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I am submitting herewith a dissertation written by Erin Marie O'Mara entitled "The Double-Edged Sword of Self-Enhancement: A Longitudinal Examination of the Effects of Self-Enhancement on Psychological and Physical Well-Being among Individuals with Multiple Sclerosis." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

_____
Lowell Gaertner, Major Professor

We have read this dissertation
and recommend its acceptance:

_____
James K. McNulty

_____
Michael Olson

_____
Russel Zaretski

Accepted for the Council

_____
Carolyn R. Hodges
Vice Provost and Dean of the Graduate School

The Double-Edged Sword of Self-Enhancement: A Longitudinal Examination of the Effects of Self-Enhancement on Psychological and Physical Well-Being among Individuals with Multiple Sclerosis

A Dissertation
Presented for
the Doctor of Philosophy
Degree
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Erin Marie O'Mara
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DEDICATION

To my mother

Josephine Barbati

And my sister

Nicole O'Mara

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ABSTRACT

The present study prospectively examines factors that affect whether self-enhancement exerts favorable or unfavorable effects on both psychological and physical well-being in a context that is less controllable than other contexts in which self-enhancement has been examined (e.g., academic performance), an at risk population of Multiple Sclerosis (MS) patients. In particular, the present study (a) examines whether self-enhancement differentially predicts psychological and physical well-being when self-enhancement is related or unrelated to the well-being outcomes, and (b) whether self-enhancement interacts with severity of circumstances (i.e., course of MS) to predict psychological and physical well-being, as suggested by O'Mara, McNulty, & Karney (2011). In addition to the baseline assessment, participants completed measures of self-enhancement (outcome-related and outcome-unrelated), and psychological and physical well-being every 30 days for 90 days, for a total of four assessments. The pattern of findings suggests that in less controllable contexts, self-enhancement is a doubled-edged sword. Outcome-related self-enhancement was trending towards a positive, cross-sectionally association with physical well-being, and a measure of prior outcome-unrelated self-enhancement (collectivistic tactical self-enhancement) was positively associated with subsequent physical well-being *only* for individuals with less severe MS. Further, prior outcome-related self-enhancement was associated with better subsequent psychological well-being but worse subsequent physical well-being, and although prior collectivistic tactical self-enhancement is associated with favorable subsequent physical well-being for individuals with less severe MS, it is also associated unfavorable psychological well-being regardless of MS severity. The discussion addresses the contributions of the present study to the literature, strengths and limitations of the present study, and directions for future research.

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CHAPTER I: INTRODUCTION

Individuals are motivated to see themselves positively (Baumeister, 1982; Greenwald, 1980; Sedikides & Strube, 1997). In an effort to satisfy the pervasive motivation for positive self-regard (i.e., self-enhancement motivation), individuals engage in a variety of cognitive and behavioral processes that yield a favorable self-image. But are the consequences of this motivation invariably favorable? Early psychological research suggested that self-enhancement is associated with a host of favorable consequences, however, more recent work suggests it can also be associated with unfavorable consequences. Perhaps a more important question is then not whether self-enhancement promotes favorable versus unfavorable outcomes, but rather under what circumstances does self-enhancement promote favorable or unfavorable outcomes? The current research, in particular, prospectively examines factors that affect whether self-enhancement exerts favorable or unfavorable effects on both psychological and physical well-being among an at risk population of Multiple Sclerosis patients.

When is Self-Enhancement Associated with Favorable Consequences?

The consequences of self-enhancement, particularly its functional association with psychological well-being, are intensely debated in the literature. Taylor & Brown (1988) challenged the longstanding belief that positive psychological well-being is rooted in accurate self-perceptions. Their research instead suggested that positive psychological well-being was characterized by positively biased cognitions, such as unrealistically positive self-perceptions (self-enhancement), exaggerated perceptions of control (illusion of control), and the tendency to overestimate the likelihood of experiencing positive events and underestimate the likelihood of experiencing negative events (unrealistic optimism). Colvin and colleagues (1994; 1995) challenged this position, claiming that the evidence for a positive association between positively

biased cognitions and psychological well-being was unsubstantiated. Colvin and Block (1994) argued that Taylor & Brown's (1988) logic for a positive association between illusory cognitions and mental health was based on indirect evidence, such as the presence of illusory cognitions among people who were not depressed or had high self-esteem and the absence of such illusory cognitions among individuals who are depressed or have low self-esteem (Colvin & Block, 1994) . A subsequent empirical examination of Colvin and Block's (1994) argument found evidence to suggest that self-enhancement is associated with unfavorable psychological consequences; however, across two studies, the outcomes assessed were not psychological well-being measures, per say, but rather measures of interpersonal consequences (Colvin, Block & Funder, 1995). For example, males who self-enhanced were subsequently rated by others as being guileful, deceitful, distrustful of others, having a brittle ego-system, and women were rated by others as evaluating the self as physically attractive, thin-skinned, and self-defensive; whereas individuals who did not self-enhance were described as interpersonally charming (Colvin et al., 1995). Of course being *perceived* by others as having a brittle ego-system and being defensive might imply that self-enhancement is detrimental to well-being. Such data, however, do not address whether enhancement effects well-being and, instead, indicate only that explicit self-enhancement increases the likelihood of being seen as arrogant.

