

Subjects also perceived their illness as a significant contributor to functional difficulties. Results indicated that subjects' ability to perform basic daily activities such as lifting objects, climbing stairs, walking, and pushing a vacuum was

significantly impaired. Both physical health and emotional problems were found to significantly interfere in subjects' ability to work or complete other regular daily activities. Social functioning was also found to be impaired for this group, secondary to health or emotional problems. Further, patients described themselves as quite fatigued and worn out. They perceived their health to be poor and expected it to get worse.

The impairment in functional status for this sample was worse than expected based on population norms from a group of hypertensive COPD patients. While subjects scored just below the 75th percentile for pain, scores for mental health, energy and role-physical and role-emotional were well below the 50th percentile (Ware, 1993). Additionally, physical functioning, social functioning, and general health perceptions were below the 25th percentile. Yet, the severity of COPD for this comparison population is unknown. Thus, it is possible that the present sample of moderate to severe COPD patients has more functional impairment due to more advanced disease. Without knowing the level of disease severity for the comparison group, interpretation of these findings is limited. Of interest, was the finding that subjects did not perceive themselves to be significantly more short of breath after completing the 6-Minute Walk test. Thus, despite subjects' perception of functional impairment VAS dyspnea scores following an objective measure of exercise tolerance failed to support this.

Review of subjects' medical records revealed that despite moderate to severe disease, the majority of subjects had avoided going to the emergency room or into the

hospital in the year preceding participation in the study. Given that subjects viewed their functional status to be so poor, it was expected that use of health care services would be much higher. The low rate of health care utilization suggests that patients are well managed medically by medications and outpatient clinic visits. Further, the significant positive correlation between the number of emergency room visits and number of hospitalizations and length of stays indicates that perhaps those patients seeking emergency services are truly in need of medical care and are using services appropriately.

The most frequently used coping strategy for this sample was acceptance, an emotion-focused strategy. It appears that subjects have accepted the reality that they have COPD. The authors of the COPE (Carver, Scheier, & Weintraub, 1989) suggest that this coping tendency may be maladaptive. However, among this sample acceptance correlated significantly with four of the five problem-focused strategies suggesting that for this group it represents an adaptive coping function. Because COPD is a slowly progressing illness, with gradual onset of symptoms, patients with moderate to severe illness are likely to have knowledge of their diagnosis for some time. The progressive nature of the illness may allow patients time to come to terms with their illness, explaining the high rate of acceptance found in this sample. Although others have described COPD patients' coping style to be characterized by isolation, denial, and suppression of emotions (Dudley, et al., 1969; Sandhu, 1986), this study actually found a low incidence of denial and behavioral disengagement, and modest use of emotional venting and social support.

Subjects tended to use multiple coping strategies in efforts to deal with their COPD. This finding is contrary to an earlier study that found a low frequency of coping strategies among a group of severe COPD patients (Herbert & Gregors, 1997). On average, subjects in the current study used a greater number of problem-focused strategies and used them more frequently than emotion-focused or maladaptive strategies. This finding is consistent with previous research (Herbert & Gregors, 1997; Smith, 1984 cited in Shekelton, 1987). Subjects did use a fair number of emotion-focused strategies, which would dispute the "emotional straightjacket" theory (Burns & Howell, 1969) for this sample. While it has been proposed that COPD patients learn to avoid emotional arousal and expression to protect their already compromised respiratory system, this group did not demonstrate this. This may mean that this group has not learned to make the connection between affective responses and dyspnea, and thus, are vulnerable to the effects of emotional arousal. Alternatively, subjects may have found a way to manage emotional expression so that it does not negatively affect their breathing.

The fact that these patients use problem-focused strategies, however, does not preclude them from also using maladaptive strategies. Approximately one-third of the sample used all three maladaptive strategies at least some of the time in dealing with their illness, while half of the sample used at least one maladaptive coping strategy. Even though this group is using healthy coping efforts, they simultaneously are using unhealthy techniques which may be undermining the beneficial effects of adaptive strategies. This would suggest that psychological intervention with COPD

patients should not only include instruction of effective coping techniques, but also assessment of maladaptive strategies which may be interfering with psychological adjustment and functioning.

It was found that using a greater number of coping strategies, however, did not lead to improved psychological and functional status or health care utilization. In fact, the more coping strategies patients used, the worse their mental health, fatigue, physical functioning, social functioning, and role performance was. Thus, the first hypothesis proposed in this study was not found to be true. Perhaps the reason a greater number of coping strategies was linked with poorer psychological and functional status is because maladaptive strategies are included in the overall number of strategies used. Thus, looking at the total number of strategies subjects use does not partial out the effects of different types of coping strategies.

