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Benefit Finding, Self-efficacy Beliefs and Employment Outcomes for Individuals Living with Multiple Sclerosis

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BENEFIT FINDING, SELF-EFFICACY BELIEFS AND EMPLOYMENT
OUTCOMES FOR INDIVIDUALS LIVING WITH MULTIPLE SCLEROSIS

BY

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Submitted in Partial Fulfillment
of the Requirements for the Degree
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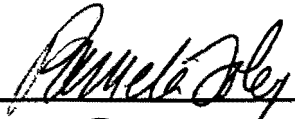
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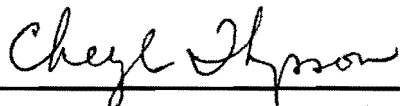
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DEDICATION

I dedicate this to my mother, Margaret Kennedy Clancy. Your love, courage and appreciation for all things mysterious inspire me every day.

This is for you.

ABSTRACT

There have been significant contributions to the literature concerning issues and experiences of employment for individuals with Multiple Sclerosis (MS). Recent research has also addressed the experience of benefit finding within this population and how it correlates with more effective coping strategies as well as higher levels of perceived social support and self-efficacy. Although one study revealed that higher levels of benefit finding were significantly correlated with unemployment, the research has not fully explored the relationship between benefit finding and employment outcomes within this population. The purpose of this study was to gain a better understanding of how the experience of benefit finding may relate to self efficacy and employment outcomes for individuals with MS within the contexts of a biopsychosocial model of illness and social cognitive career theory.

Previous research has largely focused on either disease-related factors or psychosocial factors as predictors of employment outcomes for individuals with MS. This study is unique in that it initiated a deeper exploration of the interplay between both types of variables. Results were mixed. As anticipated, there were significant relationships between the variables contained in the present study, including benefit finding, both forms of self-efficacy and disease severity. However, disease-related variables emerged as stronger individual predictors of employment outcomes, as compared to the psychosocial variables. The length of time since an individual's diagnosis was also strongly related to employment status. Any predicted relationships concerning the career stage during which a person was diagnosed and self-efficacy beliefs or employment outcomes were insignificant. There were no significant gender differences found within the sample.

The results show that the relationships among these variables, particularly over time, and their effect on employment outcomes may be more complex than the current study demonstrates. Therefore, additional research that explores these relationships is needed.

CHAPTER 1

Introduction

The employment rate for individuals with Multiple Sclerosis (MS) is significantly lower than for individuals with other physical disabilities (Julian, Vella, Vollner, Hadjimichael & Mohr, 2008; Rumrill & Hennessey, 2008; Minden, Marder, Harrold, Dor, 1993). Nearly all individuals diagnosed with MS possess a work history, and the majority of people living with MS were working in paid employment at the time of their diagnosis. Although the term “work” may encompass all instrumental activities that serve to maintain one’s life, including homemaking and childcare, the use of the term in this study refers to paid employment. While researchers acknowledge the obvious impact of MS-related physical and cognitive decline on an individual’s work life, studies have shown that psychosocial factors, including self-efficacy, are also significant predictors of an individual’s employment status and experience (Rumrill & Hennessey; Uccelli, Specchia, Battaglia & Miller, 2009). In addition, research has also shown that individuals with MS who are employed report lower levels of stress and higher levels of overall quality of life than individuals who are unemployed (Miller & Dishon, 2006; Roessler et al. 2004).

The majority of research to date has viewed the development of a disability as a challenge, which results in negative psychological outcomes. Recent research, however, has explored the psychosocial construct of benefit finding, or the identification of positive changes in one’s life following a stressful event, such as the diagnosis of an illness, and how a person’s experience of benefit finding relates to psychological adjustment. In several studies, individuals reported positive changes related to improved health behaviors, increased spirituality, better interpersonal relationships, a positive view of themselves, value or meaning of their life and

career goals, post-diagnosis of an illness (Antoni et al., 2001; Mohr et al., 1999; Siegel & Schrimshaw, 2000). For individuals diagnosed with MS, studies have shown that higher levels of benefit finding correlate with higher levels of perceived social support and effective coping strategies (Mohr et al., 1999; Pakenham, 2005). In addition, higher levels of benefit finding are positively correlated with higher levels of self-efficacy for individuals with other illnesses, including breast cancer and HIV/AIDS (Antoni et al., 2001; Siegel & Schrimshaw, 2000). Given the links between self-efficacy, more effective coping, perceived social support, and employment, the overarching purpose of this study was to determine how the experience of benefit finding relates to employment outcomes for individuals with MS, within the contexts of a biopsychosocial approach to illness (Engel, 1980) and social cognitive career theory (Hackett & Betz, 1981). The remainder of this chapter will include an introduction to the problem, a brief description of a biopsychosocial approach to illness, social cognitive career theory, statement of the problem, discussion of the significance of this study, definition of variables, research questions, hypotheses, as well as the anticipated limitations of this study.

Introduction to the Problem

MS is the most common neurologic disease of young adults, with an onset between the ages of 20-50. It is estimated that 400,000 Americans, and over 2 million worldwide, live with MS (MS Society, 2008). It occurs in approximately 1 in 500 individuals, with women being two to three times more likely than men to develop the disease. Individuals with MS may experience a variety of physical, cognitive and emotional symptoms, at varying levels of intensity, during periods of flare-ups in the relapsing-remitting (RRMS) form of the disease, or through a persistently progressive course (Murray, 2005; MS Society). The majority of research regarding employment among individuals with MS has been focused on individuals with RRMS. RRMS is

the most common course of the disease, with approximately 85% of individuals diagnosed with this type of MS (MS Society). The most common signs of MS include the following: problems with walking and general motor operations; loss of balance; fatigue; visual problems; changes in cognitive function, especially problems with memory, attention, and problem-solving; numbness; changes in sexual function; pain throughout the body; depression or mood swings; tremors; loss of coordination; speech and swallowing problems; and impaired hearing (Murray, 2005; MS Society).

The world of work is one of the many areas of a person's life affected by a diagnosis of MS. An individual's work is often tied to his or her sense of identity, financial security, role within the family, other personal relationships and the community. Within the context of Super's (1990) career development theory, individuals between the ages of 20-40 are engaged in the stages of *exploration*, *establishment* and *maintenance* of a career. The majority of people with MS are diagnosed during one of these critical periods during which they are determining their career goals, developing a plan to attain these goals or advancing in their chosen career. Therefore, the career development of an individual is interrupted by a diagnosis of MS. A person's ability to pursue or continue work within his or her chosen field may be affected by her or his unique physical or cognitive symptoms of MS. Research shows that issues with mobility, hand function problems, fatigue and perceived cognitive decline are significant predictors of unemployment for individuals with MS (Rumrill & Hennessey, 2008; Julian et al., 2008).

Depending on a person's job function at the time of her or his diagnosis, an individual may require accommodations both in the physical work space and job design. Physical accommodations may include changes such as moving the individual's office space to a lower or first level of a building in order to eliminate stairs or long distance walking, closer proximity to

restrooms and parking accommodations. In addition, a person may require more frequent breaks as a result of fatigue and flexibility with regards to working hours. It is important to recognize the uniqueness of each person's experience with MS, as well as each person's experience with MS within her or his work. Taking the physical and cognitive factors into consideration is crucial in order to effectively address the needs of a person with MS. However, psychosocial factors, such as overall adjustment to living with MS, financial concerns and self-efficacy, also are important in predicting the individual's success in employment.

The cost associated with the medical treatment and management of MS is high, and a chief concern is the ability to continue employment in order to maintain both a steady income and health benefits. However, depending on the symptoms and the particular demands of a job, some individuals will take a short-term disability leave prior to or immediately following a diagnosis. Given the uncertain and sometimes sporadic nature of MS flare-ups and overall worsening of the disease, many people with MS will opt to transition from short-term to long-term disability rather than returning to their current line of work, for fear of a worsening of the disease that will prevent them from returning to a pre-morbid level of functioning (Nissen, Rumrill & Hennessey, 2008). Although Social Security Disability regulations allow for a person to engage in paid work while still receiving disability income and benefits, the maximum income allowed for this paid work restricts individuals to part-time work. In general, the research suggests that individuals with MS may prematurely exit full-time work shortly after diagnosis (Fraser, McMahon & Danczyk-Hawley, 2004; Nissen et al.).

In addition to an individual's symptom presentation and experience, several researchers have addressed the importance of the individual's level of adjustment to living with MS, both in terms of day to day life as well as a person's work life. Fifty percent of individuals living with

MS experience a major depressive episode within their lifetime, as compared to the approximately 15% of the general population. Chapter II will further discuss depression as a direct, secondary or tertiary effect of MS. However, it is important to note that depression and increased levels of stress are related to a worsening of symptoms in MS which, in turn, may have an impact on a person's ability to work (Mohr, 2007). Therefore, the avoidance of stress and promotion of overall well-being is optimal for those living with the disease.

Researchers have found that for people with MS, negative psychological adjustment to living with the disease was associated with higher levels of stress, including avoidance-style coping, uncertainty about the illness and its progression, helplessness and perceived barriers to health behaviors (Arnett, Higginson, Voss, Randolph & Grandey, 2002; Dennison, Moss-Morris, & Chalder, 2009; Mohr et al., 1999; Mohr, 2007; Pakenham, 2005). It is clear that the uncertainty of the disease progression, i.e., how fast MS symptoms will progress or how frequent and severe relapses may be, threatens a person's ability to adjust overall to living with MS as well as to maintaining employment. As previously stated, research shows that the uncertainty of the illness is a key predictor of an individual's decision to leave work. In addition, lower levels of self-efficacy with regards to job performance and a failure to seek out social support and accommodations are also related to more challenging work experiences or unemployment for individuals with MS, while self-efficacy beliefs, perceived social support and support-seeking behaviors are related to more positive employment outcomes (Roessler & Rumrill, 1994; Uccelli et al., 2009). Positive adjustment in individuals with MS has been associated with factors including acceptance of illness, more problem-focused coping styles, higher levels of optimism, benefit finding, self-efficacy with regards to both illness management and day-to-day living, perceived social support and positive relationships with a partner or family (Arnett et al.; Arnett

& Randolph, 2006; Dennison et al.; Mohr; Mohr et al.; Pakenham, 2006, 1999; Riazi, Thompson & Hobart, 2004).

Researchers who have investigated the experience of benefit finding within illness and specifically MS have found that benefit finding significantly correlates with reduced levels of health-related distress, higher levels of self-efficacy and support-seeking behaviors, in general (Antoni et al., 200; Siegel & Schrimshaw, 2000). Therefore, benefit finding has been shown to positively correlate with factors that are strongly correlated with positive employment outcomes. Only one study to date has directly associated employment status with benefit finding in MS. Mohr, et al. (1999) found a correlation between benefit finding and unemployment within a sample of 94 individuals with MS. However, the authors acknowledge that they did not account for age (participants ranged in age from 25-67) or severity of disability within their study. Just as benefit finding is related to more effective adjustment, higher levels of self-efficacy as well as higher levels of social support and support seeking behaviors, it would therefore be helpful to gain further insight into how benefit finding may relate to employment outcomes for individuals with MS.

Biopsychosocial Model of Illness

As cited earlier, employment outcomes for individuals with MS are dependent on a complex interplay of disease-specific and psychosocial variables. Therefore, a multidimensional, or biopsychosocial, assessment that considers how various factors relate to each other and affect the work life of individuals with MS is warranted. Engel (1980) was a pioneer with regards to a biopsychosocial model of illness, which states that a person exists within a system of biological, psychological and social elements. Therefore, when treating a person with a medical illness, one must consider the illness within the context of the complex

relationship of the physical, psychological and social experiences of each person. The next chapter will discuss the various symptoms and courses of MS, in depth, which will highlight the complexity and uniqueness of the physical, cognitive and emotional symptoms that each person experiences.

The biopsychosocial model has been used by other researchers interested in MS and experiences of stress, pain, depression and fatigue (Kerns, Kassirer & Otis, 2002; Mohr, 2007; Trojan et al., 2007). A recent study (Uccelli et al., 2009), applied a biopsychosocial approach to assessing the specific physical and cognitive, personal and environmental factors that influence the employment status for individuals with MS. However, this study did not consider benefit finding as a variable. An examination of how an experience of benefit finding may relate to employment outcomes within this population will further enhance the understanding of the relationship between biological and psychosocial factors, particularly as they relate to employment.

Social Cognitive Career Theory

Social cognitive career theory (SCCT; Hackett & Betz, 1981; Lent, Brown, & Hackett, 1994) is based on Bandura's Social Cognitive Theory (1977), which posits that an individual's sense of self-efficacy with regards to a particular task has four sources: a history of successful performance of the task; vicarious learning through observation of others performing the task; persuasion by others; and affective arousal. Bandura makes an important distinction between outcome expectations and an individual's perceived self-efficacy. The former refers to a person's beliefs about the results of an action; whereas the latter refers to the person's belief about whether he or she is capable of achieving this outcome. Hackett and Betz were the first to apply social cognitive theory to vocational development. At the core of their theory is the notion

that self-efficacy, or the conception that a person has of his or her confidence to perform tasks, has a direct impact on an individual's interests, choices and performance with regards to his or her work.

Lent, Brown and Hackett's (1994) model of social cognitive career theory highlights the stages of vocational development that rely and build on an individual's self-efficacy and outcome expectations: interest, choice, performance and persistence. As these authors explain, self-efficacy and outcome expectations foster an initial interest in a particular job or field that a person may choose to explore through goal-setting and action. A person's anticipated and actual performance and persistence in the respective area are reinforced by the strength of her or his self-efficacy in being able to successfully master the required skills.

With regards to career-related self-efficacy for individuals with disabilities, the large majority of the research considers issues and assessments for individuals in the early stages, or exploration, of vocational development, such as high school or college students with disabilities. This research and use of measures such as the Career Decision-Making Self-Efficacy Scale (CDMSE; Taylor & Betz, 1983) and the Task-Specific Occupational Self-Efficacy Scale (TSOSS; Rooney and Osipow, 1992; Osipow, Temple & Rooney, 1993) are used to evaluate individuals' confidence in making decisions about a career or the variety of work and tasks in which they have confidence in performing. Some researchers (Beveridge, Craddock, Liesener, Stapleton & Hershenson, 2002) suggest that an individual's particular career stage at the time of an illness diagnosis may influence decisions with regards to employment. Self-efficacy beliefs, in particular, with regards to certain tasks or careers may be affected by one's level or lack of experience or time in a particular job prior to diagnosis. However, there is little empirical research that explores this relationship. Lindley (2006) contends that there is limited research

concerning career-related self-efficacy specific to a person's current work that may address concerns for individuals with acquired disabilities, such as MS

The literature is replete with suggestions that the development of a chronic disabling illness such as MS, which impacts both physical and cognitive abilities, can have a profound effect on job-related self-efficacy. However, their arguments are grounded in the research that has assessed self-efficacy, in general, with regards to day to day living for people with MS using measures such as the Multiple Sclerosis Self-efficacy Scale (MSSE; Schwartz, Coulthard-Morris, Zeng, & Retzlaff, 1996). Only two studies have (Roessler & Rumrill, 1994; Uccelli et al., 2009) assessed career-specific self-efficacy for people with MS. In their study Uccelli et al. asked individuals with MS from several European countries to indicate whether their certainty with regards to their capabilities to perform at work made work easier or more difficult. Results indicated that perceived self-efficacy with regards to work performance was directly related to employment status and outcomes. However, it is notable that this was assessed through a single item on the questionnaire designed for that study.

