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# Effect of Individual Cognitive Behavioral Therapy on Depression and Anxiety in Older Adults with Chronic Obstructive Pulmonary Disease : a Feasibility Study

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Philadelphia College of Osteopathic Medicine

Department of Psychology

THE EFFECT OF INDIVIDUAL COGNITIVE BEHAVIORAL THERAPY ON DEPRESSION  
AND ANXIETY IN OLDER ADULTS  
WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE:  
A FEASIBILITY STUDY

By Eileen Lightner, MA, MS, LPC

Submitted in Partial Fulfillment of the Requirements of the Degree of

Doctor of Psychology

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PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE  
DEPARTMENT OF PSYCHOLOGY

**Dissertation Approval**

This is to certify that the thesis presented to us by EILEEN LIGHTNER  
on the 17<sup>th</sup> day of MARCH, 2010, in partial fulfillment of the  
requirements for the degree of Doctor of Psychology, has been examined and is  
acceptable in both scholarship and literary quality.

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## Abstract

The progression of chronic obstructive pulmonary disease (COPD) in older adults has been associated with a high prevalence of depression and anxiety (Kunik et al., 2005). The purpose of this study was to examine the effects of a COPD-specific individual cognitive behavioral therapy (CBT) intervention on depression and anxiety in older adults with COPD. Three older adult patients with moderate to severe COPD and co-morbid depression and anxiety were recruited from a large hospital affiliated pulmonary practice to participate in this single subject multiple baseline feasibility study. Pre-test-post test assessments were conducted utilizing the Geriatric Depression Scale (GDS), the State Trait Anxiety Inventory (STAI), the COPD Self-Efficacy Scale, the St .George Respiratory Questionnaire (SGRQ-C), the Social Problem-Solving Inventory-R (SPSI-R), the MRC Dyspnea Scale, and the Six Minute Walk Distance Test (6MWD). It was hypothesized that this intervention would decrease depression and anxiety; increase self-efficacy and positive problem orientation; increase exercise tolerance; and improve dyspnea management and quality of life for older adults with COPD. The results suggest that depression and anxiety were decreased and self-efficacy increased for all three participants. Dyspnea management and overall quality of life were improved for the two participants who completed the protocol. Changes in exercise tolerance and problem orientation varied by participant. This study has implications for the use of this protocol in a pilot study with a larger sample of older adults with COPD and co-morbid depression and anxiety.

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“If I can breathe easily without obstruction, I can count my blessings twice!”

# OLDER ADULTS WITH COPD

## Chapter One: Statement of the Problem

Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the United States and throughout the world. This illness is a primary disease process causing disability and death among older adults worldwide (Ng et al., 2007; Stapleton, Nielsen, Engelberg, Patrick, & Curtis, 2005). COPD is the only major chronic disease for which fatality rates have not declined over the past 30 years (Alexopoulos et al., 2006). In this regard, some researchers suggest that by the year 2020, COPD may have become the third leading cause of death (Norwood & Balkissoon, 2005; National Heart, Lung, and Blood Institute, 2006).

COPD is an illness defined by a progressive decline in lung function, marked by chronic airflow obstruction which interferes with normal breathing (Wouters, 2005). The irreversible nature of this illness is accompanied by distressing emotional symptoms caused by chronic dyspnea (breathlessness) and productive cough (van Manen et al., 2002). These symptoms often interfere with activities of daily living for older adults with moderate to severe COPD. The most common causes of chronic airflow obstruction for COPD include chronic bronchitis and emphysema. Approximately 80 to 90 percent of deaths caused by COPD involved a history of cigarette smoking. However, approximately 23 percent of individuals who develop COPD have no history of smoking. Although not well understood, the other identified risk factors for COPD include: air pollution, second-hand smoke, certain occupational exposures to environmental dust or organic materials, a history of childhood respiratory infections, and genetic factors.

In the United States, the overall prevalence for moderate to severe COPD is 10.1 percent (Mannino & Buist, 2007). However, this prevalence data for COPD may be

significantly underestimated because most cases of the disease are not diagnosed until the illness has progressed to moderate or severe stages (Stapleton et al., 2005). More than 12 million adults in the United States are currently diagnosed with COPD and an additional 12 million most likely, but unknowingly have the disease (National Heart, Lung, and Blood Institute, 2006). The number of older adults with COPD is almost three times the rate for those younger than age 65. This prevalence rate has been steadily rising, with the number of female deaths attributable to COPD surpassing that of males for the fifth consecutive year (American Lung Association, 2006). Caucasians, both male and female, have a higher prevalence rate of COPD compared with African American males and females. However, in workplace exposures, African American and Mexican American workers were found to have higher percentages of cases of airflow obstruction (Hnizdo, Sullivan, Bang, & Wagner, 2004).

#### *Co-morbid Depression and Anxiety*

The debilitating disease process in COPD has been associated with the presence of depression and anxiety symptoms (Paz-Diaz, Montes de Oca, Lopez, & Celli, 2007). Despite the high rates of depression and anxiety found in patients with COPD (Kunik et al., 2005), the research literature is sparse concerning the impact of treating these co-morbid conditions in patients with COPD (Eiser, Harte, Karvounis, Phillips, & Isaac, 2005). Older adults with COPD struggle in most aspects of daily living, including short walks inside the home, which result in increased breathlessness and fatigue (Emery, Shermer, Hauck, Hsiao, & MacIntyre, 2003). The decline in physical endurance impacts upon social roles and activity, with compromised independent capability and increased dependence on spouse or other family members. In a recent study of older adults with

severe oxygen dependent COPD, Robinson (2005) found that 80% of the participants reported psychosocial impacts to family life.

Consequently, the concomitant psychosocial factors related to this physical illness impact the decreased quality of life for older adults with COPD. Studies on quality of life issues in older adults with moderate to severe COPD have identified depression as a factor which impacts the experience of dyspnea and related disabling limitations (Emery et al., 2003). The affective component in the relationship between dyspnea and anxiety was recently examined in a study of older adult patients with COPD (Bailey, 2004). In that study, patients reported that their acute exacerbations of dyspnea were related to anxiety and emotional functioning. Other researchers have found that depressed patients with COPD needed more intensive supervision in their rehabilitation interventions to achieve greater reductions in dyspnea (Nguyen & Carrieri-Kohlman, 2005).

#### *Purpose of the Study*

Based on the literature, positive changes in thoughts, feelings and behaviors may aim to decrease depression and anxiety and increase self-efficacy and quality of life in individuals with COPD. As such, cognitive behavioral theory seems to address the connection between a patient's perception of the problems associated with COPD and their responses to those stressors. An individual cognitive behavioral intervention was developed to address these concerns. The current study was designed to examine the impact of a COPD-specific intervention of individual cognitive behavioral therapy for older adults with co-morbid depression and anxiety. The focus of the intervention was designed to target depression and anxiety symptoms and to improve the functional status and quality of life for older adults with COPD. Important goals for medical treatment

outcome for this population include the alleviation of exertional dyspnea and improvement in exercise tolerance (Maltais et al., 2005). Consequently, this study was also designed to examine self-efficacy for older adults in the management of breathlessness symptoms and exercise tolerance.

## Chapter Two: Literature Review

Perceived quality of life for older adults with chronic obstructive pulmonary disease (COPD) has been a recent concern in the medical community due to the increased burdens for patients and caregivers in the management of this chronic disease (Creed et al., 2002). The chronic, debilitating disease process in COPD requires continued psychological adjustment as periods of disease stability are interrupted with acute illness exacerbations and progressive decline (Rybarczyk et al., 1992). Each acute exacerbation of COPD typically results in greater breathlessness with increased cough and chest tightness. Consequently, the patient's condition changes from the prior stable state to a condition that worsens, affecting normal day-to-day functioning.

The decline in physical endurance impacts upon social roles and activity with compromised independent capability and increased dependence on spouse or other family members. As the disease progresses, older adults with moderate to severe COPD struggle in most aspects of daily living including showering, getting dressed and performing household tasks such as meal preparation (Emery et al., 2003). Most activity, which includes climbing stairs, taking short walks inside the home, and even eating, results in shortness of breath and fatigue (Falter, Gignac, & Cott, 2003). In a recent study with older adults with severe oxygen dependent COPD, Robinson (2005) found that 80% of the participants reported psychosocial impacts to family life.

Thus, the concomitant psychosocial factors related to this physical disease impact the decreased quality of life in older adults with COPD. It has been suggested that treatment for COPD in older adults must focus on quality of life issues because of the irreversible nature of this illness, which involves major physical impairment and

distressing emotional symptoms caused by dyspnea and productive cough (van Manen et al., 2002). The impact on older adults and their caregivers is quite burdensome as the patient and family members adjust to the physical, social, and environmental challenges of this disease. Despite the recognition in the literature that maintenance of independent functioning is a primary goal for older adults with COPD, few studies have examined the relationships between perceptions of independence, adaptation to disability, and self-efficacy. In their study on adaptation to disability in COPD, Falter et al. (2003) found that perceptions of independence in older adults were highly malleable and could not be explained solely by level of disability. The results of their study indicated that the perceptions of independence for older adults with COPD was more closely related to the types of activity, adaptation strategies employed to manage the difficulty, and the levels of self-confidence in their ability to control breathlessness.

#### Co-morbidity with Depression

The prevalence of depression is significantly higher in older adults than in younger populations. More than 2 million adults age 65 and older in the United States have suffered from depression (Mills, 2001). It has been suggested that late-life depression is often undiagnosed and attributed to other medical conditions because older adults present depression symptoms almost exclusively in primary care or other medical settings (Harpole et al., 2005; Hill & Brettle, 2005). In a recent study examining the strength of association between long-term medical conditions and major depression, researchers found the strongest associations with co-morbid depression in gastroenterological, neurological and respiratory conditions (Patten et al., 2005). In a recent study examining depression treatment in patients with and without chronic medical

illness, researchers found that disability improvement was related to improvement in depression despite unchanged physical conditions (Simon, Von Korff, & Lin, 2005).

Research has indicated that physical health status has been predictive of co-morbid depression symptoms among older adults (Mills, 2001). Chronic illness in older adults has been associated with an increased risk for psychological distress along with the accompanying functional disability (Mills, 2001). In that study examining the influence of various chronic illnesses on depression, Mills (2001) found that depression scores were highest for older Caucasian adults with digestive, respiratory or heart disorders. Based on these findings, which confirmed previous research indicating a relationship between respiratory disorders and depression, Mills (2001) suggested that older adults with shortness of breath may have medical conditions which may be more debilitating in restricting daily activity due to perceived or actual health burden.

In a recent study examining predictors of depression in patients with COPD, researchers found that current smoking, lower self-efficacy, lower social support, and higher perceived illness intrusiveness were independently associated with higher levels of depression (Coultas, Edwards, Barnett, & Wludyka, 2007). In contrast, these researchers also found that depression was not independently predicted by severity of lung function impairment in the older adults sampled in this study. This finding is supported by prior research which suggests that depression symptoms have been found to predict functional capacity more than physiological indicators in patients with COPD (Dahlen & Janson, 2002; Fellker et al., 2001, as cited in Ng et al., 2007; Kim et al., 2000).

Older adults frequently suffer from multiple chronic medical conditions, and co-morbid medical illness has been associated with higher rates of depression (Harpole et

al., 2005). It has been estimated that 88% of adults age 65 and older experience one or more chronic illnesses and that 25% of those adults will suffer from more than four chronic diseases (Harpole et al., 2005). Because COPD is considered a heterogeneous disease, older adults with COPD may have other co-morbid chronic illnesses which also have a high prevalence of depression, such as diabetes (Egede, 2005). Research indicates that depression has been associated with certain chronic medical conditions in older adults, such as cardiovascular disease, digestive disorders, cancer, arthritis, diabetes, and others (Mills, 2001). Studies have found that medical illness can induce mood disorders through psychosocial stressors, disability and certain biological pathways (Harpole et al., 2005).

Some researchers have concluded that the impact of co-morbid depression and medical illness is additive because both conditions can adversely impact functioning and quality of life, as well as mortality (Harpole et al., 2005). In a study which compared depressed vs. non depressed patients who were hospitalized during an acute exacerbation of COPD, researchers found that mortality risk was three times higher for the patients with depression symptoms (Almagro et al., 2002). The co-morbidity of depression in older adults has been associated with the progression of this chronic illness (Coulter et al., 2007); Yohannes, Baldwin, & Connolly, 2000).

Research suggests that there are significant psychosocial stressors with the chronicity and progression of COPD (Lox & Freehill, 1999) and that psychosocial variables influence health related quality of life (Stahl et al., 2005). Because the progression of COPD results in increased breathlessness, greater disability and frequent hospitalizations, the associated disability results in reduced physical activity and a loss of

independent functioning (Sewell, Singh, Williams, Collier, & Morgan, 2005). In a study which examined functional status and quality of life for patients with chronic medical conditions, the researchers found that patients with COPD had poorer psychological functioning when compared with patients with heart failure, arthritis, angina and diabetes (Stewart et al., 1989). In a more recent study (N=179), Cully et al. (2006) found that co-morbid depression and anxiety are among the most salient factors related to decreased quality of life for patients with COPD. In their review of studies examining the co-morbidity of depression and anxiety with chronic medical conditions, Katon, Lin and Kroenke (2007) suggested that depression and anxiety may lead to heightened awareness of physical symptoms which can contribute to increased muscle tension and autonomic nervous system dysregulation.

Studies have found that depression prevalence rates for patients with COPD ranged from 7% to 42% (van Manen et al., 2002); 40% (Yohannes, Baldwin, & Connolly, 2003); 16% to 74% (Ng et al., 2007); to 20 to 60% (Ahmed, Kelshiker, & Jenner, 2007). Despite the growing literature on the high prevalence of co-morbid depression for individuals with COPD, the actual prevalence and severity of depression symptoms for older adults with moderate to severe COPD is uncertain and often undetected, and thus may be underestimated. Medically ill older adults may perceive their difficulties with depression symptoms to be wholly related to the deterioration of their medical condition and disease progression (Cully, Graham, Stanley & Kunik, 2007; Lyness et al., 2007). Even when recognized and detected, depression may not be treated by the physicians responsible for the long-term patient management with this population (Borson et al., 1992; Sirey, Raue, & Alexopoulos, 2007). Consequently, there are clinical

implications for psychological interventions which utilize cognitive behavioral therapy strategies for this population of patients with COPD, for their families, and for other caregivers.

### Co-morbidity and Anxiety Symptoms

There is ample research demonstrating that anxiety disorders and symptoms are common among older adults with depression. Studies have found prevalence rates for co-morbid anxiety ranging from 38 to 46% in older adults with depression (Ayers, Sorrell, Thorp, & Wetherell, 2007; Beckman et al., 2000; Lenze et al., 2005). The prevalence of anxiety in older adults varies greatly due to the heterogeneity of the older adult population and the co-morbidity of medical conditions in older adults (Ayers et al., 2007). The most common anxiety disorders for older adults include generalized anxiety disorder and phobias and range from approximately 4 to 19% (Ayers et al., 2007; Barrowclough et al., 2001). However, older adults with medical illnesses experience much higher rates of anxiety with links to increased physical disability and decreased quality of life (Brenes et al., 2005; Wetherell et al., 2004). For patients with COPD, the prevalence of generalized anxiety disorder is three times higher than for the general population in the United States (Brenes, 2003).

For older adults with COPD, the co-morbidity of anxiety symptoms with depression is often secondary to the medical condition (Kunik et al., 2005). In their cross-sectional study of patients with chronic breathing problems, including COPD, Kunik et al. (2005) found an 80% prevalence rate in patients screened for depression and/or anxiety. Prior research has found a high rate of anxiety disorders in patients who were admitted for hospitalization during acute exacerbations of COPD (Yellowlees,

Alpers, Bowden, Bryant, & Ruffin, 1987). In fact, anxiety has been found to be a major predictor for frequency of hospital admission during an acute exacerbation in cases of older adults who have endured significant physical disability related to the progression of COPD (Yohannes et al., 2000). An exacerbation of COPD has been defined as an acute worsening of respiratory symptoms with increased breathlessness and associated utilization of health care services (Wedzicha & Seemungal, 2007). The U.S. National Heart Lung and Blood Institute Global Initiative for Chronic Obstructive Lung Disease (GOLD) notes that although the most common causes of an exacerbation of symptoms include infections and air pollution, one-third of severe exacerbations cannot be identified (Pauwels, Buist, Calverley, Jenkins, & Hurd, 2001). For older adults with moderate to severe stages of COPD, the frequency of exacerbations increases as the severity of the disease progresses. Research suggests that patients with more frequent exacerbations tend to decline more rapidly in functional status (Wedzicha & Seemungal, 2006). However, these researchers also noted that the yearly exacerbation rates vary significantly among patients with similar stage levels of COPD.

Psychological distress has been linked to the physiological progression of COPD, with older adults often experiencing somatic symptoms present in panic attacks which appear to be secondary to the physical disease process. It has been suggested that acute exacerbations of COPD are highly stressful because patients often perceive the exacerbation episode and accompanying breathlessness as life threatening (Guthrie, Hill, & Muers, 2001). Prior studies have found that patients with COPD tend to experience intense fearfulness related to excessive dyspnea, which, in turn, may trigger a panic attack (Crockett, Cranston, Moss, & Alpers, 2002; Yohannes et al., 2000). Some

researchers examining the impact of psychological distress on the quality of life in older adults hospitalized with COPD have found that high levels of distress during an acute illness phase of COPD may impact not only the course of the illness, but also the treatment outcome (Andenaes, Kalfoss, and Wahl, 2004).

Acute illness exacerbation has also been studied in relationship to dyspnea management, depression and gender in primary care practice. In one study, the researchers found that depressive symptoms in elderly patients with COPD were associated with female gender and experience of dyspnea (Chavannes et al., 2005). These researchers concluded that females may express a different method of coping with breathlessness with a greater impact on health status as suggested in a prior study (Antonelli-Incalzi et al., 2003, cited in Chavannes et al., 2005). In this regard, lower levels of self-efficacy in dyspnea management have been associated with higher levels of depression and anxiety and a catastrophic withdrawal coping strategy (McCathie, Spence, & Tate, 2002). In another study utilizing primary care patients with COPD, perceived severity of COPD symptoms was found to be predictive of depression and anxiety symptoms (Cleland, Lee, & Hall, 2007). Based on their findings, these researchers concluded that symptom management may contribute to the ability to cope with COPD, and thus may be related to the development of depression or anxiety disorders.

#### Perceived Self-Efficacy

Self-efficacy beliefs have been influential in the determination of effort one may elect to invest in health behavior change (Bandura, 1997). Self-efficacy related to health behavior impacts the persistence to continue striving despite the obstacles and setbacks which may undermine motivation toward goals. According to social cognitive theory, a

person's sense of control over his or her environment and behavior impacts on health related goals and is a significant predictor of behavior change and maintenance (Bandura, 1997). Perceived self-efficacy has been found to underlie psychosocial functioning with a wide variety of stressful situations. Self-efficacy has also been defined as one's sense of personal competence to cope with obstacles and aversive experiences in coping with chronic illness (Kaplan, Atkins, & Reinsch, 1984). Based on social cognitive theory, self-efficacy for health behaviors is affected by self-efficacy judgments (Bandura, 1986). Within this context, self-efficacy perceptions impact on effort expenditures and perseverance, on maladaptive thought patterns, and on affective and neurophysiological reactions to environmental stressors or demands (Bandura, 1997).

Beliefs about the ability to perform certain health behaviors have been examined in many studies which have examined chronic medical conditions (Bond, 2002; Kobau & Dilorio, 2003; Pinto et al., 2002). Self-efficacy for the maintenance of diabetes related self-care (i.e., diet, exercise and glucose monitoring) was found to be strongly related to optimistic self-beliefs about the outcome of health behavior compliance (Bond, 2002). When examining the health behaviors of breast cancer patients, Pinto et al. (2002) found that self-efficacy was related to the maintenance of diet and physical activity for that population. Self-efficacy beliefs were also found to be related to lifestyle management behaviors (i.e., medication compliance, sleep hygiene, alcohol avoidance, and social support) and outcome expectations (seizure avoidance) in a study which examined adults with epilepsy (Kobau & Dilorio, 2003).

Self-efficacy to control symptoms and to maintain physical and role function was also examined in patients with coronary heart disease (Sullivan, LaCroix, Russo, &

Katon, 1998). The results of that study indicated that self-efficacy was related to the maintenance of daily activities and to one's ability to control symptoms. Sullivan et al. (1998) further suggested that their study indicates that the functional decline associated with other chronic medical conditions in older adults may also be linked to self-efficacy. In other research, self-efficacy expectations and outcome expectations for physical performance and exercise activity in older adults with hip fractures have been a focus of study because of the challenges associated with motivating older adults to adhere to an exercise regimen (Resnick, Magaziner, Orwig, & Zimmerman, 2002). Self-efficacy theory has been utilized in that study to suggest that improved exercise behavior in older adults is related to beliefs about the benefits of that behavior for improved functional performance and overall health status. Research has been supported by social cognitive theory, which suggests that one's beliefs about capabilities is a stronger predictor of functional performance than one's actual capabilities (Kohler, Fish, & Greene, 2002; Maly, Costigan, & Olney, 2007; Resnick, Vogel, & Luisi, 2006).

In a recent study, Arnold et al. (2005) examined the relationship between self-efficacy and physical functioning in patients with chronic obstructive pulmonary disease (COPD) and chronic systolic heart failure (CHF). In that study, self-efficacy was defined as control over specific behaviors necessary in managing an illness. These researchers found that patients with greater confidence in performing physical exercise (self-efficacy) reported better physical functioning. The researchers noted that this finding suggested that their perceptions were related to perceptions of control over that specific behavior rather than perceptions of general life control. This finding is supported by prior research on social learning theory which examined specific versus general expectancies for

exercise behavior change in older adults with COPD (Kaplan et al., 1984). In their study, Kaplan et al. (1984) found that patients with COPD increased exercise tolerance as self-efficacy increased, regardless of lung function severity.

The relationship between self-efficacy and physical activity has been examined in several studies which focused on functional decline and quality of life in older adults (Allison & Keller, 2004; McAuley et al., 2006). Participation in regular exercise has been found to improve functional performance in older adults and has been linked to higher self-efficacy (McAuley et al., 2006). Other studies have also found that changes in levels of functioning in older adults with chronic medical conditions have been more strongly associated with psychosocial variables rather than with biomedical variables (Allison & Keller, 2004; Kohler et al., 2002; Maley et al., 2007). Within this context, the functional decline which is associated with chronic diseases in older adults has been linked to self-efficacy for general physical performance. Research suggests that improvements in self-efficacy for exercise and physical activity for older adults can reduce further disability and maintain role function in chronic illnesses (Sullivan et al., 1998). In their recent study on exercise motivation with older adults, Resnick et al. (2006) found that self-confidence in one's ability to exercise safely despite unpleasant sensations, such as pain, fear, or shortness of breath was strongly related to exercise behavior. Other researchers have also suggested that the cognitive processes involved with personal capability attributions is an important area to target for patients with COPD (Davis, Carrieri-Kohlman, Janson, Gold, & Stulbarg, 2006). The findings in these studies are supported by Weiner's (1985) attribution theory of achievement motivation and emotion, which suggests that an individual's cognitions about perceived causality,

capability, and expectancy for success are significantly related to one's affective response.

Perceived self-efficacy has been found to have a mediating effect on the quality of life for patients with COPD (Davis et al., 2006; Kohler et al., 2002). In another study, McCathie et al. (2002) found that higher levels of depression and anxiety were associated with low levels of self-efficacy in symptom management for older adult males with COPD. Women with COPD have also been found to struggle with symptom management and would benefit from enhanced self-efficacy (Cleland et al., 2007; DiMarco et al., 2006; O'Neill, 2002). In another recent study, Arnold et al. (2006) found that perceptions of personal control and self-efficacy were related to quality of life even in older adults with severe impairment in the advanced stages of COPD. These researchers concluded that the role of self-efficacy is an important factor related to maintaining the quality of life improvements for older adults following pulmonary rehabilitation.

### Pulmonary Rehabilitation Programs

Many studies have been conducted on the benefits of patient participation in pulmonary rehabilitation for the long-term management of COPD (Nishiyama et al., 2005). Candidates for pulmonary rehabilitation programs have included patients who are symptomatic of COPD and other chronic lung diseases, as well as those patients who have received acute hospital care following an exacerbation episode related to their disease. Most pulmonary rehabilitation programs incorporate patient pulmonary function evaluation, lung disease education, and respiratory therapy, including breathing

techniques, exercise training, and some focus on psychological support (Lox & Freehill, 1999; Verrill, Barton, Beasley, & Lippard, 2005).

Research has demonstrated that short-term pulmonary rehabilitation can improve quality of life and reduce respiratory symptoms as well as the frequency of hospitalizations for patients with COPD (Lox & Freehill, 1999; Verrill et al., 2005). Improvements in emotional function, perception of dyspnea, fatigue, and exercise tolerance have been indicated in programs which provide three months of supervised breathing retraining (Guell et al., 2000). In their multi-site study of both short term and long term pulmonary rehabilitation programs, Verrill et al. (2005) found that perceptions of dyspnea and quality of life improved for patients with chronic lung disease (n=309 females; n=281 males) who participated in a 12 week pulmonary rehabilitation program with gains maintained or improved after 24 weeks of pulmonary rehabilitation. In another study, Berry et al. (2003) compared long term and short term exercise rehabilitation programs and found that compared with a three month exercise program, an 18 month exercise program resulted in greater improvements in physical functioning and self-reported disability for patients with COPD (N=140). However, most insurance plans do not cover maintenance pulmonary rehabilitation, which results in participation decline for longer-term programs (Verrill et al., 2005).

Prior research has also indicated that the progress made in both physical and psychological functioning following participation in pulmonary rehabilitation programs tends to decline over time (Ries, Kaplan, Limberg, & Prewitt, 1995). However, recent studies have examined factors which contribute to the maintenance of improved quality of life and functional independence, as well as to reduction in utilization of health care

resources, following pulmonary rehabilitation for COPD patients (Sewell et al., 2005). It has also been suggested that older adults with COPD have experienced an increase in self-efficacy and related improvement in quality of life following participation in pulmonary rehabilitation, regardless of their decline in pulmonary function capacity (Emery, Schein, Hauck, & MacIntyre, 1998; Emery et al., 2003). The effectiveness of varied components of pulmonary rehabilitation programs has been examined in recent studies with older adults who have COPD. In a recent study, the researchers found that older adults with COPD gained greater functional status with activities of daily living by combining activity training with exercise training (Norweg, Whiteson, Malgady, Mola, & Rey, 2005). Based on their findings, these researchers concluded that older adults with dyspnea related anxiety during activities of daily living appeared to benefit from greater opportunities for desensitization to dyspnea through learning strategies for dyspnea management.