When comparing the different types of coping strategies, it was found that only greater use of maladaptive coping strategies correlated with increased rates of anxiety and depression. Interestingly, humor was also linked with depression, suggesting that making jokes about one's illness may be detrimental to psychological adjustment. Number of maladaptive coping strategies was also associated with greater impairment in energy, physical and social functioning, and pain. Subjects using a greater number of maladaptive strategies were also more likely to perceive their general health as worse, have a harder time performing expected roles due to emotional problems, and lack a sense of control over managing their illness. Use of humor was also associated with greater physical pain. Perhaps, patients in more

severe pain rely on humor as a way of distracting themselves from the discomfort. Contrary to hypothesis two, use of a greater number of problem-focused coping strategies was correlated with greater impairment in physical functioning and ability to perform expected roles due to physical limitations. Because the results can not provide clarity on the temporal relationship between problem-focused coping and functional status, it can not be concluded that use of problem-focused coping efforts causes worse functioning. It may be the case that patients with greater physical limitations are more likely to use problem-focused approaches in dealing with their situation. Alternatively, given that patients with moderate to severe COPD are often easily fatigued and winded with activity, active coping which requires energy and physical effort may be taxing for patients and result in the perception of impaired physical functioning.

In support of hypothesis number two, greater use of emotion-focused coping was found to be associated with longer hospitalization. While causality can not be determined from the results, it may be the case that patients who rely on emotional strategies (i.e. prayer, seeking emotional support from family or friends, denying need to be in the hospital) instead of taking more direct action by engaging in activities which may speed recovery (i.e. regular use of peak flow meter, attempting to walk further each day, participating in physical rehabilitation, eating well to regain strength, and taking medications as prescribed) end up in the hospital longer. In short, problem-focused coping did not provide any beneficial effect on psychological and functional status, or health care utilization, disproving the second study hypothesis.

However, the second hypothesis was partially supported by the finding that maladaptive coping strategies do significantly correlate with impairments in psychological and functional status. Further, as proposed, emotion-focused coping was significantly correlated with longer hospital stays.

Results further revealed that subjects had good social support. Subjects tended to perceive slightly more instrumental support, although emotional support was also prevalent. The overall quality of social support was also quite good. It has been shown that social support can have a beneficial effect on psychological and functional status and quality of life in COPD populations (Anderson, 1995; Graydon & Ross, 1995; Keel-Card et al., 1993; Lee et al., 1991). However, results from this study failed to demonstrate a significant relationship between greater social support and improved psychological status, health care utilization, or quality of life. Greater social support was found to be significantly associated with increased energy, suggesting a small positive effect on functional status. It may be the case that COPD patients with less fatigue are more apt to interact socially with others, leading to increased social support. Results also failed to show that greater perceived instrumental support, versus emotional support, was superior for improved psychological adjustment, functional status, or health care utilization. Overall, the third proposed hypothesis was unsupported by the data, except for a modest relationship between social support and energy level.

Nevertheless, results did reveal that the quality of social support was significantly related to functional status, quality of life, and health care utilization. As

expected, greater perceived negative social support was significantly related to worse physical functioning and role performance due to physical limitations. It has been postulated that social support may be beneficial to COPD patients by facilitating emotional adjustment and increasing compliance with medical regimens (Graydon & Ross, 1995). Yet for this group of COPD patients, quality of social support was unrelated to psychological adjustment. However, it is possible that patients who experience greater conflict with support persons are less likely to be supported and encouraged to follow medical recommendations, and consequently are less compliant with the medical regimen leading to poorer control of disease-related symptoms. This may, in part, account for the greater impairment in functional status seen in patients with highly conflictual support. The fact that greater negative social support was also significantly associated with patients feeling less able to manage their illness (as measured by the CRQ Mastery subscale), lends evidence to this possible explanation. Furthermore, greater perceived conflict with support persons was significantly associated with more frequent hospitalization. In short, the above results lend support for hypothesis number four.

Results further demonstrated that collateral data from family and friends may be clinically useful. For example, it was found that support persons are able to provide a reliable assessment of how anxious patients are feeling. For patients who have difficulty verbalizing their feelings or have a tendency to minimize psychological distress, collateral information from a family member or friend may provide valuable insight that would otherwise be overlooked. While concordance for

depression was low, it appeared that family and friends were more likely to rate the patient as clinically depressed than the patient himself/ herself. This may suggest that patients are less apt to admit to depression or fail to recognize subtle changes in their mood. It is possible that family members and friends misinterpret disease symptoms as depressive symptoms and are overestimating the true rate of depression. However, given the high prevalence of psychological comorbidity in this population, it may be clinically beneficial to obtain collateral information and err on the side of ruling out family suspected depression rather than solely relying on the patient's self-report and delaying appropriate diagnosis and treatment.