Others (Roessler & Rumrill, 1994; Rumrill & Hennessey, 2008) contend that a critical task that affects employment in this population is related to the request for work accommodations. Roessler and Rumrill (1994) developed the only task-specific career-related self-efficacy scale for people with MS which assesses an individuals' self-efficacy with regards to accommodations requests. They argue that effective adjustment to MS requires that a person assume an active role in addressing work-related limitations. A person's confidence in her or his ability to request these accommodations and confidence in a positive outcome of the request are dependent on a number of psychosocial factors, including perceived support from co-workers and superiors as well as overall adjustment to living with MS.

Research findings are mixed regarding how variables such as gender and time since diagnosis influence both self-efficacy and employment status for individuals with MS. The percentage of women with MS who are unemployed is greater than the percentage of men with MS who are unemployed (LaRocca, 1995; Roessler, Rumrill, Hennessey et al., 2003; Roessler, Fitzgerald, Rumrill & Koch, 2001). However, research also shows that women with MS report higher levels of self-efficacy, overall (Fraser & Polito, 2007), which would theoretically protect against unemployment. With regards to time since diagnosis, a large number of researchers (Edgley, Sullivan & Dehoux, 1991; Kornblith, LaRocca & Baum, 1986; Wineman, 1990) contend that increased time since diagnosis relates to increased unemployment. However, Devins and Seland (1987) suggest that time since diagnosis may enhance an individual's ability to adapt to living with the disease and, therefore, lead to higher levels of self-efficacy. In accordance with these and other previous findings regarding the significance of self-efficacy within this population, it follows that self-efficacy with regards to the tasks of daily living, as well as the particular efficacy beliefs related to requesting job accommodations (hereinafter, "workplace self-efficacy") are critical factors that may be mediated by biological and other psychosocial factors that predict employment outcomes for individuals with MS.

Statement of the Problem

The majority of individuals with MS leave the workforce within 5 years after receiving a diagnosis (Julian et al., 2008; Minden et al., 1993; Roessler & Rumrill, 1994; Rumrill & Hennessey, 2008). As the time since diagnosis increases, an individual is more likely to become unemployed. In addition, women with MS are more likely to be unemployed than men (Rumrill & Hennessey). While physical and cognitive symptoms associated with MS present undeniable challenges, researchers have found that illness severity or specific symptoms are not always

sufficient predictors of employment status. Several researchers (Rumrill & Hennessey; Roessler & Rumrill) argue that, despite the actual symptoms, the impact of the diagnosis and the unpredictable nature of the progression of MS may have an immediate effect on the current work experience and career plans for a person with MS.

Given the unpredictable nature of the illness experience and progression of MS for each individual, employment outcomes for individuals with MS depend on many different physical, emotional and environmental factors. While the current research acknowledges the various factors, there is a lack of research that thoroughly assesses the complexity of the relationship between the biological and psychosocial factors, such as benefit finding and self-efficacy, and how these factors relate to a person's employment status, post-diagnosis.

Moreover, a significant amount of the more recent literature has been conducted in Europe, Canada and Australia. Given the current financial climate and particular issues with regards to disability benefits within the United States, there is a need for additional research that addresses employment concerns for individuals with MS living in the United States.

Significance of the Study

Every week, 200 people in the United States are diagnosed with MS (MS Society, 2008). In a field where uncertainty dominates, further clarification and understanding will serve to inform individuals with MS as well as family members, employers, mental and physical healthcare professionals who may play a role in a person's decision-making process with regards to work. The findings from this study add to the existing body of research that explores the vocational development of individuals with MS in the United States. Vocational development is a hallmark of the field of counseling psychology which emphasizes a whole person and empowering perspective.

Although the focus of this study was on employment outcomes, the nature of the biopsychosocial, or whole person, approach emphasizes the overlap of experience within a person's life. That is, an understanding of how benefit finding may relate to a person's workplace self-efficacy extends to work as well as other aspects of a person's life. Further, a relationship between benefit finding and seeking social support which may assist a person in asking for accommodations is not merely about helping a person at work. Rather, this relationship may be indicative of a coping skill that will enable a person to seek support elsewhere in his or her life and relationships, leading to a higher quality of life and relationships, overall.

Definition of Terms

Benefit finding: The psychosocial construct of benefit finding is understood to mean the positive ways in which an individual's life changes as a result of a traumatic event, including the diagnosis of an illness (Helgeson, Reynolds & Tomich, 2006). There are multiple terms used throughout the literature to refer to these positive changes, including posttraumatic growth, stress-related growth, or benefit finding. However, they all refer to the same concept. For the purpose of this study, the term benefit finding is used consistently throughout this paper and was measured using the revised Stress Related Growth Scale (SRGS-R) developed by Armeli, Gunthert and Cohen (2001), which measures whether positive aspects of a person's life have increased or decreased since receiving a diagnosis of MS, with higher scores indicating a positive change. Examples include, *the meaning in my life, communicating more honestly with others, and ability to deal with uncertainty.*

Career stage: In accordance with Super's (1980) theory of career development, an individual's career stage is defined as one of *exploration, establishment, or maintenance.*

Consistent with research (Allen & Meyer, 1993; Gould & Hawkins, 1978; Morrow & McElroy, 1987) that measures career stage according to job or career tenure as well as the proposed relevance of career stage at the time of diagnosis to sustained employment (Beveridge et al, 2002), this variable is defined according to how many years an individual was working in her or his current career at the time of diagnosis. A question on the demographic questionnaire designed for this study assessed this variable. Some suggest that an individual's particular career stage at the time of an illness diagnosis may also have an impact on her or his self-efficacy which may, in turn, influence decisions with regards to employment (Beveridge et al., 2002)

Cognitive disability: Given the high correlation between unemployment and reports of cognitive changes, including memory, processing speed and executive functioning, among individuals with MS (Julian et al, 2008; Roessler et al, 2004), cognitive symptoms were measured using the cognitive disability subscale of the American version of Guy's Neurological Disability Scale (GNDS; Sharrack & Hughes, 1999; Fraser & McGurl, 2007), Perception of cognitive changes is measured from 0-5 (0 = no disability or requiring no support); 5 = maximum disability or support required), accounting for a range in disability.

Daily living self-efficacy: Daily living self-efficacy refers to an individual's belief in her or his ability to perform certain tasks or engage in certain behaviors (Bandura, 1977). For people with MS, research has focused on an individual's perception of her or his abilities, on a daily basis, with regards to particular physical functions such as getting dressed, as well as perceived emotional and physical control, including dealing with the uncertainty of MS. Self-efficacy was assessed by using the Multiple Sclerosis Self-efficacy Scale (MSSE; Schwartz, Coulthard-Morris, Zeng, & Retzlaff, 1996). Higher scores on each of the two subscales (function and control) indicate higher levels of daily living self-efficacy.

Disease severity: Disease severity refers to the individual's experience with physical, cognitive and emotional symptoms of MS. It was measured using the American version of Guy's Neurological Disability Scale (GNDS; Sharrack & Hughes, 1999; Fraser & McGurl, 2007), a self-report measure that assesses how a person experiences 12 symptoms associated with MS: cognitive, mood, visual, speech and communication, swallowing, upper limb, lower limb, bladder, bowel, sexual, fatigue and other. Higher scores indicate increased severity of the disease, or disability. Each of the 12 symptom subscales is measured from 0-5 (0 = no disability or requiring no support; 5 = maximum disability or support required), accounting for a range in disability. The use of a self-perceived disease severity measure is consistent with previous research involving employment among individuals with MS (Roessler, Rumrill & Fitzgerald, 2004).

Employment outcomes: Employment outcomes refer to employment status (i.e. whether one is currently employed either in full-time or part-time paid work (coded as 1), or currently unemployed (coded as 0) as well as weekly hours worked, for those who are employed. A person's employment status and the number of weekly hours worked was assessed through the demographic questionnaire that was designed for this study and that will be described in Chapter III.

Fatigue: Given the high correlation between unemployment and reports of fatigue among individuals with MS (Julian et al, 2008; Smith & Arnett, 2005), fatigue was measured using the fatigue subscale of the American version of Guy's Neurological Disability Scale (GNDS; Sharrack & Hughes, 1999; Fraser & McGurl, 2007). Scores range from 0-5, with higher scores indicating increased severity of the symptom.

Time since Diagnosis: The time since diagnosis refers to the number of years since an individual received her or his diagnosis of MS. The time since diagnosis was assessed by subtracting the age at which a person was diagnosed with MS from his or her current age listed on the demographic questionnaire.

Workplace Self-Efficacy: The career self-efficacy for an individual with MS is strongly tied to her or his confidence in the ability to request appropriate accommodations (Rumrill & Hennessey, 2008; Roessler & Rumrill, 1994). For the purpose of this study, workplace self-efficacy refers to an individual's confidence in performing tasks related to requesting accommodations and was measured using the Career Self-Efficacy Scale (CSES; Roessler & Rumrill), with higher scores indicating a higher degree of certainty.

Research Questions

The current study addressed the following questions:

Research question 1: What is the relationship between each of the following biopsychosocial variables in this study: disease severity, daily living self-efficacy, workplace self-efficacy and benefit finding?

Research question 2a: Will disease severity, cognitive disability, fatigue, daily living self-efficacy, workplace self-efficacy and benefit finding each explain unique variance as predictors of employment status?

Research question 2b: For those who are employed, will disease severity, cognitive disability, fatigue, daily living self-efficacy, workplace self-efficacy and benefit finding each explain unique variance as predictors of weekly hours worked?

Research question 3a: Will the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding predict variance in employment status after controlling for the biological variable of disease severity?

Research question 3b: Will the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding predict variance in employment status after controlling for the biological variable of cognitive disability?

Research question 3c: Will the psychosocial variables of self-efficacy, workplace self-efficacy and benefit finding predict variance in employment status after controlling for the biological variable of fatigue?

Research question 3d: For those who are employed, will the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding predict variance in weekly hours worked after controlling for the biological variable of disease severity?

Research question 3e: For those who are employed, will the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding predict variance in weekly hours worked after controlling for the biological variable of cognitive disability?

Research question 3f: For those who are employed, will the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding predict variance in weekly hours worked after controlling for the biological variable of fatigue?

Research question 4a: What is the relationship between gender and each of the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding?

Research question 4b: What is the relationship between gender and employment status?

Research question 5a: What is the relationship between time since diagnosis and each of the psychosocial variables of daily living self-efficacy and workplace self-efficacy?

Research question 5b: What is the relationship between time since diagnosis and employment status?

Research question 6a: What is the relationship between career stage and each of the psychosocial variables of daily living self-efficacy and workplace self-efficacy?

Research question 6b: What is the relationship between career stage and employment status?

Hypotheses

The hypotheses that were tested in the current study are as follows:

H_{1a}: In accordance with previous findings that demonstrate a negative correlation between disease severity and self-efficacy beliefs (Fraser & Polito, 2007; Rumrill & Hennessey, 2008) there will be a negative correlation between disease severity and daily living self-efficacy.

H_{1b} : In accordance with previous findings that demonstrate a negative correlation between disease severity and self-efficacy beliefs (Fraser & Polito, 2007; Rumrill & Hennessey, 2008), there will be a negative correlation between disease severity and workplace self-efficacy.

H_{1c} : In accordance with previous findings (Antoni et al., 2001; Siegel & Schrimshaw, 2000) that demonstrate a positive correlation between self-efficacy beliefs and benefit finding, there will be a positive correlation between daily living self-efficacy and benefit finding.

H_{1d}: In accordance with previous findings (Antoni et al., 2001; Siegel & Schrimshaw, 2000) that demonstrate a positive correlation between self-efficacy beliefs and benefit finding, there will be a positive correlation between workplace self-efficacy and benefit finding.

H_{1e}: Consistent with H_{1a} through H_{1c}, there will be a negative correlation between disease severity and benefit finding.

H_{2a}: Each of the four variables mentioned in H_{1a} through H_{1d} as well as the particular disease-related variables of cognitive disability and fatigue (Julian et al, 2008; Smith & Arnett, 2005; Roessler et al, 2004) will explain unique variance in the prediction of employment status.

H_{2b}: For those who are employed, each of the variables mentioned in H_{1a} through H_{1d} as well as cognitive disability and fatigue will explain unique variance in the prediction of weekly hours worked.

H_{3a}: In accordance with previous findings that demonstrate that disease severity, alone, will not predict employment status for individuals with MS (Uccelli et al., 2009), the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding would predict variance in employment status after controlling for disease severity.

H_{3b}: Consistent with H_{3a}, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in employment status after controlling for cognitive disability.

H_{3c}: Consistent with H_{3a} and H_{3b}, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in employment status after controlling for fatigue.

H_{3d}: For those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for disease severity.

H_{3e}: Consistent with H_{3d}, for those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for cognitive disability.

H_{3f}: Consistent with H_{3d} and H_{3e}, for those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for fatigue.

H_{4a}: Female participants will report higher daily living self efficacy and workplace self-efficacy (Fraser and Polito, 2007).

H_{4b}: Female participants will report higher levels of benefit finding (Helgeson et al., 2006)

H_{4c}: Male participants will be more likely to report that they are currently employed (Roessler et al., 2001).

H_{5a}: There will be a negative correlation between time since diagnosis and daily living self efficacy (Rumrill & Hennessey, 2008).

H_{5b}: There will be a negative correlation between time since diagnosis and workplace self-efficacy (Rumrill & Hennessey, 2008).

H_{5c}: In accordance with previous findings (Rumrill & Hennessey, 2008; LaRocca, 1995; Wineman, 1990), there will be a negative relationship between the demographic variable of time since diagnosis and reports of being currently employed.

H_{6a}: The psychosocial variables of daily living self-efficacy and workplace self-efficacy will explain unique variance in the prediction of career stage

H_{6b}: Career stage will explain unique variance in the prediction of employment status.

Limitations

There are limitations related to the sample, method and measures selected for this study. First, the participants were self-selected. It cannot be known whether those who chose to participate were, in fact, individuals with MS who met the inclusion criteria defined in Chapter

III. If the participants were not truly representative of the population of interest, it may not be possible to generalize the results of the study. In addition, recruitment limited participation to individuals who are involved with MS community programs or associations and to individuals who have access to a computer and the Internet. Moreover, it was beyond the scope of this study to measure and consider individuals' financial concerns with regards to their decisions regarding employment. Furthermore, the data collected in this study accounts for a single point in time and, therefore, cannot account for participants who may decide to re-enter the work-force or increase the number of weekly hours worked.

The use of self-report measures presented another limitation. Participants in the study may have responded to some of the measures in ways that are not congruent with their feelings or experiences. For example, individuals may have under or over estimated their disease symptoms. Moreover, there may be monomethod bias, as online surveys were the only source of data.