In another study examining older adults with COPD, frequency of attendance in a maintenance program following participation in a pulmonary rehabilitation program was found to be predictive of longer term improvements in quality of life (Nishiyama et al., 2005). Although recognizing that the improvement effects following pulmonary rehabilitation are difficult to maintain, Nishiyama et al. (2005) found that 35.8% of the patients in their study maintained improvements in quality of life after one year following pulmonary rehabilitation.

The research literature on the effects of dyspnea for older adults with COPD consistently emphasizes the importance of maintaining physical activity despite this debilitating symptom (de Blok et al., 2006). In older adults with COPD, difficulty with

dyspnea management often leads to a reduction in physical activity levels with the accompanying deconditioning and reduction in quality of life. Researchers have examined the effects of pedometer feedback with a lifestyle physical activity component during a nine week pulmonary rehabilitation program (de Blok et al., 2006). In their study, de Blok et al. (2006) (N=21) found that the experimental group showed an increase of 69% mean steps per day in comparison with the control group who showed an increase of 19%. The researchers noted that although the effect was not statistically significant, the difference was clinically relevant with an effect size =  $>0.80$ . The researchers further concluded that the lower step count in their findings was consistent with other research which indicates that older adults tend to take fewer steps per day (Tudor-Locke & Bassett, 2004 as cited in de Blok et al., 2006), and that there may have been seasonal influences because their study was conducted in the autumn and winter months.

#### *Depression and Anxiety Treatment in Pulmonary Rehabilitation Programs*

Although the literature recognizes depression and anxiety as co-morbid conditions for older adults with COPD, the research suggests that depression and anxiety may be both underdiagnosed and undertreated in this population (Seung et al., 2000). Recent studies suggest that pulmonary rehabilitation programs may improve physical activity and level of functioning; however, the evidence for the psychological benefits of pulmonary rehabilitation is sparse. Older adults with depression and anxiety may restrict their activity levels, which may reinforce social isolation and ultimately preclude their attendance at pulmonary rehabilitation programs. In this regard, research suggests that depression and anxiety may be more predictive of functional capacity than actual physiological lung capacity (Paz-Diaz et al., 2007).

In their recent study, Paz-Diaz et al. (2007) found that despite no changes in pulmonary function tests, participation in an eight week pulmonary rehabilitation program resulted in an improvement in dyspnea and quality of life, as well as an improvement in depression, and to a lesser extent, in anxiety symptoms. These findings were in contrast with earlier research which found a non-significant decrease in psychological symptoms associated with participation in a pulmonary rehabilitation program (Ries, et al., 1995).

A few recent studies have examined the impact of inpatient pulmonary rehabilitation programs on depression and anxiety symptoms for older patients with COPD. In one study, 63 older adults (mean age 71.3 years) with COPD and co-morbid depression participated in an inpatient pulmonary rehabilitation program, with a median length of stay of 16 days (Alexopoulos et al., 2006). The multidisciplinary treatment in this study provided respiratory therapy; physical, speech, and occupational therapy, and social work services designed to increase their self-efficacy in managing COPD. The findings in that study indicated that improvement of depression symptoms occurred regardless of whether patients were taking antidepressant medications or not. Despite the lack of a control group in this study, the researchers concluded that nonpharmacologic interventions of the inpatient pulmonary rehabilitation program may have been the major contributor to the reduction in depression symptoms. Although recognizing that their pulmonary rehabilitation program was not specifically designed to treat depression, Alexopoulos et al. (2006) indicated that specific, efficacious depression treatment elements such as support and behavioral activation were components of most interventions of their study. Thus, these researchers concluded that improvement in

depression symptoms may be more closely related to behavioral interventions in the pulmonary rehabilitation program rather than a result of antidepressant drug treatment.

In a prospective study of 149 patients with COPD, researchers have also examined the effect of inpatient pulmonary rehabilitation for patients with moderate to severe levels of COPD on co-morbid depression and anxiety (Garuti et al., 2003). In that study, patients attended 12 three hour sessions 6 times per week, which included breathing training, physical exercise with a focus on activities of daily living, psychosocial counseling, stress management and symptom control. Based on their findings, the researchers concluded that although the positive effect of inpatient pulmonary rehabilitation on the reduction in depression and anxiety symptoms may have been related to the continued medical improvement following an acute exacerbation of COPD, they noted that the improvement of quality of life scores significantly paralleled the change in depression and anxiety scores (Garuti et al., 2003). This study supports prior and current research which suggests that reductions in depression and anxiety symptoms can contribute to overall improvements in quality of life for older adults with moderate to severe stages of COPD (Andenaes et al., 2004; Eiser et al., 2005; Gudmundsson et al., 2006; Kim et al., 2000; Ng et al., 2007; Sirey et al., 2007).

Researchers have examined the relationship among biomedical, self-efficacy, and quality of life factors in patients with COPD (Kohler et al., 2002). The findings in that study indicate that psychosocial factors more strongly influenced the quality of life in pulmonary patients than did the biomedical factors. This research has great implications for the use of cognitive-behavioral therapy in pulmonary rehabilitation because the

severity of lung function was less of a determinant in physical functioning ability when mediated by improved self-efficacy.

Despite the positive impact of pulmonary rehabilitation, most pulmonary rehabilitation programs do not include empirically supported treatment interventions for older adults with COPD who have co-morbid depression and anxiety symptoms. Consequently, most of the older adults with COPD continue to experience depression and anxiety without adequate psychological assessment and treatment for their symptoms. Cognitive behavioral therapy can be effective in improving the psychological functioning of older adults to cope with and manage their COPD despite the unlikely improvement in their physical symptoms (Kunik et al., 2001).

#### Cognitive Behavioral Therapy and Older Adults

The research literature on psychotherapy with older adults indicates that cognitive behavioral therapy (CBT) is an empirically supported treatment for this population (Hyer, Kramer, & Sohnle, 2004). Although much of the research on the effectiveness of CBT has been conducted in studies with younger to middle age adults, there is a growing body of research examining the efficacy of CBT for older adults (Kazantzis, Pachana, & Secker, 2003). CBT has been extensively researched and has been found to be an empirically supported treatment for many psychological disorders including depressive and anxiety disorders (Beck, 1995; Freeman, Pretzer, Fleming, & Simon, 2004; Gilson & Freeman, 1999; Leahy, 2003). Current research suggests that CBT is adaptable for the older adult population (Arean et al., 1993; American Psychological Association, 2004; Satre, Knight, & David, 2006; Scogin & McElreath, 1994). In their review of treatment outcome studies which utilize cognitive behavioral interventions, Satre et al. (2006)

suggested that the flexibility of CBT is advantageous for older adults because of the complexity of their psychological issues. These researchers noted that the psychological distress present in older adults often involves adjustment challenges related to physical illness, disability, loss of autonomy, and grief issues.

In a recent meta-analysis of psychotherapeutic interventions with older adults, Pinquart and Sorensen (2001) found that the effectiveness of CBT on depression was above average. Their meta-analytic study also found that individual CBT interventions were generally more effective than group CBT. It has been further suggested that CBT for older adults may be enhanced by a strong therapeutic alliance in the areas of: 1) socialization to the therapy process, 2) cognitive restructuring, 3) resource and skill building within the context of aging, and 4) affect tolerance (Hyer et al., 2004). In addition, CBT theory emphasizes the collaborative nature of the therapeutic alliance and supports the collaborative adaptation of homework assignments when working with older adults (Kazantzis et al., 2003). In another study examining depression in older adults, the researchers utilized individual CBT and found significantly greater reductions in depression in those older adult patients who completed more homework assignments (Coon & Thompson, 2003). These researchers noted that older adults with co-morbid medical illness may benefit from CBT homework adaptations which help the patient discriminate between disease imposed limitations and excess disability exacerbated by psychological distress.

Recent research has also conceptualized a CBT model to treat late life depression; this incorporates CBT modifications within a gerontological cognitive framework (Laidlow, Thompson, & Gallagher-Thompson, 2004). In their model, Laidlow et al.

(2004) identified important age-related issues which can be incorporated into any CBT intervention for depression treatment with older adults. For example, cohort beliefs can be addressed within the context of individual core beliefs for an older adult in terms of developing an age and generational context for therapeutic intervention. CBT interventions can also incorporate a focus on reconstructing a sense of meaning for investment in activity with new or adjusted role transitions. In this regard, Erikson's generativity stage of development (as cited by Laidlow, Thompson, & Gallagher-Thompson, 2004) can be utilized in role transitions with older adults to find alternative adaptations to loss or change.

According to their model, Laidlow et al. (2004) also note that negative cognitions about aging within a sociocultural context can contribute to a maladaptive vulnerability about the aging process for older adults. Laidlow et al. (2004) also emphasize the importance of intergenerational relationship strains in precipitating a depressive episode with older adults. This may become particularly applicable for interventions with older adults with chronic illness who may be struggling with perceptions of being a burden to adult children or grandchildren. Finally, this model also emphasizes the importance of conceptualization of disability management with chronic illness when working with older adults.

CBT interventions, designed to focus on the way a person copes with the disability consequences from chronic illness, can enhance an older adult's sense of control despite physical impairment from the disease. Social problem solving theory suggests that deficits in problem-solving can lead to maladaptive coping attempts for older adults who may be under high levels of stress from significant life changes (Araon

et al., 1993). Significant life stressors such as deteriorating physical health and loss of loved ones can impact on mood and self-esteem, and can precipitate a depressive episode. Based on social problem-solving theory, an older adult's ability to cope with these life stressors is an important factor in one's vulnerability to depression. In a study examining depression in older adults (N=75), researchers compared the effectiveness of problem-solving therapy (PST) and reminiscence therapy (RT) (Arean et al., 1993). The results in that study indicated that the older adults who received a skill based CBT approach (PST) had a greater improvement in depression symptoms than those who received an insight-based approach (RT). Thus, improvement in problem-solving ability may be an important component of a CBT approach for depression treatment in older adults.

Research also suggests that 38 to 46% of older adults with depression have co-morbid anxiety disorders or anxiety symptoms (Lenze et al., 2005). It has been suggested that the most common co-morbidity pattern has been generalized anxiety disorder preceding depression, with some researchers indicating that effective treatment for anxiety can be preventive in reducing late life depression (Ayers et al., 2007). Research has shown that CBT interventions that target beliefs about worry and intolerance of uncertainty, poor problem orientation and cognitive avoidance are effective strategies for adaptation when treating older adults with generalized anxiety disorder (Ladouceur, Leger, Dugas, & Freeston, 2004). In their recent literature review, Ayers et al. (2007) found that although CBT is an effective treatment for generalized anxiety disorder, the efficacy for subjective anxiety symptoms was weaker. These researchers noted that many of the studies reviewed utilized group rather than individual modalities and that the

protocols included limited CBT components which may not address the idiographic range of symptoms and problems experienced by older adults.

Research also suggests that anxiety in older adults can contribute to a decrease in life satisfaction which is often associated with physical disability and impairment in activities of daily living (Brenes et al., 2005). The clinical care for older adults with anxiety disorders is predominantly accessed through primary care physicians and other medical settings. Yet research suggests that mood and anxiety disorders are under-diagnosed and under-treated in primary care settings (Rabinowitz, Shayevitz, Hornik, & Feldman, 2005). Recent research suggests that the use of anxiolytic medication increases with age (Gorenstein et al., 2005). Within this context, research indicates that older adults consume a disproportionate share of anti-anxiety medications (Wetherell, Gatz, & Craske, 2003). Other studies suggest that 30% of hospitalized older adults and 20% of non-institutionalized older adults have been prescribed benzodiazepines to treat their anxiety symptoms. Yet the long-term management of anxiety with benzodiazepines for older adults remains controversial due to the potential risks with drug interactions, physical dependence, cognitive impairment, and falls.

In the older adult population, clinically significant anxiety has been associated with co-morbid medical illness (Cully et al., 2007). Research also indicates that psychosocial stressors and emotional distress are major triggers for high primary care use (Nassens, Baird, Van Houten, Vanness, & Campbell, 2005). For older adults, anxiety screen questions should focus on the impact of worry and associated anxiety symptoms on the patient's physical functioning, activities of daily living, finances, and social and interpersonal concerns. Late-life anxiety has been associated with increased complaints

of fatigue, muscle tension, pain, and worry about physical health (Lenze et al., 2005).

Older adults who are anxious and perceive poorer health have been found to be at increased risk for activity limitations or restrictions. Lenze et al. (2005) further suggested that when older adults worry about their health and restrict activity, they often become hypervigilant, with a focus on further somatic symptoms. These concerns and related behavior may contribute to a cycle which perpetuates somatization and anxiety symptoms. In one study which examined somatic symptoms, i.e. palpitations or neurological tremor, those symptoms were found to be higher at baseline for the anxious group than for the non-anxious group (Lenze, Mulsant, & Shear, 2000).

Mild or intermittent gastrointestinal distress, urinary concerns, dizziness, palpitations, and headache or back pain represent common somatic complaints even in the general population. For older adults with anxiety, these same somatic concerns may be perceived as potentially life threatening or as symptomatic of a new or worsening medical condition. Consequently, the preoccupation with somatic concerns, catastrophizing cognitions, fears of pain, and related restriction of mobility and activity fosters anticipatory worry and associated increased anxiety symptoms.

For older adults with or without serious chronic medical illness, these cognitive-behavioral processes can contribute to further disability and may exacerbate a co-morbid condition. In one case example of an older adult with GAD and co-morbid medical conditions, including diabetes mellitus, hypertension, osteoporosis, diabetic neuropathy in the feet, and chronic lower back pain secondary to spinal stenosis, the patient reported that when she experienced anxiety symptoms, her pain symptoms worsened and she became more socially isolated and disabled (Lenze et al., 2005). Some researchers have

suggested that older adults may be more comfortable in expressing the distress experienced from chronic medical conditions, bereavement issues, or other social or role loss issues through somatic complaints rather than in acknowledging their psychological struggles (Lenze et al., 2000).

In their manualized treatment protocol for primary care settings, Stanley, Diefenbach and Hopko (2004) emphasized that CBT designed to treat anxiety symptoms in older adults should be developed to target other common co-morbid conditions such as depression and specific fears. Although the small sample size in their study (n=12) limited their conclusions, these researchers found that modified CBT with increased flexibility for individual needs and with differential attention to coping skills contributed to significant improvements in worry and depression for older adults compared with usual care. Intense stressors such as physical health decline, loss of job or economic hardship, or the death of a loved one can impact the physical and mental capacity for older adults in coping with daily living activities. Problem-solving skills and coping style has been associated with perceived quality of life in relation to the management of these stressors in the lives of older adults (Lopez & Mermelstein, 1995). Thus, CBT interventions for older adults need to focus on teaching new coping skills in addition to addressing distorted thought patterns and self-defeating beliefs (Knight & Satre, 1999).

In a study on perceived health and life satisfaction for older adults, worry contributed to lower life satisfaction, negative emotions, physical discomforts and decreased functional ability (Fakouri & Lyon, 2005). These researchers also found that worry was predominantly related to health and functioning. Impaired quality of life for older adults has also been associated with worry and anxiety related to fears of falling.

Research indicates that falls are common in later life, with approximately one-third of individuals age 65 years and older sustaining a fall annually (Gagnon, Flint, Naglie, & Devins, 2005). Subsequent fear of falling occurs for approximately 50% of older adults who have sustained a fall regardless of the severity of the fall related injury. Even when the fall resulted in minimal harm, many older adults restrict or curtail activity in response to that fear; this can foster social isolation. Some studies have suggested that activity restriction associated with fall-related anxiety actually contributes to further falls due to muscle atrophy, de-conditioning and poorer balance (Gagnon et al., 2005).

Research has also suggested that death anxiety may be associated with the quality of life experienced by older adults (Ardelt & Koenig, 2006). Anxiety about death includes concerns related to uncertainty about what will occur after death, fear of separation from loved ones, dread of possible pain and stress associated with dying, and unknown physical changes. In their study on the experience of death anxiety in older adults, Ardel and Koenig (2006) found that a sense of purpose in life had a positive effect on subjective well-being and a negative effect on fear of death. A quantitative review study which focused on death anxiety experienced by older adults corroborated prior research findings that successful resolution of the integrity versus despair crisis in old age is related to decreased death anxiety (Fortner & Neimeyer, 1999). Considering the fact that research has found that increased physical health problems and higher levels of psychological problems have been associated with death anxiety in older adults (Fortner & Neimeyer, 1999), CBT for older adults may need to address specific late life cognitions associated with chronic illness, disability, and loss of loved ones (American Psychological Association, 2004; Knight & Satre, 1999; Satre et al., 2006).

### Cognitive Behavioral Therapy and COPD

Certain common medical problems which can result in anxiety symptoms in older adults include cardiovascular, neurological, and pulmonary disorders (Satre et al., 2006). Intense anxiety has been associated with respiratory disorders such as COPD, relative to the patient's experience of choking sensations and gasping for air (Brenes, 2003). In a recent study, Insel, Meek and Leventhal (2005) investigated the illness representations of the symptom experience of breathlessness in patients with moderate to severe COPD. Insel et al. (2005) found that awareness of breathing and worry about the next breath were linked to activities of daily living and effort. They found further that older adults with COPD reported metacognitive processes that associated worry, distress, and fear of death with their breathing awareness and aspects of self-care in their daily activities. The results of this study clearly support the appropriateness of cognitive-behavioral treatment strategies which help patients modify these maladaptive cognitions.

CBT strategies which reduce maladaptive cognitions with specific focus on worry, distress and fears related to chronic medical conditions have been adapted for use with older adults with anxiety and depression symptoms. In this regard, research has found that CBT can be effective in improving the psychological functioning of older adults to cope with and manage their chronic illness despite the unlikely improvement in their physical symptoms (Kunik et al., 2001). In their study, Kunik et al. (2001) found that even one brief session of CBT reduced anxiety and depression symptoms in older adults with COPD. An appropriate use of CBT for older adults with COPD would be the use of education and practice exercises to help patients understand and to cope with the

anxiety and fears around physical activity and breathlessness which develop and are related to living with a chronic medical condition.

Researchers have examined the effects of a group CBT intervention with older adults who have moderately severe COPD (n=10) on anxiety, exercise tolerance, dyspnea and quality of life (Eiser, West, Evans, Jeffers, & Quirk, 1997). In that study, the subjects were compared with a matched control group who did not receive the treatment. The intervention consisted of six 90 minute weekly group sessions of cognitive behavioral psychotherapy. The sessions, led by a psychiatrist, consisted of discussions about the impact of the physical and psychological effects of their disease on their quality of life, progressive muscle relaxation and deep breathing training, education on distraction techniques, and homework assignments which included breathing and relaxation exercises. The results of the study indicated that although there was an improvement in exercise tolerance following treatment, there was no significant reduction in anxiety. Based on the findings in this study, along with the methodological limitations, these researchers suggested that a longer course of treatment with a larger sample may yield greater results.

In a recent study examining selective attention in older adults with moderate to severe COPD (N=60), researchers compared data from three groups: one group consisted of subjects with co-morbid panic disorder or panic attacks; one group without panic attacks or panic disorder; and one age-matched healthy control group without any serious physical or mental illness (Livermore, Sharpe, & McKenzie, 2007). The results of their study indicated that in a threatening situation, anxious patients with COPD demonstrated a selective attentional bias toward positive information. However, this bias was

suppressed in patients who were also depressed. The results also indicated an attentional bias toward threatening information both in the COPD group without panic and in the healthy control group. Based on their findings, the researchers concluded that greater vigilance of breathing symptoms may be helpful for older adults with COPD who experience shortness of breath in response to physical exertion. In this regard, the researchers suggested that the lack of attentional threat bias in COPD patients with depression and intense anxiety and panic attacks may indicate a lack of sufficient awareness of breathing difficulty. It was suggested that increased anxiety may result when breathlessness occurs for those patients because they may perceive the shortness of breath as “coming out of the blue” (Livermore et al., 2007, p. 892). Based on their findings, the researchers concluded that CBT interventions for older adults with COPD and co-morbid anxiety may need adaptations to manage the actual threat of breathlessness in addition to reducing the fear related to panic sensations.

CBT components have been utilized in studies examining the level of disability in older adults with COPD with similar stages of functional impairment COPD (Lisansky & Hendel Clough, 1996). In their study (n=8), Lisansky et al. (1996) conducted an eight week cognitive behavioral, self-help, group educational program which provided COPD disease education and CBT strategies which focused on reframing cognitive distortions, stress management, breathing training, and progressive muscle relaxation. Based on their findings, the researchers concluded that there may be specific illness-related cognitive distortions in patients with COPD. These researchers also suggested that restructuring cognitive distortions may have contributed to the decrease in psychosocial disability found in their study. Although the findings in this study indicate a positive treatment

response, it is unclear from the measures selected whether or not this small convenience sample of patients met clinically significant pre and post-test levels of depression and anxiety. In addition, the relaxation and stress management components of a CBT intervention for older adults with COPD are supported by stress management theory, which suggests that the problems of living associated with a debilitating chronic illness are important targets for stress management techniques (Lehrer & Woolfolk, 2007, chap. 26).

In another study, researchers conducted a qualitative review of self-management programs and their impact on quality of life for patients with COPD (Bourbeau, Nault, & Dang-Tan, 2004). Although recognizing that the research literature is sparse with limited studies included in their review, their findings suggested that the role of self-efficacy may have important implications for depression and anxiety treatment for older adults with moderate to severe levels of COPD. In this regard, a patient's confidence in his or her ability to manage or avoid breathing difficulty has been a significant factor in predicting the patient's engagement in certain physical activities or situations. Based on their review, Bourbeau et al. (2004) recommended practice, feedback, and reattribution of negative perceptions as important components of interventions designed to increase self-efficacy with this population. In addition, these researchers emphasized that interventions programs should include behavior modification components which focus on perceived barriers and increasing disease-related skills to facilitate effective lifestyle modifications to manage this chronic illness.

Another recent study examining the effects of a dyspnea self-management program on depression with subjects who had moderate to severe COPD (N=115) found

that improvements in dyspnea management, along with an intensive supervised exercise component resulted in greater improvement in depression symptoms (Nguyen & Carrieri-Kohlman, 2005). Researchers have also examined predictors of psychotherapy engagement in a recent study with patients who had co-morbid COPD and depression and anxiety (N=248) (Cully et al., 2007). In that study, the researchers noted that although few medically ill patients receive psychotherapy, their findings suggested that mastery over COPD symptoms was the only significant predictor of engagement in mental health treatment. The findings in these previously mentioned studies further suggest that increased self-efficacy in dyspnea management is an important component of depression treatment for older adults with COPD.

In another study, researchers examined self-efficacy for walking and for managing shortness of breath in a sample (N=102) of patients with moderate to severe COPD. The results of the study indicated that subjects improved their self-efficacy for walking, which was significantly related to their walking performance demonstrated by the 6MWD test. These findings were consistent with social cognitive theory which states that a personal sense of control contributes to changes in health behavior (Bandura, 1997). Researchers have also examined the perceptions of independence in the adaptation to disability for older adults with COPD (N=50) (Falter et al., 2003). Based on their findings, Falter et al. (2003) suggested that improved self-efficacy for certain activities of daily living may improve perceptions of independence unrelated to level of disability for older adults with COPD. In his editorial calling for more research, Wamboldt (2005) suggested that reduction of depression and anxiety symptoms may promote more patient participation in COPD management, such as pulmonary

rehabilitation, with improvement in cardiopulmonary fitness contributing to improvement in dyspnea and functional capacity.

Research suggests that CBT is particularly useful for treating older adults because of its collaborative approach and because it is time-limited and symptom-focused (Stanley et al., 2003). CBT theory suggests that the use of homework assignments (practice) for older adults reduces emotional distress by enhancing skill building to manage maladaptive thoughts and behaviors (Coon & Thompson, 2003). The empirical support for the use of homework in CBT can provide the opportunity for older adults with COPD and co-morbid depression and anxiety to improve their self-efficacy and quality of life through the practice of learned skills not only during, but also in-between intervention sessions (Kazantzis et al., 2003). The research literature supports the use of an individual mode of CBT intervention for older adults (Coon & Thompson, 2003; Hyer et al. 2004; Pinguart & Sorensen, 2001). An individual approach may also be more efficacious for older adults with COPD who have not otherwise participated in a pulmonary rehabilitation program due to their depression or anxiety symptoms.

In addition, research indicates that CBT strategies could be enhanced for the treatment of anxiety by integrating motivational interviewing and mindfulness oriented techniques (Dugas & Koerner, 2005). These strategies would be particularly helpful for older adults with COPD and co-morbid anxiety, with the emphasis on accepting rather than controlling uncertainty to reduce worry and anxiety symptoms. It has been suggested that sustained observations of anxiety-related symptoms in a nonjudgmental manner without efforts to avoid or escape the symptoms may lead to reduced emotional reactivity (Kabat-Zinn et al., 1992). Because mindfulness meditation training does not

involve the induction of panic through hyperventilation as prescribed in interoceptive exposure therapy (Barlow & Craske, 2000), older adults with COPD could benefit from a technique designed to assist them in tolerating breathlessness symptoms. Mindfulness meditation, when viewed as self-directed attention without evaluation, can result in desensitization of conditioned responses and reduction of avoidant behaviors (Baer, 2003). This technique, when practiced regularly, can lead to relaxation and to further benefits for older adults with COPD, who need to maintain some vigilance about breathlessness, while simultaneously avoiding escalation of fears and anxiety symptoms.

The integration of motivational interviewing with the problem-solving approach in CBT may also be more acceptable to older adults who may perceive themselves as having had efficacy in problem-solving ability when they were younger and had fewer intense psychosocial stressors (Hyer et al., 2004). Social problem-solving theory suggests that an individual's problem-solving ability is related to an individual's experience of psychological distress, including depression and anxiety (Nezu & Nezu, 2001; Nezu, Nezu, Felgoise, McClure, & Houts, 2003). Identification of an individual's problem orientation including beliefs, appraisals and expectations concerning the ability to solve a problem effectively is an important component in the problem-solving process (Nezu & Nezu, 1993). In a recent meta-analysis which examined the efficacy of problem-solving therapy, Malouff, Thorsteinsson and Schutte (2007) found that problem-solving therapy was effective for the treatment of mental or physical health problems. In a recent study examining depression in older adults with co-morbid medical conditions, the researchers found that a brief intervention of problem-solving therapy was associated with significantly reduced depression symptoms and improved quality of life (Gellis,

McGinty, Horowitz, Bruce, & Misener, 2007). In an earlier review of empirically supported psychological treatments for chronic illnesses, the researchers suggested that efficacious psychological interventions, such as cognitive behavioral therapy, may enhance the quality of life of patients with chronic illness (Compas, Haaga, Keefe, Leitenberg, & Williams, 1998). Thus, by incorporating a problem-solving approach in the design of a CBT intervention designed to reduce depression and anxiety symptoms, older adults with COPD may improve their self-efficacy in dyspnea management and increase exercise tolerance, thereby improving their overall quality of life.