Overall, the concordance between patient and support person ratings of how patients were coping with their illness was low. Family members and friends did agree with how often patients used denial and religion as strategies for adjusting to their illness. Since denial was found to be significantly correlated with greater depression, pain, and fatigue it may be especially helpful to gain collateral information on the use of this emotion-focused coping technique when working with COPD patients. Support persons and patients were also in significant agreement with respect to the degree of conflict in the relationship. This may be important when working with COPD patients, since research has shown that spouses of COPD patients also suffer from depression, loneliness, and decreased life satisfaction (Appleton, 1982; Keel-Card, et al., 1993; Sandhu, 1986; Sexton & Munro, 1985; Williams, 1989). Given that patients increasingly rely on spouses and primary support persons as their disease progresses, the preservation of this relationship is

critical for patients' adjustment. Marital or family therapy may be beneficial for patients to address and work through the familial consequences of COPD.

This study further indicates that the best predictors of poor psychological adjustment among this sample of COPD patients were maladaptive coping and pain. Greater use of maladaptive coping strategies and more severe pain predicted anxiety and depression in this sample. While COPD does not typically cause physical pain, this sample did have a high rate of comorbid arthritis, which may account for this finding. Because uncontrolled pain may lead to psychological stress, which in turn could complicate the treatment of COPD, appropriate assessment and management of pain should be a treatment goal with this population. Having patients rate the frequency and intensity of their pain on a 0-10 scale is one way to track pain severity and assess the need for improved management through medical means. If chronic pain is suspected, referral to a pain clinic may also serve to minimize the deleterious effects of comorbid pain on COPD adjustment. Psychological intervention with these patients should also aim to help patients utilize more adaptive coping strategies and avoid use of maladaptive strategies. More effective coping may have a positive reciprocal effect on comorbid pain.

In particular, mental disengagement was found to be a significant predictor of poor physical functioning. The tendency to distract oneself from thinking about the stress of living with COPD by daydreaming, sleeping or other self-distraction techniques should be modified if the goal of treatment is to increase patients' activity level. At the same time, quality of social support appears to significantly predict

functional status as well. Marital or family therapy may, therefore, be warranted to address any premorbid relational conflict and to assist patients and spouses, or families, in adjusting to the numerous psychosocial stressors that can accompany a progressively debilitating illness like COPD. Attempts to improve the quality of social support for COPD patients are also important because negative social support was also found to significantly predict the rate of respiratory-related hospitalization. If primary support persons play a vital role in encouraging or overseeing adherence to medical regimens, it may be the case that when patients and support persons are at odds with one another, patients are less compliant with medications and have poorer control over disease symptoms. If there is conflict in the relationship, patients may also be forced to take care of personal or household needs themselves. This increased activity coupled with emotional upset and poor management of disease symptoms, may lead to COPD exacerbations and increased need for medical services.

Once patients are hospitalized, data from this study suggests that greater use of emotion-focused coping strategies contributes, in part, to the length of hospitalization. Thus, teaching patients to use more active, problem-focused coping strategies may actually facilitate a quicker recovery and return home.

Limitations

Generalizability of the findings from this study is limited by the small sample size. One of the challenges in working with COPD patients with moderate to severe disease is that the majority of qualifying patients are elderly and often physically

limited by dyspnea, deconditioning, and/or use of supplemental oxygen. Thus, recruitment of subjects was, in part, limited by subjects' refusal to participate due to transportation difficulties and hesitancy to travel to the study site. For elderly dyspneic COPD patients, getting showered, dressed, and traveling to the hospital was often times aversive. Many subjects required numerous rescheduling before actually completing participation in the study. This raises the issue of a possible sample bias, in that extremely anxious patients may have been likely to decline participation. The same could have held true for severely depressed patients who may have lacked the motivation to participate. Given that there were no significant differences between participants and nonparticipants on demographic variables and that a typical rate of psychological comorbidity was found in the sample suggests that these sample biases are unlikely. Further, given that this study was a part of a larger anxiety treatment study, anxious patients may have been more likely to participate in hopes of receiving help in managing their anxiety. Given that the study sample consisted of moderate to severe COPD patients, generalizability of results is also limited to patients with similar disease severity. The findings of this study, unfortunately may not apply to patients with mild COPD.