Finally, there may be limitations related to the measurement instruments. First, the characteristics of the normative samples used to validate each of the instruments that were employed in this study may not match the characteristics of the study sample. In addition, another limitation maybe related to the language or reading abilities of the current sample, some of whom may speak, read, and write in English as a second language. The specific instruments are discussed further in Chapter III.

CHAPTER II

Review of the Literature

The purpose of this chapter is to provide a critical review and discussion of the literature relevant to the current study. This chapter includes the following sections: (a) Multiple Sclerosis (MS), (b) biopsychosocial model of MS, (c) social cognitive career theory (SCCT) within disability research, (d) employment outcomes for individuals with MS, and (e) benefit finding. Each section includes reviews of both theoretical and empirical research.

Multiple Sclerosis

In order to pursue a discussion regarding the complexity of employment issues for individuals with MS, it is important to provide a comprehensive overview of the complexities of the disease itself. A person with MS has an immune system that turns on itself, attacking its own tissue. The specific tissue that is under attack is the myelin sheath, the protective covering of the nerve fibers within the Central Nervous System that assists the nerve fiber in conducting impulses (Darby, 2005). The result is *demyelination*, the one common factor associated with all cases of MS. Individuals with MS may experience a variety of physical, cognitive and emotional symptoms, at varying levels of intensity, during periods of flare-ups or through a persistently progressive course of the disease (Murray, 2005; MS Society, 2008).

The most common signs of MS include the following: problems with walking and motor operations, in general; loss of balance; fatigue; visual problems; changes in cognitive function, especially problems with memory, attention, and problem-solving; numbness; changes in sexual function; pain throughout the body; depression or mood swings; tremors; loss of coordination; speech and swallowing problems; and impaired hearing (Murray; MS Society). Although some patterns exist among those who are diagnosed, many questions still remain as to the exact cause,

progression and most effective treatment for each individual with MS (Murray, 2005). While treatments help to slow down the progression or relieve certain symptoms of the disease, there is still no cure. The lesions associated with MS occur in any area where the myelin has been damaged or completely destroyed, leaving behind scar tissue, or *sclerosis*. The nerve fiber itself may also be damaged or destroyed. When myelin or the nerve fiber is damaged or destroyed, the nerves lose their ability to conduct electrical impulses to and from the brain, resulting in any number of the signs of MS. The signs of MS vary from patient to patient and may serve as either the initial symptoms or later emerging effects of the disease.

Until recently, the symptoms of MS were viewed as primarily physical with any cognitive or emotional effects considered to be a consequence of the stress that a person with MS endures. However, recent research has shown that the primary effects of MS can be physical, cognitive or emotional in nature (LaRocca & Kalb, 2006). The myriad physical, cognitive and psychological symptoms associated with the disease may be broken down into three categories: primary, secondary or tertiary (LaRocca & Kalb, 2006).

In addition to the primary symptoms caused directly by the demyelination, there are other types of problems or complications that can occur as indirect results of these primary impairments or the experience, overall, of having MS. Secondary effects of MS are considered to be the physical and cognitive complications that can arise as a result of the primary effects. For example, the loss of muscle tone, decreased bone density and poor posture may result from the primary effect of the weakened or lost ability to walk. Pressure sores may develop on the body of a person who is immobile. The term *MS lassitude* refers to the fatigue that is directly traced back to the demyelination, and is therefore considered a primary effect, as opposed to the secondary fatigue that can result from tiredness resulting from other causes (LaRocca & Kalb,

2006). And while secondary symptoms can be treated, Schapiro (2007) emphasizes the importance of treating the primary symptoms as a way of avoiding these additional deleterious effects of the disease.

Tertiary effects of MS may be described as the complications that interfere with a person's quality of life. They stem from the primary and secondary effects and are usually vocational, social and emotional, in nature. The change in or loss of physical and cognitive abilities and the overall strain of dealing with this chronic illness can disrupt a person's professional and personal life. Until fairly recently, cognitive dysfunction associated with MS was classified exclusively within the latter two categories. However, current research shows that the cognitive, as well as emotional, effects may be considered primary, secondary or tertiary. Individuals with MS may experience one or all of these and other symptoms, at varying levels, throughout the course of the disease. Each person with MS has a unique set of symptoms that can be likened to a fingerprint. Therefore the diagnosis and treatment of each person must respond to the individuality of their presentation and experience.

According to LaRocca and Kalb (2006), approximately 50-66% of people with MS will develop some degree of cognitive dysfunction, which may affect learning and memory, information processing, executive functions, visual perceptual functions as well as intellectual and language functions. In addition, people with MS frequently experience emotional changes. The lifetime prevalence of depression is particularly high among individuals with MS. The potential cognitive and emotional elements of the disease are as unpredictable and as variable as every other aspect, with regard to the severity and timing of their manifestations. Within-group and between-group studies (Camp et al., 2005; Wachowius, Talley, Silver, Heinze & Sailer, 2005; Randolph, Arnett & Freske, 2004; Randolph, Arnett & Higginson, 2001) among the

different courses of MS have shown that there is no statistically significant connection between cognitive dysfunction and physical impairment or disease duration. That is, a person with virtually no physical limitations may experience significant cognitive impairment, while a person who is quite physically disabled can be unaffected cognitively. And while the complexity of cognitive functioning may lead one to conclude that cognitive dysfunction results from increased and complex demyelination that would seem to occur over a longer period of time, there are no established connections between the type and severity of cognitive dysfunction and the length of time that a person has had MS. Although rare, cognitive symptoms may be the first manifestations of the disease (LaRocca & Kalb; MS Society, 2008).

To further illustrate the complexity of this issue, it is helpful to consider different examples of how a person may experience memory impairment, which is a common cognitive dysfunction occurring in MS. As Randolph et al. (2004) explain, studies have shown that depressed individuals present with increased memory complaints even in the absence of impairment on objective memory tests. Therefore, the treatment of depression in these individuals might serve to reduce the number of complaints relating to memory. However, there has also been evidence of individuals presenting with complaints of depression who, upon further assessment, suffer from memory deficits independent of their mood symptoms. Through an effective employment of coping strategies aimed at improving the primary memory dysfunction, the complaint of depression was reduced or eliminated (LaRocca & Kalb, 2006).

Individuals with MS may expect to follow one of four courses of the disease: relapsing-remitting, primary-progressive, secondary-progressive or progressive-relapsing (Noseworthy, Lucchinetti, Rodriguez & Weinshenker, 2000). People with relapsing-remitting MS represent the majority of those diagnosed with the disease, approximately 85%. These individuals

experience flare-ups, or relapses, of any one or a number of the signs listed above. These episodes are followed by partial or complete recovery periods, or remissions, free of disease progression. During flare-ups the myelin in a particular region is attacked, causing the manifestation of motor or cognitive symptoms. People may experience similar symptoms, different symptoms, or a combination of old and new symptoms with each relapse.

Approximately 10% of individuals diagnosed with MS experience a primary-progressive form of the disease. These individuals experience a slow but steady worsening of the disease, with no identifiable relapses or periods of remission. However, there are variations in rates of progression with respect to certain effects over time and there may even be temporary minor improvements (MS Society, 2008; Noseworthy et al., 2000).

The rarest form of MS is the progressive-relapsing course, during which people experience a continuous worsening of the disease from the onset along with clearly identified relapses. In contrast to relapsing-remitting MS, the periods between these attacks are marked by the continued progression of the disease (MS Society, 2008; Noseworthy et al., 2000).

Within each of these four courses of MS, the particular combination of symptoms and effects varies tremendously from patient to patient. And while some may enjoy successful management of some or all of their symptoms through particular treatments, there is still no answer as to why other patients with similar symptoms or disease progression may not respond to the same treatment. The uncertainty of MS, prior to and subsequent to the diagnosis, can serve as a tremendous source of stress and change for individuals and their families.

Biopsychosocial Model of MS

Each individual diagnosed with MS experiences a unique dynamic of physical, cognitive and emotional symptoms. In addition to these individual variables, the experience of the person

living with MS is also affected by other major life events and systems of which she or he is a part. That is, a person's relationships, physical environment and community must also be considered within the overall experience of adjusting to and living with MS. Therefore, research regarding an individual's experience with MS should consider or assess the biological, or disease-related, issues as well as psychosocial issues relevant to particular topic being discussed (Devins & Seland, 1987). This section will provide a discussion of current literature that addresses the interplay between biological and psychosocial issues for individuals with MS.

As mentioned in Chapter I, positive adjustment in individuals with MS has been associated with factors including acceptance of illness, more problem-focused coping styles, higher levels of optimism and self-efficacy with regards to both illness management and day-to-day living, perceived social support and positive relationships with a partner or family (Arnett et al.; Arnett & Randolph, 2006; Dennison et al.; Mohr et al.; Pakenham, 2006, 1999). Therefore, psychosocial factors can affect, or be affected by, physical or cognitive disease-related issues.

Several researchers (Kerns, Kassirer & Otis, 2002; Mohr, 2007; Trojan et al., 2007) have applied a biopsychosocial model in which to address individuals' experiences of pain, stress, physical exacerbations, depression and fatigue in individuals living with MS. Kerns et al. (2002) argue that, despite the high prevalence of severe and chronic pain reported by individuals with MS, there is a lack of research that examines the combination of physical and psychosocial implications of the pain experience. Like all symptoms of MS, the particular type and severity of pain in MS is varied. Due to the nature of each person's pain, the authors explain that a strictly physical or pharmacological approach to pain management is often ineffective or may compromise other areas of functioning. For example, individuals with spasticity pain may also rely on spasticity to facilitate standing and stability. Therefore, a thorough assessment of the

severity of pain and how it may interfere with an individual's daily functioning and overall quality of life are warranted.

Kerns et al. (2002) explain that higher levels of pain are related to self-reported unemployment and depressive symptoms as well as decreased relationship satisfaction and overall quality of life. In addition, the authors contend that it is important to consider issues of coping styles and overall adjustment to living with MS as predictors of adherence to health management or health-seeking behaviors. Individuals who may be depressed or have difficulty adjusting to living with MS may be less inclined to seek necessary medical help in treating chronic or severe pain. Moreover, recognizing and addressing psychosocial issues as they relate to overall adjustment may help a person to better cope specifically with pain as well as to help them develop effective help-seeking and illness management behaviors that may also ameliorate her or his experience with pain.

Higher levels of stress and stressful events have long been associated with exacerbations and increased lesions in MS (Mohr, 2007). However, the author argues that stress does not directly cause these exacerbations. In an attempt to clarify this relationship, Mohr provides a thorough overview of the biological and psychosocial factors associated with stress and MS exacerbations. He explains that higher levels of perceived threat, or uncertainty regarding the worsening of MS, and a person's perceived inability to manage these threats has been shown to have a negative impact on immune system functioning. Moreover, reports of more adaptive coping styles and behaviors in response to stress are related to the development of fewer gadolinium enhancing (Gd+) lesions that are detected through magnetic resonance images (MRI). Gd+ lesions are associated with an inflammatory response and are more common in RRMS than progressive forms of the disease (Murray, 2005). With regards to individuals who

experience depression, higher levels of perceived social support have been shown to act as a mediator that protects immune system functioning.

Mohr (2007) also distinguishes between the effects of moderate chronic and major, or acute, stress on immune system functioning in MS. Results show that chronic stress (e.g. work-related or family-related) is significantly related to immune system functioning while individual acute stressors (e.g. a death in the family or even a wedding) generally are not. He argues that under chronic stress, the immune regulating system becomes accustomed to high levels of cortisol and is, therefore, less responsive during periods of flare-ups, resulting in more intense exacerbations that may otherwise be more effectively regulated by the immune system.

Fatigue is another symptom that is widely, yet variably, experienced among individuals with MS (75-95%). Trojan et al. (2007) applied a biopsychosocial approach to understanding general fatigue, physical fatigue and mental fatigue in 53 ambulatory individuals with MS (70% RRMS; 30% secondary progressive MS). Results revealed correlations between general and physical fatigue and disease-related, behavioral and psychosocial factors, while correlations with mental fatigue were primarily psychosocial factors, including higher levels of stress and lower levels of self-efficacy. Decreased sleep quality, decreased levels of self-efficacy, and higher reports of pain correlated with general fatigue, whereas decreased levels of self-efficacy and higher levels of physical activity correlated with physical fatigue. Through the identification of significant correlates of fatigue that may be modifiable, the authors argued that healthcare professionals can enhance their understanding of the experience of fatigue in MS beyond pharmacological assessment and treatment.

Behavioral and psychotherapeutic interventions that address issues related to sleep, physical activity, stress and self-efficacy may alleviate symptoms of fatigue in individuals with

MS which may, in turn, result in improved physical well-being and overall quality of life. The research discussed in this section emphasizes the importance of assessing the complex relationship between physical symptom presentation of MS and relevant psychosocial variables in order to provide effective treatment. As the subsequent sections of this chapter will demonstrate, the complex relationships between biological and psychosocial factors, including those already discussed, are directly related to the employment outcomes for individuals with MS.

Social Cognitive Career Theory Within Disability Research

Social cognitive career theory, with its focus on self-efficacy, is of particular relevance to the career development of individuals with disabilities. Several studies (Eby et al., 1998; Hergenrather et al., 2008; Lustig & Strauser, 2003; Luzzo, Hitchings, Retish & Shoemaker, 1999; Mazurek & Shoemaker, 1997; Strauser, Lustig & Uruk, 2004; and Yancheck, Lease & Strauser, 2005) reported lower levels of self-efficacy with regards to performing certain job functions or making career-related decisions in diverse individuals and specifically those with disabilities, as compared to non-disability samples. Mazurek and Shoemaker (1997) as well as Luzzo et al. (1999) compared college students with and without disabilities and found that students with disabilities reported significantly lower levels of self-efficacy with respect to career decision-making. Luzzo et al. (1999) hypothesized that these results reflect a perceived lack of control over career decision-making and future success. They speculated that as a result of the students' disabilities, parents, faculty and others assumed control over course selections and imposed limitations which may, in turn, have led to a level of learned helplessness and perceived lack of responsibility for these types of decisions. Overall, research indicates that individuals with disabilities experience faulty self-efficacy beliefs (Eby et al., 1998; Hergenrather et al,

2008; Strauser et al, 2004) with regards to both the career decision-making process as well as to their ability to perform certain tasks or succeed within certain careers.

Among the numerous within-group differences for people with disabilities as well as for those living with a specific disability or illness, an individual's career stage at the time of a diagnosis or disabling incident, may also affect her or his self-efficacy and employment (Beveridge et al, 2002). Beveridge et al. argue that career stage, rather than age, and whether a person experiences a *pre-career* or *mid-career* onset of a disease or disability are critical to the career development of these individuals. In general, research has shown that individuals in with pre-career onset of a disease internalize higher levels of limitations with regards to the variety of work available to them and their perceived ability, or self-efficacy, to perform a range of work-related tasks. Whereas individuals who have a certain level of experience and tenure in a particular work environment are likely to maintain higher levels of self-efficacy, following a diagnosis or incident. However, depending on the line of work a person is in and her or his particular disability, the more advanced a person is in her or his career may lead to lower levels of self-efficacy as she or he worries about maintaining a certain level of performance. The vocational literature is inconsistent with regards to defining and measuring career stage. There is even less representation or consistency of this construct within disability research. While the Adult Career Concerns Inventory (ACCI; D. E. Super, A. S. Thompson, & R. H. Lindeman, 1988) was designed as a measure of career stage that is based on Super's (1990) theory of career development, it serves as a current measure of career stage rather than as a historical measure that allows a person to identify her or his career stage at the time of diagnosis, as suggested by Beveridge et al (2002). Tenure within a particular job or organization is a convenient and popular form of career stage measurement. In studies of public sector workers (Gould &

Hawkins, 1978; Morrow & McElroy, 1987) utilized a tenure model of measurement that has been replicated in subsequent research (Meyer & Allen, 1993). Individuals who had been working in their present line of work 0-2 years were considered in the early, or *exploration*, stage; while individuals who had been working in their present line of work for either 2-9 years or 10 or more years were considered to be in one of two levels of commitment, or mid-career stages; in other words, the *establishment* and *maintenance* stages, respectively.