### Chapter Three: Hypotheses

In the present study, it is hypothesized that there will be a reduction in depression and anxiety symptoms for older adults with COPD, who are provided individual cognitive behavioral therapy (CBT). A reduction in depression is operationally defined as a reduction in depression symptoms as measured by the Geriatric Depression Scale (GDS) (Yesavage et al., 1983). A reduction in anxiety symptoms is operationally defined as a reduction in the state and trait anxiety scores as measured by the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970).

It is also hypothesized that the individual CBT intervention will result in an older adult's improved self-efficacy for managing dyspnea and exercise tolerance. Increased self-efficacy is operationally defined as an improvement in confidence level from the "not very confident" level to the range which falls between "somewhat confident" and "very confident" as measured by the COPD Self-Efficacy Scale (Wigal, Creer, & Kotses, 1991). In addition, increased self-efficacy may be further explained by an increase in positive problem orientation, as measured by an increase in the Positive Problem Orientation Subscale score of the Social Problem-Solving Inventory-Revised (SPSI-R) (D'Zurilla & Nezu, 1999). In this regard, it is hypothesized that the individual CBT intervention will result in increased exercise tolerance and improved dyspnea management for older adults with COPD. An increase in exercise tolerance is operationally defined as an improvement in the distance walked, as measured by the Six Minute Walk Distance Test (6MWD) (Butland, Pang, Gross, Woodcock, & Geddes, 1982). Improvement in the management of dyspnea symptoms is operationally defined

as a reduction in the scores on any of the six items measured by the Medical Research Council (MRC) Dyspnea Scale (Darbee & Ohtake, 2006).

It is further hypothesized that the individual cognitive behavioral therapy intervention will result in improved quality of life and functional status for older adults with COPD. Improved quality of life is operationally defined as improved health status, as measured by a reduction in the Total Score on the St. George's Respiratory Questionnaire for COPD patients (SGRQ-C) (Meguro, Barley, Spencer, & Jones, 2007).

## Chapter Four: Methods

### *Overview*

The present study evaluated the impact of an individual cognitive behavioral therapy approach for the treatment of depression and anxiety symptoms in older adults with COPD. This feasibility study was designed to examine the effect of a COPD-specific CBT intervention to decrease depression and anxiety; to increase self-efficacy and positive problem orientation; to increase exercise tolerance; and to improve dyspnea management and quality of life.

### *Design and Design Justification*

The study is a single subject, multiple-baseline design observed across three subjects. This design relates to the research goals, which are to develop a COPD-specific protocol to examine the impact of individual CBT on depression and anxiety symptoms and health related quality of life and functional status for older adults with moderate to severe COPD. The multiple baseline design across individuals in this feasibility study provides the necessary control without reversal of the conditions required to demonstrate the effects of the intervention (Kazdin, 1982). This design eliminates the need for disruption of the intervention, once introduced, for a population of older adults whose health status may be further compromised by the withholding or withdrawal of the intervention. The design began with pre-test baseline assessment of all three study participants, after which the intervention was applied to only one of the subjects. Baseline assessment continued until all of the subjects received the intervention.

*Participants*

To meet the research goals, three (3) individuals ages 65 years and older (patients at a large outpatient pulmonary practice), who had a primary diagnosis of moderate to severe COPD (GOLD staging standard, NHLBI/WHO) (Pauwels et al., 2001) with comorbid depression and anxiety symptoms were enrolled in the study. The outpatient pulmonary practice serves the population residing in eastern Pennsylvania, including Philadelphia and two surrounding counties, representing a mixture of urban, suburban, and rural settings. The participants were recruited from a highly specialized population available at a large hospital-affiliated pulmonary practice, which specializes in chronic pulmonary disease, and which is affiliated with an outpatient pulmonary rehabilitation program for adults with chronic lung disease. This pulmonary practice services a culturally diverse population, which includes African American, Caucasian, Hispanic/Latino American, and Asian American individuals. Fourteen older adults who were identified in moderate to severe stages of COPD were recruited for the study. Of the 14 recruited patients, eleven were not enrolled in the study for the following reasons: three were not interested in participation; two reported no current depression symptoms; two were taking Theophylline; one had cognitive impairment; one was a current smoker; one developed pneumonia following screening; and one was unable to enroll at the time of the study due to other work commitments. The participants, all Caucasian, ranged in age from 74-79 ( $M = 76.33$ ,  $SD = 2.52$ ), and included one male and two females. All three participants were currently retired and had a high school education. Two of the three participants completed all twelve sessions of the protocol, but one participant

(female) withdrew from the study following the completion of the sixth therapy session due to illness and caregiver obligations.

*Inclusion Criteria.*

All of the participants had a history of smoking, but were current nonsmokers or ex-smokers at the time of the study. Because COPD in older adults is recognized as a heterogeneous disease, other stable, co-morbid medical conditions included are cardiovascular disease, including congestive heart failure and other circulatory system diseases. All of the participants were currently treated with bronchodilator therapy and oxygen therapy. All of the participants included in the study were ambulatory and one participant ambulated with the use of a walker. All of the participants were receiving low dosage antidepressant and/or anti-anxiety medication during the course of the study, and had been on a stable dosage for at least three months. All three participants included in the study had spirometric testing to measure pulmonary function within the prior six (6) months at the outset of their enrollment in the study and were oxygen dependent.

*Exclusion Criteria.*

Patients who had participated in a pulmonary rehabilitation program within three months prior to enrollment were excluded from the study. Individuals with advanced stage lung cancer or other malignant disease, advanced coronary heart disease, severe end stage respiratory disease, severe left ventricular dysfunction, or any other unstable medical condition were excluded from the study. Other exclusion criteria included individuals with COPD who were non-ambulatory. Patients who are chronically treated with systemic glucocorticosteroids were excluded from the study. Individuals with a past or current psychiatric treatment history were excluded from the study, as well as

individuals with dementia or psychosis. Patients who were taking certain non-psychotropic medications, such as Theophylline, which may affect mood states, were also excluded from the study. Patients with severe visual or writing difficulties were also excluded from the study.

### *Measures*

#### Geriatric Depression Scale (GDS)

The Geriatric Depression Scale (GDS) was used to assess depression severity. The GDS consists of 30 Yes/No questions, and was specifically developed for older adults (Yesavage et al., 1983). The simplicity of the “yes” or “no” responses enables this measure to be used with older adults with chronic illness, and is commonly used as a routine part of a comprehensive geriatric assessment. This questionnaire, which has valid and reliable psychometric properties, has been compared with the Hamilton Rating Scale for Depression (HRS-D), and has been used extensively to detect depression in older adults with and without chronic illness (Kim et al., 2000). In addition, this measure has been found to discriminate between groups of normal, mildly, and severely depressed elderly subjects.

#### Mini-Mental State Exam (MMSE)

In addition, the Mini-Mental State Exam (MMSE) (Folstein, Folstein, & McHugh, 1975) was utilized to screen for cognitive impairment. This instrument is widely utilized to measure cognitive impairment in the geriatric population and it has demonstrated validity and reliability for both psychiatric and medical populations. The instrument measures cognitive functioning including orientation, attention, immediate and short-term recall, language and the ability to follow instructions. The maximum score possible in

this test is 30. A score below 22, which indicates cognitive impairment, is not considered normal for older adults.

#### State Trait Anxiety Inventory (STAI)

Anxiety was assessed with the State Trait Anxiety Inventory (STAI), a self-reported assessment instrument which includes separate measures of state and trait anxiety (Spielberger et al., 1970). State anxiety reflects a more transitory emotional state, which may fluctuate in intensity over time. The anxiety state scale consists of 20 statements that evaluate how respondents feel at the moment. The trait anxiety scale composed of 20 statements, measures how respondents feel generally. This anxiety measure is highly reliable and has the ability to discriminate changes related to the effects of stressful situations (Metzger, 1976). This instrument, a widely used tool to measure general anxiety, has good psychometric properties (Lang & McNeil, 2006).

#### COPD Self-Efficacy Scale

The Self-Efficacy questionnaire used in this study was the COPD Self-Efficacy Scale, which consists of 34 items and assesses patients' confidence regarding their ability to avoid or manage breathing difficulty in certain situations (Wigal et al., 1991). This questionnaire has five subscales: Negative Affect, Intense Emotional Arousal, Physical Exertion, Weather/Environmental, and Behavioral Risk Factors, which measure confidence with breathing management in those specific situations. This instrument has good test-retest reliability ( $r = .77$ ) and excellent internal consistency (Cronbach's  $\alpha = .95$ ) (Wigal et al., 1991). In addition to the five subscale scores, each scale adds up to a total score on a Likert type rating scale with measurements from 1 to 5, with 1 indicating low self-efficacy and higher scores indicating higher self-efficacy. Self-efficacy has been

found to predict physical function and role function, i.e. social and family (Sullivan et al., 1998). Self-efficacy was recently examined in a study designed to compare self-efficacy in patients with chronic heart failure and in patients with COPD (Arnold et al., 2005).

#### St. George Respiratory Questionnaire (SGRQ-C)

The COPD-Specific Version of the St. George Respiratory Questionnaire (SGRQ-C) was utilized to assess functional health status because it is a disease-specific measure used with patients with COPD (Meguro et al., 2007). The SGRQ is a standardized, disease-specific, self-administered health status instrument which has been found reliable and valid for use in assessing health related quality of life for individuals with chronic pulmonary disease (Gudmundsson et al., 2006; Jones, Quirk, Baveystock, & Littlejohns, 1992). The SGRQ-C instrument has 40 items with a total score and three subscales which assess health-related quality of life in individuals with COPD. The three subscales include “symptoms”, which measures distress caused by respiratory symptoms; “activity”, which measures the effect of disturbance on the mobility and physical activity; and “impact”, which measures the psychosocial impact of the disease.

#### Social Problem-Solving Inventory-Revised (SPSI-R)

The Social Problem-Solving Inventory-Revised (SPSI-R:S) is the short form version of this self-report instrument which measures one’s ability to identify adaptive solutions to problems in daily living (D’Zurilla & Nezu, 1999). The short form version is a 25-item instrument which takes approximately 10 minutes to complete. This instrument has separate norms available for elderly adults and has been widely used in research with patients with chronic illness, such as cancer (Nezu et al., 2003). In addition to a total score, the measure consists of five scales which measure two constructive

dimensions (Positive Problem Orientation (PPO) and Rational Problem Solving (RPS) and three dysfunctional dimensions (Negative Problem Orientation, Impulsivity/Carelessness Style, and Avoidance Style). Positive Problem Orientation (PPO) is described as a constructive, problem-solving cognitive set which involves: appraising a problem as a challenge rather than a threat; a belief that problems are solvable; a belief in one's ability to solve problems successfully (self-efficacy); a belief that successful problem-solving takes time, effort and persistence, and a commitment to solving problems with dispatch rather than with avoidance. Negative problem Orientation (NPO) is the dysfunctional or inhibitive cognitive-emotional set that involves the tendency to: view a problem as a significant threat; to doubt one's ability to solve problems successfully, and to become upset or frustrated when confronted with life problems. The Rational Problem Solving (RPS) subscale includes four specific tasks which define a constructive problem-solving style: problem definition, generation of alternative solutions, decision-making, and solution implementation and verification. These subscales are included to evaluate the hypothesis that an increase in adaptive problem-solving would be associated with an increase in self-efficacy and quality of life and decreased psychological distress. The SPSI-R, which has strong internal consistency (alpha range is 0.79 to 0.95 across the five scales) and good test-retest reliability, has been found to be sensitive to the effects of treatment (Nezu et al. 2003).

#### Medical Research Council (MRC) Dyspnea Scale

Dyspnea was assessed using the modified Medical Research Council (MRC) Dyspnea Scale (Darbee & Ohtake, 2006), which categorizes the intensity of dyspnea ranging from 0 to 5, using the following descriptors:

0 = None = Not troubled by dyspnea.

1 = Slight = Troubled by shortness of breath when hurrying on the level or walking up a slight hill.

2 = Moderate = Walks slower than people of the same age on the level because of breathlessness.

3 = Moderately Severe = Has to stop because of breathlessness when walking at own pace on the level.

4 = Severe = Stops for breath after walking about 100 yards or after a few minutes on the level.

5 = Very Severe = Too breathless to leave the house or breathless when dressing or undressing.

The questionnaire is a simple self-administered scale consisting of 6 statements about the perceived effect of breathlessness on daily activities. This instrument has been used in recent studies to document the impact of dyspnea on a person's physical functioning (Darbee & Ohtake, 2006).

#### Six Minute Walk Distance Test (6MWD)

Exercise tolerance was assessed by the Six-Minute Walk Distance test (6MWD), which was administered by a certified respiratory therapist at the hospital Pulmonary Rehabilitation Program. This assessment measures the total distance (in feet) that the participant can walk in a six minute interval and has been used extensively in pulmonary rehabilitation as a measure of exercise performance (Butland et al., 1982). The test results will be reviewed and recorded by a certified pulmonologist at the pulmonary practice medical facility.

*Procedure*

All participants signed an informed consent form approved by the appropriate Institutional Review Boards. The study was conducted at the pulmonary practice medical facility. All pre and posttest data was collected by the responsible investigator of the study, with the exception of the Six Minute Walk Distance Test, which was collected by the hospital Respiratory Department. Pulmonary function was determined by a certified pulmonologist who obtained spirometric measurements of forced vital capacity (FVC); forced expiratory volume ( $FEV_{1.0}$ ), and maximum mid-expiratory flow rate ( $FEF_{25-75}$ ) during the past six months. Those test measurements and results were collected as part of standard medical care and were obtained from the medical records at the pulmonary practice medical facility.

To meet the inclusion criteria, the participants were screened for depression and anxiety symptoms by the responsible investigator. Only those participants who met the required cutoff scores on the Geriatric Depression Scale (GDS) and the State Trait Anxiety Inventory (STAI) were included in the study.

Each participant who met the inclusion criteria was required to complete all of the baseline assessment pretest measures prior to the start of the intervention. The participants were matched for severity of depression and anxiety symptoms based on a score above or below the midpoint on the pre-test assessment measures.

Following completion of the first baselines, the first subject commenced treatment consisting of twelve (12) one hour individual CBT sessions, which were conducted weekly in no less duration than six weeks and in no longer duration than 16 weeks. The second and third subjects received baseline measurements again at the completion of the

first subject's third session. The second subject began treatment while the third subject received baseline assessment following the third session completed by the second subject. The third subject began treatment following the third session completed by the second subject.

If for any reason the participant was unable to continue treatment during the study, the participant would be referred out to another treatment provider. If a participant drops out of the study prior to the sixth session, another participant may be enrolled in the study. In the event that a patient's medical status changes (e.g. acute exacerbation) prior to the sixth session, the participant may continue in treatment with changes and progress documented, but data will not be analyzed as part of the three required participants. If a participant drops out of the study following the sixth session, the participant will be considered a viable subject for the purpose of data collection and interpretation of study results.

The intervention phase consisted of twelve (12) individual therapy sessions, which was provided by an advanced doctoral candidate in clinical psychology, specifically trained in cognitive behavioral therapy (CBT). The doctoral level therapist was supervised by a licensed psychologist, who is board certified in clinical psychology by the American Board of Professional Psychologists in Clinical Psychology. All therapy sessions were audiotaped, with ongoing review by the supervising psychologist to ensure that the therapy was consistent with the principles of CBT and that the sessions conform to the treatment protocol developed specifically for patients with COPD.

*Session One*

Session One consisted of a semi-structured clinical interview which supplemented the assessment data collected during the initial baseline phase of the study. The therapist utilized an initial evaluation form (Appendix A), which outlined the major topic areas needed to develop the patient's treatment plan and goals for therapy. This first session also included an orientation to the CBT process for the patient.

Goals:

- 1) Gather patient information to include patient's symptomatology, history, current functioning, and goals for therapy, which will form the foundation for understanding the processes that initiate and maintain the patient's difficulties related to his or her COPD illness (Freeman et al., 2004).
- 2) Provide the patient with an educational handout (Appendix B), to explain the basic structure of a CBT session; this will include: agenda setting; a review of the patient's current physical and emotional status; a review of homework from the previous session; an overview and rationale for the main agenda for the current session and any agenda items prioritized by the patient, and the collaborative development of new homework assignments.

Training:

- 1) Provide education to the patient about the complexity and variety of symptoms presenting in depression and anxiety disorders which may co-exist with COPD. Assist the patient in understanding those symptoms which are not part of the medical condition. Assist the patient in the recognition that depression and anxiety are separate and reversible problems from their COPD condition. Educate the patient about the impact of

untreated depression and anxiety on his or her medical condition. Encourage hopefulness by explaining the benefits of psychological intervention to treat the depression and anxiety symptoms.

2) Provide a brief introduction to the process of CBT, including the function of homework assignments (Gilson & Freeman, 1999). Provide an explanation to the patient that the purpose of homework assignments is to provide specific opportunities to practice learned skills and techniques and to identify any difficulties with implementation or maintenance. Explain to the patient that the therapist will solicit feedback from the patient each week concerning the previous and current session to engage the patient in the collaborative process of CBT.

3) Establish a simple homework assignment aimed at identification of the patient's problem orientation such as creating a problem list, which the patient will bring to the next session.

*Session Two*

Goals:

1) Provide foundational psychoeducation for the social problem-solving approach in managing depression and anxiety symptoms secondary to medical conditions (Nezu, Nezu, Friedman, Faddis, & Houts, 1998).

2) Identify and alter those beliefs which interfere with motivation to engage in adaptive problem-solving behaviors when coping with COPD related stressors.

Training:

- 1) Positive Problem Orientation (PPO) vs. Negative Problem Orientation (NPO).
- 2) Components of problem orientation:

Problem perception; problem attribution about cause of problems; problem appraisal (challenge or threat); perceived control over COPD related stressors; commitment to time and effort for problem-solving (Appendix C).

Agenda:

- 1) Review any questions on the content or key points of the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale and overview for the problem orientation training and the relationship with self-efficacy in symptom management.
- 5) Have the patient identify a problem related to his or her COPD illness in order to begin to utilize the components of problem orientation in the session to challenge the beliefs or attitudes which contribute to maladaptive problem-solving.
- 6) Collaboratively develop self-monitoring homework assignment for the patient so that he or she may practice recognizing automatic thoughts and may rate feelings associated with problem orientation. Recommend that the patient practice recording his or her thoughts and feelings on the Thought/Feeling Rating Log (Appendix D) at least four to seven days per week.

*Session Three*

Goals:

- 1) Encourage positive problem orientation by changing attitudes or beliefs related to problem orientation.

- 2) Identify cognitive distortions which contribute to the portion of activity restriction that is not determined by actual physical limitations.

Training:

- 1) Educate the patient about automatic thoughts and identify some of the cognitive distortions related to COPD which may be contributing to his or her activity restriction, including how activity restriction affects thoughts and feelings.
- 2) Teach patient to understand the difference between thoughts and feelings, including how these relate to behaviors.

Agenda:

- 1) Review any questions on the content or key points of the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale for the focus on cognitive distortions (Appendix E) and explain how thoughts, feelings and behaviors are interrelated and how cognitive distortions are related to depression and anxiety.
- 5) Have the patient review the list of common cognitive distortions and identify some of his or her own automatic thoughts related to maladaptive activity restriction in coping with COPD.
- 6) Use examples during the session to teach the patient how to challenge the distorted thought and replace it with an alternative adaptive thought, using the daily thought record.

- 7) Use patient's own examples during the session to teach the patient how to recognize and separate the thought from the feeling, using the daily thought record (Appendix F) so that the patient can identify thought patterns which maintain the depression and anxiety.
- 8) Collaboratively create new homework assignment for the patient to practice using the daily thought record between sessions to reframe his or her thoughts and improve his or her mood. Recommend that the patient practice using the daily thought record (Appendix F) at least four to seven days per week.

#### *Session Four*

##### Goal:

- 1) Provide relaxation training.

##### Training:

- 1) Diaphragmatic and pursed-lips breathing (Gilbert, 2003) (Appendix G).
- 2) Guided Imagery training (Appendix H).

##### Agenda:

- 1) Review any questions on content or key points of prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale and overview for the relaxation training and the relationship with dyspnea management and anxiety.
- 5) Have the patient discuss any automatic thoughts or self-defeating beliefs which may interfere with engaging in the breathing training.

- 6) Instruct the patient on diaphragmatic breathing and have the patient practice the breathing strategy during the session to ensure the patient has learned the technique. Assist the patient in understanding that learning to breathe more deeply in a slower rhythm serves to stop hyperventilation which accompanies anxiety and panic attacks. Explain to the patient that learning to breathe in through the nose will help to reduce coughing.
- 7) Instruct the patient on imagery relaxation utilizing imagery initiated by the individual patient or given to him or her by the therapist and have the patient engage in practice during the session to ensure that the patient has learned the technique.
- 8) Develop new, collaboratively created homework assignment for the patient, in order to practice the learned techniques between sessions. Recommend that the patient practice 10 deep, slow breaths at least three to five times per day. Recommend that the patient practice using the learned imagery technique at least four to seven days per week.

#### *Session Five*

##### Goal:

Provide psychoeducation about the use and control of emotions in effective problem-solving.

##### Training:

- 1) Educate the patient about how to use emotions as a cue for problem recognition.
- 2) Facilitate positive problem orientation by having patient learn how to minimize emotional distress related to managing the irreversible and chronic nature of COPD.

##### Agenda:

- 1) Review any questions on the content or key points from the prior session.

- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Have the patient identify how to view a problem as a challenge rather than as a threat.
- 5) Help the patient gain understanding about emotional arousal and beliefs about problem solving capability.
- 6) Have the patient identify any available social roles to help turn adversity into a challenge.
- 7) Help the patient redefine roles and responsibility.
- 8) Help the patient challenge any perceptions associated with feeling like a "burden" on significant others.
- 9) Utilize the "Examine the Evidence" strategy to challenge the patient to identify areas of autonomy, despite increased dependence on others (Appendix I).
- 10) Collaboratively create a homework assignment for the patient, in order to practice challenging negative cognitive distortions which present as obstacles to social roles and autonomy. Recommend that the patient practice using the "Examine the Evidence" record (Appendix I) at least four to seven days per week.

### *Session Six*

#### Goals:

- 1) To educate the patient about anticipatory anxiety and breathlessness and avoidance conditioning.
- 2) Learn to observe thoughts and feelings and to observe which situations/activities are related to greater or lesser emotional distress.

Training:

- 1) Systematic desensitization
- 1) Self-monitoring and Activity Scheduling

Agenda:

- 1) Review any questions on the content or key points from the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale for exposure and de-conditioning for avoidant behavior related to anxiety.
- 5) Develop a hierarchy of anxiety provoking activities related to COPD.
- 6) Assist the patient in the use of covert desensitization by having the patient employ cognitive rehearsal with coping imagery during the session, utilizing an activity from the hierarchy which elicits only a mild level of anxiety.
- 7) Provide the rationale for learning how to use an activity schedule to monitor skill/task mastery and pleasure in activity. Explain the relationship between positive problem orientation and mastery and pleasure in activity.
- 8) Have the patient identify specific behaviors to increase activity, utilizing the activity schedule during the session (Appendix J).
- 9) Collaboratively create new homework assignment for the patient, in order to begin using an activity schedule and to practice using cognitive rehearsal with relaxation strategies learned from prior sessions to cope with and reduce anxiety related to anticipatory breathlessness. Recommend that the patient engage in at least one to two

activities per day using relaxation strategies and record and rate the activities on the Activity Schedule (Appendix J).

*Session Seven*

Goal:

1) Provide problem-solving skills training (Appendix K) for patient's utilization in determining the most effective solution for coping with problems or situations related to COPD illness.

Training:

- 1) Problem definition.
- 2) Generating alternative.
- 3) Making decisions.
- 4) Evaluation of solution outcome and verification.

Agenda:

- 1) Review any questions on content or key points from the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale for improving problem-solving skills training and the relationship with self-efficacy in symptom management.
- 5) Have the patient identify two current problems related to his or her COPD illness in order to begin to practice problem definition and solution generation in the session.
- 6) Help the patient determine advantages and disadvantages of the solutions generated (Appendix L).

- 7) Evaluate and review patient's progress and discuss transition status to begin preparation for discharge from treatment.
- 8) Collaboratively develop homework assignment for the patient, in order to practice the most promising alternative for at least two problems through guided discovery and to evaluate and verify the solution outcomes. Recommend that the patient practice improving problem-solving skills by using the Generating Alternatives record (Appendix L) for at least two problems before the next session.

### *Session Eight*

#### Goals:

- 1) To learn how to improve mood by increasing behavioral activation.
- 2) Utilize and strengthen problem-solving skills and reinforce a positive problem orientation to break the habit of procrastination and avoidant behavior related to activity restriction due to breathlessness.

#### Training:

- 1) Review and evaluate patient's problem-solving skills to enhance coping with difficult situations related to coping with dyspnea and fatigue experienced with increased activity.
- 2) Learn how to engage in self-enhancement activity.

#### Agenda:

- 1) Review any questions on content or key points from the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.

- 4) Provide the rationale for the connection between behavioral activity and improved mood.
- 5) Provide the rationale for maintaining a positive problem orientation and the relationship with enhanced self-efficacy and quality of life in adjusting to disability related to the progression of COPD.
- 6) Use the activity chart to facilitate the patient's understanding of how his or her activity and the way he or she spends time has an impact on mood and emotional states.
- 7) Assist the patient in determining which activities and events are rewarding for the patient and assist the patient to define any problem or obstacle related to engaging in the pleasant or rewarding activity.
- 8) Help the patient to generate alternatives and to evaluate the likely outcome of each alternative solution, including advantages and disadvantages (Appendix L).
- 9) Collaboratively create new homework assignment for the patient to continue physical activity and to practice using problem solving skills to evaluate outcomes using the activity record. Recommend that the patient record and rate at least one to two activities per day on the Activity Schedule. Recommend that the patient practice problem-solving skills, using the Generating Alternatives record (Appendix L) for any obstacles encountered, relative to engaging in the activity.

### *Session Nine*

#### Goals:

- 1) Gain control of emotions when presented with stressors related to COPD.
- 2) Strengthen perceived control and self-efficacy in using problem-solving skills.

#### Training:

- 1) Gain understanding of the role of vulnerability factors for depression, including how it relates to the chronicity of COPD.
- 2) Learn how to decrease emotional distress and vulnerability to depression by evaluating and prioritizing stressors related to COPD and by using learned problem-solving skills.