Interpretation of findings regarding health care utilization is also limited by the fact that use of objective data from patients medical records included only services rendered through the Henry Ford Health System during the previous 12 months. If patients were seen at another hospital, this information would not have been captured in the MIMS system. Therefore, reliance on medical records versus patient self-report

may have lead to an underestimation of actual use of health care services. It is also difficult to discern whether the use of health care services was medically justified or not. Within a managed care health system, however, the goal is to minimize unnecessary hospitalization. Thus, it is likely that only patients with a legitimate medical need were hospitalized. The same does not necessarily hold true for use of emergency room services, where an anxiety-induced COPD exacerbation may not be recognized until after services are rendered. It is often the case that psychosocial antecedents for respiratory crises are not well documented in the medical record.

Future Recommendations

While the present study suggests that the type of coping strategies patients use and the quality of their social support can impact psychological adjustment, functional status, and health care utilization, the study should be replicated with a larger sample size to ensure the generalizability of findings. It is also recommended that future research include a measure of the perceived usefulness of assessed coping strategies. The coping questionnaire used in this study, the COPE, did not provide such information, which may have helped to explain the use of multiple coping strategies or high incidence of maladaptive coping strategies. Future research could also be improved by including a self-report measure of health care services that includes emergency room visits and hospitalizations outside patients' regular health care system. Lastly, the present study should serve as an impetus for treatment studies looking at the clinical utility of psychosocial interventions aimed at helping COPD

patients replace maladaptive strategies, such as mental disengagement, with more adaptive coping strategies.

Conclusion

While there is great variability with how patients with moderate to severe COPD adjust to living with their chronic illness, a significant minority are likely to experience mood disturbances and limitations in functional capacity. The present study has shown that patients who use a large number of coping strategies do not necessarily fare better. In fact, they may have poorer adjustment if relying on mental or behavioral disengagement from their illness, or focus on venting emotions. Use of a limited number of problem-focused strategies, coping in which the patient takes direct action in reducing disease-related stress, may help COPD patients adjust to their illness, remain active, and minimize hospitalization. Adequate pain management from COPD and other comorbid medical conditions may also be a critical link in facilitating adjustment among this population. It also appears important that COPD patients have healthy relationships with their primary support system since conflict with primary support persons may inhibit functioning and lead to greater use of health care services. In summary, patients' coping skills and quality of social support are important variables in adjustment to COPD. Psychological interventions which aim to improve the quality of COPD patients' coping skills and social support may be a critical step to enhancing overall well being.

Appendix A

Demographic and Illness-Related Questionnaire

DEMOGRAPHICS/DISEASE STATUS INTERVIEW

ID# _____

Date _____

Interviewer _____

Name _____

Address _____
(street)

Telephone# _____

(city, ZIP)

1. MD _____ How long? _____
2. Diagnosis _____ Date diagnosed _____
3. FEV₁ (% predicted) _____
4. Sex: Male Female
5. Ethnic Background: Caucasian African-American Hispanic
Other _____
6. Birthdate _____ Age _____
7. Marital Status: Married Separated Divorced Widowed
Single Live-in Partner
8. Who lives in your house with you? _____
9. Currently smoking? Yes No When did you quit? _____
10. How many years smoked? _____ How much? _____
11. Do you currently have any health problems other than your
COPD (high blood pressure, heart disease, diabetes, cancer,
arthritis kidney disease, liver disease, stomach disease, blood
disease)?

If yes, did you see a doctor more than 3 times last year for any of these conditions? _____

12. Are you still working? _____ Fulltime Parttime

Stop working because of COPD? _____

When did you stop working? _____

Are you on a leave of absence from work, or are you on permanent disability. _____

13. Are you receiving disability insurance? _____

Are you receiving Social Security Disability or SSI? _____

14. Do you have a financial worries? _____

15. O₂ ? How many hours/day? _____

16. Current Medications

Name

Dose

Schedule

17. Have you taken medications more than prescribed? If yes, explain. _____

18. Do you have difficulty sleeping because of difficulty with your breathing?

19. How many pillows do you use to make yourself comfortable in bed?

20. In the past 7 days, how many times/night did you wake up because you were having difficulty breathing?

21. On average, how long did you stay awake?

22. In the past 7 days, how many times/night do you have to get up to make yourself comfortable?

23. In the past 7 days, how many times/week do you have to sleep sitting up in a chair?

24. Have you attended pulmonary rehabilitation within the last year? Yes No

25. Ever had to see a doctor or counselor because of problems with depression (feeling blue, nervous)? Yes No

Explain _____

26. Ever taken medication to help you feel less blue, nervous, or for any other mental problem? Yes No Explain

27. In the last 4 weeks have you felt fear of panic because you thought you weren't going to be able to catch your breath? Y N