Consistent with findings regarding general self-efficacy with regards to living with MS, there is a significant amount of literature that suggests that a diagnosis of MS can have a profound effect on career-related self-efficacy. The following section will highlight literature regarding issues of self-efficacy for individuals with MS.

Self-efficacy in Individuals with MS

As cited in the previous chapter and as is evident from discussions within the current chapter, research suggests that self-efficacy is an important predictor of overall adjustment and well-being of individuals with MS. Several studies (Fraser & Polito, 2007; Riazi, et al.2004; Schnek et al, 1995; Schwartz et al., 1996; Wassem, 1992) have looked at self-efficacy in individuals with MS. In general, these studies examine an individual's belief that she or he can cope with a challenging situation such as MS, and how this belief may correlate with other physical, emotional or behavioral outcomes.

Results from two studies indicate that self-efficacy in individuals with MS is related to better adjustment and less psychological distress. In a study of 62 adults with MS, Wassem (1992) examined the impact of self-efficacy beliefs on adjustment to illness and outcome expectations. Self-efficacy was assessed according to an individual's level of confidence in performing activities such as taking medications, exercising, and pacing daily activities. Results

indicate that self-efficacy was a significant predictor of adjustment. However, outcome expectations were unrelated to adjustment. In a similar study, Shnek et al. (1995) examined self-efficacy beliefs of 80 adults with MS. Results of this study revealed that lower levels of self-efficacy correlated with higher levels of depression. Both of these studies utilized self-efficacy measures that were designed for medical populations, such as individuals with Arthritis, which examined beliefs regarding overall adjustment to the illness and health-related behaviors.

In accordance with the above and other similar findings, Schwartz et al. (1996) developed a self-efficacy scale specific to individuals with MS. In their validation study, the MS Self-Efficacy (MSSE) Scale was administered to 141 individuals living in the northeastern part of the United States who were diagnosed with MS. Although the particular course of MS was not identified, disease severity ranged from minimal disability to wheelchair dependent. Factor analyses resulted in a 2-factor, 18-item scale that assessed self-efficacy beliefs with regards to function and control. The function subscale measures an individual's sense of confidence to perform behaviors that allow them to engage in daily living activities, such as getting in and out of a car without assistance. The control subscale measures confidence in one's ability to manage disease symptoms, reactions to disease-related limitations, and the impact of their disease on life activities. Test-retest reliability analyses for the sample revealed that scores were stable over a 2-month interval with correlation of .75. Internal consistency was also strong ($\alpha = .89$). In addition, tests of both convergent and divergent validity demonstrated validity of the scale.

In one of many studies that utilized the MSSE scale, Fraser and Polito (2007) explored gender differences in self-efficacy among men and women with both RRMS and progressive courses of MS. In a study involving 556 individuals with MS (432 women and 124 men) results indicated that women with MS reported higher levels of overall self-efficacy. However, the

differences were only significant for the functional subscale. The sample included individuals with both RRMS (75%) and progressive forms of MS (25%). Individuals with RRMS reported higher levels of both control and function scales of self-efficacy, overall.

Riazi et al., (2004) utilized the MSSE scale to assess the relationship between self-efficacy and functional ability. Using a sample of 89 individuals, who were either in an inpatient rehabilitation program or outpatient steroid treatment program for relapses, the authors measured levels of self-efficacy and functional ability at baseline, or entry into either program, and whether there were changes in both areas following the intervention. Individuals in the rehabilitation group received a multidisciplinary, tailored program that included physical therapy as well as individual counseling. Individuals in the steroid group did not receive any treatment outside of the corticosteroid injections. It should be noted that the majority of individuals in the rehabilitation group self-identified as having a progressive course of the disease, while the majority of individuals in the steroid group self-identified as following a relapsing-remitting course.. Overall, self-efficacy and self-reports of functional status improved from baseline to follow-up, at the conclusion of the treatment. However, a greater effect size was seen for changes in MSSE scores within the steroid group, which reported lower levels of disease severity at baseline. In addition, higher scores on the MSSE functional subscale at baseline and follow-up were significant predictors of improved health outcomes, overall. This study demonstrates that self-efficacy is a strong predictor of self-reported health status in MS and may, therefore, be an important area to target in order to improve overall health outcomes in this population.

Based on these and other related studies regarding self-efficacy in individuals with MS, researchers have hypothesized that a diagnosis of MS may have a significant impact on work-related self-efficacy. However, there is limited empirical research concerning career-related self-

efficacy specific to a person's current work that may address concerns for individuals with acquired disabilities, such as MS (Beveridge et al, 2002; Lindley, 2006). Only two studies (Roessler & Rumrill, 1994; Uccelli et al, 2009) have assessed career-specific self-efficacy for people with MS.

Although a diagnosis of MS may not result in immediate disability, Roessler and Rumrill (1994) contend that the immediate impact of the diagnosis and the unpredictable nature of the progression of MS may have a sudden impact on the current work experience and career plans for a person with MS. More specifically, a person's self-efficacy with regards to work is significantly decreased. While self-efficacy for work tasks is clearly affected, Roessler and Rumrill proposed that a critical component of work-related self-efficacy is the individual's confidence in her or his ability to request accommodations that will allow continued employment. According to the authors, individuals with MS are often hesitant to request accommodations and may become overwhelmed with their work requirements as the number and level of their symptoms increase, over time. In order to address the necessary changes in job function, hours or change in career, proactive and ongoing interventions regarding work site accommodations and vocational counseling are, therefore, critical to the effective assessment of the changing needs and abilities of the individual. Moreover, Roessler et al. (2001) write that individuals with MS may even quit their jobs soon after their diagnosis, uncertain as to how the disease will progress, fearful that their disability will reach a point where they are unable to maintain a satisfactory level of job performance. A person's confidence in her or his ability to request these accommodations and confidence in a positive outcome of the request are dependent on a number of psychosocial factors, including perceived support from co-workers and superiors as well as overall adjustment to living with MS.

Roessler and Rumrill (1994) developed the only task-specific career self-efficacy scale (CSES) for people with MS which assesses an individuals' self-efficacy with regards to accommodations requests. Using a 10-point Likert scale (1 = not sure, 10 = very sure), participants are asked to rate how confident they would be in performing specific tasks related to the accommodation request process. In accordance with Bandura's (1986) emphasis on reciprocation among the cognitive, social, and behavioral skills that are required to complete specific actions, these tasks include the following: identifying one's accommodation needs, requesting employer review of on-the-job needs, discussing accommodations with one's employer, negotiating with one's employer to implement accommodations, evaluating the effectiveness of accommodations, keeping one's employer informed about ongoing accommodation needs and participating in all aspects of the accommodation request process.

The authors' sample was comprised of 51 individuals, ages 21-63, from Indiana and Kentucky who were employed either part-time or full-time at the time of the study. Other variables including years of education (12-21) and years since diagnosis (1-28) were also assessed. The participants' course of MS and disease severity were not assessed. Participants were placed into experimental and control groups. Both groups completed a questionnaire regarding self-identified accommodations needs. The experimental group then received phone or in-person guidance regarding their rights for their identified accommodations under the Americans with Disabilities Act (ADA). Both the control group and the experimental group completed the CSES as well as other assessments relating to job satisfaction and acceptance of their diagnosis, or psychological adjustment, at pre and post intervention periods. Pre-intervention analyses revealed that greater accommodations needs, poorer career-related self-efficacy as well as lower levels of job satisfaction and acceptance of diagnosis were significantly

correlated. Although results of the experimental group revealed an increase in self-efficacy, increases in job satisfaction and overall psychological adjustment were not correlated with increases in self-efficacy. However, the authors argue that the relationship among these variables is strong and that the results indicate that changes in one may take place subsequent to changes in another, rather than simultaneously.

In a multinational study involving 1,141 individuals from 18 European countries, Uccelli et al. (2009) asked participants to indicate whether their certainty with regards to their capabilities to perform at work made work easier or more difficult. Results indicated that perceived self-efficacy with regards to work performance was directly related to employment status and outcomes. However, this was only one item on a questionnaire designed for that study. The complete details of this study will be discussed in the following section.

Research findings are mixed regarding how variables such as gender and time since diagnosis influence both self-efficacy and employment status for individuals with MS. The percentage of women with MS who are unemployed is greater than the percentage of men with MS who are unemployed (LaRocca, 1995; Roessler, Rumrill, Hennessey et al., 2003; Roessler, Fitzgerald, Rumrill & Koch, 2001). However, as mentioned earlier, women report higher levels of self-efficacy, which would theoretically protect against unemployment. With regards to time since diagnosis, a large number of researchers (Edgley, Sullivan & Dehoux, 1991; Kornblith, LaRocca & Baum, 1986; Wineman, 1990) contend that increased time since diagnosis relates to increased unemployment. However, Devins and Seland (1987) suggest that time since diagnosis may enhance an individual's ability to adapt to living with the disease and, therefore, lead to higher levels of self-efficacy. It is unknown how gender and time since diagnosis relate to the career related self-efficacy proposed by Roessler and Rumrill (1994). However, given the

relevance of self-efficacy to the overall adjustment to living with MS, self-reported health status and management of the disease as well as job satisfaction, it appears to be a critical variable to consider in a discussion of employment outcomes for this population. The following section will present general statistics found in the literature as well as the physical, demographic and psychosocial variables that are relevant to employment for individuals with MS.

Employment Outcomes for Individuals with MS

Research regarding the employment outcomes for individuals with MS, worldwide, has been conducted since the early 1980s, with low employment rates consistently reported for this population (LaRocca et al., 1985; Kornblith et al., 1986). Results of recent surveys of individuals living with MS in the United States are consistent with earlier findings that reveal a high unemployment rate, ranging from 56-65% (Julian et al., 2008; Roessler, Rumrill & Hennessey, 2002). Researchers (Johnson, Bamer & Fraser, 2009; Julian et al., 2008; Roessler, Rumrill & Hennessey, 2008; Rumrill, & Fitzgerald, 2004; Rumrill & Hennessey, 2008; Smith & Arnett, 2005) who have evaluated employment outcomes for people with MS contend that the following factors are critical predictors of whether a person maintains or leaves work: the severity of physical and cognitive symptoms or loss of function; the experience and severity of fatigue; time since diagnosis and certain demographic variables, including gender.

Physical and cognitive symptoms are recognized as significant, or primary, predictors of employment status, particularly for individuals who have lived with MS for a longer period of time or with a progressive form of the disease. In a study of 1,124 individuals between the ages of 18 and 65 living with MS, Johnson et al. (2009) found that less than half of the participants were employed (40%) half-time or more. The majority (60%) of participants reported a relapsing-remitting course of the disease, with the remaining (40%) reporting a progressive

course. Variables significantly associated with unemployment were the self-reported severity of disease, gender, age, and time since diagnosis. Women and individuals who were older and had been living with MS for a longer period of time, who reported more severe symptoms, including cognitive decline, or who experienced a progressive course of the disease were more likely to be unemployed.

Utilizing the data from their survey conducted in 2002, Roessler et al. (2004) conducted a backward stepwise multiple logistic regression analysis in order to examine predictors of employment status. Consistent with general demographics of the disease, three quarters of the sample was female. The average age of participants was 50 and the majority were White (92%), well educated (97% high school graduates; 40% college graduates), and living in urban or suburban areas (74%). Results indicated that educational attainment, severity of symptoms, persistence of symptoms, and presence of cognitive impairment were strong predictors of employment status.

Smith and Arnett (2005) were the first to look at factors associated with having to cut back on working hours versus complete unemployment. They argued that identifying variables that distinguish individuals who reduce their hours could provide valuable information regarding factors that allow people with MS to continue working, even part-time, rather than having to quit altogether. In their study, they recruited 50 individuals living with MS and divided them into the following groups: working full-time, working part-time due to MS symptoms, and those who left work due to MS symptoms.

The individuals who had left work reported significantly greater physical disability than the other two groups and significantly more fatigue than working individuals. The individuals who cut back on their hours and were working part time had attained higher levels of education

and reported higher occupational prestige than those who left work. In contrast to findings by other researchers that will be discussed later in this chapter, the individuals who were working full time reported significantly greater mood disturbance compared with the group of individuals who were not working. Moreover, findings from this study indicated that age, gender and time since diagnosis did not relate to employment status. These findings conflict with a large number of studies, including those that have been and will be discussed in this chapter. Consistent with previous findings, nearly all of the individuals who had cut back on their hours reported that fatigue was a primary reason for the change in their employment status. A large majority (86%) of the individuals who were unemployed reported that a wide range of physical and neurological symptoms were responsible for their decision to leave work.

Julian et al. (2008) contend that a lack of longitudinal data is a major limitation within the literature regarding issues of employment for people with MS. In their study, the authors looked at factors related to individuals with MS exiting from or re-entering the workforce over a six-month period. Data regarding employment status and MS symptoms were collected from over 8,000 individuals who were registered with the North American Research Committee on Multiple Sclerosis (NARCOMS) at an initial point (Time 1) and six months later (Time 2). At Time 1 and Time 2, 56–58 % of MS patients were not employed. At Time 1, unemployed participants more likely to have a progressive disease course, longer time since diagnosis and higher levels of disability, overall. At Time 2, increasing MS symptoms was related to leaving the workforce. In addition, specific problems in mobility, hand function, fatigue, and cognitive performance were associated with leaving the workforce. Conversely, less severe problems with regards to physical mobility, hand function, and cognitive functioning were predictive of individuals re-entering the work force between Time 1 and Time 2.

Although it is clear that high levels of disease severity or a progressive course of MS pose an increased risk for unemployment, the research also indicates that disease-specific variables are not the only significant predictors of employment for all individuals with MS. Given the high rate of unemployment and the lower rates of individuals with progressive courses of MS, other factors must be considered (Rumrill & Hennessey, 2008). Psychosocial factors, such as overall adjustment to living with MS, financial concerns and self-efficacy, also are important in predicting the individual's success in employment.

Any discussion of employment for individuals with disabilities, particularly within the United States, must address the impact of disability benefits and restrictions. According to a study by Fraser et al. (2004), individuals with MS progress from short-term disability to long-term disability to Social Security Disability Insurance (SSDI) at a faster rate as compared to individuals with other disabilities. In a survey of approximately 1,300 individuals from 10 states and Washington, DC, (Roessler, Rumrill & Hennessey et al., 2003), the researchers asked participants to rate their level of satisfaction or dissatisfaction in being able to address 32 employment-related concerns. Results revealed that Social Security disability programs had one of the top dissatisfaction ratings. These results are indicative of problems within a system that discourages individuals from re-entering the work force, for fear of losing income and health benefits.