Agenda:

- 1) Review any questions on content or key points from the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Have the patient evaluate situation-specific vulnerability by identifying those situations with a low vulnerability threshold.
- 5) Assist the patient to define the problem by identifying those situations for which the amount of stress exceeds his or her vulnerability threshold.
- 6) Have the patient utilize the Coping with Stressors Worksheet (Appendix L) to identify and record a small part of the stressful situation with which coping can begin.
- 7) Help the patient determine advantages and disadvantages of the options for coping with the stressors related to COPD.
- 8) Collaboratively create new homework assignment for the patient, in order to practice a small part of coping with the stressor and to evaluate the solution outcome. Recommend that the patient practice improving problem-solving and coping skills by using the Generating Alternative record (Appendix L) and Coping With Stressors Worksheet (Appendix M) for at least one to two stressful situations before the next session.

*Session Ten*Goal:

1) Evaluate and improve dyspnea management to maintain progress, enhance skill building, and prevent relapse with depression and anxiety.

Training:

- 1) Learn to utilize the self-control triad (Appendix N) in order to manage anxiety related to breathlessness.
- 2) Learn to utilize mindfulness meditation to remain present and focused, in order to foster acceptance and commitment to maintaining change, despite any changes in the patient's pulmonary function status.

Agenda:

- 1) Review any questions on content or key points from the prior session.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Provide the rationale for the utility of the self-control triad in managing anxiety related to dyspnea.
- 5) Have the patient engage in cognitive-behavioral rehearsal, using the self-control triad to reduce anxiety related to breathlessness expectations with the anticipation of increased exercise.
- 6) Provide the rationale for utilizing mindfulness meditation to cope with the chronicity of COPD and to help the patient manage emotional distress related to coping with shortness of breath.

- 7) Have the patient engage in five minutes of mindfulness meditation during the session to ensure comfort level with the technique.
- 8) Trouble-shoot any problem areas the patient has experienced in using the techniques learned in prior sessions.
- 9) Have the patient identify areas of success in utilizing the CBT strategies learned for coping with their COPD illness.
- 10) Reinforce the patient's successes and assist the patient in coping with any areas of difficulty.
- 11) Discuss transition and maintenance purpose of remaining two sessions in preparation for discharge from treatment.
- 12) Collaboratively create new homework assignment focused on practicing the self-control triad and mindfulness meditation, along with any techniques which require reinforcement of previously learned skills. Recommend that the patient practice the self-control triad to manage anxiety related to breathlessness or activity at least one to three times per day. Recommend that the patient practice mindfulness meditation for at least five to ten minutes per day.

*Sessions Eleven and Twelve*

Goal:

- 1) Increase self-instruction or coaching to maintain progress in alleviating depression and anxiety symptoms.

Training:

- 1) Learn to utilize, change and strengthen the techniques used from prior sessions.

Agenda:

- 1) Review any questions on content or key points from any of the prior sessions.
- 2) Review the patient's current physical and emotional status and any agenda items prioritized by the patient for the current session.
- 3) Review the homework from the previous session.
- 4) Have the patient identify the techniques most uniquely useful to him or her in reducing depression and anxiety symptoms.
- 5) Have the patient identify the warning signs for behavioral or cognitive regression.
- 6) Review the patient's coping resources for managing stressful situations related to COPD.
- 7) Have the patient develop a relapse prevention plan, including support resources for future utilization.
- 8) Recommend that the patient continue to increase pleasant activity and practice the learned skills to manage stressors daily.
- 9) Provide the patient with resources for future referrals if depression and anxiety symptoms recur or persist (Appendix O).

## Chapter Five: Results

### *Overview*

Three older adults participated in the study and data was compared within and between participants. The pre-test baseline assessments were analyzed to determine the slope and variability among all three participants. Intervention post-test data was collected and analyzed for all three participants with follow-up data collected and analyzed for the two subjects who completed the entire therapy protocol.

### Geriatric Depression Scale

#### *Pre-test data.*

The slope of the between participants pre-test baseline data as shown in Figure 1 indicates that there was a steady increase in depression symptoms, as measured by the Geriatric Depression Scale (Yesavage et al., 1983) for Carla (who completed six sessions) during the pre-test baseline period while Dee and Harry were receiving the therapy protocol. The pre-test data for both Dee and Harry show a relatively stable baseline prior to the intervention phase of the study. These results suggest that the reduction in depression symptoms experienced by Dee and Harry may have been related to their completion of the protocol during the intervention phase of the study.

#### *Post-test data.*

The results of this study indicate that there was a reduction in depression symptoms as measured by the Geriatric Depression Scale (Yesavage et al., 1983) for all three participants (Dee = 6; Harry = 6; and Carla = 11) as shown in Table A. The follow-up data results for the two subjects who completed the entire protocol of twelve sessions (Dee and Harry) show that reductions in depression symptoms were sustained at both

three and six month follow-up (see Table A). Although posttest results indicate a reduction in depression symptoms for Carla following six sessions of the protocol, this participant was still reporting mild depression at the time she withdrew from the study. Had she completed the entire therapy protocol, she may have obtained a greater reduction in depression symptoms.

#### State Trait Anxiety Inventory

##### *Pre-test data.*

The slope of the pre-test baseline assessments, shown in Figure 2, reveals a steady increase in State anxiety symptoms for Carla prior to the intervention, despite a more stable Trait anxiety pattern, while Dee and Harry were receiving the therapy protocol. The results of the pre-test baseline data shown in Figure 2 also reveal that there was minimal variability in the State anxiety symptoms for Dee and Harry, and minimal to no variability in the Trait anxiety symptoms for Dee and Harry, respectively. The stability in the slope of the baseline data suggests that reductions in anxiety at post-test may be related to the intervention phase of the study.

##### *Post-test data.*

Table B shows that there was a decrease in anxiety for Dee and Harry, as measured by the State Trait Anxiety Inventory (Spielberger et al., 1970). The posttest results show that Dee, Harry, and Carla experienced a reduction in state anxiety ( $S=30$ ;  $S=33$ ; and  $S = 38$ , respectively as shown in Table B) following the intervention phase of the study. The reductions in both State and Trait anxiety at post-test for all three subjects were below the means found in general medical patients without psychiatric complications (Mean = 42.68, SD = 13.76). Considering the fact that Dee and Harry

sustained a further reduction in State anxiety at follow-up (Dee = 21 at 6 months; Harry = 22 at 3 months), Carla's State anxiety may have been further reduced had she completed the entire protocol. As shown in Table B, Dee maintained a more stable Trait anxiety pattern at posttest, but experienced a reduction in Trait anxiety at three and six month follow-up. In contrast, Harry showed a reduction in Trait anxiety at posttest, which was maintained at both three and six month follow-up. These results suggest that the reduction in anxiety symptoms may be related to completion of the therapy protocol with continued maintenance of the gains experienced in managing COPD related anxiety symptoms. Analysis of Trait anxiety for Carla was not conducted due to incomplete data.

#### COPD Self-Efficacy Scale

##### *Pre-test data.*

A comparison of the pre-test baseline data among all three subjects indicates that there was relative stability in the slope of the data for all three participants, as shown in Figure 3. These results suggest that the increase in self-efficacy for managing COPD symptoms found for all three subjects at post-test was related to their participation in the intervention phase of the study.

##### *Post-test data.*

The posttest data results shown in Table C indicate that all three participants experienced an increase in self-efficacy as measured by the COPD Self-Efficacy Scale (Wigal et al., 1991) (Dee = 3.74, Harry = 4.30, Carla = 2.78). These results indicate that while self-efficacy increased for both subjects following the intervention phase of the study, Dee's self-efficacy was higher than the other two participants at baseline, which may account for her small increase at post-test. However, as shown in Figure 3, the

effect size for Dee was larger at three and six month follow-up than the small increase in her self-efficacy at posttest (Dee= 4.65 at 3 months; 4.15 at 6 months). For Harry, the results show a greater magnitude in effect size at posttest (4.30) which was maintained at three and six month follow-up (Harry = 4.06 at 3 months; 4.91 at 6 months). As shown in Table C, Dee experienced and maintained greater gains at follow-up, which may be related to continued posttest skill practice.

In contrast, the results show that despite an increase in Carla’s score at post-test, her self-efficacy remained low (2.78) in comparison with the overall higher self-efficacy scores obtained by Dee and Harry post intervention and sustained at follow-up (see Table C). These findings suggest that the increase in self-efficacy for Dee and Harry are most likely related to their completion of the twelve session therapy protocol, because Carla completed only six sessions. The results indicate that Carla may have experienced a greater increase in self-efficacy had she completed the entire therapy protocol.

St. George Respiratory Questionnaire for COPD Patients

*Pre-test data.*

The results shown in Table D indicate that Carla continued to incur a reduction in health related quality of life during the pre-test baseline assessment period as indicated by the stability and steady increase in her baseline scores on all four measured scales. The pre-test measurements for Dee indicate relative stability on the Total and Activity scales, along with an increase in the Symptoms scale during the baseline phase of the study (see Table D). There was a slight decrease in her Impacts pre-test measurement during the baseline phase of the study. As shown in Table D, the results show relative stability in the baselines on the Symptoms scale for Harry. However, there was a slight decrease in

the Activity, Impacts, and Total scales during the baseline phase of the study. Although these results suggest that there was some variability in the pre-test data for Dee and Harry showing slight changes prior to the intervention, the post-test results indicate substantial changes following the intervention. A review of comparison baseline and post-test data utilizing an American sample of patients with COPD is shown in Table D.

*Post-test data.*

The post-test results indicate that there was a significant improvement in the Symptoms scores for health related quality of life, as measured by the St. George Respiratory Questionnaire for COPD Patients (Meguro et al., 2007) for Dee and Harry following the intervention phase as shown in Table D. For Dee, the findings reveal that there was a significant reduction in the perception of her distress resultant from respiratory symptoms (Baseline = 68.56 post-test; Symptoms = 46.14) following the intervention phase which was maintained and further reduced at three and six month follow-up (3 month follow-up = 42.17; and 6 month follow-up = 44.48). A reduction is also true for Harry; his Symptoms score of 60.79 at baseline was reduced to 46.14 at post-test, with further reductions at 3 month follow-up (32.24) and six month follow-up (27.83).

The results also indicate there was no change for Dee on the Activity subscale following the intervention phase at posttest. However, the results show a significant reduction in the Impacts score for Dee at three and six month follow up (Impacts = 19.19, and 14.53, respectively as shown in Table D). In addition, the results for Dee revealed a significant reduction in her Total score at post-test, which was further reduced at three and six month follow-up as shown in Table D (Total = 43.80, 39.72, 37.63, respectively).

These results suggest that Dee experienced an improvement in quality of life related to her perception of respiratory problems and psychosocial impacts following the intervention, despite no change in the impacts to her daily physical activity. The results further indicate that her improved overall quality of life was maintained and further improved at three and six month follow-up.

There was also a significant reduction in the Activity, Impacts and Total scores for Harry following the intervention as shown in Table D (Activity = 73.07, Impacts = 2.18, and Total = 31.35). However, his Activity scale score at follow-up (80.27) indicates that he did not sustain his improvement at follow-up. The results also indicate that although Harry's Impacts scale score increased at three month follow-up, he showed a reduction at six month follow-up (11.07) which suggests that his reduction in psychosocial impacts was maintained and related to his participation in the intervention. As shown in Table D, the results further reveal that Harry's reduction in the Total scale score was maintained at three and six month follow-up (3 month = 40.28; 6 month = 35.38). These results suggest that Harry's overall improvement in quality of life is most likely related to his completion of the twelve session therapy intervention.

Although the results shown in Table D for Carla suggest that she experienced a significant reduction in the psychosocial impacts (Impacts = 31.88) at posttest, there was no significant change in her perception of respiratory symptoms or impacts to her daily physical activity following her six sessions of intervention. In fact, her overall total score on the SGRQ-C merely returned to her initial baseline measurement following her six therapy sessions. These results suggest that Carla may have incurred a greater

improvement in her perception of respiratory symptoms and overall quality of life had she completed the entire therapy protocol.

#### Social Problem Solving Inventory

The results shown in Table E reveal the fact that both pre-test and posttest scores varied by subject. The inconsistency of these test results may be related to the way in which the older adult subjects interpreted the items and their responses and to the overall good problem-solving ability reflected in their baseline measurements. The posttest results for Dee indicate there was no significant change in her positive problem orientation subscale or in her total score, as measured by the Social Problem Solving Inventory-Revised Short Form (D’Zurilla & Nezu, 1999). There was no significant change in negative problem orientation or in avoidance style as shown in Table E. However, the results show there was a significant reduction in Dee’s Impulsivity/Carelessness Style subscale (ICS = 77) following the intervention. This finding suggests that Dee may have improved her problem-solving ability by the application of problem-solving strategies which involve considering and generating alternative solutions more carefully.

Although the results show no significant change in the total score for Harry, there was a significant decrease in his positive problem orientation (PPO = 110). However, this score fell within the norm group average (86-114), which indicates that this result is not reflective of poor problem orientation. It should be noted that Harry’s pre-test baseline data (135 and 122) fell within the above norm group average (115-129) and very much above norm group average (130-144). When viewed within the context of the other significant test results for Harry on other measure in the study, indicating a decrease

in depression, anxiety, and perception of breathlessness and an increase in self-efficacy for managing COPD symptoms, exercise tolerance, and quality of life, this finding may be less reflective of his overall problem-solving approach in coping with COPD symptoms; it may be more closely related to an outcome of his item responses affected by the occurrences of that day.

The results shown in Table E also show there was a significant improvement in the total problem-solving skills score for Carla (Total = 116). Carla showed an increase in positive problem orientation and rational problem solving scores (PPO = 106; RPS = 101) and a decrease in her negative problem orientation and impulsivity/carelessness style scores (NPO = 82; ICS = 85). These results suggest that Carla may have obtained gains in her problem solving ability because of a shift toward a more adaptive constructive cognitive set, along with a more systematic, deliberate approach to problem-solving. In addition, these findings reveal that Carla may have gained confidence in her ability to solve her problems successfully and that she may have improved her ability to generate alternative solutions in a more careful, less impulsive manner. Although the results suggest that Carla gained improvement in problem-solving skills following the completion of six sessions, her positive problem orientation at pre-test baseline measurements fell within the below norm group average range (71-85). Thus, she may have obtained greater gains in overall problem-solving ability, had she completed the entire therapy protocol.

#### Medical Research Council (MRC) Dyspnea Scale

*Pre-test data.*

Although Dee and Harry showed no variability during the baseline phase of the study, the results shown in Figure 4 reveal that Carla reported an increase in her perception of breathlessness effects during the pre-test baseline period, while Dee and Harry were receiving the therapy protocol. These results suggest that the intervention most likely resulted in Dee's and Harry's reduced perception of breathlessness effects following the intervention phase of the study. As per Kazdin (1982), the increase in the baseline measurements in a single case multiple baseline design is unlikely to be a confound in the interpretation of the results.

*Post-test data.*

Table F shows that there was a decrease in the perception of breathlessness effects on daily activity as measured by the Modified Medical Research Council (MRC) Dyspnea Scale (Darbee & Ohtake, 2006) for Dee and Harry following the intervention phase of the study (Dee = 2; Harry = 1). A comparison of posttest data among the three subjects, as shown in Table F, demonstrates that only Dee and Harry, who completed the entire therapy protocol, showed a reduction in their posttest scores from their baseline measurements.

In addition, the findings show that the decrease in the perception of breathlessness effects experienced by Dee following the intervention phase was maintained at three month follow-up, but returned to baseline at six month follow-up. Despite Harry's reduced perception of breathlessness following the intervention, his score returned to baseline at three month follow-up with no further change at six-month follow-up. These results suggest that the maintenance of reduced dyspnea experienced at posttest may require additional booster sessions as the course of the illness progresses due to the

heterogeneity of COPD with co-morbid illnesses experienced by older adults. The results shown in Table F further support the suggestion that the longer duration of sessions may be related to the reduction in perceived dyspnea following the intervention. In this regard, Carla's score at posttest, which reflects a return to her baseline score, suggests that completion of the entire therapy protocol during the intervention phase of the study may have contributed to the decrease in perception of dyspnea reported by Dee and Harry.

#### Six Minute Walk Distance Test (6MWD)

The results of the Six Minute Walk Distance Test (see Table G) did not reveal any significant changes in the distance walked by Dee during the post-test measurement. It should be noted that the posttest results for Dee included three weeks of de-conditioning due to another physical illness which occurred post intervention. The results for Harry showed an increase in his distance walked from 606 feet at pretest to 675 feet at posttest. These results suggest that the effects of the intervention phase of the study may have contributed to the increase in exercise tolerance for Harry following completion of the therapy protocol. Exercise tolerance was not measured for Carla who had a compromised ability to walk at the time she withdrew from the study.

#### Findings from Therapy Sessions

##### *Session One*

The goals for Session One included education about depression and anxiety symptoms which may co-exist with COPD, orientation to the cognitive behavioral therapy process, and identification of the individual treatment plan and goals for therapy. The orientation to the cognitive behavioral therapy process included an explanation about

the purpose of an agenda-focused session and the importance of the homework aspect of cognitive behavioral therapy. The typical agenda for a cognitive behavioral therapy session was outlined for the subjects. In collaboration with the therapist, all three subjects agreed to develop a problem list as a homework assignment to bring to the next session.

Based on observations with all three subjects, a critical educational component during this session involves assisting the subject in the recognition that depression and anxiety are reversible problems, separate from their COPD condition. All three subjects indicated that increased difficulty with breathlessness was anxiety provoking, which at times has led to prior panic attacks. During this initial session, all three subjects had minimal understanding of the relationship between untreated anxiety or depression symptoms and increased breathing difficulty.

Dee indicated that sometimes her breathing difficulty “appeared out of nowhere”. For example, she may have been getting ready to go out and “suddenly” experienced an increase in breathing difficulty as she approached the exit doors. She attributed these sudden struggles with breathlessness to her worsening COPD and related dyspnea upon exertion or movement. She reported that she tended to avoid exercise, including walking, and at the outset of treatment, attributed this avoidance to “laziness”. Her depression symptoms included losses related to multiple co-morbid medical conditions, job retirement due to worsening COPD and oxygen dependence, and the death of her spouse. Her main goals for therapy included a reduction of anxiety and “worrying”, along with improved ability to manage dyspnea.

At this initial session, Harry indicated that his main concerns involved depression and anxiety symptoms, including anger outbursts, which he attributed predominantly to difficulty with caregiving for a disabled spouse, while simultaneously coping with his COPD and multiple co-morbid medical conditions. Harry indicated that he had “mood swings” and was not always certain where they came from. At the outset of treatment, he was unable to see any alternative except in venting his anger to cope with his caregiver stress. Although he was able to recognize that his emotional distress contributed to increased breathing difficulty, he was unable to make the connection among his ruminating behaviors around caregiving issues, maladaptive coping and problem-solving skills, and his depression and anxiety symptoms. His depression and anxiety symptoms were related to adjustments to his worsening medical condition and increased oxygen dependence, as well as to other psychosocial impacts associated with job retirement and caregiver stress. His main goals for therapy included reducing emotional distress related to chronic caregiver distress and improving his quality of life related to coping with COPD and dyspnea.

Carla reported higher levels of depression and anxiety symptoms than Dee and Harry, which continued to increase during the baseline period. She indicated that her depression and anxiety symptoms were related to major life changes including the death of her spouse, job retirement and loss of other employment due to worsening COPD, and to multiple co-morbid medical conditions including obesity. At the outset of treatment, she attributed all of her depression and anxiety problems to her medical condition, which included difficulty with COPD symptoms and breathlessness, difficulty with weight management and fluid retention problems and other co-morbid medical concerns.

Although she was able to recognize that her weight issues contributed to her experience of dyspnea and difficulty with exercise and walking, she was unable to associate the interplay among her thoughts, feelings and behaviors and her difficulty managing the portion of her COPD symptoms which was related to her depression and anxiety. Her main goals for therapy included reducing depression and anxiety symptoms and improving her self-confidence and problem-solving skills.

### *Session Two*

The goals for Session Two included psychoeducation on the social problem-solving approach to managing depression and anxiety secondary to chronic medical conditions, and individual identification of maladaptive beliefs which interfere with adaptive problem-solving behaviors when coping with COPD related stressors. A review of the collaboratively developed homework assignment revealed that two of the three subjects “forgot” about the first assignment. The one subject who completed the initial assignment attended to the written homework tasks consistently throughout the therapy sessions. The therapist positively reinforced him for completion of the homework and reiterated the importance of the collaboration with the homework assignment for the other two subjects. Following an elaboration of the “practice between sessions” purpose of the homework component of therapy, all three subjects became more therapeutically engaged in the process.

During the training portion of this session, which included education about positive vs. negative problem orientation, Dee was able to identify some positive self-statements which helped her cope in the past, such as “I just have to face this and go forward”. She also identified some of her negative beliefs, which included self-blame

related to causal attributions for the severity of her COPD. She referred to herself as “stupid” for smoking so heavily, which may influence her problem appraisal and maladaptive response when she is in stressful situations and experiences dyspnea. During the session, she described feeling lonely on the weekends when residents at her assisted living residence left to visit family or stayed inside their apartments, leaving her with minimal social contact. She stated that, often, she suddenly becomes short of breath when she is preparing to leave her apartment to go out. During the session, she demonstrated minimal insight into the difficulty she had in separating her thoughts from her feelings when asked to identify her thoughts related to leaving to go out and her experience of greater breathlessness. When educating her on the use of the Thought/Feeling Rating Log to use for the next homework assignment, it was evident that she was unaware of her thoughts when she felt anxious or worried. As she became educated on positive problem orientation, she was encouraged to identify and begin to change the thoughts and beliefs which contribute to anxiety and which may interfere with her motivation to engage in adaptive problem-solving behaviors related to managing breathlessness from COPD.

Harry presented with depression and anxiety symptoms which he related to the impact of his caregiver stress on his own health condition. He discussed his uncertainty and anxiety about his future prognosis with worsening COPD, his depressed feelings about his retirement, and his caregiver related stressors. He had difficulty in identifying positive self-statements which could help him cope with his current situation. However, he readily identified some negative beliefs related to causal attributions for the difficulty he was having coping with his COPD related stressors. He shared his belief that his

caregiving situation with his spouse was hopeless because “she will never change”. In addition he believed that his spouse was inconsiderate of his COPD condition when she placed demands on him (which he termed “commands”) for caregiving attention, which seemed to influence his problem appraisal and maladaptive anger response. Therapist and subject were able to use his problem list (last homework assignment) to identify ways he could begin to use the components of problem orientation to challenge his beliefs and attitudes which may contribute to maladaptive problem solving and increased emotional distress. He reported that he becomes extremely angry and frustrated when he perceives that his spouse was “inconsiderate and demanding” of the impact on his breathlessness and oxygen dependence while he is providing caregiving to meet her disabling physical needs. He struggled throughout the session with minimal insight into the difficulty that he had in separating his thoughts from his feelings and its impact on ineffective problem solving. By the end of the session, he was beginning to make the connection between his negative attributions and an increase in negative rumination, anxiety, anger, and depression symptoms.

Carla indicated that she often became worried about shortness of breath and sometimes avoided going out. She stated that she tends to give up easily and becomes “frustrated and hopeless” about her COPD and other co-morbid medical conditions. When educating her on the problem orientation training portion of this session, she had difficulty in identifying positive self-statements which could help her cope with her negative emotions and avoidant behaviors. Her negative beliefs included her self-blame related to causal attributions for the severity of her COPD. Despite her admitted maintenance of long term nicotine abstinence, she continued to criticize herself harshly

for her smoking history. In addition, she used self descriptors as “I have low self-confidence in problem-solving” and “I don’t cope well when I am upset”. It was explained to her that her maladaptive beliefs and automatic negative thoughts may influence her problem appraisal and maladaptive response when in stressful situations related to her dyspnea. She identified two problems she could begin to use to develop a positive problem approach to challenge her beliefs which contribute to her ineffective problem solving and avoidant behavior. She explained that getting the laundry done and engaging in short walks felt overwhelming to her because of breathlessness. She also was short of breath when engaged in activities such as grocery shopping, errands, or social activities with friends or family. By the end of the session, she was beginning to make the connection between her negative self-blaming statements and an increase in negative rumination, anxiety and depression symptoms. When educating her on the use of the Thought/Feeling Rating Log, it was evident that she was unaware of her thoughts when feeling anxious or worried related to concerns about breathlessness.

*Homework.*

In collaboration with the subject, Dee agreed to record thoughts and feelings and rate the intensity of the feelings, using the Thought/Feeling Rating Log daily and to bring the log to the next session. Harry agreed to record his thoughts and feelings and rate the intensity of the feelings using the Thought/Feeling Rating Log daily and to bring the log to the next session. He also agreed to practice an assertive approach to address the belief that his spouse was inconsiderate rather than engage in his usual avoidant behavior. He elected to attempt to clarify his feelings to his spouse about the manner in which she makes requests of him and educate her on the impact of the caregiving duties on his

COPD and breathlessness. In collaboration with the therapist, Carla agreed to record her thoughts and feelings and rate the intensity of the feelings, using the Thought/Feeling Rating Log three to four times during the week and bring the log to the next session.

*Clinical Impressions.*

All three subjects seemed to have difficulty in separating their thoughts from their feelings. Two of the three subjects had more difficulty in identifying positive self-statements to help cope with COPD related stressors. The use of the Thought/Feeling Rating Log seemed to provide a simple tool for older adults to record and rate their thoughts and feelings to practice their skills in recognizing the difference between their thoughts and emotions.

*Session Three*

The goals for Session Three included psychoeducation on cognitive distortions related to problem orientation and the identification of attitudes or beliefs which contribute to activity restriction not determined by actual physical limitations. The training included education about automatic thoughts and how they relate to feelings and behaviors.

Both Dee and the therapist reviewed her completed homework assignment from the prior session. A review of her Thought/Feeling Rating Log allowed a collaborative examination of the automatic thoughts involved in anxiety provoking situations. When the subject reviewed the list of Common Cognitive Distortions with applications to patients with COPD, she was able to identify Mind Reading/Fortune Telling and Selective Abstraction as distorted thought patterns which were related to her depression and anxiety symptoms. The therapist and subject collaboratively explored her

maladaptive self-blaming belief that her smoking was the sole cause of her COPD.

Through the use of Socratic dialogue, she was able to consider the possibility that other factors may have also contributed to her COPD, such as a genetic predisposition or history of bronchial pneumonia. She was able to recognize that her strongly held beliefs and emotional reasoning may not reflect the true or entire situation.

Harry completed his homework but needed additional education and review of the Thought/Feeling Rating Log because he was having difficulty separating his thoughts from his feelings. In reviewing his homework, the therapist and subject were able collaboratively to explore his negative problem orientation and maladaptive avoidant or explosive response to his psychological distress. He was able to identify some of the automatic thoughts related to his beliefs and expectations, which contribute to his escalating anger, increased breathing difficulty, and maladaptive problem solving. The subject was able to identify Dichotomous Thinking, Selective Abstraction, and Emotional Reasoning as typical thought patterns which are related to the high intensity of emotions experienced when he views his situation from a negative problem orientation. The therapist assisted Harry in exploring his beliefs to help him make the connection between his automatic thoughts, anger, and maladaptive withdrawal behavior related to his caregiving stressors. By the end of the session, Harry was able to consider the possibility that a change in his thoughts and perceptions may reduce the intensity of his negative emotions and his related increased breathing difficulty.