The debate over whether self-enhancement is associated with favorable consequences illuminates an important distinction to make between two types of consequences of self-enhancement: intrapsychic and interpersonal. Intrapsychic processes, or those that occur within a person, include consequences associated with psychological adjustment and well-being, physiological reactivity, and performance motivation. Interpersonal processes, or those that

relate to other persons, include how others perceive an individual in the context of minimal group interactions, friendships, and romantic relationships.

A robust literature finds self-enhancement to be positively associated with intrapsychic consequences. Consistent with Taylor & Brown's (1988) theory, self-enhancement is positively associated with self-esteem and ego-resiliency (Paulhus, Harms, Bruce, & Lysy, 2003), psychological adjustment (Bonanno, Field, Kovacevic, & Kaltman, 2002; Taylor, Lerner, Sherman, Sage, & McDowell, 2003a), mental health (Taylor et al., 2003; Zuckerman & O'Loughlin, 2006), and less psychological distress after trauma (Gupta & Bonanno, 2010). Such favorable effects of self-enhancement on well-being have been documented cross-sectionally (Taylor et al., 2003a; Gaertner, Sedikides, & Chang, 2008), longitudinally (Bonanno et al., 2002; Zucketman & O'Loughlin, 2006), and with an experimental manipulation of self-enhancement (O'Mara, Gaertner, Sedikides, Zhou, & Liu, 2011). In addition to favorable intrapsychic consequences that pertain to psychological well-being, the favorable consequences of self-enhancement extend beyond psychological well-being to other instrapsychic processes, such as self-regulation in regard to physiological health (Gramzow, Willard, & Mendes, 2008; Taylor, Lerner, Sherman, Sage, & McDowell, 2003b) and academic performance motivation (Gramzow, Elliot, Asher, & McGregor, 2003). For example, Taylor et al. (2003b) found that individuals who self-enhanced demonstrated better physiological functioning (i.e., lower systolic blood pressure, lower heart rate, and lower physiological reactivity) in response to stress tasks. Gramzow et al. (2003) also demonstrated in two separate studies that academic grade point average (GPA) was associated with higher subsequent GPA for students who had high achievement motivation.

Despite a positive association between self-enhancement and intrapsychic outcomes, previous research suggests that self-enhancers are well adjusted but friendless. Self-enhancing

tendencies tend to be frowned upon by others: individuals who self-enhance are perceived as arrogant or narcissistic (Leary, Bednarski, Hammon, & Duncan, 1997; Sedikides et al., 2007), less agreeable over time (Paulhus, 1998), and rated as having poor social functioning (Colvin, Block, & Funder, 1995). For example, recently widowed spouses who self-enhanced were rated more negatively by observers (Bonanno et al., 2002). Similarly, among a sample of New Yorkers after the September 11th terrorist attacks, self-enhancement was negatively associated with social relations (Bonanno, Rennicke, & Dekel, 2005). These findings suggest that the favorable consequences of self-enhancement may be limited to intrapsychic outcomes.

Accordingly, much of the self-enhancement literature is concerned with the association between self-enhancement and psychological well-being, but the empirical findings are inconsistent; some research finds a positive association between self-enhancement and psychological well-being (e.g., Taylor et al., 2003a; Zuckerman & O'Loughlin, 2006) while other research finds a negative association (e.g., Bonanno et al., 2002; Robins & Beer, 2001). In an effort to reconcile these discrepant findings, researchers turned their focus to methodological inconsistencies in the assessment of self-enhancement. Kwan, John, Kenny, Bond, and Robins (2004) examined the two most common methods of assessing self-enhancement, social comparison (i.e., compare self to others of average sex and age; Festinger, 1954) and self-insight (i.e., comparing the self-ratings to other's ratings of the self; Allport, 1937), and found that social comparison is often associated with positive consequences for well-being, whereas self-insight is more often associated with negative consequences. However, Taylor et al. (2003) also examined whether the inconsistencies in the outcomes of self-enhancement can be accounted for by how self-enhancement is measured, using both social comparison and self-sight measures. Their findings suggest that both measures of self-enhancement were associated with positive subjective

and clinician-rated psychological adjustment. These findings suggest that previous inconsistencies in the association between self-enhancement and psychological well-being cannot be accounted for by methodological inconsistencies how self-enhancement is assessed.

Recent work, however, identifies several factors that moderate the association between self-enhancement and well-being. These factors include whether the consequences of self-enhancement are examined over the short-term or long-term, whether the context is personally controllable or uncontrollable, the severity of circumstances, and whether self-enhancement is related or unrelated to a particular outcome. The following sections review the literature for each of these moderating factors.