If yes,

28. On average, how many days/week did this happen? _____

29. On average, how many times each day did this happen to you? _____

(For questions 31, 33, 35, 37 be sure to record incidents in addition to the ones in the last 3 months. We need to be consistent so we are not recording 12 months for some patients and 9 months for others)

30. In the last 3 months (since _____) how many times have you had to go to the Emergency Room because of breathing problems? _____

31. How many times since last year at this time? _____

32. In the last 3 months how many times have you had to be hospitalized because of your breathing problems? _____

How many days were you in the hospital? _____

33. How many times since last year at this time? _____

How many days were you in the hospital? _____

34. In the last 3 months (since _____) how many times have you had to call your doctor's office because you were having breathing problems? _____

35. How many times since last year at this time? _____

36. In the last 3 months (since _____) how many times did you have to schedule an extra appointment to see your doctor (over and above your regularly scheduled appointments)? _____

37. How many times since last year at this time? _____

38. Six Minute Walk Test _____

Appendix B
Subject Recruitment Phone Script

"Hello, I'm Dr. _____. I am working with Dr. _____, your pulmonologist.

"If you have a few minutes I'd like to tell you about a study we are conducting with patients with moderate to severe breathing problems."

"We are conducting a study to better understand the anxiety, depression, and breathlessness which are often experienced by patients with Chronic Obstructive Pulmonary Disease (COPD). Further, we are interested in learning more about how patients adjust to living with COPD and how support from others may be of help. Additionally, we want to see if a brief treatment will lessen the anxiety, help patients to lead a more satisfying life, and decrease the number of times patients have to seek medical care. We are asking a large number of patients with COPD to participate in this project. We hope that the project will assist us in helping patients now and in the future. The results of your recent Pulmonary Function Tests showed that you would be eligible to participate in the study.

Before I tell you more about the study, I need to ask you a few questions:

1. Do you have any illnesses or conditions in addition to your COPD? (Probe to determine if this affects psychological functioning to the degree that it would confound results- e.g. cancer, MS)
2. Do you have problems with concentration or memory? If yes, probe. Administer a few MMSE items if questionable.
3. You will be asked to read and fill out a number of forms? Do you think you would be able to do this?

(If patient has illness or obvious cognitive deficits which would preclude participation thank them for their time and end conversation. If patient does not have illness or obvious cognitive deficits which would preclude participation continue with following script):

"If you agree to participate in this study you will be asked to take part in an interview, fill out a number of paper and pencil questionnaires, provide a name and number of someone close to you to complete a packet of questionnaires, and complete a short exercise test. You may also be asked to give permission for the researchers to review your medical records related to your illness. These activities will take approximately 2 hours. To make it as convenient as possible for you to participate, we can arrange to meet with you at the same time as your next clinic visit."

"You may be invited to take part in the second phase of the study which will assess the effectiveness of our brief treatment. If so, this would take another 3 hours of your time over a two month period."

"Should you opt not to provide a name and number of a support person to complete a supplemental battery of questionnaires, this will not disqualify you from participating in either parts of the study."

"We think you will find the activities enjoyable and interesting, and would be pleased if you would consider being part of the study."

"Do you have any questions?"

(Answer questions)

"I hope I've answered the questions to your satisfaction. Do you think you would be willing be part of the study?"

1a. (If patient is willing to meet):

Schedule appointment

1b. (If patient is hesitant):

"We won't schedule an appointment, but I'd appreciate it if you would consider discussing the study with Dr. _____."

1c. (If patient gives a definite "no")

"Thank you very much for your time."

Appendix C
Consent Form

Henry Ford Hospital
CONSENT
TO PARTICIPATE IN A RESEARCH STUDY

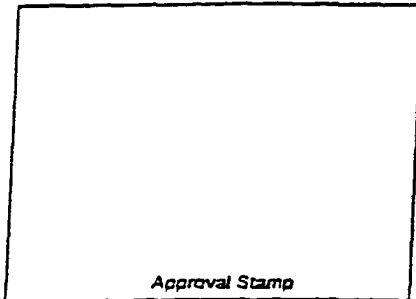
☐ MAIN ☐ WEST BLOOMFIELD
☐ FAIRLANE ☐ OTHER _____

DATE

MRN

NAME

116



Approval Stamp

PROJECT TITLE:

Cognitive-Behavioral Treatment of
Anxiety and Dyspnea
Associated with Moderate to Severe
Chronic Obstructive Pulmonary Disease

1. PURPOSE OF THE PROJECT

You have been asked to take part in a research project. You have been told that the purpose of this project is to better understand the anxiety and breathlessness which are often experienced by patients with Chronic Obstructive Pulmonary Disease (COPD), and to see if a brief counseling will lessen the anxiety and decrease the number of times patients have to seek medical care. Also, the project will look at ways in which you handle your illness and how support from others may be related to your mood, daily functioning, and need for medical care. There will be 180 other persons in this research study at Henry Ford Hospital and Medical Centers. No one in the study will be paid for their participation.