Although the Social Security Administration provides incentives for individuals on disability to return to work, individuals with MS cite that disincentives still exist. Disability regulations allow for a person to engage in paid work while still receiving disability income and benefit. However, the maximum income allowed for this paid work restricts individuals to part-time work. Nissen et al. (2008) argue that the uncertainty of MS, the fear that the disease will

worsen to a point that will prevent them from returning to a pre-morbid level of functioning or that any improvement may be followed by a relapse or worsening of the disease, lead people to transition from short-term to long-term disability rather than maintaining employment.

Uccelli et al., (2009), applied a biopsychosocial approach to assessing the specific physical and cognitive, personal and environmental factors that influence the employment status for individuals with MS. They conducted a mixed methods study in order to identify and assess the range of biological and psychosocial factors that affect an individual's employment. They recruited individuals within Europe who were either employed or unemployed who were last employed within the last five years. Results of their interviews with both employed and unemployed individuals with MS, led them to develop a questionnaire that assessed whether work was made easier or more difficult as a result of the following factors: MS-related, or disease, factors; attitudes toward work (including self-efficacy); attitudes of others in the workplace; personal considerations; financial considerations; and workplace environment.

Over 1,100 employed and unemployed individuals from 18 European countries participated in this study. Results for both employed and unemployed individuals showed that each factor was significantly related to employment status, with varying levels of significance for items within each category. With regards to MS-related factors, the presence or lack of visual, mobility and memory problems significantly correlated with employment status. However, fatigue was not significantly related. With regards to an individual's attitudes toward work, a person's certainty with regards to their capabilities to perform the tasks and functions in their respective job (i.e., self-efficacy) was significantly correlated to employment status. However, this was only assessed according to the responses to one item within the questionnaire. Within a

multiple logistic regression analyses, MS-related factors, workplace environment and financial considerations predicted more of the variance in employment status.

Based on the research cited, thus far, it is clear that employment outcomes for individuals with MS are influenced by a myriad of biological and psychosocial factors. It is clear that disease severity, alone, cannot predict whether an individual remains employed. Given the importance of self-efficacy, particularly as it relates to seeking necessary accommodations, as well as perceived social support to a person's continued work, the research suggests that enhancing a person's self-efficacy may be helpful to assisting individuals with MS who wish to remain employed. The next and final section of this chapter will address the experience of benefit finding, as a correlate of self-efficacy, as supported by research within illness populations, including MS.

Benefit Finding

Recent research has explored the psychosocial construct of benefit finding, or the identification of positive changes in one's life following a stressful event, such as the diagnosis of an illness, and how a person's experience of benefit finding relates to psychological adjustment. Researchers who have investigated the experience of benefit finding within illness, including MS, have found that benefit finding significantly relates to overall adjustment, higher levels of self-efficacy and seeking social support, in general (Antoni et al., 2001; Siegel & Schrimshaw, 2000).

In their study of 54 women living with HIV/AIDS in New York City, Siegel and Scrimshaw (2000) found that the large majority, 83%, reported at least one positive change in their lives since their diagnosis. The areas of change related to health behaviors, spirituality, interpersonal relationships, a positive view of oneself, value or meaning of life and career goals.

While there was variability within the results regarding whether a diagnosis of HIV served as a set-back or incentive with regards to career goals, the relationship between benefit finding to work is an important finding that is relevant to this discussion.

Given similar results in research conducted with samples of individuals with cancer, Antoni et al. (2001) conducted a study regarding the impact of a 10-week cognitive behavioral therapy group versus a control group on benefit finding and overall psychological adjustment for women with early stage breast cancer. The control group received a condensed version of the intervention in a single 5-hour seminar. A sample of 100 women was assessed at baseline, post-intervention as well as at 3 and 9 month follow up periods. Results indicated that the group therapy intervention significantly increased levels of benefit finding for the experimental group at post-intervention and at 3 months. However, there were no significant differences between the control and experimental group at the 9-month follow-up. It is important to note that the majority of women in the study reported some level of benefit finding. Increases in benefit finding following the intervention were also related to decreased levels of depression. Findings suggest that benefit finding may be a modifiable variable that, if addressed through therapy or psychoeducation, may have an impact on the overall quality of life for individuals with cancer or other illnesses.

For individuals diagnosed with MS, higher levels of benefit finding have been shown to correlate with higher levels of perceived social support and effective coping strategies (Hart, Vella & Mohr, 2008; Mohr et al., 1999; Pakenham, 2005). Mohr et al. (1999) conducted the first study regarding benefit finding in individuals with MS. After interviewing 50 patients regarding the effects MS had on their lives and interpersonal relationships, these statements were collated and administered using a 5-point Likert scale (1=strongly disagree; 5 = strongly agree) to 94 MS

patients. Factor analyses resulted in three areas of psychosocial consequences of MS: demoralization, benefit finding, and deteriorated relationships. Benefit finding was related to a deepening of relationships, enhanced appreciation of life and an increase in spiritual interests. Although benefit finding was related to adaptive coping it was unrelated to depression and was related to higher levels of anxiety and anger. It is not known if benefit finding causes increased anxiety and anger, if anxiety and anger trigger the use of benefit finding, or if there is a more complex, dynamic relationship between mood and the use of benefit finding.

Contrary to Mohr's initial findings, Hart et al. (2008) found that benefit finding and lower levels of depression were significantly correlated. In their study, 126 individuals with MS who participated in a larger, randomized clinical trial comparing two types of telephone psychotherapy for depression, were assessed at baseline, mid-therapy (8 weeks), end of therapy (16 weeks) as well as at 6- and 12-month follow-up periods. After controlling for time since diagnosis and type of treatment, results indicated that improved depression was associated with increased benefit finding over time.

Pakenham (2005) examined effects of benefit finding on positive and negative health (both physical and mental) outcomes for individuals with MS. A total sample of 404 individuals with MS was assessed at baseline and at a 3 month follow-up. Measures of illness were collected at baseline. Measures of benefit finding, subjective health, and negative (global distress, negative affect) and positive (life satisfaction, positive affect) were collected at the 3-month follow-up. After controlling for the effects of demographics and illness severity, results showed that benefit finding was a significant predictor of positive outcomes. However, benefit finding was not related to distress or subjective health but demonstrated a weak association with negative affect.

With regards to employment, only one study to date has directly associated employment status with benefit finding in MS. Mohr et al. (1999) found a correlation between benefit finding and unemployment within their sample. However, it should be noted that the study did not account for the age of participants or severity of disability within their study. Participants ranged in age from 25-67 and it is unknown how many who identified as unemployed were retired unrelated to disability. In addition, participants' course of MS or symptom severity was not identified. However, an earlier study conducted by Salomone and O'Connell (1998) is suggestive of a link between benefit finding and employment in individuals with MS. The authors sought to fill in a gap in the literature regarding the career development for individuals with MS by assessing self-identified needs and importance or meaning of a career and work. An analysis of 12 phone interviews with individuals with MS revealed that a greater appreciation for life and improved changes in personal care. Employment status for individuals who shared this sentiment was varied. In some cases this resulted in leaving work in order to take more time to enjoy life. However, it is a significant finding as greater appreciation for life and improved personal care are also correlates of benefit finding, as discussed in the previous studies.

It is important to note that a review of studies involving benefit finding (Helgeson et al., 2006) found differences in gender, race and age with regards to experiences of benefit finding. Results showed that women engaged in more benefit finding than men. In addition, non-White individuals reported higher levels of benefit finding than White individuals. Finally, younger age was associated with higher levels of benefit finding.

Studies show that benefit finding is related to other correlates of employment outcomes for individuals with MS; namely, more effective adjustment, higher levels of self-efficacy as well as higher levels of social support and support seeking behaviors. It would, therefore, be

helpful to gain further insight into how benefit finding may relate to employment outcomes for individuals with MS.

Summary

As the research suggests, multiple factors must be considered when addressing employment concerns and outcomes for individuals with MS. Disease severity is only one issue, but it also must be measured in a comprehensive way, accounting for all physical, cognitive and affective symptoms of the disease. As the literature demonstrates, psychosocial issues are also important factors to consider. In addition, demographic variables such as gender, age, career stage and time since diagnosis are also salient to the discussion of employment outcomes for individuals with MS.

Chapter III

Methodology

The purpose of this chapter is to provide information as to how this study was conducted. The population of interest and recruitment methods will be described, as well as the methods of data collection. A description of the measurement instruments, including the reliability and validity of each, will be discussed. Lastly, the study design, hypothesis testing, and statistical analyses used will be reviewed.

Population of Interest

The overarching purpose of this study was to determine how the experience of benefit finding relates to employment outcomes for individuals with MS, within the contexts of a biopsychosocial approach to illness (Engel, 1980) and social cognitive career theory (Hackett & Betz, 1981). Consistent with the literature cited in Chapters I and II, individuals between the ages of 25-50 who have been diagnosed with MS, currently experience a relapsing-remitting form of MS (RRMS), who were working at the time of their diagnosis, and who live in the United States were recruited for this study. Participants were recruited through online postings on the National Multiple Sclerosis Society and local chapter websites as well as through the North American Research Committee on Multiple Sclerosis. In addition, a letter and recruitment flyer was sent, via electronic mail, to MS program facilitators within hospitals and rehabilitation institutes throughout the country, requesting that the flyer be posted on bulletin boards and sent electronically to program participants. Finally, individuals who had expressed interest in a previous study conducted by the researcher, who did not meet the criteria for that study but consented to be contacted for future research, were contacted via electronic mail regarding participation for the current study. All recruitment materials directed interested participants to an

scores administered by the individuals' neurologists ($r = .75$). Internal consistency for the self-administered GNDS was also strong ($\alpha = .93$). The large majority of neurologists (82%) surveyed approved of the scale, overall. In addition, the participants who took part in the study endorsed their approval of each of the scales and individual items, with approval ratings on the scales ranging from 73-91%. Rossier & Wade also tested the psychometric properties of the GNDS using a sample of 43 patients with MS in the UK. Test-retest reliability was strong ($r = .97$) and the correlation between GNDS scores and EDSS scores was moderately strong ($r = .64$).

Since the GNDS was created in the United Kingdom, Fraser and McGurl (2007) modified select items to create an American version. For example, the phrase "do you have to take care when swallowing" was changed to "do you have to be careful when swallowing?" (Fraser & McGurl, p. 15). The term "stick" was also changed to "cane" in the American version. In conducting tests of validity and reliability for this version of the scale with 253 individuals from across the United States living with MS, the authors found convergent validity to be strong with negative correlations of $-.33$ to $-.66$ when overall scores from the GNDS were compared to scores from other health outcome measures in which higher scores indicate better health. Test-retest reliability over a two-week period was strong with a resulting Pearson's correlation of $.91$. Further, the test was administered on three occasions, yielding Cronbach's alpha of $.78$ -. 80 , indicating strong internal consistency.

Study Design

The overarching purpose of this study was to determine how the experience of benefit finding relates to employment outcomes for individuals with MS, within the contexts of a biopsychosocial approach to illness (Engel, 1980) and social cognitive career theory (Hackett &

Betz, 1981). The variables of disease severity, cognitive disability, fatigue, daily living self-efficacy, workplace self-efficacy, benefit finding, career stage, gender and time since diagnosis served as the predictor, or independent, variables with employment status and weekly hours worked as the criterion, or dependent, variables. The design was non-experimental and cross-sectional. Each of the hypotheses will be discussed in terms of the statistical analysis used in the following section.

Hypothesis Testing

Following are the hypotheses that were tested in the current study along with a description of the statistical analysis that was used to test each hypothesis.

The first set of hypotheses focused on relationships among four of the independent variables within this study: disease severity, benefit finding, daily living-self-efficacy and workplace self-efficacy.

H_{1a}: In accordance with previous findings that demonstrate a negative correlation between disease severity and self-efficacy beliefs (Fraser & Polito, 2007; Rumrill & Hennessey, 2008) there will be a negative correlation between disease severity and daily living self-efficacy.

H_{1b}: In accordance with previous findings that demonstrate a negative correlation between disease severity and self-efficacy beliefs (Fraser & Polito, 2007; Rumrill & Hennessey, 2008), there will be a negative correlation between disease severity and workplace self-efficacy.

H_{1c}: In accordance with previous findings (Antoni et al., 2001; Siegel & Schrimshaw, 2000) that demonstrate a positive correlation between self-efficacy beliefs and benefit finding, there will be a positive correlation between daily living self-efficacy and benefit finding.

H_{1d}: In accordance with previous findings (Antoni et al., 2001; Siegel & Schrimshaw, 2000) that demonstrate a positive correlation between self-efficacy beliefs and benefit finding, there will be a positive correlation between workplace self-efficacy and benefit finding.

H_{1e}: Consistent with H_{1a} through H_{1c}, there will be a negative correlation between disease severity and benefit finding.

Bivariate correlations were used to measure H_{1a} through H_{1e}. Bivariate correlation measures the strength of the relationship between two continuous variables (Pedhazur & Schmelkin, 1991).

The second set of hypotheses considered whether the three psychosocial variables from the first set (benefit finding, daily living self-efficacy and workplace self-efficacy) along with the biological variables (disease severity, cognitive disability and fatigue) explain unique variance in the prediction of employment status and the number of weekly hours worked.

H_{2a}: Each of the four variables mentioned in H_{1a} through H_{1d} as well as the particular disease-related variables of cognitive disability and fatigue (Julian et al, 2008; Smith & Arnett, 2005; Roessler et al, 2004) will explain unique variance in the prediction of employment status.

H_{2a} was tested using a logistic regression analysis in which employment status is the dependent variable and disease severity, cognitive disability, fatigue, benefit finding, daily living self-efficacy and workplace self-efficacy are the independent variables. Regression analysis is used to ascertain the relationship between a dependent variable and multiple independent variables, while assessing the relative importance of each of the independent variables toward the prediction of the dependent variable. Logistic regression is used when the dependent, or criterion, variable is dichotomous (as with employment status) and the independent, or predictor, variables are either categorical or continuous (Meyers, Gamst & Guarino, 2006).

H_{2b}: For those who are employed, each of the variables mentioned in H_{1a} through H_{1d} as well as cognitive disability and fatigue will explain unique variance in the prediction of weekly hours worked.

H_{2b} was tested using a multiple regression analyses in which weekly hours worked was the dependent variable and disease severity, cognitive disability, fatigue, benefit finding daily living self-efficacy and workplace self-efficacy were the independent variables.

The third set of hypotheses looked at the predictive relationship of the psychosocial variables for employment status and the number of weekly hours worked after controlling for each of the biological variables.

H_{3a}: In accordance with previous findings that demonstrate that disease severity, alone, will not predict employment status for individuals with MS (Uccelli et al., 2009), the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding would predict variance in employment status after controlling for disease severity.

H_{3b}: Consistent with H_{3a}, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in employment status after controlling for cognitive disability.

H_{3c}: Consistent with H_{3a} and H_{3b}, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in employment status after controlling for fatigue.