Short-Term versus Long-Term Effects of Self-Enhancement

The time frame in which researchers assess the effects of self-enhancement impacts whether it will be associated with favorable or unfavorable consequences. Researchers initially proposed that self-enhancement was associated with favorable consequences in the short-term but unfavorable consequences over time (e.g., Robins & Beer, 2001). Accordingly, research finds that, in general, self-enhancement is associated with favorable consequences, intrapsychic and interpersonal, over shorter periods of time. For example, although Paulhus (1989) found that although self-enhancers were rated poorly by others over time, the initial evaluation of these participants was more positive. Similarly, Robins and Beer (2001) found that self-enhancement was initially associated with higher self-esteem and well-being; however, over the course of four years of college, self-esteem and well-being declined more rapidly for individuals who self-enhanced compared to those who did not[1]. Subsequent studies, however, find that self-

[1] Robins & Beer's (2001) operationalized self-enhancement as past academic performance (SAT scores), which yields inconsistent associations with self-enhancement (see Willard & Gramzow, 2009).

enhancement is also associated with positive psychological well-being over time. For example, Zuckerman & O'Loughlin (2006) found that over the course of 7-months, self-enhancement was positively associated with psychological well-being. These inconsistent findings suggest that although the period of time in which the effects of self-enhancement are assessed is an important factor in understanding the consequences of self-enhancement, it is not *the* determining factor of when self-enhancement will lead to favorable and unfavorable consequences.

Self-Enhancement in Controllable versus Uncontrollable Contexts

Much of the early self-enhancement research focused on its role in improving the lives of individuals with potentially life threatening illnesses. Taylor (1983) found that for women coping with breast cancer, self-enhancement was a crucial component to their adjustment process. In fact, most women found that they were coping as well as or better than other women with the same disease. Subsequent work confirms that for individuals experiencing such uncontrollable circumstances, self-enhancement is adaptive. For example, women with advanced stage breast cancer who held exaggerated perceptions of control and unrealistic optimism regarding their illness reported better mental health than women who lacked this sense of control and optimism (Taylor, Kemeny, Reed, Bower, & Gruenwald, 2000). Similarly, HIV-positive males who accurately appraised their declining health status as such experienced a more rapid health decline than those who maintained an unrealistically optimistic health appraisal (Reed, Kemeny, Taylor, & Visscher, 1999; Reed, Kemeny, Taylor, Wang, & Visscher, 1994). In each context, individuals were diagnosed with an illness that would likely lead to death earlier than s/he would otherwise experience, with little to no control over improving his or her health.

In the context of more controllable circumstances, however, the findings regarding whether self-enhancement is associated with favorable or unfavorable consequences are

inconsistent. Although a host of favorable intrapsychic consequences are associated with self-enhancement in such contexts, previous research suggests self-enhancement is also associated with unfavorable intrapsychic consequences. The distinction between controllable and uncontrollable circumstances is directed at the extent to which a person can influence change in their circumstances. For individuals with uncontrollable circumstances, such as a terminal illness, construing one's circumstances more positively is unlikely to be harmful because few things (if any) the individual does can change their circumstances. However, for more controllable circumstances, appraising one's circumstances as more positively could be harmful to the extent that it prevents individuals from taking the necessary steps to improve their circumstances. Previous research suggests that positively biased cognitions, such as unrealistic optimism, are associated with both promotion and avoidant behavior (e.g., Radcliff & Klein, 2002). For example, students who exaggerate their current GPA and are promotion focused show improvements in their subsequent GPA (Gramzow & Willard, 2006; 2008). Importantly, O'Mara, McNulty, and Karney (2011) found that minimizing one's stress was associated with greater future stress for people who had more severe circumstances, suggesting that positively biased appraisals of that stress can actually lead to problems getting worse over time,

Severity of Circumstances

Previous research suggests that the consequences of self-enhancement vary as a function of the severity of circumstances. For example, for marital partners who have a relationship characterized by relatively mild problems, making positive attributes about their partner's negative behavior is associated with higher levels of marital satisfaction over time; however, the same attributions are associated with lower levels of marital satisfaction for relationships characterized by more severe problems (McNulty, O'Mara, & Karney, 2008). Similarly,

forgiveness is associated with greater marital satisfaction in relationships characterized by few negative behaviors, but is associated with lower marital satisfaction in relationships characterized by frequent negative behaviors (McNulty, 2008), and forgiving partners who fail to make amends for negative behavior is associated with less self-respect (Luchies, Finkel, McNulty, & Kumashiro, 2010. Further, evaluating one's stress as more positive than that stress is viewed by a more objective evaluator is associated with more positive mental health only for individuals experiencing relatively low levels of stress. Individuals with more severe stress have poorer mental health four-years later (O'Mara et al., 2011).

Outcome-Related versus Outcome-Unrelated Self-Enhancement

To enhance the self, individuals commonly engage in a variety of positively biased cognitions. For example, individuals see and evaluate the self as superior to others (Alicke, 1985), recall positive self-relevant information with greater ease than negative information (Sedikides & Green, 2000), attribute success to internal attributes and failure to external sources (Campbell & Sedikides, 1999), view one's own positive behaviors as more unique and negative behaviors more common (Suls, Wan, & Sanders, 1988), believe others are more likely to have negative experiences than the self (Weinstein, 1980), and hold more favorable attitudes towards objects that are self-related (e.g., name initials and birthdays numbers; Bosson, Swann, & Pennebaker, 2000), and importantly, see the self as better-than-average on personally important attributes (Sedikides, Gaertner, & Toguchi, 2003). Such biases tend to not be directed at a specific outcome, but rather on more broad aspects of the self. Individuals commonly evaluate the self more positively regarding broader traits and self-relevant information because such traits are more malleable in how they are defined, and more difficult to refute (Dunning, Meyerowitz, & Holzberg, 1989).