2. PROCEDURES OF THE PROJECT

If you agree to participate in this study you will be asked to take part in an interview, fill out a number of questionnaires, ask someone who is close to you and provides support to fill out a separate packet of questionnaires, and complete a short exercise test. These procedures will take approximately 2 hours. In addition, your medical records may be examined to determine how many times you have been treated in the ER or been admitted to the hospital in the past year. Should you choose not to provide a name and telephone number of a primary support person, you will still be eligible to participate in the project.

You may be asked to take part in the second phase of the project. In this case you will be assigned by chance to an "immediate treatment group" OR to a "delayed treatment" group. If you are placed in the "immediate treatment" group you will be asked to return to the clinic within the next week to participate in a second 1 1/2 hour session in which you will be taught ways to manage anxiety

Henry Ford Hospital
CONSENT
TO PARTICIPATE IN A RESEARCH STUDY

☐ MAIN
☐ FAIRLANE

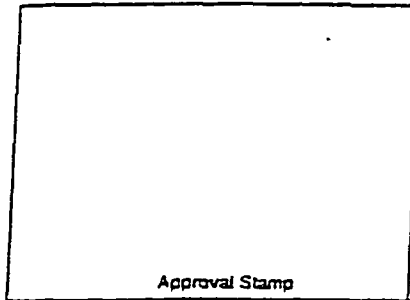
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PROJECT TITLE:

Cognitive-Behavioral Treatment of
Anxiety and Dyspnea
Associated with Moderate to Severe
Chronic Obstructive Pulmonary Disease

and breathlessness. You will be called at home a total of six times in three weeks following this session in order to support your efforts to use the techniques you have learned to manage these symptoms. Four weeks after the treatment you will be asked to return to the clinic to complete the interview, questionnaires, and exercise test again. This will be a shorter interview, approximately 1 hour. After three months you will be contacted by phone for a final brief follow-up.

If you are assigned to the "delayed treatment group" you will be asked to complete the assessment procedures again seven weeks after your initial assessment. Approximately 3 months after your first assessment session you will be offered treatment at that time. Your medical records may be reviewed.

3. RISKS/DISCOMFORTS OF THE PROJECT

Risks associated with this project include:

- a) that of delayed treatment if you are in the "delayed treatment group.
- b) there are no known risks associated with the screening phase or treatment.

4. BENEFITS OF THE PROJECT

- a) You may not be helped by participating in the screening phase of the project. However, others may be helped by what is learned from this research.

CONSENT
TO PARTICIPATE IN A RESEARCH STUDY

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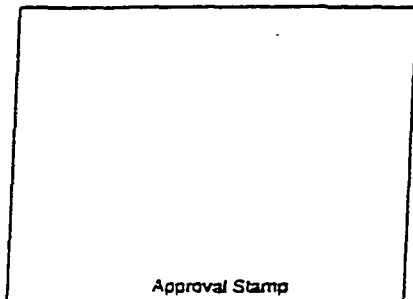
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Approval Stamp

PROJECT TITLE-

Cognitive-Behavioral Treatment of
Anxiety and Dyspnea
Associated with Moderate to Severe
Chronic Obstructive Pulmonary Disease

b) You may benefit from being in the treatment phase of project by learning ways to improve your quality of life. This benefit will be delayed if you are in the "delayed treatment" group.

5. ALTERNATIVES TO PARTICIPATION

Alternative course of treatment for this project would be reliance on psychotropic medications to decrease psychological stress or referral for outpatient psychological treatment.

6. PRIVACY

Your name will not appear on the questionnaires that you or your support person fill out. Your signed consent form, which bears identifying information, will be stored separate from your data. All data related to your participation in this study will be kept in a locked office in the Consultation-Liaison Psychiatry Department. Research data will be maintained for a minimum of three years and destroyed thereafter. If data from the study are published, this holding period will be extended for an additional five years following publication. Research data that include your name or other identifying information will not be published or otherwise released unless you give your permission in writing or unless there are legal requirements to disclose that information.

7. INJURY DUE TO PROJECT

There is no federal, state, or other program that will compensate you or pay for your medical care if you are injured as a result of participating in this study. You and/or your medical insurance may have to pay for your medical care if you are injured as a result of participating in this study.