H_{3d}: For those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for disease severity.

H_{3e}: Consistent with H_{3d}, for those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for cognitive disability.

H_{3f}: Consistent with H_{3d} and H_{3e}, for those who are employed, the psychosocial variables of daily living self-efficacy, workplace self-efficacy and benefit finding will predict variance in weekly hours worked, after controlling for fatigue.

A hierarchical logistic regression analysis was originally planned in order to measure H_{3a} through H_{3f}. A hierarchical regression analysis assesses the relative importance of each of the independent variables to the prediction of the dependent variable, after controlling for the variable(s) entered in the initial step (Meyers et al., 2006). However, given the results at the initial level, these analyses were not run.

The fourth set of hypotheses looked at gender differences within the sample with regards to employment status as well as self-efficacy beliefs and benefit finding.

H_{4a}: Female participants will report higher daily living self efficacy and workplace self-efficacy (Fraser and Polito, 2007).

H_{4b}: Female participants will report higher levels of benefit finding (Helgeson et al., 2006)

H_{4c}: Male participants will be more likely to report that they are currently employed (Roessler et al., 2001).

H_{4a} and H_{4b} were measured using independent *t*-tests to assess whether there were significant differences between male and female participants. H_{4c} was tested using a Chi Square analysis, comparing the frequency of unemployment between male and female participants.

Following the initial analysis, an additional independent samples *t*-test was conducted in order to explore possible differences in disease severity among male and female participants. Further, a logistic regression analysis was run in employment status was the dependent variable with gender and disease severity as the independent variables.

The fifth set of hypotheses considered how the time since diagnosis correlated with both forms of self-efficacy as well as employment status.

H_{5a}: There will be a negative correlation between time since diagnosis and daily living self efficacy (Rumrill & Hennessey, 2008).

H_{5b}: There will be a negative correlation between time since diagnosis and workplace self-efficacy (Rumrill & Hennessey, 2008).

H_{5c}: In accordance with previous findings (Rumrill & Hennessey, 2008; LaRocca, 1995; Wineman, 1990), there will be a negative relationship between the demographic variable of time since diagnosis and reports of being currently employed.

H_{5a} and H_{5b} were measured using bivariate correlations. H_{5b} was measured using bivariate correlations where employment status was coded numerically (0=unemployed; 1=employed).

The sixth set of hypotheses looked at whether both forms of self-efficacy serve as predictors of career stage.

H_{6a}: The psychosocial variables of daily living self-efficacy and workplace self-efficacy will explain unique variance in the prediction of career stage

H_{6b}: Career stage will explain unique variance in the prediction of employment status.

H_{6a} was tested using a multiple regression analyses in which career stage was the dependent variable and daily living self-efficacy and workplace self-efficacy were the

independent variables. H_{6b} was tested using a multiple regression analyses in which employment status was the dependent variable and career stage was the independent variable.

Chapter IV

Results

The focus of this chapter is to provide the results of the statistical analyses of the current study. Sample demographics, descriptive statistics, tests of hypotheses and a summary of findings are presented.

Sample Demographics

As discussed in Chapter III, participants for this study were recruited through online postings and electronic mail. All recruitment materials directed interested participants to the online survey website address which provided an informed consent form (Appendix F) and the questionnaires (Appendix A-E) to be completed and submitted online. A total of 301 individuals started the survey. Of these, 296 individuals consented to participate. A total of 87 did not meet the inclusion criteria because they were younger than 25 or older than 50 ($n = 57$), experience a course of MS other than relapsing-remitting ($n = 7$), were not employed at the time of diagnosis ($n = 16$) or are not a resident of the United States ($n = 7$). Of the remaining 209 individuals, 175 completed the survey.

Participants in the present study ranged in age from 25-50 ($M = 41.6$, $SD = 6.6$). The large majority were female (87.4 %), were married or partnered (69.7%) and identified as currently employed (74.9%), working 4 to 75 hours per week ($M = 38.8$, $SD = 11.1$). Of the 171 participants who answered the question identifying their race, most individuals identified as White or Caucasian ($n = 158$); the remaining 13 identified as Black or African American ($n = 5$), Hispanic ($n = 2$), Asian ($n = 1$) and mixed race or biracial ($n = 5$).

Descriptive Statistics

Means and standard deviations for the entire sample for each of the scales used in the present study (SRGS-R, MSSE, CSES, GNDS) are presented in Table 1. Ranges of possible scores for each of the measures are as follows: SRGS-R, 43-301; MSSE, 180-1800; CSES, 7-70; GNDS, 0-60.

Table 1

Means and Standard Deviations for the SRGS-R, MSSE, CSES and GNDS

Scale	Total Sample (N=175)	
	<i>M</i>	<i>SD</i>
SRGS-R	189.73	29.71
MSSE	1280.00	363.02
CSES	45.77	22.58
GNDS	15.50	7.75

SRGS-R= Revised Stress Related Growth Scale; MSSE = Multiple Sclerosis Self-Efficacy Scale; CSES =Career Self-Efficacy Scale; GNDS = American version of Guy's Neurological Disability Scale.

Tests of Hypotheses

The first set of hypotheses focused on relationships between independent variables within this study. H_{1a} , H_{1b} and H_{1e} predicted negative correlations between disease severity and both forms of self-efficacy beliefs (daily living and workplace) as well as a negative correlation between disease severity and benefit finding. H_{1c} and H_{1d} predicted positive correlations between both forms of self-efficacy and benefit finding. Bivariate correlations were used to test these hypotheses. Results are presented in Table 2. Three of the variables were significantly correlated at the .01 level and one was significantly correlated at the .05 level. There are strong

negative relationships between workplace self-efficacy and disease severity, $r(173) = -.364$, as well as daily living self-efficacy and disease severity, $r(173) = -.691$. There is a strong positive relationship between daily living self-efficacy and benefit finding, $r(173) = .366$, and a moderate negative relationship between disease severity and benefit finding, $r(173) = -.170$. There is no significant relationship between workplace self-efficacy and benefit finding. Therefore, four of the five hypotheses in the first set were supported.

Table 2

Correlations between Benefit Finding (SRGS-R), Daily Living Self-Efficacy (MSSE), Workplace Self-Efficacy (CSES), and Disease Severity (GNDS)

Scale	GNDS	CSES	MSSE
SRGS-R	-.170*	.116	.366**
MSSE	-.691**	.401**	
CSES	-.364**		

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

SRGS-R= Revised Stress Related Growth Scale; MSSE = Multiple Sclerosis Self-Efficacy Scale; CSES =Career Self-Efficacy Scale; GNDS = American version of Guy's Neurological Disability Scale.

As Table 2 demonstrates, there is also a strong positive relationship between workplace self-efficacy and daily living self-efficacy.

H_{2a} stated that the four variables mentioned in H_{1a} through H_{1e} as well as cognitive disability and fatigue would explain unique variance in the prediction of employment status. A logistic regression analysis was used in which employment status was the criterion variable and benefit finding, workplace self-efficacy, daily living self-efficacy, disease severity, cognitive disability and fatigue were the predictor variables. The model demonstrated a prediction accuracy of 77.7%. However, in looking at the individual significance of each predictor, only

two of the variables were significant: disease severity and fatigue. The results indicate that for every point endorsed on the disease severity scale, individuals are .862 times less likely to be employed. For every point endorsed on the fatigue scale, individuals are 1.61 times more likely to be employed. Table 3 provides the complete results for all variables in the regression model.

Table 3

Logistic Regression Analysis for Predictors of Employment Status

Predictors	β	SE	Odds ratio
Benefit Finding	-.008	.007	.992
Daily Living Self-Efficacy	.001	.001	1.001
Workplace Self-Efficacy	.008	.010	1.008
Disease Severity	-.149**	.049	.862
Cognitive Disability	-.407	.247	.665
Fatigue	.476*	.203	1.610

* $p < .05$

** $p < .01$

H_{2b} stated that, for participants who are employed, each of the variables mentioned in H_{1a}, H_{1c} as well as cognitive disability and fatigue would explain unique variance in the prediction of the number of weekly hours worked. A multiple regression analysis was used in which weekly hours worked was the criterion variable and benefit finding, workplace self-efficacy, daily living self-efficacy, disease severity, cognitive disability and fatigue were the predictor variables. The linear combination of the independent variables was significantly related to the number of weekly hours worked, $F(6,125) = 2.802, p < .05; R^2 = .12$, meaning that 12% of the variance in weekly hours worked is accounted for by this combination of predictor variables. However, as

shown in Table 4, only disease severity was a significant unique predictor of weekly hours worked.

Table 4

Regression Analysis for Predictors of Weekly Hours Worked

Predictors	B	SEB	β
Benefit Finding	.037	.035	.101
Daily Living Self-Efficacy	-.001	.004	-.030
Workplace Self-Efficacy	-.053	.046	-.102
Disease Severity	-.512	.209	-.328*
Cognitive Disability	.639	1.084	.057
Fatigue	-.421	.903	-.054

* $p < .05$

H_{3a}-H_{3f} stated that daily living self-efficacy, workplace self-efficacy and benefit finding would predict variance in employment status and weekly hours worked after controlling for each of the following independent variables: disease severity, cognitive disability and fatigue.

Hierarchical regressions were originally planned in order to test these hypotheses. However, these analyses were not run, given that two of the control variables, disease severity and fatigue were the only significant individual predictors that emerged during the simultaneous regression analyses at the initial level.

Select differences regarding gender were addressed in H_{4a}-H_{4c}. H_{4a} stated that female participants would report higher levels of daily living self-efficacy and workplace self-efficacy. H_{4b} stated that female participants would report higher levels of benefit finding. Independent samples *t*-tests were conducted to evaluate H_{4a} and H_{4b}. The results of the analyses for H_{4a}

concerning daily living self-efficacy were not significant $t(173) = -.709, p = .48$ and $.534$. The results concerning workplace self-efficacy were also not significant, $t(173) = .534, p = .60$. The results of H_{4b} were also not significant, $t(173) = 1.032, p = .312$. Therefore, these hypotheses were not supported as there were no significant differences between male and female participants with regards to the psychosocial variables of daily living self-efficacy, workplace self-efficacy or benefit finding.

H_{4c} stated that male participants would be more likely to report that they are currently employed, as compared to female participants. The results of a Chi Square analysis did not reveal a significant relationship between gender and employment status $\chi^2(1, N=175) = .60, p = .44$, Cramer's $V = .06$. Therefore H_{4c} was not supported. However, previous studies have also shown that physical disability is a stronger predictor of unemployment for men with MS as compared to their female counterparts (Roessler et al, 2001), which suggests that further analyses were warranted in order to explore the relationship between disease severity and employment status for both men and women.

To further explore the possibility that differences in disease severity may vary between genders, an independent samples t -test was conducted in order to assess differences in disease severity between men and women within the sample. The results were not significant, $t(173) = -1.34, p = .19$, indicating that there were no significant differences between men and women with regards to disease severity. A second analysis explored whether gender along with disease severity would explain unique variance in the prediction of employment status. A logistic regression analysis was used in which employment status was the criterion variable, with gender and disease severity serving as the predictor variables. The model demonstrated a prediction accuracy of 76.6%. The results indicate that for every point endorsed on the disease

severity scale, individuals are .87 times less likely to be employed, similar to the findings of the initial logistic regression. However, gender did not emerge as a significant predictor.

H_{5a} and H_{5b} predicted negative correlations between the time since diagnosis and each form of self-efficacy (daily living self-efficacy and workplace self-efficacy). Results of bivariate correlations between time since diagnosis and daily living self-efficacy as well as workplace self-efficacy were not significant. Therefore, H_{5a} and H_{5b} were not supported through this analysis. H_{5c} predicted a negative relationship between time since diagnosis and employment status. Results for this hypothesis were significant, showing a moderate negative relationship $r(173) = -.174$, indicating that the longer a person has been living with MS, the less likely he or she is to be employed. Therefore, H_{5c} was supported.

H_{6a} stated that the psychosocial variables of daily living self-efficacy and workplace self-efficacy would explain unique variance in the prediction of career stage. However, the linear combination of these two independent variables was not significantly related to career stage. H_{6b} stated that career stage would explain unique variance in the prediction of employment status. Results of a regression analysis in which career stage served as the predictor variable and employment status served as the criterion variable were also not significant. Therefore, neither H_{6a} nor H_{6b} were supported through this analysis.

Summary

Results were mixed and revealed disease-related variables as stronger individual predictors of employment outcomes, as compared to the psychosocial variables. As anticipated, there were significant relationships between the variables contained in the present study. Benefit finding was significantly correlated with daily living self-efficacy and disease severity. Further, disease severity was significantly correlated with both forms of self-efficacy, workplace

and daily living. However, there was no significant relationship between benefit finding and workplace self-efficacy.

The combination of psychosocial variables (benefit finding, workplace self-efficacy and daily living self-efficacy) along with disease severity, fatigue, and cognitive disability was a strong predictor of both employment status as well as the number of weekly hours worked. However, only disease severity and fatigue demonstrated significance as individual predictors of employment status. Likewise, disease severity was the only individual variable that demonstrated significance as a predictor for the number of weekly hours worked.

There were no significant differences between men and women within the sample with regards to benefit finding, both forms of self-efficacy, disease severity or employment status. Exploratory analyses revealed that the combination of gender along with disease severity was a significant predictor of employment status. However, only disease severity served as a significant predictor of employment status within the regression model.

Results concerning time since diagnosis and career stage demonstrated were largely not significant in this study. Consistent with the hypothesis for this study, there was a negative relationship between time since diagnosis and current employment. However, there were no significant correlations between time since diagnosis and either form of self-efficacy. Neither form of self-efficacy served as a significant predictor of career stage. Likewise, career stage was not a significant predictor of employment status. These results and their implications for clinical practice and future research are discussed further in Chapter V.

Chapter V

Discussion

The purpose of this chapter is to summarize and discuss the findings of this study and to consider the implications for clinical practice. The limitations of the study are also addressed and areas for future research are identified.

Summary of Results of Hypothesis Testing

The first set of hypotheses focused on relationships among four of the independent variables within this study: disease severity, benefit finding, daily living-self-efficacy and workplace self-efficacy. Four out of the five hypotheses were supported in this analysis. Consistent with previous research (Fraser & Polito, 2007; Rumrill & Hennessey, 2008), the results revealed that higher levels of disease severity were significantly correlated with lower levels of benefit finding and daily living self-efficacy. In addition, higher levels of benefit finding were significantly correlated with daily living self-efficacy. This finding was consistent with previous findings (Antoni et al., 2001; Siegel & Scrimshaw, 2000) that link higher levels of benefit finding and self-efficacy. However, the results of this study did not reveal a significant positive relationship between workplace self-efficacy and benefit finding.