Although self-enhancement is commonly examined in the context of broader self-relevant dimensions, recent work has examined the predictive nature of self-enhancing tendencies that are directed at specific outcomes. Recent work suggests that evaluating the self more positively on a specific dimension is associated with future improvements in that domain. For example, Gramzow & colleagues consistently find that exaggerating one's academic grade point average (GPA) is associated with an increase in future GPA, particularly for students who are promotion oriented as this motivation helps students propel the self towards their specific (academic) goal (Gramzow & Willard, 2006; 2008; Willard & Gramzow, 2009). Further, men with AIDS who have an unrealistic acceptance of one's own death (i.e., are less likely to acknowledge their death) lived an average of 9-months longer than men with AIDS who were more realistic in the acceptance of their death (i.e., more likely to acknowledge their death; Reed, et al., 1994). Similarly, research that examines self-perceptions in the context of aging suggest that self-enhancement directed at dimensions associated with aging, such as positive perceptions of aging and health status, influence survival. Levy, Slade, Kunkel, & Kasl (2003) assessed self-perceptions in regard to aging among older adults (e.g., *things keep getting worse as I get older*) and found that more positive evaluations were associated with survival. That is, at baseline, adults who had more positive perceptions of their aging lived longer than adults with less positive perceptions. Further, this effect was partially mediated by the will to live; adults with more positive perceptions of aging had a greater will to live, and subsequently lived longer. Idler & Kasl (1991) examined a sample of adults 65 years of age and older over the course of four years and, controlling for health status, positive health self-perceptions lived longer than those who had poorer health self-perceptions.

Existing theory regarding global versus specific psychological processes suggests that self-

enhancement may be particularly predictive of outcomes related to the domain that the self-enhancement targets. For example, exaggerating academic performance is less likely not associated with well-being, but is predictive of subsequent academic performance (e.g., Gramzow & Willard, 2008). Similarly, although global and specific self-esteem were once described as interchangeable in regard to their predictive effectiveness (see Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995), each are predictive of different types of outcomes. Self-esteem that relies on the promotion of more global traits is likely to be associated with a broader range of outcomes, such as active, competent, extroverted, given the greater number of events can be used to confirm that trait (Hampson, Oliver, & Goldberg, 1986). Individuals can maintain high levels of positive global self-esteem and not feel positively about all the specific dimensions that make up their self-concept. Research finds that whereas global self-esteem (i.e., an individual's generalized attitude towards the self) is more consistently associated with psychological well-being, specific self-esteem (i.e., attitude about the self in regard to a specific domain or dimension) is association with behavior (Rosenberg et al., 1995). Although general attitudes are generally poor predictors of behavior (e.g., LaPiere, 1934), "a person's attitude has a consistently strong relation with his or her behavior when it is directed at the same target and when it involves the same action." (p. 912, Ajzen & Fichbein, 1977).

Additionally, the role of global and specific evaluations in predicting relationship satisfaction has important implications for self-enhancement. Partners tend to make more positive evaluations of their relationship on items assessing the global aspects, but less positively on specific aspects of their marriage (McNulty & Karney, 2001; McNulty, O'Mara, & Karney, 2008; Neff & Karney, 2005). For partners who have a relatively positive relationship, evaluating their relationship globally positive but specifically negative (or less positive than they do

globally) is associated with greater marital satisfaction over time, whereas the same pattern of global and specific evaluation is associated with poorer marital satisfaction over time for partners who have negative relationships (McNulty et al., 2008). Further, wives who feel globally positive about their marriage and are accurate about the specific components of their relationship demonstrate more supportive behaviors, have greater feelings of control in the relationship, and are less likely to divorce over the first four years of marriage (Neff & Karney, 2005). These findings suggest that differences in the specificity of self-enhancement for particular outcomes can differentially predict well-being.

The present study longitudinally examines the association between self-enhancement and psychological and physical well-being in a context that is less controllable than other contexts in which self-enhancement has been examined (e.g., grade point average): a sample of individuals with multiple sclerosis. Additionally, the present study examines whether any association between self-enhancement and well-being vary by type of self-enhancement (outcome-related self-enhancement and outcome-unrelated self-enhancement) and by disease severity.

What is Multiple Sclerosis?

Multiple sclerosis (MS) is an autoimmune disorder in which the body attacks myelin, damaging the nerve fibers and forming scar tissue lesions (i.e., sclerosis), most commonly found on the brain and spinal cord. Multiple Sclerosis affects 1 in about 750 individuals, most commonly women, and is usually diagnosed between the ages of 20 and 40 (but has also been diagnosed in children and teenagers; Chwastiak et al., 2002). Individuals with MS are diagnosed with one of the four courses of MS: Relapse-Remitting (experience of clear worsening of neurologic functioning, or a "flare-up", followed by partial or complete recovery), Primary-Progressive (slow worsening neurologic functioning with no relapses or remissions), Secondary-

Progressive (initial period of relapse-remitting MS followed by more steadily declines in neurologic function with or without flare-ups), and Progressive-Relapsing (steadily worsening of neurologic functioning from diagnosis with clear flare-ups). Each course of MS varies in severity and prevalence; relapse-remitting MS is the most common, but least severe form of MS, primary progressive is the next severe course and the second most common, followed by secondary progressive, and finally progressive relapsing. All four courses share a common set of physical and psychological symptoms (Crayton, Heyman, & Rossman, 2004). The most common physical symptoms of MS are fatigue, numbness of the face, body, or extremities, coordination and balance problems, bladder dysfunction, vision problems, dizziness, sexual dysfunction, spasticity, and pain. Psychological symptoms include emotional changes, depression, and poor cognitive functioning.