A review of Carla's completed homework assignment revealed many examples of her tendency toward self-critical and self-blaming thoughts related to problems associated with her COPD illness. This subject readily acknowledged her negative problem

orientation and the intensity of her feelings related to her beliefs and perceptions about the limitations she experienced due to her COPD illness. When reviewing the list of Common Cognitive Distortions with application to patients with COPD, she identified overgeneralization, dichotomous thinking, mind reading, selective abstraction, and emotional reasoning as typical thought patterns which occur when she feels overwhelmed with her COPD symptoms. The therapist assisted the subject in exploring her beliefs and perceptions that she is a burden to her friends and family. In a collaborative manner with the therapist, the subject practiced changing maladaptive beliefs by reframing her misperception about being a burden to others to a self-exploration about her feelings related to loss of independence. She was able to recognize how her thoughts and beliefs about being a burden increased her anxiety and depression and contributed to her isolating and withdrawing behaviors. By collaboratively exploring the subject's self-blaming beliefs about her smoking history, the therapist assisted the subject in identifying alternative explanations for her development of COPD, such as second-hand smoke exposure in her family, a history of childhood respiratory infections, and a genetic predisposition due to her family history of pulmonary disease.

*Homework.*

For the next homework assignment, all three participants were given a Daily Thought Record which involved recording a situation/event and behavior/outcome in addition to recording the correlated thought and emotion. In collaboration with the therapist, all three participants agreed to use the log three to five times during the week to practice making connections between their thoughts, feelings and behaviors.

*Clinical Impressions.*

All three participants used the Thought/Feeling Rating Log and the list of Common Cognitive Distortions to facilitate their exploration of automatic thoughts and maladaptive beliefs which contribute to their depression and anxiety symptoms. Both Dee and Carla experienced depression and anxiety symptoms related to self-blame and maladaptive COPD causal attributions and beliefs about their smoking history. Harry experienced intense emotional distress related to a negative problem orientation and strongly held maladaptive beliefs and expectations attributed to his caregiving stressors. Despite the various psychosocial stressors impacting these three older adults, all three subjects reported that they experienced increased breathing difficulty and associated activity restriction and withdrawal behaviors related to their depression and anxiety symptoms.

*Session Four*

The goal for Session Four was to provide relaxation training, which included education on two specific relaxation strategies. Subjects were trained in diaphragmatic breathing and guided imagery during the session. The training included providing handouts, demonstration by the therapist, and collaborative practice between the therapist and subject during the session.

Upon arrival at the session, Dee indicated that she was “feeling down” this week because she was not feeling well physically and had some respiratory congestion. She reported that when she does not feel well, she becomes worried and anxious about her COPD and further loss of independence as the disease progresses. She gave an example in session of being offered assistance by other residents in her assisted living apartment

building who were wheelchair-bound; this triggered an increase in negative thought rumination and worrying about future independence losses. In collaboration with the therapist, the subject explored the meaning she placed on independence loss. The therapist reiterated to Dee in an empathic manner that the therapy protocol was designed to build upon her existing skills to improve problem-solving and coping skills to help manage adjustments to COPD symptoms and future medical conditions to maintain an adequate quality of life.

In reviewing Dee's homework assignment, it became evident that she was having difficulty in identifying the thoughts related to her feelings when she was anxious or angry. The therapist assisted the subject by further clarification of the use of the Daily Thought Record. She was also encouraged to practice with the tools each week in addition to new weekly homework assignments to build her skills in separating and managing her thoughts and feelings.

Dee was easily able to master the diaphragmatic breathing, indicating that she had learned this in the past, but admitted that she stopped using it because she had difficulty slowing the pace of her deep breaths. In reviewing this technique with her, she indicated that her hurried breathing pace was related to her fear of "running out of air". This gave the therapist an opportunity to assist the subject in challenging that belief, while practicing the technique more slowly. Because Dee was able to connect her hurried shallow breathing rhythm with an increase in anxiety, she was more willing to practice the diaphragmatic breathing at a slower pace, which ultimately resulted in reducing her fear and related breathlessness.

Dee had greater difficulty with the guided imagery technique, stating that she never had much time to sit and relax before retirement. Upon further exploration, she admitted that her prior relaxation image consisted primarily of sitting on her balcony smoking a cigarette. The therapist educated the subject on the usefulness of this guided imagery technique for managing anxiety related to medical problems and to her COPD. The subject was able to identify a relaxing image from a past vacation (which did not include smoking) that she used to practice while the therapist guided her in using her senses to vividly imagine the relaxing scene.

Harry arrived at the session with frustration, concerned that despite his attempts to practice his homework assignments, his spouse was not changing her behavior which increased his anger and anxiety related to his caregiving role. Most of his reported homework situations focused on thoughts and beliefs which triggered anger, frustration, and anxiety related to caregiving demands and his spouse's behavior. The therapist used this opportunity to assist the subject in challenging the automatic thoughts which provoked his emotional arousal and distress. When the therapist provided further clarification about the use of the Daily Thought Record and the importance of focusing on the changes he could make which were within his control, his frustration began to dissipate and he showed more hopefulness and motivation for change. Having the subject focus on his automatic thoughts and maladaptive beliefs seemed to help the subject reframe his negative problem orientation to a more positive approach to his caregiving demands. In this regard, Harry began to gain some insight into the connection between his increased anger and anxiety and an increase in breathing difficulty.

During the relaxation training segment of the session, Harry indicated that he was vaguely aware of the diaphragmatic breathing technique, but did not use it and did not feel properly trained on the relaxation strategy. After the therapist explained that he could use the technique with or without his supplemental oxygen, he was willing to engage in the training and cooperated with the collaborative practice. The therapist explained to the subject that the daily practice of this technique might help lessen the intensity of his breathlessness by providing him with a strategy to help regain control of the portion of his breathlessness related to his anxiety or anger. In collaboration with the therapist, Harry generated a relaxing scene, which included sitting on the beach watching a sunset. Harry was easily able to engage in the guided imagery training and indicated that he felt relaxed and calm by the end of the session.

When Carla arrived at the session, she stated that she was feeling depressed and wanted to add a stressful situation to the session's agenda. A review of her homework provided an opportunity for her to elaborate her difficulty in understanding the source of her recent depressed feelings. Through the use of Socratic dialogue and vertical descent/downward arrow technique (Leahy, 2003), the therapist was able to facilitate Carla's own discovery of the automatic thoughts and maladaptive beliefs which contribute to her depression. The therapist assisted Carla in reframing her thoughts and beliefs related to a late life "empty nest" syndrome in order to help her reduce negative feelings related to multiple losses and adjustments, along with her COPD-related loss of some independence. Carla continued to struggle with making the connection between her negative thoughts, emotions, and mood state. It was apparent that Carla would need additional practice with reframing cognitive distortions and automatic thoughts to

alternative, positive coping statements to assist her in connecting her thoughts and feelings.

During the relaxation training, Carla initially struggled with the diaphragmatic breathing technique because she was obviously using accessory muscles rather than her diaphragm when attempting to gain deeper breaths. The therapist focused on the pursed lip breathing strategy for exhalation which assisted her in learning to breathe in through her nose and out through her mouth. By the end of the training, Carla was able to make the connection between her rapid shallow breathing and increased anxiety and feelings of panic. In contrast, she easily constructed a visual image of a quiet cove with its sights, sounds, smells and textures, utilizing her senses during the guided imagery training. She reported that this technique was relaxing for her.

*Homework.*

Dee and the therapist collaboratively developed her homework assignment to include practicing the diaphragmatic breathing with ten slow breaths 2-3 times per day, practicing the guided imagery 3-4 times during the week, and continuing to use the Daily Thought Record to monitor her thoughts and emotions. For Harry, a collaboratively established homework assignment included: continued practice with the Daily Thought Record at least 5-7 times during the week, practice with ten slow deep breaths using the diaphragmatic breathing technique 2-3 times per day, and practice the guided imagery scene 3-4 times during the week. In collaboration with Carla, it was mutually agreed that she would use the Thought/Feeling Rating Log to gain additional practice changing maladaptive thoughts to more adaptive coping statements and bring the rating log to the next session. Carla also agreed to practice ten slow deep breaths 3-5 times per day to

strengthen her diaphragmatic breathing skills. She planned to practice the guided imagery technique 3-4 times during the week.

*Clinical Impressions.*

All three subjects reported some increase in psychological distress by the fourth session. Although they recognized that their stressors were uniquely different, all seemed in need of some relaxation strategies by that session. In addition, all of them seemed to require some reiteration and enhanced focus on the importance of learning how to separate their thoughts from their feelings. Although two subjects would practice with the Daily Thought Record (most recently learned tool), it was important to assist one subject with further practice on the Thought/Feeling Rating Log.

*Session Five*

The goals for Session Five focused on psychoeducation about the use and control of emotions in effective problem-solving. The subjects were provided with education on emotional arousal and how to use emotions as cues for problem recognition. The therapist facilitated positive problem orientation by having the patients learn how to view a problem as a challenge rather than as a threat and minimize emotional distress related to managing their COPD symptoms.

Upon arrival at Session Five, Dee indicated that she was having difficulty with the cognitive aspect of the protocol, which required her to focus on her thoughts feelings in coping with her COPD. She stated that she was not accustomed to “thinking about thoughts” when she was having breathing difficulty and was focused only on getting her breathing under control. When the therapist explained that most people have trouble learning to become more self-aware of the connection between thoughts and emotions,

Dee expressed her relief that it was not because she “was just not getting this”. She also shared the thought that although she was gaining symptom relief from the diaphragmatic breathing, she was struggling with the guided imagery relaxation technique. The therapist assisted the subject in identifying another imagery scene which may have provided greater relaxation for her to practice.

During this session, the therapist assisted Dee in identifying the sources of her emotional arousal. Dee struggles with her belief that accepting assistance from others (feeling like a burden) would mean “that it’s all downhill now”. Her fear of accepting help is related to her belief that her quality of life would end. Within this context, she connects this belief to her mother, who became depressed, developed dementia, and died in a nursing home. The therapist encouraged Dee to challenge her beliefs about using supports or assistance, which appeared to contribute to her fears and worries related to the progression of COPD and her perceptions about future loss of independence.

When Harry arrived for the session, he shared his frustration, citing that he feels motivated for change when he leaves the sessions, but becomes disenchanted when he does not see changes in his partner’s behavior. With a collaborative review of his homework, Harry was able to identify the sources of his emotional distress and gain insight into the connection between the maladaptive belief that his spouse needed to change her behavior for him to become less emotionally distressed. As the therapist challenged Harry concerning his struggle with resenting his own placating behavior toward his disabled spouse, he began to consider an alternative way to interact with her. He recognized how his emotional arousal was connected with his lack of assertiveness

and his avoidant behavior, which contributed to his inability to maintain his own self-care in an adaptive way.

The therapist worked collaboratively with Harry to assist him in cognitively reframing the problem to focus more closely on his own positive coping statements in order to reduce his emotional distress, rather than on his being so closely focused on his spouse's behavior. Through the psychoeducation component of the session, Harry was able to recognize how his emotional responses either facilitated or inhibited his performance or behavior in coping with his COPD and related problems. Harry gained insight into his struggle with the change in his lifestyle which involved accepting an adjustment to retirement due both to an increased caretaking role and to increased oxygen dependence with his COPD illness. Harry indicated that he was using both the diaphragmatic breathing and the guided imagery for relaxation, but he felt that the diaphragmatic breathing helped him to calm down and regulate the pace of his breathing more easily than the guided imagery.

When Carla arrived for the session, she indicated the difficulty she was having in challenging her belief that she was worthless and unnecessary to her family relative to the progression of her COPD. During the review of her homework, the therapist was able to assist Carla with the process of examining the evidence regarding this belief. Carla discussed her feelings suggesting that she was a burden if she had to ask family or friends for assistance. The therapist was able to help Carla recognize that her beliefs about being a burden contributed to her fears and worries about the progression of COPD and to her perceptions about future loss of independence. Following the examination of these beliefs, Carla was able to make a positive connection between exerting effort to engage in

behaviors she could manage, such as getting the mail and taking out the trash, and positive feelings related to the maintenance of some independence.

During the session, Carla demonstrated for the therapist that she had improved her diaphragmatic breathing which was helping her to gain a more rapid recovery of her breathlessness. She indicated that she had not practiced the guided imagery because of other demands and obligations related to her focus on weight loss.

*Homework.*

Based on the content of this session, the mutually collaborated homework assignment included using the Daily Thought Record weekly, daily practice of diaphragmatic breathing, and practice in using guided imagery with a new imagery scene. In addition, Dee agreed to use the Examine the Evidence worksheet, which was explained during the session, to challenge negative cognitive distortions related to using assistance or social support to help her with grocery shopping or other difficult tasks impacted by her breathlessness.

The therapist collaboratively established a homework assignment with Harry, which included daily diaphragmatic breathing exercises. In addition, Harry agreed to use the Examine the Evidence worksheet to challenge his negative cognitive distortions about his spouse's behavior in order to increase his sense of control in managing caregiving demands with less anxiety, and with less anger and related breathlessness.

A collaboratively developed homework assignment included daily diaphragmatic breathing exercises, guided imagery practice, continued use of the Thought/Feeling Rating Log, and practice with the use of the Examine the Evidence worksheet to challenge negative cognitive distortions related to her beliefs about being a burden. In

addition, Carla was focused on meal portion reduction and carbohydrate reduction to encourage weight loss and further breathlessness control.

*Clinical Impressions.*

The findings from Session Five indicate that all three participants experienced breathlessness relief and relaxation from the practice of their diaphragmatic breathing training. Two of the three subjects also gained some relaxation benefits from the guided imagery technique. The one subject who struggled with the guided imagery technique required further training and discussion about the benefits of this technique and opted to practice with a different imagery scene the following week to ascertain if the technique would be useful to her. All three subjects required additional practice and follow-up training on separating thoughts from feelings. Their difficulty with the cognitive portion of the therapy protocol was reduced during this session as they learned about the relationship between their emotions, their thoughts and beliefs, and the portion of breathlessness related to their intense emotional arousal. All three subjects seemed to gain greater understanding of this connection by the end of this session.

*Session Six*

The goals for Session Six included educating the subject about anticipatory anxiety and breathlessness and avoidance conditioning. Each subject was provided with education about systematic desensitization with the rationale for exposure and de-conditioning of avoidant behavior related to anxiety. They developed a hierarchy of anxiety provoking activities related to coping with their COPD symptoms. Subjects learned to observe their thoughts and feelings and to observe those situations/activities which are related to more or less emotional distress. During the session subjects used an

activity from their hierarchy which elicits a mild level of anxiety in order to learn how to use cognitive rehearsal with coping imagery. Subjects also learned to observe their thoughts and feelings and to observe those situations/activities which are related to more or less emotional distress. They were provided with the rationale for learning how to use an activity schedule to monitor not only skill/task mastery, but also pleasure in the activity. During the session, the subjects identified specific behaviors to increase activity using the activity schedule shown in Appendix J.

Upon arrival at Session Six, Dee described having a pleasant time at a birthday party at her residence, but was disappointed that she avoided the dancing activity because of her fearfulness about breathlessness. With assistance from the therapist, Dee used the Examine the Evidence record during the session to process her fears and her all or none thinking pattern in order to consider alternative ways that she may be able to dance for a few minutes at the next monthly birthday party. In reviewing her homework, Dee indicated that she was practicing the diaphragmatic breathing daily but was not using the guided imagery because she would rather be doing something relaxing rather than imagining it. The therapist introduced mindfulness meditation to this subject as an alternative relaxation strategy during the session rather than waiting until a later session to introduce it. Dee practiced the technique during the session and agreed that the meditation technique may be a more useful strategy for her.

After educating Dee about anticipatory anxiety, breathlessness and avoidance conditioning, she identified a hierarchy of three anxiety provoking situations. The situations included: after bridge games clean up duty; carrying laundry to the community laundry room and completing the task; and showering without oxygen. During the

session, Dee engaged in cognitive rehearsal, using coping imagery for the two least anxiety-provoking situations from her hierarchy. The therapist assisted Dee in the use of the activity schedule in order to record and monitor her progress on skill building with anxiety provoking activities and management of breathlessness.

When Harry arrived at the session, he reported that he was giving up hope that his spouse would change and stated that he may need to focus more closely on his own changes. This disclosure signaled progress for Harry and provided the therapist with an opportunity to assist him with redirecting his therapeutic focus. The therapist and subject examined the maladaptive beliefs related to his life changes involving his caregiver role and his emotional responses. He was able to process his all or none thinking pattern and considered alternative ways to interact with his spouse to reduce the intensity of his emotional distress and subsequent increase in breathlessness. With assistance from the therapist, he explored alternative ways to assert himself and to use alternative problem-solving strategies when he felt “provoked”, rather than engaging in verbally aggressive or avoidant withdrawal behaviors. A review of his homework allowed the therapist to use examples he completed on the Examine the Evidence worksheet to assist him in examining and clarifying how his emotional responses may foster or inhibit effective problem-solving in coping with his daily stressors.

During the session, he verbalized his understanding of ways to recognize his emotional arousal and identified ways to use relaxation and distraction techniques to regulate the intensity of his emotional responses. He reported that he was using the diaphragmatic breathing technique on a daily basis, but felt he needed further practice with the guided imagery technique. With assistance from the therapist, he was able to

create a more relaxing scene and indicated his plan to practice the guided imagery technique using sailboat imagery, visualizing sailing across the waves. Harry stated that when he practices relaxation, uses distracters, and challenges his beliefs about his spouse when he feels provoked, he feels more empowered and in control and has less anxiety and anger, and less intense breathlessness. By the end of this session, he appeared to be making a stronger connection among his thoughts, feelings and behaviors and their contribution to his increased or decreased experience of breathlessness.

After Harry was educated on anticipatory anxiety, breathlessness and avoidance conditioning, he identified a hierarchy of five anxiety/anger provoking situations which tend to increase his breathlessness. The situations included: caregiving difficulty in getting his spouse to sit on the balcony with him; caregiving demands related to the TV and telephone; listening to spouse's "moaning" in pain; internal distress when he is interrupted with excessive caregiving demands; and fatigue related to trips to the assisted living community dining room. Harry learned to use the activity schedule to monitor his progress on skill building with anxiety/anger provoking activities from his hierarchy list and breathlessness.

Carla reported that she felt less depressed and anxious, but was having increased difficulty with physical activity due to her limitations with using a walker, in addition to carrying her portable oxygen. She did not complete the Examine the Evidence worksheets from her homework assignment, stating that she had fewer negative thoughts about being a burden and felt more useful this week due to family obligations which required her involvement. The therapist reinforced the importance of homework to practice learned skills in order to improve her confidence in challenging her cognitive

distortions and to help her alter maladaptive beliefs which may interfere with improving her quality of life in coping with her COPD symptoms as the disease progresses. Carla provided an example of how she used a positive coping statement to encourage herself to leave the house even though she was fearful about breathlessness due to the rain and humidity.

The therapist encouraged her to gain more practice this week with the Thought/Feeling Log and the Examine the Evidence worksheet to improve her skills even if she continues to feel better, because of her tendency to fluctuate in her progress, dependent on the situations or events of the week. Carla reported that she gained a lot from last week's session on the use and control of emotions because it further clarified how to separate her thoughts from her emotions. She also indicated that she was using the diaphragmatic breathing technique daily for relaxation, which she found more helpful for her than the guided imagery technique.

Upon further review of her homework assignment, Carla indicated that she started to reduce meals rather than her agreed-upon reduction of portions of several small meals throughout the day. With assistance from the therapist, Carla was able to recognize her all or none thinking pattern in her response to her obesity problems. She was able to recognize more difficulty with blood sugar level fluctuations throughout the day and increased irritability and depressed mood states when she attempted to skip entire meals. Carla verbalized her understanding of the connection among her thoughts, feelings and behaviors and how this interplay contributes to her mood and emotional state. She also indicated her understanding that her obesity, as well as her depression and anxiety,

contributed to increased difficulty with breathlessness related to managing her COPD symptoms.

During this session, Carla was educated about anticipatory anxiety, breathlessness and avoidance conditioning. She was able to identify a list of eight anxiety provoking situations which she readily connected with increased breathlessness. Her hierarchy of anxiety provoking situations included: daily showers; vacuuming the house; getting seated at restaurants with her oxygen tank; laundry activity; trips to the grocery or department stores; trips to theatre or shows with friends; getting in/out of cars; and climbing stairs at home. The therapist assisted her in gaining an understanding of the portion of breathlessness which is related to her anxiety and fears about her experience of dyspnea. It was explained to her that the gradual exposure to the anxiety provoking situations is intended to desensitize her to the anticipatory anxiety and to decondition her from avoidant behaviors. In addition to the activities of daily living listed on her hierarchy list, there were also situations which triggered her beliefs that she is a burden to others. It was mutually agreed that this hierarchy list may also be helpful for her to use in the problem-solving skills training in the next session to assist her with skill building in positive problem-solving approaches to manage her depression and anxiety symptoms secondary to her COPD medical condition.

*Homework.*

It was mutually agreed that Dee would practice cognitive rehearsal and relaxation prior to engaging in the activities from her desensitization hierarchy list. Dee decided to practice with the bridge game clean up and laundry activities discussed in the session; these were the two least anxiety provoking situations for her. In collaboration with the

therapist, Harry agreed to practice guided imagery with the sailboat scene three to four times during the week; use the activity schedule to record mastery and pleasure in weekly activities; and practice cognitive rehearsal and relaxation prior to engaging in the balcony and TV/phone examples from hierarchy of anxiety/anger provoking list.

After providing her with education on the use of the activity schedule to monitor her master and pleasure as she practices the activities on her anxiety provoking hierarchy list, Carla and the therapist mutually established a homework assignment. She agreed that she would practice using the Thought Feeling Rating log and the Examine the Evidence worksheet to practice using alternative explanations for beliefs about usefulness and being a burden. She was willing to eat three smaller, portioned meals per day using some of the Weight Watcher meals she has used in the past. She planned to use the activity schedule to monitor and record mastery and pleasure in two of the least anxiety provoking activities from her hierarchy and bring the schedule to the next session.

*Clinical Impressions.*

All three participants again indicated that the diaphragmatic breathing was extremely beneficial for them in controlling the pace of their breathing when they experienced anxiety or emotional distress. Only Harry reported a willingness to continue engaging in guided imagery and stated that it was relaxing for him. All three subjects easily identified a hierarchy of anxiety provoking situations or activities which triggered fears and worries about increased breathlessness. All three subjects were able to make the connection between their anticipatory anxiety and their conditioned avoidant responses. By the end of the session, all three subjects verbalized their recognition of the

portion of breathlessness related to anxiety or emotional distress which was related to their increased breathlessness.

### *Session Seven*

The goals for Session Seven included a focus on problem-solving skills training to assist the subject in determining the most effective solution for coping with problems or situations which arise related to their COPD condition. The subjects were educated on the four main components of problem-solving skills which include problem definition; generating alternatives; making decisions, and evaluation of solution outcome and verification. During the session, the therapist provided the rationale for improving problem-solving skills and the relationship with self-efficacy in COPD symptom management. In addition, this session marked a transition to begin the process of preparation for the termination of treatment at the end of twelve sessions.

When Dee arrived for the session, she wanted to discuss the recent deaths of two residents at her assisted living home, one of whom had breathing difficulties. As she processed her emotional distress, she recognized the connection between the situation (their deaths), her automatic thoughts about her own future with worsened breathlessness from COPD, and her increase in worry and anxiety. She reported that subsequent to their deaths, she decided to test her belief that she could not shower without her oxygen, which was on her hierarchy list of anxiety provoking situations. She provided an example of how she practiced relaxation and cognitive rehearsal prior to making the attempt to shower without her oxygen. To Dee's surprise, she failed to experience any greater breathlessness without the oxygen. The therapist reinforced her positive problem orientation in which she approached both her emotional distress about the residents'

deaths and her perception about her breathlessness problem in an alternative way, which resulted in a reduction of her anxiety and an increase in her confidence in mastering a daily activity that was impacted by her COPD condition.

Upon review of her homework assignment, the therapist and Dee decided to use an entry that she completed on the Activity Schedule to examine the difficulty she has with increased breathlessness because the other residents leave to go upstairs while she performs her after-bridge game clean up duties. The therapist assisted Dee as she developed a cognitive rehearsal to practice for the next bridge game in order to increase her confidence that she can reduce her anxiety and slow her activity pace to prevent an increase in breathlessness. Her rehearsed script was to “stay calm, don’t hurry – I’ve been the last one out many times and have always been fine” and “I can always ask someone to wait for me if needed”. By having a positive coping statement rehearsed, along with using diaphragmatic breathing to relax, she indicated that she felt more confident that she could reduce her anxiety at the next bridge game.

Following the problem-solving skills training, Dee identified a problem she was having with increased breathlessness during daily dressing activity. In collaboration with the therapist, Dee more clearly defined the problem as she recognized that her recent increased shoulder pain from a prior injury was contributing to her difficulty. She practiced in session using the Generating Alternatives worksheet (Appendix L) and generated alternatives such as contacting her physician to assess pain, improve pain relief, and consider other treatment options; shifting her portable oxygen strap to criss-cross over her shoulder and under her opposite arm, and fastening her bra backwards first to ease dressing. Through this problem-solving process, Dee selected a combination of

alternatives to maximize her benefit and to minimize costs with the emphasis on her health and comfort; she will sustain her plan for a week and evaluate the solution outcome.

Harry reported that he had a reduction in emotional distress during this past week which he attributed to his greater focus on practicing learned strategies without giving up easily in frustration. He reported that he practiced the guided imagery using the sailboat scene which he found relaxing and helpful to minimize breathlessness that was related to his emotional distress. He continues to use the diaphragmatic breathing daily and reports relief from breathing difficulty when he becomes aware of his emotional distress. The therapist reinforced his focus on using emotions as a cue for problem-solving. Although Harry is making the connection between the situation (e.g., caregiving demands), his automatic thoughts (e.g., spouse is too demanding or inconsiderate of his oxygen dependence), and his emotional distress response which results in increased breathlessness, he struggles with inconsistent behaviors when he regresses with negative automatic thoughts/beliefs.