The second set of hypotheses considered whether the three psychosocial variables from the first set (benefit finding, daily living self-efficacy and workplace self-efficacy) along with the biological variables (disease severity, cognitive disability and fatigue) would explain unique variance in the prediction of employment status and the number of weekly hours worked. Both regression analyses demonstrated significance with regards to the combination of variables in their prediction of employment status as well as the number of weekly hours worked. However, when looking at the significance of individual predictors, only disease severity and fatigue were

significant with regards to employment status. The results indicate that higher levels of disease severity reduce the likelihood of employment as well as the number of hours worked. However, the results revealed that individuals who endorsed higher levels of fatigue were more likely to be employed. The findings regarding fatigue are in contrast with previous research that found higher levels of fatigue among individuals with MS who were unemployed as compared to those who were employed at the time the research was conducted as well as from self-reported claims that fatigue was a significant factor for deciding to leave work (Julian et al., 2008; Smith & Arnett, 2005). However, the results from this study may be understood to mean that participants who are working experience higher levels of fatigue.

The third set of hypotheses looked at the predictive relationship of the psychosocial variables for employment status and the number of weekly hours worked after controlling for each of the biological variables. As previously noted, the proposed hierarchical regressions for this set of hypotheses were not run due to the results at the initial level of analyses.

The fourth set of hypotheses looked at gender differences within the sample with regards to employment status as well as self-efficacy beliefs and benefit finding. There were no significant differences found between male and female participants with regards to these variables. While this set of hypotheses was not supported, further analyses were conducted in accordance with research (Roessler et al, 2001) regarding gender differences in employment status and disease severity. Roessler et al. stated that physical disability is a stronger predictor of unemployment for men with MS as compared to their female counterparts. However, there were no significant differences between the men and the women with regards to disease severity.

The fifth set of hypotheses considered how the time since diagnosis correlated with both forms of self-efficacy as well as employment status. Consistent with the literature (Rumrill &

Hennessey, 2008; LaRocca, 1995; Wineman, 1990), negative relationships were anticipated. As anticipated, the results did reveal a significant negative relationship between time since diagnosis and employment status. In contrast, relationships between time since diagnosis and daily living self-efficacy as well as workplace self-efficacy were positive, but not significant. .

The sixth set of hypotheses looked at whether both forms of self-efficacy would serve as predictors of career stage. It was further predicted that career stage would explain unique variance in the prediction of employment status. Results for all regression analyses associated with these hypotheses were not significant.

Discussion of Results of Hypothesis Testing

This study revealed strong relationships between select psychosocial and disease-related variables. However, the results emphasized the significance of disease severity as a predictor of employment outcomes. Several studies (Rumrill & Hennessey, 2008; Julian et al., 2008) regarding individuals with MS found that disease-related variables were primary predictors of employment status, so it is not surprising that individuals within this study who endorsed higher levels of disease severity were less likely to be employed or work fewer hours. However, these results still do not suggest that disease-related variables are the only factors that may influence employment outcomes. The significant correlations between disease severity and benefit finding, workplace self-efficacy and daily living self-efficacy suggest that these relationships are complex and require further exploration and understanding.

Higher levels of benefit finding were significantly related to lower levels of disease severity and lower levels of disease severity were, in turn, associated with reports of employment and higher numbers of weekly hours worked. Similar relationships were found between disease severity and both forms of self-efficacy. Although the analyses for the current study looked at

benefit finding and other psychosocial variables as predictors of employment outcomes, it is possible that employment status or the number of weekly hours worked may predict or affect benefit finding. In order to understand these relationships, it may be helpful to consider the potential for mediating and moderating effects (Baron & Kenny, 1986) that benefit finding and disease severity may have on each other towards the prediction of employment status and number of weekly hours worked. An exploration of the potentially more complex nature of the relationships between the psychosocial and disease-related variables may further explain the results from this study regarding the relationship between disease severity and employment outcomes. That is, the significant relationships between psychosocial and disease related variables within this study may be indicative of an indirect relationship between certain psychosocial variables and employment outcomes. For example, since benefit finding was found to be significantly related to disease severity and disease severity is a significant predictor of employment outcomes, it is possible that benefit finding may moderate the effects of disease severity on employment outcomes.

As predicted, there were significant negative correlations between both forms of self-efficacy and disease severity. As speculated above, while neither form of self-efficacy beliefs were significant predictors of employment outcomes within this study, it is possible that the relationships are more complex than the current analyses revealed. Self-efficacy beliefs may serve to mediate or moderate the effects of benefit finding and disease-related variables on employment outcomes. Likewise, employment status and the number of weekly hours worked may, in turn, affect self-efficacy beliefs.

Self-efficacy beliefs were mixed with regards to their relationships with other variables within this study. Previous research (Rumrill & Hennessey, 2008) had shown that increased

time since diagnosis was associated with lower levels of self-efficacy beliefs, but the authors speculated that this may have resulted from a tendency for increased time since diagnosis to coincide with increase in disease severity. While the overall results of the current study were not significant, it is worth noting that both forms of self-efficacy were positively correlated with time since diagnosis. This may reflect a curvilinear relationship between disease-related and psychosocial variables, as suggested by LaRocca et al. (1985). In other words, while Rumrill and Hennessey found that increases in time since diagnosis coincided with increased disease progression and therefore a decrease in self-efficacy beliefs, it is possible that the current study captured individuals at a point in time in which the time since diagnosis provided them with time to adjust to living with MS and develop a greater sense of self-efficacy, as suggested by Devins and Seland (1987). Observations either sooner or much later since diagnosis may capture these same individuals at a point where they had not adapted as well or had experienced an increase in disease severity such that their self-efficacy beliefs might decrease.

Workplace self-efficacy, in particular, revealed weaker relationships than daily living self-efficacy. Whether a person is willing or has disclosed her or his diagnosis of MS in the workplace may be a confounding factor. Since the measure used in this study specifically measures efficacy beliefs with regards to requesting accommodations, the level of endorsement may be a reflection of rates of disclosure among the participants rather than, or in addition to, self-efficacy beliefs related to this specific task.

The large discrepancy in numbers between male and female participants may account for the lack of significant findings with regards to gender differences. Although the sample is representative of the population, with significantly higher numbers of women as compared to men with MS, the resulting low power in analyses may interfere with potentially significant

differences. Although findings were not significant, it is worth noting that higher percentages of women within the sample reported being employed, while men in the sample endorsed higher levels of workplace self-efficacy. As previously discussed, a willingness to disclose one's diagnosis may influence efficacy beliefs regarding accommodation requests. Given previous research that reveals differences in men and women with regards to self-efficacy beliefs, it is possible that gender may also be a factor with regards to a person's willingness to disclose a diagnosis of MS.

Overall, the results from this study are mixed and suggest that there is a more complex interplay between disease-related and psychosocial variables, particularly over time.

Limitations

There were limitations with regards to the sample, method, and measures selected for this study. First, the participants were self-selected. It could not be known whether those who participated were, in fact, individuals with MS who met the inclusion criteria. Although the sample demographics were representative of the MS population with regards to factors such as gender and race, it may still not be possible to generalize the results of the study. In addition, participation was limited to individuals who were connected with MS-related groups as well as access to a computer and the Internet. Moreover, it was beyond the scope of this study to measure all possible psychosocial variables, including socioeconomic status, level of education, type of work and other workplace variables, or participants' financial concerns with regards to their decisions regarding employment.

As with any nonexperimental study, it was not possible to establish causality between any of the variables. Furthermore, the data collected in this study accounted for a single point in time. As previously discussed, the relationship between variables and employment outcomes is

subject to change over time. For example, the relationship between higher levels of fatigue and current employment within this study could indicate that people who are working are more tired or that increasing levels of fatigue will lead to unemployment. This study also cannot account for participants who may decide to re-enter the work-force or change the number of weekly hours worked in the future. The use of self-report measures was another limitation. Participants may have under or over estimated their disease symptoms. In addition, individual interpretations of disease severity, in particular, may vary. That is, self-report of disease severity and limitations is subject to personality and coping variables, so that those who are more resilient may report less subjective distress for equal levels of medically determinable signs and symptoms. Moreover, monomethod bias may have been a factor, with online surveys as the only source of data.

The factor of volition as it relates to the employment outcomes for each participant employment status was not assessed. This study explored relationships of biopsychosocial factors and employment outcomes, assuming that decisions regarding these outcomes were made by participants. The current study did not account for any individuals who were asked by their employer to leave work or reduce their weekly hours worked.

As noted above, this study did not account for whether individuals had disclosed their diagnosis to their current or past employer. This information is of particular relevance when assessing workplace self-efficacy. The measure of person's belief in her or his ability to request specific accommodations largely assumes that she or he has disclosed. Therefore, the results of this study may be indicative of the relevance of the questions, depending on whether the participant has disclosed her or his MS, rather than actual self-efficacy beliefs with regards to requesting accommodations.

The characteristics of the normative samples used to validate each of the instruments that were employed in this study may not match the characteristics of the current sample, particularly with the specificity of disease-related symptoms and severity. In addition, all surveys were presented in English. For any participants for whom English is a second language, there may not have been a consistent understanding and interpretation of the questions asked.

Implications for Clinical Practice

The results of this study reinforce the importance of a biopsychosocial perspective when working with individuals with MS, particularly with regards to employment. No single factor should be considered in isolation. Disease-related symptoms emerged as the only significant individual predictors of employment status and the number of weekly hours worked. However, the strong correlations between disease severity and benefit finding as well as self-efficacy beliefs suggest that the interaction of all of these factors may influence, or be influenced by, employment outcomes.

Participants who reported higher levels of benefit finding also reported lower levels of disease severity and higher levels of daily living self-efficacy. Perhaps a straightforward interpretation that increased disability leads to lower levels of benefit finding and self-efficacy beliefs is justified. However, as noted earlier, self-report measures are subject to individual interpretation. Individual coping styles and acceptance of the diagnosis may influence how a person experiences and assesses his or her own severity of symptoms. Moreover, these potentially subjective interpretations may also influence experiences of benefit finding and self-efficacy beliefs, and vice versa. If experiences of benefit finding and self-efficacy beliefs are related to individual perceptions of disease severity, which in turn predict employment status and

the number of hours worked, it will be helpful to explore these relationships within a therapeutic or counseling setting.

While the results of this study did not reveal significant gender differences, previous research (Fraser and Polito, 2007; Helgeson et al., 2006) has shown that women endorse higher levels of self-efficacy and benefit finding. When working with individuals with MS, it will be important to consider how gender may be a factor when exploring experiences of benefit finding and self-efficacy and their potentially protective or disruptive influence on employment.

Research shows that employment among individuals with MS is linked to lower levels of stress and higher levels of overall quality of life (Miller & Dishon, 2006; Roessler et al., 2004). Therefore, this study may have caught individuals who are currently employed at a point in time in which they were endorsing lower levels of disease severity and experiencing higher levels of self-efficacy and benefit finding. It may be that continued employment may promote higher levels of self-efficacy beliefs and benefit finding and influence perceptions of disability. In counseling individuals with MS, further understanding and self-awareness with regards to how these factors interact for each person will be helpful.

However, it is also important to consider and monitor how and when certain types of work may adversely affect the physical and mental well-being of the person. The results of this study demonstrate how employment may have a deleterious effect on symptoms of fatigue as well as certain self-efficacy beliefs, and vice versa. While these experiences and challenges do not necessarily preclude individuals from maintaining employment, it should be acknowledged that maintaining paid work is not necessarily in the best interest of every individual with MS. Moreover, a person's overall satisfaction with her or his current work may also be a factor that needs to be considered. If a person's work is already a source of significant stress, remaining in

that particular job or line of work may have more of a negative impact on the person with MS. It is, therefore, critical to consider when the benefits of employment no longer outweigh the liabilities to physical and mental health.

Counseling psychologists and other healthcare professionals are encouraged to thoroughly assess the disease related symptoms as well as relevant psychosocial variables that are relevant to each individual. Given the variability and change over time with regards to disease progression as well as other psychosocial factors, it would be ideal for individuals to receive ongoing support to assess changing needs with regards to employment. To this end, mental health and medical professionals who work with individuals with MS at any stage or time since diagnosis can reinforce the importance of continued reassessment of needs.

Directions for Future Research

There is a lack of research that assesses the relationship between the myriad biological and psychosocial factors that affect employment outcomes for individuals with MS. This study addressed the relationship between disease-related and particular psychosocial variables, specifically benefit finding and self-efficacy beliefs, in order to generate further understanding, interest and research in a much needed area. The results of this study highlight the need for current research that further delineates the disease-related and psychosocial variables that are relevant to the discussion. Moreover, it is clear that longitudinal research in this area would more accurately track and explain the changing needs and experiences of people with MS with regards to employment.

As suggested earlier, despite the emphasis of disease severity as the primary predictor of employment outcomes, the results of this study demonstrate significant relationships between the biological and psychosocial factors. The analyses for the current study looked at direct

relationships between variables. Additional studies that explore mediating and moderating pathways and further add to the understanding of the relationships, particularly over time, between the disease related and psychosocial variables are warranted.

The results of this study also highlight the need for further research regarding the potential non-linear nature of relationships among variables that affect employment outcomes for people with MS (LaRocca et al., 1985). That is, for each individual with MS, different factors are relevant at different points in time. Age is one of these factors. For example, studies have shown that younger and older individuals with MS are less likely to be employed as compared to their middle-age counterparts (LaRocca et al.) While studies have shown some consistency with regards to relationships between certain factors, time may have an impact on these relationships. To this end, longitudinal research would be helpful.

Further delineation of disease severity and psychosocial factors will also be helpful. Although this study looked at cognitive disability as well as fatigue, in addition to overall disease severity, an understanding of the types and severity of specific physical and cognitive symptoms, particularly over time, will be helpful to assess more specific disease-related factors that influence employment outcomes. Likewise, additional psychosocial factors including SES, level of education as well as workplace variables, including the type of work one is engaged in, will also foster greater understanding within the field. For example, having an understanding of whether a person's symptoms are primarily cognitive or physical in nature will variably affect his or her perceived self-efficacy with regards to particular physical or cerebral demands of work.

As noted earlier, factors such as disclosure, volition and job satisfaction are also critical to this discussion. Whether an individual has disclosed that she or he has MS has implications

regarding accommodations requests. For future studies that explore accommodation requests or self-efficacy beliefs regarding such requests, a question that assesses whether a person has disclosed her or his diagnosis would be helpful. Moreover, the level of choice that a person has with regards to her or his current employment status is also warranted. Whether a person chooses to stay or leave work of her or his own volition may have implications with regards to self-efficacy beliefs, benefit finding as well as perceptions of disease severity. Consistent with Social Cognitive Career Theory, the issue of job satisfaction may also be considered in future research that assesses psychosocial factors that relate to employment for individuals with MS, particularly with regards to self-efficacy beliefs.

Gender differences also require further exploration. Prior research is inconsistent with regards to differences between men and women with MS. Although the samples from the current and previous studies are likely representative of the population, with significantly higher numbers of women as compared to men, the large discrepancy in numbers of men versus women within quantitative research can lead to low power and diminish potentially significant gender differences that may exist with regards to disease severity, a willingness to disclose a diagnosis of MS, self-efficacy beliefs and benefit finding. Therefore, research that involves a larger and more balanced sample of men and women might yield different results.

Conclusions

The current study is unique in that it considered both disease-related and psychosocial factors that may influence employment outcomes for individuals with MS. While the results emphasized the significance of disease-related variables, they also reinforced the lack of understanding that exists with regards to how psychosocial factors interact with each other as well as with the disease-specific factors, particularly over time. Counseling psychologists and

other mental health professionals working with individuals with MS are advised to introduce and revisit these factors in order to effectively serve the needs of their clients confronting decisions regarding employment. The limited scope and analysis within this study may serve as a starting point for continued research in this area in order to gain further understanding of individuals' experience in order to more effectively anticipate and serve the needs of people with MS.