Individuals with MS are an ideal population to examine the functional association between self-enhancement and physical and psychological well-being for several reasons. First, individuals with MS are at high risk for poor psychological well-being. Depression is described as a primary symptom of MS. The prevalence of depression among individuals with MS ranges from 22.8% to 54% (Patton, Metz, & Reimer, 2000; Sadovnick et al., 1996; Whitlock & Siskind, 1980; Dalos, Rabins, Brooks, & O'Donnell, 1983), and is more prevalent among individuals with MS than both the general population (13%; Kessler, et al., 1996; Kessler, Nelson, McGonagle, Liu, Swartz, & Blazer, 2003) and other chronically ill populations (21.3% among HIV-positive males; Lyketsos et al., 1993). Second, depending on the course, individuals with MS experience distinct impairments and/or flare-ups, making changes in psychological and/or physical well-being less subjective. For example, in order to be diagnosed with MS, individuals must report two independent physical symptoms within a one-month period. These symptoms are most

commonly pain, fatigue, or tingling and numbness of the body. Subsequent physical impairments can occur intermittently or get progressively more frequent and severe. Third, because individuals are diagnosed with a specific course of MS, they are given an objective rating of disease severity. Objective ratings of event severity have been demonstrated to moderate the effects of self-enhancement on psychological well-being (O'Mara et al., 2011), and the course rating can be used to test whether the consequences of self-enhancement vary by disease severity. Finally, MS provides a specific context to which self-enhancement can be targeted. If self-enhancement is associated with more favorable well-being when related to that outcome, self-enhancing cognitions towards MS should be predictive of subsequent physical and psychological well-being for this population.

Goals of the Present Study

The present study sought to extend existing self-enhancement research by empirically addressing the following questions. First, is the association between self-enhancement (outcome-related and outcome-unrelated) and psychological and physical well-being moderated by severity of circumstances, or disease severity, cross-sectionally for individuals with MS? Previous work finds that in the context of uncontrollable circumstances, self-enhancement is associated with positive psychological well-being; however, less is known about the association with physical well-being. To examine this question, participants with each course of MS were assessed at four time points, 30 days apart. At each time point they completed measures of outcome-related self-enhancement and outcome-unrelated self-enhancement, and multiple measures of psychological and physical well-being. The extent to which each type of self-enhancement and disease severity (i.e., course) concurrently predicts well-being is examined at each time point. Second, does disease severity interact with outcome-related and outcome-unrelated self-enhancement to

predict psychological well-being and physical well-being for individuals with MS over time? Although severity was found to interact with positively biased cognitions in predicting depressive symptoms in controllable circumstances over time (O'Mara et al., 2011), the moderating effects of severity for subsequent well-being have not been empirically examined in the context of uncontrollable circumstances. Although the findings from O'Mara et al. (2011) are suggestive, it is uncertain whether such findings will persist in a context less controllable than the context examined in O'Mara et al. (2011). Given that for individuals with MS, more severe MS is the least controllable, self-enhancement may be most beneficial for individuals who are experiencing severe circumstances, or have more severe courses of MS given that they are unable to improve their circumstances and such findings would be consistent with O'Mara et al. (2011). To examine this question, the extent to which each type of self-enhancement at a previous time point interacts with course to predict future well-being is assessed. That is, does previous self-enhancement interact with disease severity to predict well-being 30 days later?

CHAPTER II: METHOD

Participants

Recruitment. To recruit individuals with all four courses of multiple sclerosis (MS) I created a screener survey that asked participants to provide their course of MS, contact email, and demographic information. The study was advertised on the National Multiple Sclerosis Society's research website page (http://www.nationalmssociety.org/research/researchers-need-you/surveys/index.aspx), and on Facebook. I created a Facebook page advertising the study and posted a link to it on the Facebook pages of national and local branches of the National Multiple Sclerosis Society pages. All study announcements provided a link to the screener survey, a general overview of the study and informed participants that if selected, he or she will be asked to complete an initial assessment (Time 1) and follow-up assessments 30 (Time 2), 60 (Time 3), and 90 days (Time 4) from the beginning of the study. Further, the announcement indicated that that, if selected, participants will earn $10 for completing in the first assessment (Time 1) and entered in a raffle to win one of five $50 gift cards for each follow-up assessment completed, and after the completion of the study he or she would receive more information about the purpose and goals of the study. The announcement also indicated that in order to participate, interested participants must be over 18 years old, have Internet access, and speak and read English fluently. The screener survey consisted of the following questions: (a) What course of Multiple Sclerosis were you diagnosed with? (b) Do you take medicine as a treatment for MS (and if yes, which medicine)? (c) How old are you? (d) What is your sex? (e) What is your email address (to be used for study communication purposes), and (f) Do you agree to participate in the study if selected? Finally, participants were told they would be notified by email whether they were selected to participate in the study.