After educating Harry on the problem-solving skills training, he was able to generate more alternative adaptive solutions to his problems. Although he did not complete the Activity Schedule from his homework assignment, he provided examples of how he practiced an approach rather than avoidant response to two of the anxiety provoking situations on his hierarchy list from the last session. For example, he was able to sit on his balcony and remain calm and relaxed even when his spouse opted not to join him. He shared the fact that when he responded with a more assertive rather than angry or avoidant approach about his needs, he gained a more favorable response from his

spouse. He also was able to provide an example of a maladaptive belief he had about the TV/phone demands at home during the session which he could now see contributed to his increased emotional distress and resultant increased breathlessness. By using the Generating Alternative worksheet in the session to define the problem more clearly, along with identifying alternative solutions, he was able to reposition the phone and establish some mutually satisfying TV time without excessive interruptions to meet his caregiving demands more adaptively.

*Homework.*

Dee agreed to practice using the Generating Alternatives worksheet to develop alternative solutions for at least two problems related to coping with her COPD condition. To monitor herself after the bridge game clean-up problem, she will practice the cognitive rehearsal discussed in the session and use the Activity Schedule to record her mastery with anxiety and breathlessness reduction. She also agreed to select a solution generated in the session for relieving her shoulder pain and evaluate the outcome after implementing the plan for one week. In collaboration with the therapist, Harry agreed to use the Generating Alternatives worksheet to develop alternative solutions for at least two problems from his desensitization hierarchy list, implement the plan for one week and evaluate the solution outcome.

*Clinical Impressions.*

Both Dee and Harry seemed to benefit from the problem-solving skills training and were able to incorporate their anxiety desensitization training and examples from their hierarchy list of emotionally distressing situations in application of the steps involved with effective problem solving. Both subjects appear motivated to continue

with behavioral activation and practice in using all of the learned cognitive behavioral skills to improve their quality of life in coping with problems associated with an exacerbation of their COPD symptoms. Carla withdrew from the study following the sixth session for reasons unrelated to the study protocol. However, she provided posttest data which was used in comparison with the two subjects who completed the entire twelve sessions of the protocol.

### *Session Eight*

The goals for Session Eight included learning how to improve mood by increasing behavioral activation, and to strengthen problem-solving skills by breaking the habit of avoidant behavior related to activity restriction due to breathlessness. The training included a review of the patient's problem-solving skills to enhance coping with difficult situations related to coping with dyspnea and fatigue experienced with increased activity. The subjects were assisted in determining those activities and events which are rewarding, as well as defining problems or obstacles connected with those activities. During the session, the subjects used the Generating Alternatives record to assist them with obstacles they encountered which are related to engagement in the activity.

Dee arrived at the session indicating that she believed her breathing was getting better. She reported that she was trying to take better care of herself, because she wanted to get through the spring without an acute exacerbation of her COPD symptoms. She explained that she had been hospitalized each spring for the past three years due to an acute exacerbation of her symptoms. She reported that she is attributing her reduced dyspnea to maintaining more awareness of her breathing and pacing her activity level more slowly.

Upon review of Dee's homework, it was evident that she was gaining mastery over daily activities such as grocery shopping, showering and errands, which she rated an "8" on a scale of 0 to 10, with a ten indicating a high level of activity mastery. The session was focused on Dee's distress with anxiety and worry related to her bridge responsibilities each Wednesday evening. With the use of problem-solving skills, Dee was able to focus on clearly defining the problem. She made the connection between her worrying about making mistakes during the bridge game and her beliefs about being criticized by the other women players. With the assistance of the therapist, Dee identified her automatic thoughts using the Daily Thought Record, along with the Generating Alternatives record, to review the advantages and disadvantages of several alternative ways to cope with the problem.

Upon arrival at the session, Harry reported that he felt more motivated and armed with strategies to reduce his emotional distress and improve his ability to cope more effectively with his caregiver duties. He provided an example when he became angry relative to his perception that his spouse was placing more demands on him than he could manage while coping with his dyspnea on exertion. Harry described how he used diaphragmatic breathing to calm himself and reduce the intensity of his breathlessness. Once he felt calm, he used a positive problem orientation approach rather than engage in his customary avoidant behavior. He reported that he believed he obtained a better outcome by the use of a calmer tone as he shared his concerns and feelings with his spouse about the severity of his own medical condition and breathlessness upon exertion. He felt less emotionally distressed as he improved his ability to verbalize his feelings more effectively. By reacting with less intense emotional distress, he gained more

understanding from his spouse and improved his sense of self-efficacy in his ability to regulate his emotions and reduce his breathlessness. He reported that following his appropriate assertiveness and clarification of his feelings with his spouse, she sat on the balcony three times during the past week, which increased his pleasant activity. The therapist assisted Harry in making the connection between his “approach” rather than “avoidant” behavior, reduced emotional distress, and resultant positive outcomes.

In addition, with the assistance of the therapist, Harry was able to associate his maladaptive thoughts and beliefs related to his caregiving demands with his increased anxiety/anger and increased breathlessness. Harry identified the cognitive distortions which contribute to his tendency to discount the positives about his spouse, while dwelling on negative beliefs about her caregiver demands, during periods when he is experiencing increased COPD symptoms and emotional distress. During this session, he was able to identify the displacement of his own discontent and disappointment with multiple life adjustments related to his own medical condition and retirement from his business, as well as his wife’s medical needs, onto his spouse as the demands of his life situation exceeded his coping capacity.

The therapist assisted Harry in identifying rewarding activities and defining any problems or obstacles related to engaging in the pleasant activity. Harry was encouraged to use the Generating Alternatives record to assist him in generating alternatives and evaluating outcomes related to caregiving problems and increasing his activity levels. The therapist explained the connection with improved mood and emotional states and engaging in self-enhancing activity.

During the session, Harry expressed his concerns about increased angina attacks, fatigue, and increased oxygen use after playing pool and “dragging around his oxygen”. He was also encouraged to schedule an appointment with his physician and continue using the cognitive and behavioral strategies that he had learned to cope with his anxiety and anger and related breathlessness. In collaboration with the therapist, he agreed to use the Activity Schedule to record and monitor mastery over 3 or 4 activities or situations. He agreed to practice using problem-solving skills, including evaluating the outcomes by using the Generating Alternatives record to assist him in identifying alternative solutions for 2 or 3 frustrating problems or situations with caregiving duties. He agreed to practice replacing automatic thoughts with more adaptive coping cognitions and to continue his use of diaphragmatic breathing and guided imagery for relaxation.

*Homework.*

In collaboration with the therapist, Dee agreed for her next homework assignment, to practice writing things down and concentrate more often on her bridge card playing with less focus on criticism or reactions from the other women. She agreed to use the Activity Record to monitor her mastery and agreed to practice using her problem-solving skills and evaluate the outcome by rating the intensity of her anxiety and breathlessness. In collaboration with the therapist, Harry agreed to use the Activity Schedule to record and monitor mastery over 3 or 4 activities or situations. He agreed to practice using problem-solving skills, including evaluating the outcomes by using the Generating Alternatives record to assist him in identifying alternative solutions for 2 or 3 frustrating problems or situations with caregiving duties. He agreed to practice replacing

automatic thoughts with more adaptive coping cognitions and to continue his use of diaphragmatic breathing and guided imagery for relaxation.

*Clinical Impressions.*

By the eighth session, both participants appeared to be gaining greater confidence in their ability to use more effectively the cognitive and behavioral strategies learned to reduce their depression and anxiety symptoms while coping with their COPD medical condition. Both subjects indicated that the diaphragmatic breathing practice and focus on replacing automatic thoughts with more positive coping statements provided them with a sense of control over the intensity of their dyspnea experience.

*Session Nine*

The goals for Session Nine included a focus on strengthening perceived control and self-efficacy in using problem-solving skills, along with a focus on gaining control of emotions when presented with stressors related to coping with COPD. The subjects were provided with education about the role of vulnerability factors for depression and the relationship with the chronicity of COPD. They were also instructed on how to decrease emotional distress by evaluating and prioritizing stressors related to COPD.

Dee reported that she was able to recover from a cold without an acute exacerbation or hospitalization, which she attributed to an awareness of her thoughts and feelings and improvement in her confidence in managing her breathing difficulties. In reviewing her homework assignment, Dee used the Activity Schedule to record her mastery and pleasure in managing the anxiety and breathlessness connected with her weekly bridge game. She reported feeling more “mentally prepared” to cope with her anxiety related to perceived negative comments from her avid bridge playing partners.

She used cognitive rehearsal with positive coping statements prior to participating in the bridge game and rated her mastery and pleasure at an “8” on a scale of 0 to 10, with 10 being high mastery and pleasure.

During the session, the therapist and Dee used the Coping with Stressors Worksheet to assist Dee with goal and task definition and the identification of steps to begin the stressful activity. She identified exercise and the task of changing her wardrobe from winter to summer clothing as two tasks which have become more difficult while coping with COPD symptoms. By breaking the tasks down into smaller steps, Dee was able to imagine coping with the stressors without feeling overwhelmed and fearful of anticipated breathlessness. For example, she used problem solving skills to generate an alternative to walking outside, which she still perceived as anxiety provoking. She indicated that she could walk in her building hallways daily prior to attempting walks outside. With minimal assistance from the therapist, she was able to prioritize the wardrobe task and decided that pulling out the summer clothes boxes and ironing summer clothes over several days would be less stressful than washing and putting away all the winter clothes first. By breaking the task down into smaller steps, she was able to reduce the intensity of anticipatory anxiety and related perception of breathlessness.

Harry arrived at the session reporting that he felt more relaxed this week and that there was less tension in his household this week. He also reported he had no angina attacks during this past week, but stated his intention to contact his physician as necessary and schedule follow-up tests to monitor his symptoms. He attributed his positive mood state to his increased practice with learned skills and resultant change in spousal response and interaction with him. The therapist reinforced and supported

Harry's reframing of his beliefs to reflect changes in his own thoughts, feelings, and behaviors to assist him in making a strong connection with his reduction in emotional distress and reduced somatic symptoms, including less breathing difficulty and no angina attacks during this past week.

Although Harry did not use the Activity Schedule or Generating Alternatives record this past week, he reported that he was engaging in alternative, more adaptive ways to manage his caregiving duties. For example, he is now taking care of many morning caregiving duties more routinely prior to getting into the shower and taking care of his own needs. He reported that he had fewer interruptions and calls for attention from his spouse by following a more scheduled morning routine. He did use the Daily Thought Record appropriately this past week to monitor the connection between his thoughts, feelings and situation outcome. The use of this record seems to assist Harry in gaining a sense of control in regulating his emotions and mood state. He also made efforts to increase his pleasant activity with his spouse this week and reported that they sat on the balcony together, ate dinners together more often, and watched a movie together. By the ninth session, Harry seemed to have greater acceptance of his medical condition and the changes necessary to cope with his multiple psychosocial stressors.

During the session, the therapist assisted Harry in the use of the Coping with Stressors worksheet to assist him with task definition and goal clarification when he feels overwhelmed with stressors related to coping with his COPD symptoms. Harry identified two stressful situations which trigger emotional distress and related breathing difficulty to examine in the session. When he works on time-consuming or difficult tasks such as updating his business website, he experiences anticipatory anxiety and worry

related to his fear of greater breathlessness when he becomes frustrated with task incompleteness. The therapist facilitated Harry's practice with problem-solving skills as he prioritized the task steps which would best minimize the escalation of emotional distress. He included taking breaks and pacing the task as part of the necessary steps for him to improve his control over breathing difficulty. During his breaks, he intended to practice relaxation techniques such as diaphragmatic breathing and guided imagery, although he suggested that the guided imagery is not always useful for him. The therapist educated and trained Harry on mindfulness meditation during this session to provide another relaxation strategy for him which may be more useful at this time; this seemed more suitable than waiting until the next session. Harry also used the Coping with Stressors worksheet to develop a more adaptive plan to cope with his anxiety related to the extensive walks around a pool table with a long oxygen hose, which increased his physical fatigue and breathing difficulty during games. He identified the steps he could take to schedule additional time to prepare for outings such as playing pool to regulate his breathing and reduce his anxiety about time constraints. He also was willing to accept his nephew's offer to assist him with creating a mobile device to transport his oxygen while playing pool rather than carrying it across his shoulder; this strategy would reduce his fatigue.

*Homework.*

In collaboration with the therapist, Dee agreed to use the Coping with Stressors Worksheet and Generating Alternatives record to practice improving problem-solving and coping skills with two situations during the week and evaluate the outcome related to her perception of breathlessness. Harry agreed to practice with at least one to two

stressful situations for homework using the Coping with Stressors worksheet and the Generating Alternatives record to practice in improving problem-solving and coping skills. He also agreed to practice mindfulness meditation for at least five minutes per day along with daily diaphragmatic breathing to increase his confidence in reducing anxiety and regulating breathing.

*Clinical Impressions.*

By the ninth session, both participants reported a cognitive shift in their perceptions about the severity of their breathlessness. The subjects' abilities to alter their perceptions about the connection between anxiety and depression symptoms and breathing difficulties seems to have improved their sense of control and confidence in slowing their breathing paces and abilities to attempt new and more adaptive behaviors to cope with their COPD medical conditions.

*Session Ten*

The goals for Session Ten included the improvement of dyspnea management, the evaluation and enhancement of skill building to maintain progress, and the development of a plan to prevent relapse with depression and anxiety. During the session the subjects learned to use the self-control triad (see Appendix N) to manage anxiety related to breathlessness. They also learned to utilize mindfulness meditation to remain present and focused to foster acceptance and commitment to maintaining their progress despite changes which occur in their pulmonary function status. They were provided with the rationale for using mindfulness meditation and the self-control triad to cope with the chronicity of COPD by managing the emotional distress associated with shortness of breath.

When Dee arrived at the session, she reported that she no longer had anxiety related to her bridge games. She was enthusiastic about her accomplishments and indicated that she realized she may not have been doing enough in the past to manage her COPD symptoms. She indicated that learning to pace her activity levels and rehearsing positive coping statements prior to engaging in activities which may cause breathlessness has helped her to reduce her anxiety and activity avoidant behaviors. She also reported that maintaining awareness of her automatic thoughts when she became short of breath and generating alternative replacement thoughts was a useful technique to reduce her anxiety. Dee was able to verbalize her understanding about how isolation in her apartment and avoidant behaviors was contributing to her depression symptoms.

A review of Dee's homework revealed that she started walking in her hallways and ironed most of her summer clothes and experienced less anxiety and associated breathlessness. She collaboratively worked with the therapist in the session on another stressor related to changing her prescription plan using the Coping with Stressors worksheet to help her clarify the problem and identify the steps she could take to address her concerns. During this exercise in session, Dee verbalized her understanding of the connection between her anxiety and unproductive worry about the problem, avoidant behavior, and maladaptive coping response. The therapist was able to use this example to introduce the rationale for practicing the self-control triad to break her pattern of unproductive worry. Because she was already using a form of mindful meditation and admittedly now practiced the diaphragmatic breathing technique daily for relaxation, it appeared that she may also benefit from practice with the self-control triad when she regresses to worrying behavior. Dee's ability to alter her perception about the portion of

her breathlessness related to anxiety seemed to increase her confidence to try other activity, such as walking, which she had avoided prior to this therapy due to fear of breathlessness.

Harry arrived at the session indicating that he had a good week with no conflicts or emotional distress. He reported no episodes of angina or severe breathlessness. When discussing the causal attributions for his reduced emotional distress, it was apparent that Harry still had difficulty with an external locus of control because he continued disproportionately to credit changes in his spouse's behavior with his reduced emotional distress. The therapist assisted him in examining whether or not the cognitive and behavioral changes that he made were connected with changes in his emotional state. This session focused on reinforcing for Harry the importance of self-monitoring to enhance his sense of control and mastery with mood state and emotional regulation. Harry was then able to verbalize his understanding about the connection between his emotional arousal, namely aggravation and frustration, and the intensity of his physical symptoms or emotional distress and greater difficulty with dyspnea. Conversely, he verbalized the awareness and recognition that his use of diaphragmatic breathing and meditation or guided imagery to calm himself, so that he can recognize cognitive distortions which interfere with his interactions with his spouse or others, has increased his confidence in managing his breathing difficulties and other physical signs of distress.

A review of his homework revealed that he prefers to use the Daily Thought Record to monitor his reactions and changes because he describes it as "easy and very functional" for him to examine his thoughts and feelings. The therapist reinforced his use of the Daily Thought Record and his ability to monitor his emotions and situation

outcomes. Through the frequent use of the Thought Record, he has been able to demonstrate his ability to replace maladaptive automatic thoughts with positive coping statements to rehearse, which contributes to less emotional distress and improved outcomes, including a decrease in breathlessness. He also used the Activity Schedule to monitor his mastery and pleasure in activities which are connected with increased breathlessness. Harry described how he visualizes the “movement of a sheer curtain” rather than a focus on his breathing as a centering point to assist him in his mindfulness meditation practice.

During the session, Harry was educated on the rationale for engaging in covert reinforcement by using the self-control triad to manage the anticipation of emotional distress due to frustration or aggravation related to caregiver issues. The therapist reinforced prior session education concerning the physiological basis of emotional arousal to assist Harry in maintaining the connection between his thoughts, feelings and behaviors and his ability to reduce anxiety and anger. Harry indicated that he used a similar strategy in the past to control his anger and verbalized his awareness that he would benefit from regular use of this strategy now because of his COPD and increased breathing difficulty when he becomes upset.

*Homework.*

In collaboration with the therapist, Dee’s homework assignment consisted of meditation practice five minutes daily and self-control triad practice daily as needed to manage anxiety. In addition, she agreed to walk in her apartment hallways daily and follow the steps she outlined on the Coping with Stressors worksheet to resolve her prescription plan problem. The therapist also encouraged her to use the Generating

Alternatives and Coping with Stressors worksheets to gain practice and assist her with problem solving skills for any new stressors which would occur during the next week.

Collaboratively, Harry agreed to practice mindfulness meditation for five minutes daily, in addition to his daily diaphragmatic breathing. He also agreed to practice the self-control triad two to three times per day as needed, with a focus on monitoring his breathlessness related to emotional distress.

*Clinical Impressions.*

By Session Ten both subjects seem to be taking greater responsibility for managing anxiety and depression symptoms in order to reduce and control breathing difficulties. Each subject continued to provide examples of using cognitive and behavioral skills to attempt new and more adaptive ways to cope with COPD. Both subjects have reported a cognitive shift in perceptions about the severity of their breathlessness which seems to have improved their confidence in their ability to reduce the portion of breathlessness related to their depression and anxiety symptoms. In addition, both subjects appear to better understand what portion of breathlessness is related to emotional distress and thus, more clearly under their control.

*Session Eleven*

The goals for Sessions Eleven and Twelve focused on increasing subject self-instruction to maintain progress in alleviating depression and anxiety symptoms. The therapist had the subjects identify the techniques most uniquely useful for them to reduce their depression and anxiety symptoms. The therapist and subject collaboratively reviewed the subject's coping resources for managing stressful situations related to COPD. The subjects also developed a relapse prevention plan, which included support

resources and the identification of warnings signs for behavioral or cognitive regression. The subjects were provided with resources for future referrals if depression and anxiety symptoms recur or persist without their ability to resolve the problems.

Dee arrived at the session reporting that she felt better physically and emotionally this past week. She stated that she felt more relaxed about coping with stressors and was more willing to use learned problem-solving skills. In reviewing her homework from the prior session, she shared her pride in accomplishing the hallway walking despite coping with the heat and humidity in her building when the air conditioning was turned off for two days. She reported that despite her fatigue and breathlessness, she continued to walk without feeling fearful. She used the Coping with Stressors worksheet to detail the steps she would take to resolve her prescription plan problem.

During the session, the therapist asked Dee to identify the warning signs which would indicate to her that she was regressing with depression or anxiety symptoms. Dee was able to make the connection between her isolating behavior and withdrawal from others and her negative thoughts as symptoms of her depression. She also recognized that her rapid, shallow breathing or worrying excessively was related to an increase in her anxiety.

The therapist reviewed learned skills and asked Dee to identify the strategies and techniques which were useful and helpful to her in coping with her COPD related depression and anxiety. Dee reported that the diaphragmatic breathing, self-coaching, along with cognitive rehearsal and distraction techniques were skills which helped her reduce her anxiety. She explained that she actually instructs herself aloud when she is getting prepared to leave her apartment to go out. She stated that the therapy helped her

to discover that the increased breathlessness she experienced when getting ready to leave her apartment was more closely related to her anticipatory anxiety and fearfulness of breathlessness rather than to the actual exertion-related breathlessness. Dee also reported that she was able to change her beliefs and reduce her excessive worrying by increasing her self-coaching to manage her anxiety when she became distressed, which in turn, reduced breathlessness. In addition, she stated that engaging in problem solving skills to cope with her stressors when triggered by anxiety was another useful strategy to break her pattern of unproductive worrying.

In developing her relapse prevention plan, Dee indicated that the Thought/Feeling Rating Log and the Daily Thought Record were most useful in helping her learn to replace automatic negative thoughts with positive coping self-statements to manage the intensity of her depressed or anxious feelings. She also indicated that increasing her pleasant activity and getting out of her apartment to be with other people was important for her to manage depression symptoms. Dee stated that the diaphragmatic breathing strategy helped her to remember to pace activity levels to better control her breathing, and that engaging in meditation or using distracters helped her to calm herself to reduce breathing difficulty.

Harry arrived at the session with a positive report of continued “good weeks” with improved relationship with his spouse and improved ability to regulate his emotions. In that session, he provided an example in session when he experienced increased anxiety because he could not locate his upper teeth plate and was worried about becoming late for an appointment. He reported an increase in perceived angina and panic reaction related to this situation. In discussing his distress, Harry was able to connect his somatic

symptoms with anxiety and panic feelings when he is emotionally distressed. In exploring this example, the therapist also assisted Harry with a focus on his own maladaptive beliefs and automatic thoughts which trigger emotional distress and avoidant behavior in interactions with his spouse around his caregiving role. In this regard, it was important to reinforce Harry's need to maintain his progress with using problem-solving skills and assertiveness about his COPD symptoms while also coping with his caregiver responsibilities. Harry reported that on a scale of 0-10 with 10 representing a high confidence level, he improved to an "8" with his ability to maintain assertiveness in his communication with others about his own health concerns related to oxygen dependence and breathlessness.

During the session, he also provided an example of an automatic thought which triggers emotional distress and increased breathlessness. When he perceived his spouse was "acting helpless", his tendency was to "jump to conclusions" rather than clarifying her request and his possible misperception. The therapist reinforced his self monitoring of automatic thoughts and maladaptive beliefs so that he will be able to recognize and change cognitive distortions to more adaptive coping responses to prevent a regression in anxiety and depression symptoms.

A review of his homework demonstrated that Harry was using the Coping with Stressors worksheet and problem-solving skills training to assist him in reducing his emotional distress when faced with financial or business related stressors. Because these psychosocial stressors tended to contribute to increased anxiety and greater breathlessness and may become more stressful in the future relative to his own and his spouse's medical conditions, the therapist and Harry collaboratively explored ways to

manage this stress vulnerability in the future. He identified his daughter and her spouse, along with two older friends, that he could include as social supports to assist him with managing stressors related to the progression of his COPD.

By this session, Harry demonstrated greater confidence in his ability to reduce the intensity of his breathlessness by gaining control over his anxiety and anger. He indicated that the self-coaching with positive alternative replacement thoughts, distraction techniques, and cognitive rehearsal were useful skills which help him reduce emotional distress. He identified guided imagery, mindfulness meditation, and diaphragmatic breathing as particularly helpful strategies for him to relax and calm his anger or anxiety. He emphasized that by practicing the diaphragmatic breathing daily, he feels more confident in his ability to slow the rate of his breathing when he perceives increased dyspnea. Increasing pleasant activity such as going out with friends for cards or for pool games, increasing quality time on the balcony, and sharing dinners with his spouse and children, have been important activities to reduce his depression and cope with caregiver stress.

*Homework.*

In collaboration with the therapist, Dee agreed to increase her pleasant activity with others and identify supports for future use as her disease progresses. She also agreed to increase her walking in her hallways daily to improve her exercise tolerance. In addition to her daily diaphragmatic breathing exercises, she agreed to practice five minutes of mindful meditation daily for relaxation. In collaboration with the therapist, Harry agreed to write out a relapse prevention plan based on discussion in the session.

He also agreed to continue practicing learned coping and problem-solving skills daily and to practice five minutes of mindfulness meditation daily.

*Clinical Impressions.*

Both participants were able to identify the cognitive and behavioral strategies most helpful for them to reduce their depression and anxiety symptoms. By the end of this session, each subject seemed more confident in his or her ability to reduce the intensity of breathlessness by reducing emotional distress. Although each subject has individual psychosocial stressors which contribute to his or her emotional distress, both subjects appeared to experience a reduction in breathlessness by using learned strategies to relax and reduce psychological distress. Cognitive restructuring, including maintaining awareness of automatic thoughts and using positive alternative coping statements, seemed to help both subjects reframe their experiences of COPD related symptoms to enhance their self-efficacy and sense of control. Diaphragmatic breathing has been the most consistently used relaxation strategy by both subjects throughout the therapy process in order to control the intensity of their perceived dyspnea when they experienced emotional distress, including anxiety or anger.

*Session Twelve*

Dee reported that she worked at the front desk in her building twice this week to increase time out of her apartment and time spent with others. She provided an example of using diaphragmatic breathing this past week to slow the pace of her breathing when she experienced breathlessness as she got out of the shower. She stated that she was able to regain control of her breathing more rapidly now than in the past with this strategy, which she attributed to continued daily practice. A review of her homework assignment

revealed that she used the Coping with Stressors worksheet to assist her when she was having breathing difficulties with the heat and humidity this past week. Dee also shared her worksheets with her niece, who encouraged her to continue using the therapy worksheets and records to help her maintain her focus on problem-solving and coping more effectively with her COPD symptoms. The therapist reinforced her inclusion of social supports such as her niece to help her monitor progress or regressions as she copes with the progression of COPD.

The session focused on a review of her relapse prevention plan including clarification of her understanding of the warning signs for a regression with depression or anxiety symptoms. Dee indicated that her past behavior of isolating herself in her apartment, withdrawing from others, and her lack of exercise or pleasant activity would be the major warning signs that she should monitor to prevent a relapse with depression. To prevent a relapse with anxiety, she was able to recognize that her “worrying about her breathing or future illness prognosis” would be a signal for her to engage in problem-solving rather than engaging in unproductive worrying. Dee identified diaphragmatic breathing, mindfulness meditation, the self-control triad and using distracters as effective strategies which help her reduce her anxiety and break the pattern of unproductive ruminative behavior.

The therapist and Dee collaboratively discussed options for her to increase pleasant activities, such as spending more time at her brother’s home when he has his grandchildren and volunteering at church. She recognized the importance of maintaining a positive problem orientation. She gave an example of using a positive coping statement to get out of the apartment rather than engaging in avoidant behavior and unproductive

worrying about the hot, humid weather. She stated that she used problem-solving skills to assist her with decision-making, such as going to an air-conditioned place when she goes out, using air conditioning in the car, and limiting her time outdoors in hot, humid weather to brief trips to the grocery store or for other errands.