Form 3403 (Rev. 10/01)

Henry Ford Hospital
CONSENT
TO PARTICIPATE IN A RESEARCH STUDY

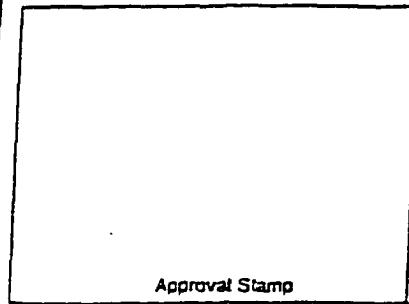
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DATE

MRN

NAME

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Approval Stamp

PROJECT TITLE:

Cognitive-Behavioral Treatment of
Anxiety and Dyspnea
Associated with Moderate to Severe
Chronic Obstructive Pulmonary Disease

8. INFORMATION ABOUT THE PROJECT

Mrs. Terri Belville-Roberston, MA has explained this research project and has offered to answer any questions. You may contact either Mrs. Terri Belville-Robertson or Dr. Anne Eshelman, Ph.D. in the Consultation-Liaison Psychiatry Department at Henry Ford Hospital at (313) 876-2523 if future questions arise. If you have further questions about the research, you may contact Ms. Julie Washington in the Research Office at Henry Ford Hospital at (313)876-2024.

9. VOLUNTARY PARTICIPATION

Your participation in this research study is voluntary. You do not have to take part in the study, and if you decide to participate, you can stop at any time. If you decide not to participate, or if you enter the study but then later decide to stop, you will get the same medical care from Henry Ford Hospital and Medical Centers that you would have without consenting to take part in the study. There will be no penalties or loss of benefits to which you would otherwise be entitled if you choose not to participate or if you choose to stop your participation once you have started.

10. STOPPING THE PROJECT

You will be asked to end you participation in the project if, in the judgment of the investigators, you have or develop psychological difficulties requiring more intensive treatment than that offered by this project. In this case you will be referred for appropriate treatment. Any treatment costs which may result from this referral will be assumed by you.

CONSENT
TO PARTICIPATE IN A RESEARCH STUDY

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☐ FAIRLANE

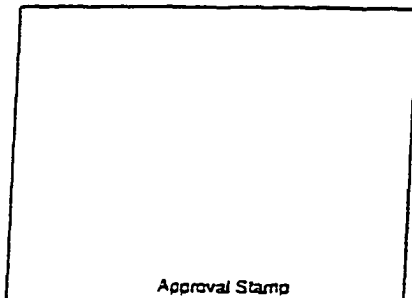
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Approval Stamp

PROJECT TITLE:

Cognitive-Behavioral Treatment of
Anxiety and Dyspnea
Associated with Moderate to Severe
Chronic Obstructive Pulmonary Disease

11. COST TO THE SUBJECT

You will not have any extra medical charges because of your participation in this study.

12. CONSENT

This consent has been reviewed with you. You have read this consent form or it has been read to you. All of the procedures have been explained to you. You understand what you are being asked to do. Your questions have been answered, and technical terms you did not understand have been defined for you. You agree to be in this study. You will be given a copy of this consent form.

Signature of Subject :

Date

Print Name of Subject

Witness' Signature

Date

Investigator's Signature

Date

Appendix D

Support Person Supplemental Battery Information Sheet



HENRY FORD BEHAVIORAL SERVICES

Maple Grove Center

1773 West Maple
West Bloomfield, MI 48322
313) 661-6100 Office
313) 661-6184 Fax

Coordinated Behavioral
Health Management

Department of Psychiatry
Consultation-Liaison Psychiatry
Inpatient Psychiatric Programs
Neuropsychology
Psychiatric Education
Psychiatric Research
Sleep Disorders Center

Gingwood Hospital

Maple Grove Center

Outpatient Centers

Allen Park
Ann Arbor
Clinton Township
Birmingham
Dearborn
Detroit
Clara Ford Pavilion
Detroit East
Fisher Building
Detroit Northwest
Livonia
St. Clair Shores
Troy
Waterford
West Bloomfield
Maple Park
Maple Grove

Date: _____

Dear _____:

You have been identified as a primary support person for _____, a volunteer in a study at Henry Ford Hospital examining how people with lung disease (e.g. chronic bronchitis or emphysema) are managing living with their illness. There are a lot of different ways people respond when they are confronted with difficult or stressful life events, including chronic illness.