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APPENDIX A

Demographic Questionnaire

BENEFIT FINDING, CAREER SELF-EFFICACY AND EMPLOYMENT OUTCOMES FOR PEOPLE LIVING WITH MULTIPLE SCLEROSIS (MS)

Please provide the following information about yourself, which will help me to better understand the results of this study. This information is strictly confidential, and will only be reported in group format.

1. Are you younger than 25 or older than 50?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2. Were you diagnosed with MS more than 15 years ago?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3. Do you experience a relapsing-remitting course of MS?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
4. Were you employed at the time of your diagnosis?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5. Are you a resident of the United States?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

Note: If you checked any shaded box above, you are not eligible for this study, and so you do not need to answer the rest of the questions. Thank you for your time and interest.

-
1. What is your current employment status?
 Employed (part or full time) Average hours/week: _____
 Unemployed (including full time disability)
 2. What is your race? _____
 3. What is your ethnicity? _____
 4. What is your gender?
 Female
 Male
 Other
 5. What is your relationship status?
 Married/Partnered
 Single
 Divorced
 Separated
 Widowed
 6. What is your current age in years? _____
 7. How old were you when you were diagnosed with MS? _____

APPENDIX B

Revised Stress Related Growth Scale (SRGS-R; Armeli, Gunthert & Cohen, 2001)

To what extent has each of the following changed as a result of having MS?

1	2	3	4	5	6	7
Greatly decreased	Moderately decreased	Slightly decreased	Neither increased nor decreased	Slightly increased	Moderately increased	Greatly increased

1. My belief in how strong I am.
2. Acceptance of others.
3. Respect for others' feelings and beliefs.
4. Treating others nicely.
5. My satisfaction with life.
6. Looking at things in a positive way.
7. Faith in God.
8. Taking responsibility for what I do.
9. Not taking things for granted.
10. Trust in God.
11. Ability to make my own decisions.
12. Feeling that I have something of value to teach others about life.
13. Understanding of how God allows things to happen.
14. Appreciation of the strength of others who have had a difficult life.
15. Not freaking out when a bad thing happens.
16. Thinking about the consequences of my actions.
17. Not getting angry about things.
18. Being optimistic.
19. Approaching life calmly.
20. Being myself and not what others want me to be.
21. Accepting myself as less than perfect.
22. Taking life seriously.
23. Working through problems and not just giving up.
24. Confidence in myself.
25. Not taking my physical health for granted.
26. Listening more carefully when others talk to me.
27. Reaching out to help others.
28. Openness to new information and ideas.
29. Communicating more honestly with others.
30. Ability to deal with uncertainty.
31. Feeling that it's OK to ask others for help.
32. Not letting little things upset me.
33. Standing up for my personal rights.
34. Understanding that there are many people who care about me.

35. My understanding that there is a reason for everything.
36. My sense of belonging.
37. Feeling as if I am part of a community.
38. My belief in a supreme being.
39. Ability to deal with hassles.
40. The meaning in my life.
41. The meaningfulness of a prior relationship with another person.
42. Ability to express my feelings.
43. Feeling as if I have a lot to offer other people.

APPENDIX C

Multiple Sclerosis Self Efficacy Scale

(MSSE; Schwartz, Coulthard-Morris, Zeng, & Retzlaff, 1996)

Regardless of whether you are currently employed, how certain are you that you are able to perform the following tasks?

10	20	30	40	50	60	70	80	90	100
Very uncertain				Moderately certain					Very certain

FUNCTION: As of now, how certain are you that you can:

1. Walk 100 feet on flat ground?
2. Walk 10 steps downstairs?
3. Take good care of your home or yard?
4. Get dressed or undressed without assistance?
5. Get in and out of the passenger side of the car without assistance from another person and without physical aids?
6. Speak clearly to express your needs or ideas?
7. Write clearly so that others can read what you wrote?
8. Take a bath or shower without assistance from someone else?
9. Go on a trip that keeps you away from home for the whole day?

CONTROL:

1. How certain are you that you can control your fatigue?
2. How certain are you that you can regulate your activity so as to be active without aggravating your MS?
3. As compared to other people with MS like yours, how certain are you that you can manage your MS symptoms during your daily activities?
4. How certain are you that you can manage your MS so that you can do the things you enjoy?
5. How certain are you that you can deal with the frustration of MS?
6. How certain are you that you can deal with the uncertainty of MS?
7. How certain are you that you can decrease your fatigue quite a bit?
8. How certain are you that you can continue most of your daily activities?
9. How certain are you that you can keep your MS symptoms from interfering with your time spent with friends or family?

APPENDIX D

Career Self Efficacy Scale (CSES; Roessler & Rumrill, 1994)

Regardless of whether you are currently employed, how certain are you that you are able to perform the following tasks?

1	2	3	4	5	6	7	8	9	10
Not sure									Very sure

1. Identifying your employment accommodation needs.
2. Requesting that your employer review your on-the-job accommodation needs.
3. Discussing your needs with your employer in a face-to-face meeting.
4. Negotiating with your employer in implementing reasonable accommodations.
5. Evaluating the effectiveness of an on-the-job accommodation.
6. Keeping your employer informed about your ongoing accommodation needs.
7. Participating in all aspects of the accommodation request process.

APPENDIX E

Guy's Neurological Disability Scale (GNDS; Sharrack & Hughes, 1999; Fraser & McGurl, 2007)

The scale is designed to assess disability in patients with multiple sclerosis. It has 12 separate categories.

with questions that are directed to assess disability in the previous **one month**.

1. Cognitive disability:

1. Do you have any problems with your memory or your ability to concentrate and work things out?
yes ___ no ___
2. Do your family or friends think that you have such a problem?
yes ___ no ___
3. If 'yes' to either Question 1 or 2:
Do you need help from other people for planning your normal daily affairs, handling money or making decisions?
yes ___ no ___
4. Are you having someone help you with this survey?
yes ___ no ___
5. If yes to Question 4: (to the helper)
Is this person oriented to time, place and person?
Yes, fully ___ yes, partially ___ no ___

2. Mood disability:

1. Have you been feeling anxious, irritable, depressed, or had any mood swings during the last month?
yes ___ no ___
2. Are you taking any medications for such problems?
yes ___ no ___
3. If 'yes' Question 1:
Has the problem affected your ability to do any of your usual daily activities such as work, housework,
or normal social activity with family and friends?
yes ___ no ___
4. If 'yes' to Question 3:
Has this problem been severe enough to prevent you from doing *all* your usual activities?
yes ___ no ___
5. If you have been feeling anxious, irritable or depressed, have you been admitted to the hospital during the last month?
yes ___ no ___

3. Visual disability:

1. Do you have any problems with your vision that can't be corrected with regular glasses?
yes ___ no ___
2. If 'yes' to Question 1:

Can you read ordinary newspaper print (with regular glasses, if worn, but not magnifying lenses)?

yes ___ no ___

3. If 'no' to Question 2:

Can you read large newspaper print?

yes ___ no ___

4. If 'no' to Question 3:

Can you count your fingers if you hold your hand out in front of you?

yes ___ no ___

5. If 'no' to Question 4:

Can you see your hand if you move it in front of you?

yes ___ no ___

4. Speech and communication disability:

1. Do you have any problems with your speech?

yes ___ no ___

2. If 'yes' to Question 1:

Do you have to repeat yourself when speaking to your family or close friends?

yes ___ no ___

3. Do you have to repeat yourself when speaking to strangers?

yes ___ no ___

4. Do you need to use sign language, or the help of your caregiver to make people understand you?

yes ___ no ___

5. If 'yes' to Question 4:

Are you able to communicate effectively by using sign language or the help of your caregivers?

yes ___ no ___

5. Swallowing disability:

1. Do you have to be careful when swallowing solids or fluids?

yes ___ no ___

2. If 'yes' to Question 1:

Do you have to be careful when swallowing with most meals?

yes ___ no ___

3. If 'yes' to Question 1:

Do you need a special diet such as soft or liquidated food to help with your swallowing?

yes ___ no ___

4. If 'yes' to Question 1:

Do you choke with most meals?

yes ___ no ___

5. If 'yes' to Question 1:

Do you have a feeding tube (nasogastric or gastrostomy tube)?

yes ___ no ___

6. Upper limb disability:

1. Do you have any problems with your hands or arms?
yes ___ no ___
2. If 'yes' to Question 1:
Do you have any difficulty in doing any of your zips or buttons?
yes ___ no ___
3. If 'yes' to Question 2:
Are you able to do all of your zips and buttons without help?
yes ___ no ___
4. Do you have any difficulty in tying a bow in laces or strings?
yes ___ no ___
5. If 'yes' to Question 4:
Are you able to tie a bow in laces or strings without help?
yes ___ no ___
6. Do you have any difficulty washing and brushing your hair?
yes ___ no ___
7. If 'yes' to Question 6:
Are you able to wash and brush your hair without help?
yes ___ no ___
8. Do you have any difficulty feeding yourself?
yes ___ no ___
9. If 'yes' to Question 8:
Are you able to feed yourself without help?
yes ___ no ___
10. If unable to do any of the functions listed:
Can you use your hands or arms for any other function?
yes ___ no ___

7. Lower limb disability:

1. Do you have any problems with your walking?
yes ___ no ___
2. If 'yes' to Question 1:
Do you use a walking aid?
yes ___ no ___
3. If 'yes' to Question 2:
How do you usually get around outdoors?
without aid ___
or with one cane or crutch or holding on to someone's arm ___
or with two canes or crutches or one cane or crutch and holding on to someone's
arm ___
or with a wheelchair ___
4. How do you usually get around indoors?
without aid ___
or with one cane or crutch or holding on to someone's arm ___
or with two canes or crutches or one cane or crutch and holding on to someone's
arm ___
or with a wheelchair ___

5. If you use a wheelchair:
Can you stand and walk a few steps with help?
yes ___ no ___

8. Bladder disability

1. Do you have any problems with your bladder?
yes ___ no ___
2. Are you taking any medications for such problems?
yes ___ no ___
3. If 'yes' to Question 1:
If you are having any problem with your bladder, do you have to rush to the toilet,
go frequently, or have difficulty in starting to pass urine?
yes ___ no ___
4. Have you had a problem controlling your urine in the last month?
yes ___ no ___
5. If 'yes' to Question 4:
Have you had a problem controlling your urine in the last week?
yes ___ no ___
6. If 'yes' to Question 5:
Have you had a problem controlling your urine every day?
yes ___ no ___
7. Do you use a catheter to empty your bladder?
yes ___ no ___
8. Do you need a permanent catheter in the bladder, or (for men only) do you use a
condom catheter to collect your urine?
yes ___ no ___

9. Bowel disability:

1. Do you have any problems with your bowel movements?
yes ___ no ___
2. Are you on any medicines for such problems?
yes ___ no ___
3. If 'yes' to Question 1:
Do you suffer with constipation?
yes ___ no ___
4. If 'yes' to Question 3:
Do you need to take any laxatives or use suppositories for this?
yes ___ no ___
5. Do you usually use enemas?
yes ___ no ___
6. Do you usually evacuate your stools manually?
yes ___ no ___
7. Do you have to rush to the toilet to open your bowels?
yes ___ no ___
8. Have you had bowel accidents in the last week?
yes ___ no ___
9. If 'yes' to Question 8:
Have you had bowel accidents every week?
yes ___ no ___

10. Sexual disabilities:

1. The next set of questions relates to sexual function. Do you mind if I ask you about this?
yes ___ no ___ not applicable (Celibate) ___
2. If you agree:
Do you have any problems in relation to your sexual function?
yes ___ no ___
3. If 'yes' to Question 2:
Do you suffer with lack of sexual interest?
yes ___ no ___
4. Do you have any problems satisfying yourself or your sexual partner?
yes ___ no ___
5. Is your sexual function affected by any physical problem such as altered genital sensation, pain, or spasms?
yes ___ no ___
6. Do you have any problems with:
(for men): erection/ejaculation?
(for women): vaginal lubrication/orgasm?
yes ___ no ___
7. If physical or sexual problems are present:
Do any of these difficulties totally prevent your sexual activities?
yes ___ no ___

11. Fatigue:

1. Have you been feeling tired or getting tired easily during the last month?
yes ___ no ___
2. If 'yes' to Question 1:
Have you been feeling tired most days?
yes ___ no ___
3. Has this tiredness affected your ability to do any of your usual activities such as work, housework, or normal social activity with family and friends?
yes ___ no ___
4. If 'yes' to Question 3:
Has this tiredness been severe enough to prevent you from doing *all* of your usual activities?
yes ___ no ___
5. If 'yes' to Question 4:
Has the tiredness been severe enough to prevent you from doing all physical activities?
yes ___ no ___

12. Other disabilities:

1. Do you have other problems due to MS such as pain, spasms, or dizziness which have not been mentioned so far?
yes ___ no ___
2. Are you taking any medicines for such problems?

- yes ___ no ___
3. If 'yes' to Question 1 or 2:
Please name your worst problem:
4. Has this problem affected your ability to do any of your usual daily activities?
yes ___ no ___
5. Has this problem been severe enough to prevent you from doing all your usual daily activities?
yes ___ no ___
6. Have you been admitted to hospital for treatment of this problem?
yes ___ no ___

APPENDIX F

Informed Consent

I am a student in the Counseling Psychology Ph.D. Program at Seton Hall University and I am inviting you to participate in a research study investigating the emotional and physical factors that may have an impact on an individual's employment status, following a diagnosis of Multiple Sclerosis (MS).

Data for this study will be collected from approximately March, 2012 through February, 2013 and will require a maximum time commitment of 30 minutes from each participant.

Participants are asked to provide their consent to the terms of this study by clicking the "I Consent" box at the end of this page. If a person does not wish to participate in this study, she or he should click the "I do not wish to participate" box at the end of this page, at which point she or he will automatically exit the survey. Individuals who consent to participate will be directed to a demographic questionnaire that serves to provide background information and to confirm that the participant meets the requirements to be included in the study. Upon completion of the demographic questionnaire and verification of eligibility, participants will complete the following assessments: the Revised Stress Related Growth Scale that was designed to measure positive or negative changes in a person's life, following a diagnosis of MS; the Multiple Sclerosis Self-Efficacy Scale, designed to measure a person's belief in her or his ability to perform specific tasks of daily life; the Career Self-Efficacy Scale, designed to measure a person's belief in her or his ability to perform specific tasks related to requesting necessary accommodations at work; and the American version of Guy's Neurological Disability Scale, designed to measure the extent of a person's MS-related disabilities.

Participation is voluntary and subjects may decline to participate or withdraw at any time without penalty. Participants may also choose not to answer any question.

The identity of each participant will remain anonymous. Each participant will be issued an identification number for the coding and analysis of data. All the data from questionnaires and assessment will be transferred to a USB memory key and will be stored in a locked cabinet maintained by the principal investigator.

Clicking "I CONSENT" below indicates that you have read and understood the information above and consent to participate in this study.

I Consent
 I do not wish to participate