A total of 500 people began the screener survey, and 320[2] (65.6%) participants completed the screener survey [291, 88.7%, female; 246 (77%) with Relapse-Remitting MS, 26 (8%) with Primary Progressive MS, 30 (9%) with Secondary-Progressive MS, and 18 (6%) with Progressive-Relapsing MS]. Of those who completed the screener survey, one female respondent did not agree to participate in the study, making the final sample of potential participants 319 (290, 88.7% female). Consistent with the prevalence of relapse remittent MS that occurs in the population, the majority of participants who completed the screener survey were diagnosed with relapse remittent MS (course 1); about 85% of individuals with MS have relapse remitting MS (Compston & Coles, 2008). Frequencies of each course of MS by respondent sex are presented in Table 1.

Study Participants. All respondents with progressive relapsing MS (course 4; n = 18) and secondary progressive MS (course 3; n = 30) were selected to participate in the study. Twenty-five of the twenty-six respondents with primary progressive MS (course 2) were selected to participate; one respondent did not provide a valid email address in order to be contacted. To have a sample that equally represents of each course of MS as possible, a total of 30 respondents with primary progressive MS were randomly selected from the 246 participants who indicated that they had primary progressive MS in the screener. Given the disproportionate amount of females versus males with relapse remitting MS in the screener survey sample, it was important to ensure that males with relapse remitting MS were selected to participate. The percentage of males with course 2-4 of MS in the present sample ranged from 10-30%, therefore the sample of

[2] If a participant selected "other" when selecting their course of MS, he or she was then asked to describe why they have not received a course diagnosis. Respondents who selected "other" as their course of MS were not selected to participate in the study. In order to test the study predictions, all participants must have been diagnosed with a specific course of MS.

respondents with primary progressive MS was divided by sex, and 30% of the male responders were selected to participate (n = 6) and 24 females randomly selected to participate.

A total of 103 participants (82 female) were selected to participate in the study (see Table 1). Selected participants were sent an email notifying them that they had been selected for the study and reminded of the study's time frame and payment system. Participants not selected for the study were sent an email explaining the random selection process by which participants were selected for the study. The average age of participants selected for the study was 44.9 (males = 40.81, females = 45.98) and age ranged from 19-75 (males = 27-61, females = 19-75). Seventy-five participants (72.82%) reported taking medication for the treatment of MS. Participants were asked to indicate their address at the end of the Time 1 assessment (to send the payment for particiation). Of participants who reached this point of the survey (n = 64), eleven participants live outside of the United States (Australia, n = 1; Canada, n = 2; England, n = 1; Germany, n = 2; Saudi Arabia, n = 1; South Africa, n = 2; Taiwan, n = 1).

Procedure

Participants were emailed the link to the study and instructions the day before each assessment. Participants were reminded that s/he should complete the study on the day indicated in the email (Time 1 = November 11th, Time 2 = December 11th, Time 3 = January 11th, and Time 4, February 11th), and were told how to log in to the study. Participants used the email address provided during the screener survey as their unique ID and log-in identification to access the survey. Using participants' email addressed provided each of them with an easy to remember, unique ID that would be used to link each participant's data for the analyses.

After logging-in to the study, participants were first asked to provide informed consent. If participants did not agree to participate in the study s/he was directed to the end of the study.

Next, participants completed the study questionnaires. First, participants completed a measure of Outcome-Unrelated self-enhancement (*Tactical Self-Enhancement Questionnaire*, Sedikides, Gaertner, & Toguchi, 2003) and a single item measure of outcome-related self-enhancement (see Measures section for description), in a counter balanced order. Second, participants completed measures of psychological well-being, (*Beck Depression Inventory*, Beck & Steer, 1987; *Hospital Anxiety and Depression Scale*, Zigmond & Snaith, 1982; *Perceived Stress Scale*, Cohen, Kamarck, & Mermelstein, 1983; *Satisfaction with Life*, Pavot, & Diener, 1993; *Subjective Well-Being*, Sevastos, Smith, & Cordery, 1992; *Positive and Negative Affect Scale,* Watson & Clark, 1994; *the Life Satisfaction Survey,* Chubon, 1990; and the *role limitations due to emotional problems, emotional well-being, cognitive function, health distress,* and *overall quality of life* subscales of the *Multiple Sclerosis Quality of Life Instrument*, Vickery, Hays, Harooni, Myers, & Ellison, 1995), and physical well-being (*Multiple Sclerosis-Related Symptom Checklist*, Gulick, 1989; *Activities of Daily Living Self-Care Checklist for Persons with Multiple Sclerosis* and *the Activities of Daily Living Help From Others Form* (both by Gulick, 1987); and the *physical health, role limitations due to physical problems, pain, energy, health perceptions, social function, change in health, sexual function,* and *satisfaction with sexual function* subscales of the *Multiple Sclerosis Quality of Life Instrument*, Vickery, Hays, Harooni, Myers, & Ellison, 1995). Participants also answered questions about their health-related behavior and demographic information.