Dee provided feedback concerning her experience with the therapy protocol. She reported that she may not have developed bad habits in managing her COPD symptoms, which she believes contributed to her depression and anxiety symptoms, had she experienced this type of therapy shortly after her initial COPD diagnosis. In this regard, she reported that prior to the therapy when a “breathing attack” or shortness of breath would occur, she “just worried” about the breathlessness without thinking about how to gain her breath back or solve the problem. She stated that the focus on having a positive problem orientation with positive thoughts about her ability to cope with her symptoms was useful at the outset of therapy. In this connection, she suggested that her “bad thoughts” led to “bad behavior” which negatively impacted her breathing. She felt that the focus on using her emotions as a cue for problem-solving, which included replacing her negative thoughts with positive coping statements, assisted her in reducing her anxiety and improving her mood state because she felt she had greater control over managing her dyspnea. She also reported that the therapy may have helped her reduce “worrying” about getting through the spring without hospitalization. In fact, Dee reported that the springtime in which she was enrolled in the study was the first spring in three years in which she was not hospitalized for an acute exacerbation of her COPD symptoms. Overall, Dee made good progress and has been able to apply many aspects of

the protocol to reduce her depression and anxiety and improve her self-efficacy, problem-solving skills, and quality of life in COPD symptom management.

Harry reported that he is increasing his pleasant activity and provided an example of spending a great day fishing at the beach with his nephew. He reported that he feels more confident that he can manage his COPD symptoms, along with his caregiver role, by not allowing the intensity of his emotions to escalate. He was clearly able to identify the connection between his anger and anxiety and increased breathlessness. He revealed that he believed that without the therapy he may have incurred a worsening of his depression and of his medical condition as well, because he was becoming hopeless about his situation. His insight suggests that he is now taking greater responsibility for the portion of breathlessness which is separate from his physical health problems and more closely related to his depression and anxiety.

In session, he provided an example of observing a regression in his spouse's "demanding behaviors", which triggered a regression in his negative thoughts/beliefs that she may be "taking advantage of him". He was able to use distraction techniques and positive coping statements to reduce his emotional distress. The therapist reinforced his approach behaviors by encouraging him to remain assertive about his feelings rather than to regress to avoidant behaviors, which involve suppressing angry feelings. Harry also provided an example in a session, which indicated that he was generalizing his learned skills to other life areas as he used assertiveness rather than an avoidant response to obtain a better outcome when playing pool with a friend. This followed his recognition that he was engaging in cognitive distortions such as emotional reasoning, mind reading, and jumping to conclusions about the behavior of his friend during a competitive game of

pool, which contributed to increased anger and emotional distress for the subject. By using the Generating Alternatives record, he was able to demonstrate his understanding of how his “negative thoughts” about his situation contribute to his emotional distress and the portion of breathlessness which he has some ability to control.

Harry collaboratively discussed his relapse prevention plan with the therapist. He acknowledged that his depression manifests with anger and that his awareness of the connection among his thoughts, feelings and behaviors was an important component in his relapse prevention. He indicated that generating alternative positive coping statements to replace maladaptive thoughts was an important component of his ability to reduce his caregiver stress. He stated that he uses the Self-Control Triad to help him regulate the intensity of angry feelings. For anxiety, he identified the need to practice diaphragmatic breathing daily, in addition to using mindfulness meditation and guided imagery for relaxation. He also stated that his use of an assertive positive approach about his medical condition with his spouse or others, rather than engaging in an avoidant negative orientation approach to problem-solving, would be important for him to prevent a relapse with anxiety, anger and increased breathlessness.

When providing feedback about the protocol, Harry indicated that he had difficulty engaging in the change process in the first three sessions because he needed to “vent” first about his problems because he had not previously disclosed to anyone his caregiver distress and its effect on his breathlessness and medical condition to anyone. He reported that he believed the therapy sessions with the focus on written homework assignments were beneficial for him by assisting him with reflection on how to change his maladaptive thoughts which contributed to his depression and anxiety. He stated that

he believed written homework was useful for older adults to make it easier to “remember” the areas of focus while learning new skills. Although he indicated that the length of sessions was appropriate for him, he stated that others may make gains in nine to twelve sessions. He also shared his belief that the initial emphasis on education about the impact of negative thoughts and beliefs on emotions and mood was important for him before he was able to change his behavior. Overall, Harry made good progress in reducing his depression and anxiety and has been able to apply learned skills.

## Chapter Six: Discussion

*Summary of Findings*

The findings in this study indicate that all three subjects experienced a reduction in depression and anxiety following the intervention phase of the study. The two subjects who completed the entire therapy protocol of twelve sessions reported no depression symptoms following treatment completion; these gains were maintained at both three and six month follow-up. Although the subject who completed only six therapy sessions experienced a significant reduction in depression symptoms, her depression scores continued to increase during the baseline phase of the study and she was still reporting mild depression at the completion of the sixth session. It is highly possible that had Carla completed the entire therapy protocol, she may also have experienced an elimination of depression symptoms following the intervention. Although it is a recognizable fact that Carla may have had new stressors introduced, the results suggest that the greater reduction of depression symptoms experienced by Dee and Harry in comparison to Carla's post-test result was most likely related to their completion of the twelve session therapy protocol. These findings support the hypothesis that the individual cognitive behavioral therapy intervention would result in a reduction of depression for older adults with co-morbid COPD.

In addition, these findings are consistent with prior research studies which found that individual cognitive behavioral therapy with treatment duration longer than nine sessions is generally more efficacious for older adults with depression (Pinquart & Sorensen, 2001). Considering that depression is frequently associated with disabling limitations from chronic illness in older adults, the specific emphasis of this protocol on

the subjects' COPD related problems, appears to have contributed to the treatment outcomes. In this regard, the focus of the content in most sessions for all three subjects involved the impacts of COPD symptoms on their activities of daily living and social interactions.

The participants in this study appeared to have greater difficulty managing the anxiety related to their breathlessness because their perceptions of dyspnea fell into the moderate to severe range at baseline (see Table F). The findings in this study suggest that the reduction in anxiety experienced by all three subjects was related to the individual cognitive behavioral therapy intervention, because both their state and their trait anxiety scores remained relatively stable during the baseline phase of the study and did not decrease until post intervention. Analysis of the State Trait Anxiety Inventory results (see Table B) suggests that Dee and Harry continued to experience further anxiety reductions at follow-up. These results suggest that Dee and Harry's longer duration in treatment and continued practice with learned strategies to cope with their anxiety most likely contributed to their maintenance of reduced anxiety at follow-up. This conclusion is supported by prior research which suggested that weekly sessions of CBT for 12 weeks significantly reduced anxiety in patients with COPD (de Godoy & de Godoy, 2003).

Both Dee and Harry engaged in daily practice of diaphragmatic breathing, which seems to be a critical behavioral component, along with other relaxation techniques in managing the portion of breathlessness related to their anxiety. In addition, the cognitive restructuring of thoughts and beliefs about subject ability to control the portion of their breathlessness related to anxiety appears to be a primary mechanism of change. Recent studies examining the impact of anxiety on breathlessness in patients with COPD and

other pulmonary disease have found that heightened patient awareness and worry about breathing was a critical target for intervention (Livermore et al., 2008; Livermore et al., 2007). Prior studies have found that anxiety symptoms, including panic attacks in patients with COPD, are often associated with physical limitations and chronic illness (Wetherell et al., 2005). The findings in this study are consistent with earlier research which found that anxiety and panic attacks in patients with COPD can be reduced by CBT even when there is no change in pulmonary function. Some studies suggest that dyspnea and disability may be worsened by untreated anxiety and depression (Katon et al., 2007). Based on findings in the present study, subjects' positive responses to individual CBT treatment may be related to the combination of gradual exposure to increasing awareness of breathing while focusing on CBT strategies to decrease the intensity of emotional distress. This intervention focus to improve self-efficacy in one's ability to control the pace of breathing and sensation of dyspnea is supported by research findings noted in a study on selective attention bias in patients with COPD and anxiety (Livermore et al., 2007).

Although all three subjects experienced an increase in self-efficacy for managing their COPD related symptoms and problems, the effect size varied by subject (see Table C). Harry experienced the largest increase in self-efficacy which was maintained at follow-up. Analysis of the data indicates that although Dee experienced a small increase in self-efficacy for coping with her COPD symptoms post intervention, she sustained another moderate increase in self-efficacy at 3 month follow-up which was maintained at 6 month follow-up. In contrast, Carla's moderate increase in self-efficacy post intervention resulted only in a self-efficacy score of 2.78, which was substantially lower

than both subjects who completed the entire protocol. These findings suggest that the higher self-efficacy scores experienced by Dee and Harry, which were maintained at follow-up, were related to their completion of the entire therapy protocol.

This protocol included therapy sessions which focused individually on the cognitive components of the subjects' experiences of COPD related symptoms. In a recent study examining disease specific self-efficacy in patients with COPD, the authors concluded that psychological conditions such as fear and anxiety and associated cognitions could adversely influence patient interpretation of breathlessness and efficacy information (Davis et al., 2006). The two subjects who were treated with the entire present protocol experienced a reduction in anxiety and depression symptoms and a decrease in perceptions of breathlessness. Thus, it may be that interventions which include a focus on the unique cognitive processes involved in anxiety, depression and perceptions of breathlessness in older adults with COPD, may contribute to increased self-efficacy for managing COPD related problems such as shortness of breath and exercise tolerance. Prior studies have noted that changes in level of functioning and activity engagement in older adults with chronic medical conditions are related to self-efficacy (McCauley et al., 2006; Seeman et al., 1999). The findings in this study are further supported by prior research which found that perceptions of personal control and self-efficacy are important factors in adjustment to COPD even in patients with severe stages of the illness (Arnold et al., 2006).

Prior studies have found that the treatment of depression and anxiety is not only related to quality of life, but may also be one of the most salient indicators of perceived health status for patients with COPD (Cully et al., 2006). Thus, therapeutic engagement

for a population of older adults who are severely, medically compromised with oxygen dependence may be a critical factor for improvement of overall quality of life in older patients with COPD. The reduction in the two subjects' perceptions of their respiratory problems following completion of the entire therapy protocol occurred despite no substantial change in the disturbances to their daily physical functioning as measured by the St. George's Respiratory Questionnaire for COPD Patients (SGRQ-C). The subject who completed only six therapy sessions did not experience a reduction in her perception of respiratory problems, and the reported disturbances to her daily activity continued to increase during the baseline phase of the study. The reduction in the psychosocial impacts subscale occurred following the intervention phase of the study for each subject, although the time frames varied by subject, with one subject obtaining the greatest gain at six month follow-up, yet another obtained the gain following six sessions of therapy.

However, an examination of the total scores on the SGRQ-C at posttest and follow-up show that only Dee and Harry experienced a significant improvement in their overall health related quality of life (Dee = 43.80 posttest and 37.63 at six-month follow up; Harry = 31.35 posttest and 40.28 at three month follow-up); however, Carla's health related quality of life decreased during the baseline period and returned only to her initial baseline measurement following six therapy sessions (Carla = 59.67 posttest). Therefore the improvement in quality of life experienced by Dee and Harry appears related to their reduction in depression, anxiety, and perceptions of respiratory symptoms, along with their increased self-efficacy to manage COPD related problems. These findings are supported by prior research which suggests that the treatment of depression and anxiety is

associated with improved quality of life for patients with COPD (Cully et al., 2006; Eiser et al., 2005).

The hypothesis that there would be an improvement in positive problem orientation generated mixed findings. A significant improvement in positive problem orientation was experienced by Carla at posttest, and by Dee at six month follow-up. For Harry, there was a decrease in positive problem orientation following the intervention. However, by six-month follow-up, Harry's positive problem orientation score showed a significant increase from his post-test score (see Table E). Considering that Harry's post-test score fell within the norm group average range, his post-test decrease does not indicate poor problem orientation. Rather, the use of the short form version of the Social Problem Solving Inventory-Revised Short Form in this study may have contributed an artifact in the design of the study by not using the long version of the measure. Although the short form version provided the desired brevity for use in the larger battery of tests in this study, the longer version may have provided a more comprehensive picture of his specific problem-solving skills. Another explanation could be related to the global indicator of the Positive Problem Orientation subscale, which suggests that Harry's responses on the items may have been affected by occurrences of that week (e.g. complicated by his caregiver burdens).

The decrease in the impulsivity/carelessness style subscale scores for Dee and Carla suggests that they may have improved their ability to address their COPD related problems with a more deliberate and careful approach following the intervention. Although there was no significant difference found in the negative problem orientation subscale for Dee and Harry, Carla experienced a significant decrease in her negative

problem orientation. Although there is recognition of some variability in the baseline data for Harry's negative problem orientation, both Dee and Harry's negative problem orientation scores fell within the average range at pre and post test measurements, with no significant changes at follow up. In contrast, these findings suggest that Carla's decrease in negative problem orientation may be related to her overall lower self-efficacy prior to the study in comparison with the other two subjects' perceptions of their overall problem-solving ability. Thus, Carla may have benefited from the early sessions which included a focus on problem orientation. The overall results of the SPSI-R:S, when compared with the results of the other measures used in this study, suggest that there may have been a response bias related to the individual subject's desire to present himself or herself in a favorable light. Another plausible explanation for the problem solving findings in this study may be due to the overall subject baseline scores which fell within the average range of problem-solving ability prior to the intervention.

Only one participant in this study (Harry) experienced an increase in exercise tolerance following the intervention. Although his 11.3% increase is smaller than the minimally clinically significant 177 feet referenced by Berry et al. (2003) for patients to perceive a difference in themselves compared with others, his increase in exercise tolerance may be a positive outcome related to his self-efficacy improvement when viewed within the context of the severity of his co-morbid heart disease and severe stage of COPD.

Another interesting finding in this study revealed that Dee was unwilling to ambulate without utilizing her own supplemental oxygen during the pre-test measurement because of fearfulness about breathlessness. During the posttest 6MWD test, she was

able and willing to ambulate with 2 liters/minute provided by the respiratory examiner without reliance on her own supplemental oxygen. This occurred despite her recent other co-morbid illness which resulted in three weeks of de-conditioning. When these results are examined within the context of Dee's reduction in anxiety and decrease in her perceptions of respiratory symptoms, along with her increase in self-efficacy related to COPD symptoms, Dee's ability to engage in the posttest 6MWD test without fearfulness about her oxygen reliance may have been related to her completion of the intervention protocol. In this regard, the findings in this study are consistent with prior research that suggests that a reduction in depression and anxiety and an increase in self-efficacy for managing breathlessness with physical activity are important outcomes for intervention (Davis et al., 2006).

The individual treatment modality of cognitive behavioral therapy tested in this study seems to provide the necessary flexibility to address the unique concerns of older adults with COPD. As was evident through the content of the therapy sessions examined with the use of this protocol, the focus of treatment goals varied individually. Although all three subjects experienced both depression and anxiety symptoms, this protocol provided the flexibility to tailor the sessions to address each subject's treatment needs adequately. Prior research has suggested that older adults are more willing to engage in therapeutic interventions which address their particular psychosocial and situational stressors (Coventry & Gellatly, 2008). Other researchers also found that the combination of standardization of the intervention, along with components of flexibility within the treatment contributed to increased patient engagement in the process (Cully, DeBaakey, Paukert, Falco, & Stanley, 2009). Some researchers have found that individual therapy

had larger effect sizes than a group context for older adults (Engels & Vermey, 1997 as cited in Pinquart & Sorensen, 2001). Another study found that individual therapy was more effective for the treatment of caregiver distress than the group modality for older adults (Knight, Lutzky, & Macofsky-Urban, 1993).

In the present study, the standardization of specific techniques and records for homework use, along with the flexibility to meet the individual treatment needs of the participants seemed to enhance the usefulness of this protocol. In a prior group treatment study, Stanley, et al., (2005) found that there was significant variability in patients' abilities to use various coping skills. Additionally, Coventry and Gellatly (2008) suggested that group based CBT may be too inflexible to address the treatment needs of COPD patients adequately. Thus the changes found in the older adults who participated in this intervention may be related to the protocol's adaptability to focus on the concrete problems and skills needed, as they were presented by each subject during the therapy sessions. As evident in the discussion of therapy sessions in the results section of this study, each subject was able to utilize the therapy intervention to address his or her unique concerns. For example, Dee's therapy focus included a greater emphasis on her recognition and treatment of anxiety symptoms due to the negative impacts to her perception of breathlessness, activity level, and quality of life. For Harry, it was important to incorporate his caregiver stressors into his therapy because his difficulty with depression and anxiety were negatively impacted by his maladaptive coping style. For Carla, the focus of therapy involved greater emphasis on her depression symptoms which were negatively impacted by her thoughts and beliefs about being a burden,

anxiety about breathlessness, in addition to her obesity related problems and their impacts on her dyspnea.

The tested feedback provided by the participants in this study suggested that compliance with written homework assignments was an important component in this therapy protocol. This feedback is consistent with prior research which found that the completion of more homework was associated with greater reductions in depression in older adults (Coon & Thompson, 2003). Although the subjects were generally compliant with mutually agreed upon homework assignments, there may have been a self-selection bias which contributed to the usefulness of the self-monitoring records provided by this protocol. The Thought/Feeling Rating Log and the Daily Thought Record were the most frequently used tools by these older adults to assist them with identifying and replacing maladaptive beliefs and cognitions contributing to their depression and anxiety symptoms. The subjects also showed a preference for using the Generating Alternatives Record and the Coping with Stressors worksheet to assist them with problem-solving activities related to coping with the physical limitations of their COPD. As the sessions progressed, the subjects increased their use of the Activity Schedule to monitor their engagement in pleasant activity and mastery over physical activities which tended to increase their dyspnea.

These findings from the therapy sessions suggest that the use of homework assignments for this sample of older adults may have contributed to the treatment outcomes. Prior research has found that collaboratively developed homework assignments that are tied to the individual goals and problems identified in therapy for older adults were related to greater reductions in depression (Coon & Thompson, 2003).

Other studies have found that older adults respond well to a therapist's enthusiasm and review of homework and tend to invest a significant amount of energy in completing the assignments (Kazantzis et al., 2003). In their review of the research on homework in cognitive behavioral therapy, Kazantzis et al. (2003) found that the use of homework to increase practice effects may produce longer-lasting treatment effects. Considering that follow up results in the present study demonstrates sustained treatment gains in depression, anxiety, self-efficacy, and perceptions of respiratory problems, it is conceivable that the individualized homework component of this protocol contributed to the intervention outcomes.

#### *Study Limitations*

The findings in this study are limited by the small sample of older adults who participated in the intervention. The interpretation of test data for one of the subjects is limited because of her inability to complete the entire protocol. However, the feasibility of using this protocol on a larger sample of older adults with co-morbid depression, anxiety and COPD may be warranted in light of the favorable outcomes for the participants in this study. This study is also limited by the use of a convenience sample of three available subjects who met the inclusion criteria, which precluded a random sampling of subjects. The lack of subject heterogeneity in ethnicity and race is another study limitation. Thus, the generalization of these findings to the larger population of older adults with COPD and co-morbid depression and anxiety has limited external validity. Although recognizing the external validity limitations, the participants recruited for this study had severely compromised medical conditions and related psychosocial stressors, which contributed to the difficulty in recruiting subjects who were able and

willing to commit to the length of the therapy protocol. Future considerations for the use of this protocol with older adults with such compromised medical conditions should also include an option for home visits to increase treatment participation.

Although the effects of the intervention appear clear in the major targeted variables which changed when the intervention was introduced, i.e., depression, anxiety, and self-efficacy, the inconsistent effects in the other measured variables may limit the concluded inferences. However, as noted in Kazdin (1982), exceptions in the intended effect may not interfere with drawing causal inferences about the intervention if several of the baseline measurements show the intended effect as was evident in these study findings.

### *Conclusions*

One may conclude that the findings in this study suggest that the individual cognitive behavioral therapy approach for the treatment of depression and anxiety in older adults with COPD used in this research may be beneficial for other older adults with these co-morbid conditions. Although this protocol is designed to follow a structured sequential format, therapists are also encouraged to use the protocol in a flexible manner, as needed and based on the individual treatment needs of the patient. In this regard, some older adults may require more practice and skill building in a specific area. The sequence of the sessions was designed to build skills focused on 1) changing thoughts, followed by 2) psychoeducation on recognizing and regulating emotions, and lastly 3) practicing changed behavior. Because the entire protocol is based on a problem-solving foundation, it is important for therapists to adjust, flexibly, when the therapeutic demands of the patient requires greater emphasis or reinforcement in a specific area.

Testing this protocol among three different older adults provided the opportunity to examine the flexibility of the individual focus of this protocol.

This study adds to the growing body of research which suggests that treatment protocols which address the individual needs of older adults with depression and anxiety secondary to their disabling COPD illness can improve the quality of life for this population. Research also suggests that psychological strategies which effectively address the psychosocial factors related to major medical problems is an important component in the integrative care of severely compromised medical patients (Bray, 2009). Improvement in self-efficacy to cope with the physical activity limitations which result from the progression of COPD seems to be related to a reduction in depression and anxiety symptoms. Based on recent research, along with the findings in this study, future studies measuring the effects of self-efficacy, psychosocial beliefs, and behavior have important implications for improved quality of life for older adults with COPD (Lemmens, Nieboer, & Huijsman, 2008). Intervention strategies which target adaptive coping and problem-solving skills to manage the dyspnea upon exertion experienced by older adults with COPD, who also have other co-morbid medical conditions, seem to be a critical element in reducing depression and anxiety for this population.

Research suggests that patients with co-morbid depression and chronic medical conditions have higher mortality and 50 to 100% higher medical costs than those without depression (Mauer, et al., 2008). For older adults with COPD, there is also a high co-morbidity with anxiety because dyspnea is a symptom of both COPD and anxiety. Therefore it appears critical that the management of this population should occur within the context of a collaborative care model, which includes referral and access to specific

mental health treatments. In a recent study examining a group modality of cognitive behavioral therapy for COPD patients, Kunik et al. (2008) suggested that a more idiographic individual modality of CBT may generate improved treatment outcomes. Future studies with larger samples should include an individual, cognitive behavioral approach which has enough flexibility to address the multiple and varied psychosocial impacts related to the depression and anxiety experienced by older adults with COPD.

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Table A

Summary of Geriatric Depression Scale Results

Subject	Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
	Baseline 1	Baseline 2	Baseline 3			
Dee	11	11		6	2	6
Harry	11	11		6	2	0
Carla	21	22	27	11		

Table B

Summary of State Trait Anxiety Inventory Results

Subject	Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
	Baseline 1	Baseline 2	Baseline 3			
Dee	S = 37 T = 44	S = 39 T = 39		S = 30 T = 35	30 25	21 25
Harry	S = 47 T = 37	S = 44 T = 37		S = 33 T = 25	22 24	30 25
Carla	S = 46 T = 54	S = 58 T = 58	S = 63 T = 57	S = 38 T = --- *		

\* Incomplete data

Table C

Summary of COPD Self-Efficacy Scale Results

Subject	Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
	Baseline 1	Baseline 2	Baseline 3			
Dee	3.44	3.38		3.74	4.65	4.15
Harry	1.74	2.03		4.30	4.06	4.91
Carla	1.68	2.00	1.76	2.78		

Table D

Summary of St. George Respiratory Questionnaire for COPD Patients Results

Subject		Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
		Baseline 1	Baseline 2	Baseline 3			
Dee	Symptoms	61.75	68.56		46.14	42.17	44.48
	Activity	73.17	73.17		73.17	73.17	73.17
	Impacts	30.13	25.46		25.72	19.19	14.53
	Total	48.64	47.27		43.80	39.72	37.63
Harry	Symptoms	63.45	60.79		46.14	32.24	27.83
	Activity	94.01	80.27		73.07	80.27	80.27
	Impacts	25.71	21.76		2.18	19.00	11.07
	Total	53.20	46.32		31.35	40.28	35.38
Carla	Symptoms	72.66	83.52	83.52	83.45		
	Activity	79.74	94.01	94.01	94.01		
	Impacts	45.77	65.03	72.10	31.88		
	Total	60.74	77.18	80.92	59.67		

Comparison Data - American Translation Study (Barr et al., 2000)

Means and (SD) values

	Baseline	Post-test
Symptoms	49.9 (14.7)	45.4 (18.9)
Activity	72.9 (22.0)	71.3 (22.6)
Impacts	41.1 (19.9)	37.5 (19.5)
Total	51.9 (17.5)	48.8 (17.4)

Table E

Summary of Social Problem Solving Inventory Results

Subject		Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
		Baseline 1	Baseline 2	Baseline 3			
Dee	PPO	101	97		85	97	126
	NPO	85	82		89	85	82
	RPS	93	117		101	97	113
	ICS	93	97		77	85	82
	AS	89	76		76	85	80
	Total	108	117		113	112	126
Harry	PPO	135	122		110	118	130
	NPO	119	89		92	85	79
	RPS	133	133		121	137	137
	ICS	117	101		105	93	89
	AS	113	89		97	89	89
	Total	104	121		110	127	131
Carla	PPO	81	89	77	106		
	NPO	109	112	109	82		
	RPS	81	93	77	101		
	ICS	97	109	113	85		
	AS	97	97	93	85		
	Total	88	90	83	116		

PPO = Positive Problem Orientation  
 NPO = Negative Problem Orientation  
 RPS = Rational Problem Solving  
 ICS = Impulsivity/Carelessness Style  
 AS = Avoidance Style

Table F

Modified Medical Research Council (MRC) Dyspnea Scale Results

Subject	Pretest Baseline Scores			Posttest	3 Mo. F/U	6 Mo. F/U
	Baseline 1	Baseline 2	Baseline 3			
Dee	3	3		2	2	3
Harry	4	4		1	4	4
Carla	3	3	4	3		

Table G

Summary of Six Minute Walk Distance Test Results

Subject	Pre-test Score	Post-test Score
Dee (ambulated with 2 l/minute)	600 feet	550 feet *
Harry (ambulated with 4 l/minute)	606 feet	675 feet
Carla (ambulated with walker; required 4-6 l/minute)	300 feet	----- **

\* Posttest conducted following 3 weeks de-conditioning due to other physical illness.

\*\* Unable to complete posttest due to illness compromising ability to walk.