As part of our study, we are very interested in your opinions and feelings about how you think your *spouse/ significant other/ family member/ or friend* is doing. To help us obtain this information, we invite you to please fill out the enclosed questionnaires. Filling out the questionnaires will take you approximately 30 minutes. Because we want you to be able to answer as honestly as possible, we request that you fill out the questionnaires in privacy. You may return your completed questionnaires in the self-addressed and stamped envelop included with this packet. Should you have questions about any of the items on the questionnaires or the study in general, please feel free to reach me at the Department of Consultation Liaison Psychiatry, Henry Ford Hospital (313) 876-2523.

As a primary support person, your insight is very important to us and will help us better understand how lung disease impacts people's daily lives. We thank you in advance for your help. Again, if you should have any questions, please feel free to contact me.

Sincerely,

Terri Belville-Robertson, MA TLLP

Consultation Liaison Psychiatry Research Assistant

Appendix E

Henry Ford Hospital Institutional Review Board Approval



Human Rights Committee
(Institutional Review Board)

CFR-I
2799 West Grand Boulevard
Detroit, MI 48202-2689
(313) 876-2024 Office
(313) 876-2018 Fax

May 16, 1996

Ira Wollner, MD
Chairman

Munther Ajlouni, MD
Vice Chairman

TO: Anne Eshelman, Ph.D.
Psychiatry

FM: Ira Wollner, M.D., Chairman
Munther Ajlouni, M.D., Vice Chairman
Human Rights Committee (Institutional Review Board)

RE: Research Proposal, "Cognitive Behavioral Treatment of Anxiety and Dyspnea Associated with Severe Chronic Obstructive Pulmonary Disease" (IRB Ref. #07.06.96)

Period of IRB Approval: May 14, 1996 - May 13, 1997

At its meeting on May 14, 1996, the Human Rights Committee reviewed the above-referenced research protocol. The Committee approved the human rights aspects of the project and the submitted consent form. However, please note that pregnant women must be included in the study population unless adequate rationale can be provided for their exclusion.

In addition, the following modifications to the consent form were made using the disk provided (a copy of the revised consent form and computer disk are enclosed with this letter):

- 1) In the Purpose section, "brief treatment" was changed to "brief counseling session".
- 2) It is not appropriate to charge "delayed treatment" subjects. Therefore, the Costs to the Subject section was revised to indicate that there will be no additional costs for participating in the study.



The Human Rights Committee and Federal Regulations require that each research proposal involving human subjects be reviewed at intervals appropriate to the degree of risk but not less than once per year and that a final report be submitted at the termination of the project. Therefore, either a progress or final report for this proposal should be submitted to the Committee by April 14, 1997.

Revisions to the Human Rights protocol must be approved by the Committee prior to implementation. The request to approve an amendment must contain the following information: (1) Name of the project director, (2) name of the research proposal, (3) a description of the amendment and rationale for implementation, (4) a description of how the amendment will change sample size and/or data analysis, (5) a description of risks as related to the amendment, and (6) a statement as to whether the consent process is changed by the amendment and, if applicable, the revised consent form.

In addition, our IRB is expected to prospectively review all documents and activities that bear directly on the rights and welfare of participants of proposed research. This includes but is not limited to advertisements used to recruit subjects.

Moreover, unexpected events and serious adverse effects relating to subjects must be reported to the Committee as soon as possible; supplemental information may be appended to the notification form (see enclosure).

Please be sure to keep copies of the signed consent forms on file. One convenient method is to duplicate each signed consent form, leaving the original with the patient's medical record and filing the copy together with all other consent forms for that project.

A copy of the signed and stamped application, indicating approval by the Human Rights Committee, is enclosed for your files. Your application has been forwarded to Susan MacPhee for review by the Small Projects Funding Committee.

Forms for progress, final and adverse/unexpected event reports are available in Research Administration (CFP-1). Please contact Ms. Nancy Thayer at ext. 62024 if you have questions regarding these matters.

Enclosures

Appendix F

Western Michigan University Human Subject Institutional Review Board Approval

Human Subjects Institutional Review Board

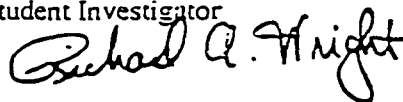
Kalamazoo, Michigan 49008-3899

WESTERN MICHIGAN UNIVERSITY

Date: 23 January 1998

To: Richard Spates, Principal Investigator
Terri Belville-Robertson., Student Investigator

From: Richard Wright, Chair



Re: HSIRB Project Number 97-11-16

This letter will serve as confirmation that your research project entitled "Coping Strategies & Social Support Differences Among COPE Patients: Effects on Psychological Well Being, Functional Status, and Health Care Utilization" has been approved under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 23 January 1999

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