After completing the questionnaires at Time 1, 2, and 3, participants were reminded of the next assessment date before the study ended. After Time 4, participants were reminded that the researcher would be contacting each participant by email shortly after the conclusion of the study to tell the participants more about the goals of the study (the debriefing). Further,

participants were reminded that the findings from the study would be emailed to each participant when available.

Measures

Each hypothesis relevant measure is described below. Complete scales are included in Appendix A.

Outcome-Unrelated Self-Enhancement. The measure of outcome-unrelated self-enhancement used in the present study asked participants to make self-evaluations regarding 16-traits, eight of which were individualistic (e.g., *independent; free; leader*) and eight of which were collectivistic (e.g., *loyal; modest; self-sacrificing*). The original instructions (Gaertner et al., 2008) were modified to reflect the present sample's peer group, individuals with multiple sclerosis. Participants were instructed to "rate yourself on the following traits relative to the average person of similar age and sex with multiple sclerosis" using a 6-point scale (1 = Definitely less; 6 = Definitely more). Previous research suggests that individuals self-enhance on personally important dimensions, representing a tactical or strategic nature of self-enhancement (Gaertner et al., 2008; Sedikides et al., 2003). In order to examine the tactical nature of self-enhancement, participants also rate the personal importance of the same 16-items on a 6-point scale (1 = very unimportant; 6 very important).

Outcome-related Self-Enhancement. In order to assess the extent to which participant were self-enhancing on a dimension related to the well-being outcomes (given that impairments in psychological well-being and physical well-being are symptoms of MS), participants read the following description:

> People vary in how good a patient they are. A good Multiple Sclerosis patient engages in behaviors that promote health and wellness and prevent declines in health and

wellbeing. For example, a good patient takes their medicine as prescribed, attends all doctors appointments as scheduled, engages in exercise and stretching activities, maintains a balanced diet low in fat and high in fiber, does not smoke cigarettes, and speaks with their physician about how much alcohol is appropriate to drink and how often.

Participants were then asked to rate how good of a MS patient he or she was "Relative to the average person of similar age and sex with multiple sclerosis" on a 6-point scale (1 = very bad; 6 = very good).

Quality of Life. The Multiple Sclerosis Quality of Life inventory (Vickrey et al., 1995) is a 54-items scale which make up 12 subscales (physical function, role limitation-physical, role limitations-emotional, pain, emotional well-being, energy, health perceptions, social function, cognitive function, health distress, overall quality of life, and sexual function), and two single item measures (sexual satisfaction and change in health). The physical health composite score consists of eight subscales (physical function, health perceptions, energy, role limitations-physical, pain, sexual function, social function, and health distress) and a mental health composite score consists of five subscales (health distress, overall quality of life, emotional well-being, role limitations-emotional, and cognitive function) with differential weighting for each subscale within a composite score. This measure is recommended for use in survey research by the National Multiple Sclerosis Society.

A second measure of quality of life was also included in the present study. The Life Satisfaction Survey (Chubon, 1990) is used to assess quality of life among populations experiencing chronic physical illnesses. In this 20-item scale participants are asked to indicate the extent to which they agree with each item (e.g., *I feel constantly under pressure; I don't have*

any fun or relaxation) on a 7-point scale (1 = Agree very strongly; 7 = Disagree very strongly). Higher scores indicate greater quality of life.

Physical Symptoms. The Multiple Sclerosis Symptom Related Checklist (Gulick, 1989) was used to assess the extent to which participants experience 22 symptoms related to multiple sclerosis (e.g., *arm weakness; pain; double vision*) over the last 30-days. Participants rated each item on a 5-point scale (0 = never; 5 = always).

Depressive Symptoms. Depressive symptoms were assessed using the revised version of the Beck Depression Inventory (Beck & Steer, 1987). Each of the 21-items in the scale presents participants with four statements and participants are asked to select the statement that best describes them. The items are scored 0-3, making the range of possible scores 0-63. Although originally designed to assess depression among psychiatrically diagnosable populations, the BDI has been validated among non-psychiatric populations (Steer, Beck, & Garrison, 1986).

Anxiety and Depressive Symptoms. Anxiety and depressive symptoms were assessed using the Hospital Anxiety and Depression Scale (Zigmond & Snaith,1982). This measure consists of 14-items asking participants to respond to each item (e.g., *I feel tense or "wound up;" I get sort of a frightened feeling as if something awful is about to happen*) using a 4-point scale with anchors that adjust for each item.

Stress. The amount of stress experienced by each participant was assessed using the Perceived Stress Scale (Cohen et al., 1983), a 10-item scale that asks participants to indicate how often he or she has experienced each item (e.g., *felt nervous and stressed? Been upset because of something that happened unexpectedly?*) in the past month. Participants respond on a 5-point scale (1 = never; 5 = always). Higher scores indicate greater perceived stress.

Well-Being. Using the Subjective Well-Being Scale (Sevastos et al.,1992), participants indicated the extent to which he or she felt each of 12 emotions, six positive and six negative (e.g., *tense; miserable; cheerful; enthusiastic*). Participants responded on a 6-point scale (1 = never; 6 = always). Higher scores indicate greater well-being.