Figure Captions

Figure 1. Geriatric Depression Scale

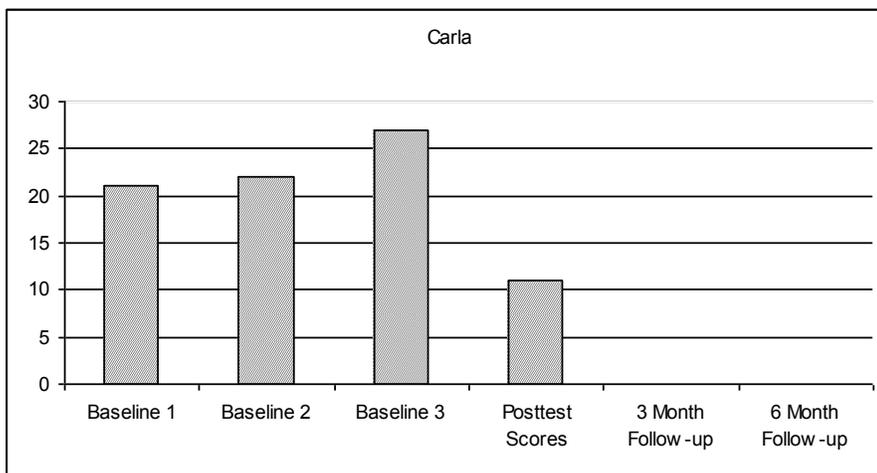
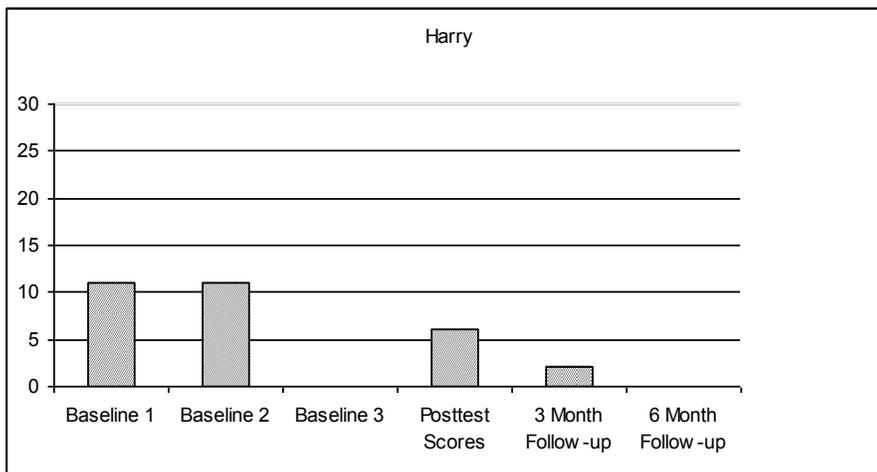
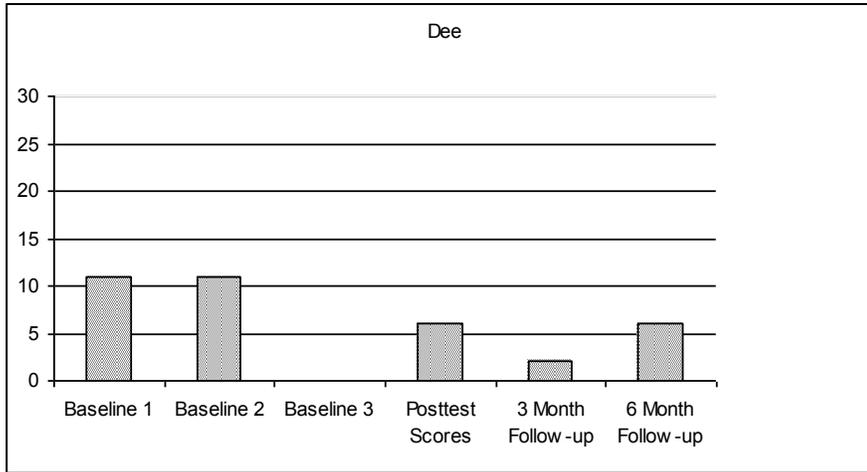


Figure 2. State Trait Anxiety Inventory Scale

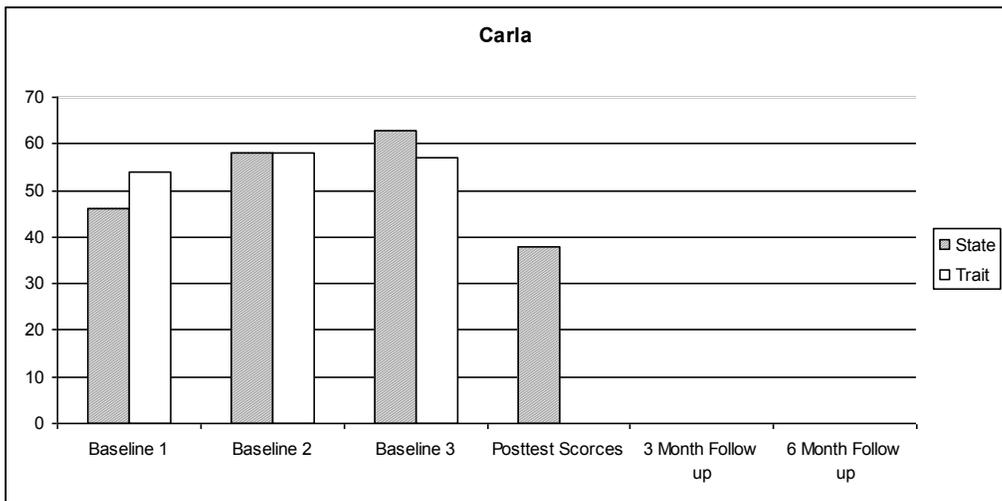
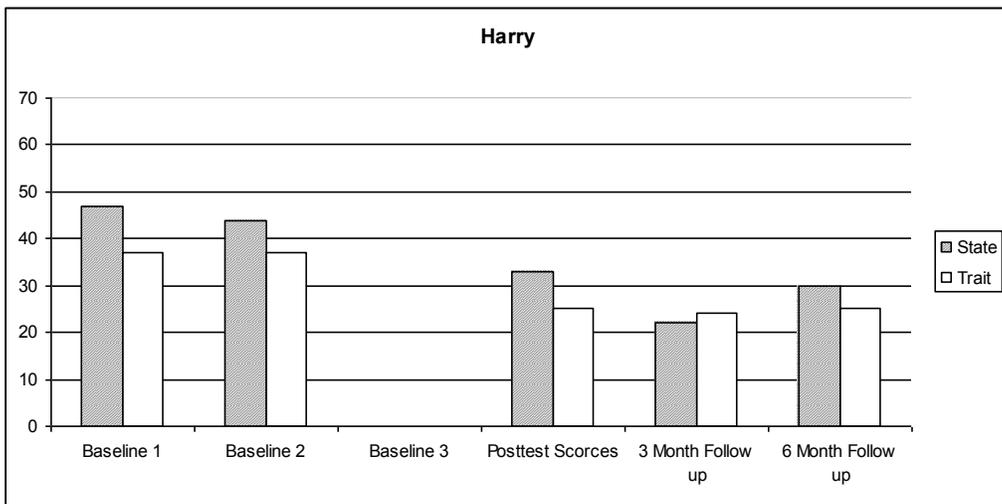
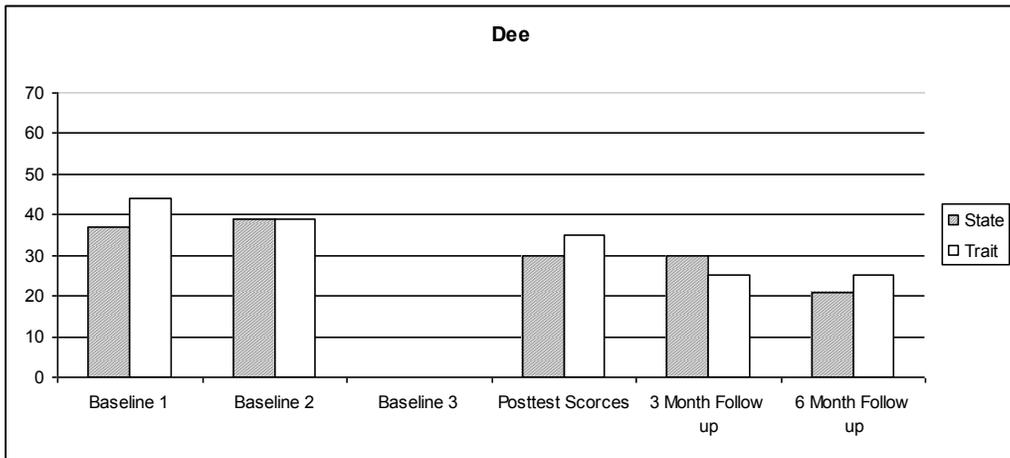


Figure 3. COPD Self-Efficacy Scale

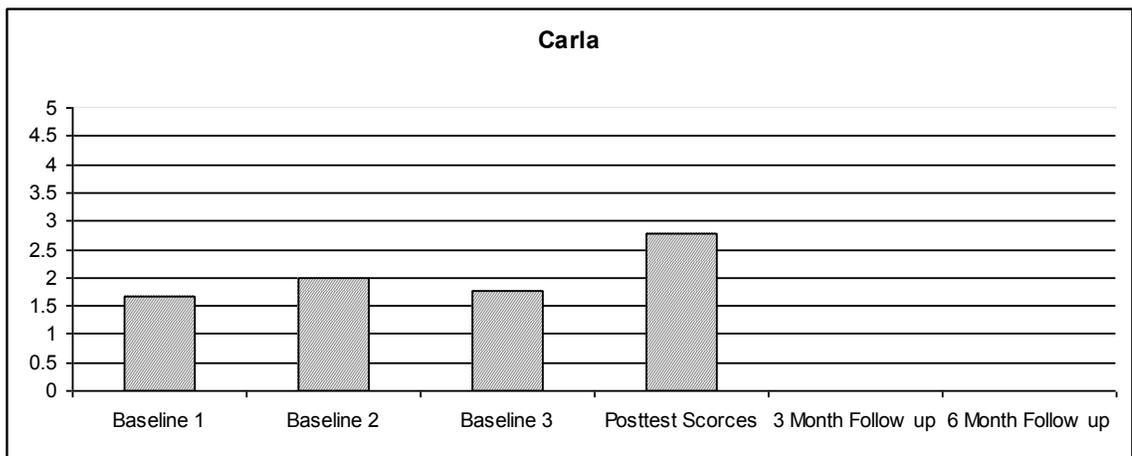
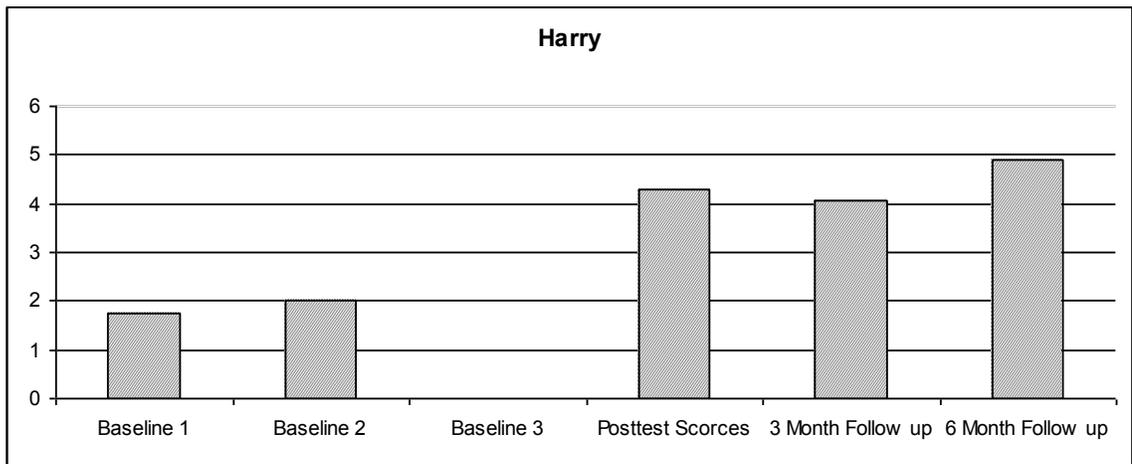
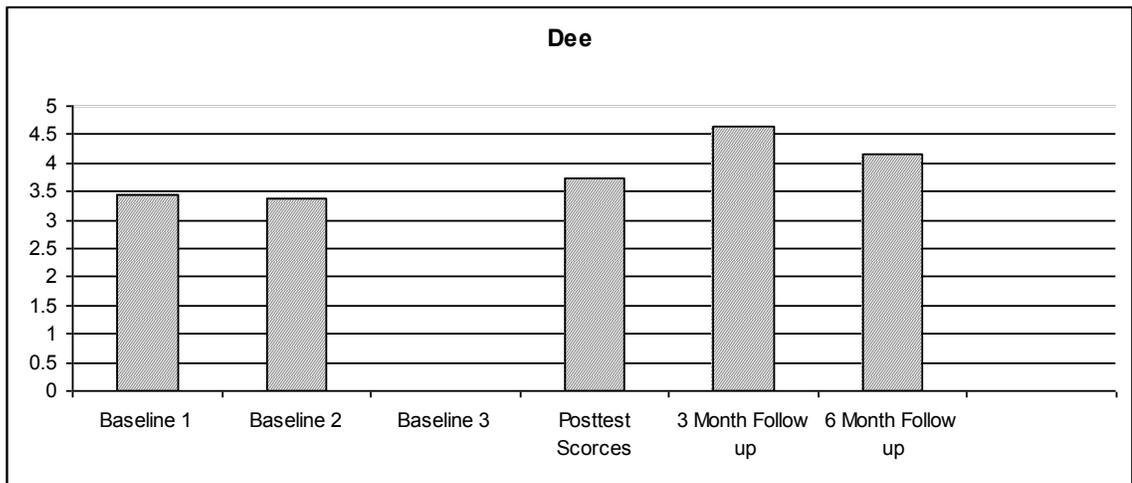
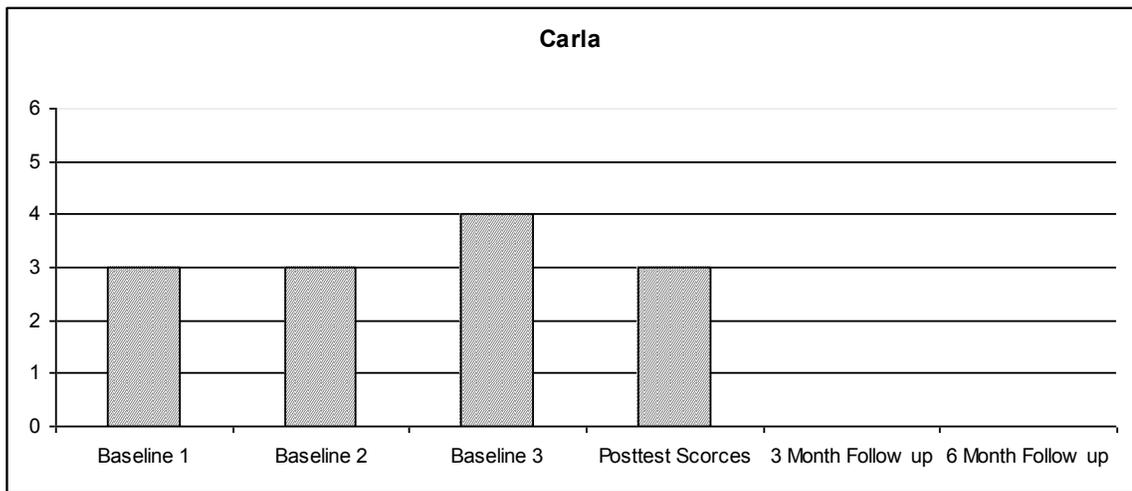
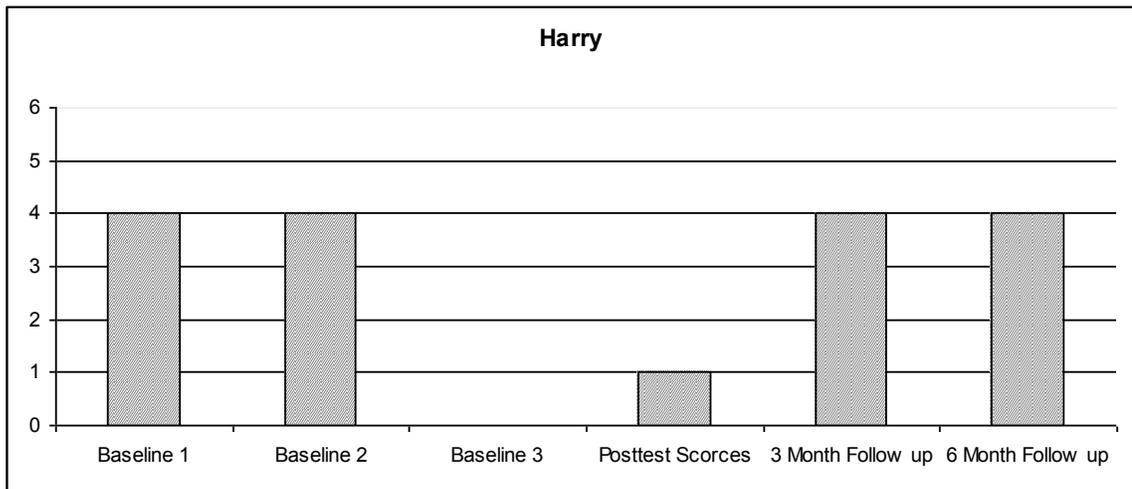
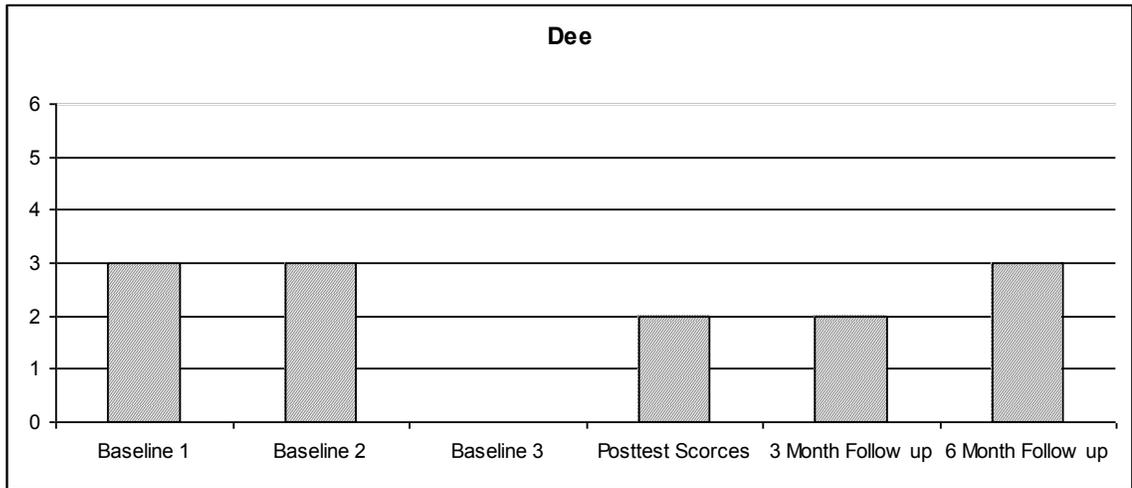


Figure 4. Modified Medical Research Council (MRC) Dyspnea Scale



Appendix A

**INITIAL EVALUATION**

*Name/Address/Phone Number:*

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*Presenting Problem:*

*Current living arrangement and marital status:*

*Date of Diagnosis with COPD and stage level:*

***Developmental History (Include descriptions of relationships with children, parents, siblings, and any deceased members with cause of death):***

***Education Level:***

***Occupational History (Include current work/retirement status):***

***Military Service History (Include status of discharge):***

*Social/Relationship History (Include relationship with current partner and any relationship problems):*

*Traumatic Experiences (Include any disruptions related to family, medical, or psychological experience):*

*Legal History (Include past or present):*

*Medical History (Include any co-morbid illnesses, current medications and pertinent family history of medical illness):*

*Any changes in sleep/libido/appetite, including weight gain or loss:*

*Psychiatric History (Include past and present both mental health and substance abuse, including smoking history):*

*Patient Goals for Therapy:*

*Any questions or concerns:*

## Appendix B

### **STRUCTURE OF THE COGNITIVE BEHAVIORAL SESSION**

- AGENDA SETTING
- REVIEW OF ANY QUESTIONS ON THE CONTENT OR KEY POINTS  
FROM PRIOR SESSION
- REVIEW OF CURRENT PHYSICAL AND EMOTIONAL STATUS
- REVIEW OF HOMEWORK FROM PREVIOUS SESSION
- PROVIDE RATIONALE AND OVERVIEW OF CURRENT SESSION
- DEVELOP NEW PRACTICE ASSIGNMENTS
- SOLICIT FEEDBACK REGARDING CURRENT SESSION

(Adapted from Freeman, Pretzer, Fleming & Simon, 2004)

## Appendix C

### **PROBLEM ORIENTATION**

- PROBLEM PERCEPTION
- PROBLEM ATTRIBUTION
- PROBLEM APPRAISAL
- PERCEIVED CONTROL
- COMMITMENT TO TIME AND EFFORT

(D'Zurilla & Nezu, 1999)

Appendix D

**THOUGHT/FEELING RATING LOG**

**Rate feeling on scale from 0-10 (0=low intensity; 10=high intensity)**

<u>Thought</u>	<u>Feeling</u>	<u>Rating</u>

## Appendix E

**COMMON COGNITIVE DISTORTIONS**

Overgeneralization – A specific event is seen as being characteristic of life in general rather than as being one event among many.  
 (“Whenever my breathing feels worse, I get more depressed.”)

Dichotomous (All or None) Thinking – Things are seen in terms of two mutually exclusive categories with no “shades of gray” in between.  
 (“It’s so depressing because I can’t do the things I used to because of my breathing.”)

Mind-reading/fortune telling – Assuming that others are reacting negatively without evidence that this is the case. (“I’m such a burden to my family – before long I’ll need help with everything.”)

Catastrophizing – Negative events that occur are treated as intolerable catastrophes rather than being seen in perspective. (“I can’t go out to eat with my spouse because everyone will be staring at me with my oxygen and there won’t be any place to put the tank.”)

Selective abstraction – A single aspect of a complex situation is the focus of attention and other relevant aspects of the situation are ignored.  
 (“All I think about is my breathing and how angry I am about how smoking may have caused this.”)

Emotional Reasoning – Assuming that emotional reactions necessarily reflect the true situation. (“I’m so worried about my next breath that I have to save my energy for breathing so I have enough to take care of myself.”)

(Adapted from Freeman, Pretzer, Fleming, & Simon, 2004)



## Appendix G

### **Pursed Lip Breathing**

- INHALE THROUGH YOUR NOSE
- COUNT SLOWLY SO YOU ARE BREATHING MORE SLOWLY
- PURSE YOUR LIPS AND EXHALE THROUGH YOUR MOUTH  
TWICE AS LONG AS YOU ARE INHALING

### **Diaphragmatic Breathing**

- PLACE RIGHT HAND ON CENTER OF STOMACH AND  
LEFT HAND ON UPPER CHEST
- INHALE THROUGH YOUR NOSE AND FEEL YOUR  
STOMACH MOVE OUTWARD
- PURSE YOUR LIPS AND EXHALE THROUGH YOUR  
MOUTH AND FEEL YOUR STOMACH MOVE INWARD

## Appendix H

**GUIDED IMAGERY**

To go to your safe place, sit comfortably and close your eyes. Walk slowly to a quiet, peaceful place in your mind. Picture yourself unloading your anxieties and worries. Notice the view in the distance. What do you smell? What do you hear? Notice what is before you. Reach out and touch it. How does it feel? Smell it, hear it, make the temperature comfortable. Look around for a private spot. Find a path to this place. Look above you. What do you see? Hear? Smell? Walk down this path until you can enter your own comfortable, quiet, safe place. You have arrived at your special place. What is under your feet? How does it feel? What do you see or hear? Reach and touch something. What is its texture? Look as far as you can see? What do you hear? What aromas do you notice? This is your safe place and nothing can harm you hear. Notice the sights, sounds and smells. Spend three to five minutes realizing you are relaxed, safe and comfortable. Memorize this place's smells, sights, sounds, tastes. You can come back and relax here whenever you want. Leave by the same path. Look far away and appreciate the view. Say an affirmation such as "I can relax here", or "This is my special place. I can come here whenever I wish".

(Davis, Eshelman, & McKay, 1995)



Appendix J

**ACTIVITY SCHEDULE**

**Note: Grade activities for Mastery (M) and Pleasure (P) on a scale from 0-10**

<u><b>Weekday</b></u>	<u><b>Activity</b></u>	<u><b>M</b></u>	<u><b>P</b></u>
<b>Monday</b>			
<b>Tuesday</b>			
<b>Wednesday</b>			
<b>Thursday</b>			
<b>Friday</b>			
<b>Saturday</b>			
<b>Sunday</b>			

(Adapted from Gilson & Freeman, 1999)

## Appendix K

### **PROBLEM-SOLVING SKILLS**

- PROBLEM DEFINITION
  
- GENERATING ALTERNATIVES
  
- MAKING DECISIONS
  
- EVALUATION OF SOLUTION OUTCOME
  
- VERIFICATION

(D’Zurilla & Nezu, 1999)

Appendix L

**GENERATING ALTERNATIVES**

	<u><b>Advantages</b></u>	<u><b>Disadvantages</b></u>
<b>Alternative 1</b>		
<b>Alternative 2</b>		
<b>Alternative 3</b>		

Appendix M

**COPING WITH STRESSORS WORKSHEET**

Define Task - \_\_\_\_\_

Define Goal - \_\_\_\_\_

Begin Task: (Steps)

- 1.
- 2.
- 3.
- 4.
- 5.

Define Task - \_\_\_\_\_

Define Goal - \_\_\_\_\_

Begin Task: (Steps)

- 1.
- 2.
- 3.
- 4.
- 5.

(Adapted from Gilson & Freeman, 1999)

Appendix N

**SELF-CONTROL TRIAD**

**STOP**

**(VISUALIZE STOP SIGN)**

**BREATHE**

**(SLOW DEEP BREATHS)**

**CALM**

**(VISUAL IMAGERY)**

(Adapted from Cautella, J. R., 1983)

## Appendix O

**Referral List**

Abington Memorial Hospital  
Behavioral Health Unit  
1200 Old York Road  
Abington, PA 19001-3788  
215-481-2000

Creekwood Center  
3941 Commerce Avenue  
Willow Grove, PA 19090-1104  
215-481-5450

Friends Hospital (Inpatient)  
4641 Roosevelt Boulevard  
Philadelphia, PA 19124-2399  
1-800-889-0548

Horsham Clinic  
722 E. Butler Pike  
Ambler, PA 19002-2310  
215-643-7800

Northwestern Human Services  
478 N. Bethlehem Pike  
Ambler, PA 19002-3526  
215-643-4340

Northwestern Human Services  
620 Germantown Pike  
Lafayette Hill, PA 19444-1810  
610-260-4600