Satisfaction with Life. Satisfaction with life was assessed with Pavot & Diener's (1993) 5-item scale. Participants are asked to "think back to the past month, please indicate your agreement with each item…" (e.g., *In most ways, my life is close to my ideal; I am satisfied with my life*) on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Higher scores indicate greater satisfaction with life.

Mood. Current affect was measured with the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The original PANAS includes 20- items (10 positive, 10 negative) and respondents are asked to rate on a 5-point scale (1= very slightly or not at all; 5= extremely) the extent to which they feel each item at the present moment.

Independence and Help From Others. The extent to which participants are able to function independently and need help regarding activities of daily living was assessed using the Activities of Daily Living Self-Care Checklist for Persons with Multiple Sclerosis and the Help From Others Form, respectively (both Gulick, 1987). The Self-Care Checklist consists of 15 items and asks participants to indicate how frequently he or she performs the behavior based on a typical day (e.g., *Cut your food; Write Clearly*) on a 6-point scale (0 = never; 5 = always). The Help from Others scale consists of 11-items that ask the participant to indicate how much help from others he or she receive in performing each activity based on a typical day. Each item appeared in the Self-Care Checklist and participant use the same 6-point scale to respond.

CHAPTER III: RESULTS

Operationalizing Measures

Disease Severity. Disease severity was operationalized as the course of MS that a participant was diagnosed with by their medical doctor. Participants were asked to indicate their diagnosed course in the initial screener survey. Participants were also asked to indicate their diagnosed course at Time 1 and Time 2 of the study. Twenty-six participants provided inconsistent reports of their diagnosed course between the screener, Time 1, and Time 2. Each participant who provided inconsistent information was contacted by email, told that the researcher needed to clarify an inconsistent response, and asked to indicate the course they were diagnosed with by their doctor and whether their doctor changed their diagnosed course during the study. Eighteen participants replied to the email, clarified their doctor-diagnosed course of MS, and explained why they provided inconsistent responses. Eight participants never replied to the email. For these participants, the course indicated in the screener survey was used as their course for analyses.

In the present set of analyses, course of MS is treated like a continuous variable. Although when diagnosed with MS doctors provide patients with a particular course of MS, this diagnosis is not static. For example, secondary progressive MS is characterized by a steady increase in disability after initially being diagnosed with relapse remitting MS (Rovaris, Confavreux, Furlan, Kappos, Comi, & Filippi, 2006). Multiple sclerosis is described as degenerative, with the disease evolving over several decades; however, individuals get progressively worse regardless of course, but at different rates (Compston & Coles, 2008). Finally, the trajectory of severity of MS is linear; although each course of MS consists of symptoms that vary in severity, in general, relapse remitting MS is less severe than primary

progressive, which is less severe than secondary progressive, with progressive relapsing being the most severe course of MS. These findings suggest that treating course like a categorical variable is not appropriate and instead it should be treated as a continuous variable.

Creating the Outcome-Unrelated Self-Enhancement Measure. The outcome-unrelated self-enhancement measure examines the extent to which individuals self-enhance on traits they value as personally important, each of which is unrelated to MS. In order to compute the associated between self-enhancement and importance, self-enhancement ratings were regressed onto importance ratings using SAS Proc Reg. This produced an overall tactical self-enhancement association score that indicates the extent to which participants self-enhance on important traits. The regression analysis was repeated to create a separate association score for each the individualistic and collectivistic subscales. Past research (e.g., Sedikides et al., 2003; Gaertner et al., 2008) finds cultural differences in tactical self-enhancement for collectivistic and individualistic traits, with Westerners demonstrating greater tactical self-enhancement for individualistic traits and Easterners demonstrating greater tactical self-enhancement for collectivistic traits.

It is not possible to test for cultural differences in tactical self-enhancement given that the present sample is almost entirely from Western countries. However, similar to previous research, the present findings suggest a difference in tactical self-enhancement for individualistic and collectivistic traits with the tactical self-enhancement association being stronger among the collectivistic traits at each time point (see Table 2). One explanation for a stronger tactical self-enhancement score on the collectivistic subscale could be due to the traits participants were asked to evaluate. The individualistic subscale consists of items related to independent functioning (e.g., independent, free), and the present sample is experiencing a chronic illness that

often compromises their ability to live independently. With such traits, participants may be confronted with accurate information about their functioning that limits the extent to which they evaluate the self positively. Alternatively, participants may diminish the importance of traits on which s/he is unable to evaluate the self more positively than others. Collectivistic traits, however, are focused on interpersonal and harmonious functioning (e.g., loyal, modest) and are less likely to be confronted with accurate information about illness-related functioning that limits the extent to an individual views that trait more characteristic of the self than of others, and participants may be less likely to under-evaluate the importance of such traits.

Further, across the four assessment times many participants (N = 80) provided no variability in their ratings of trait importance for either the individualistic (n = 30) or collectivistic (n = 50) subscales. That is, some participants provided the same rating of importance for each of the eight items in a subscale. When this happened, a tactical self-enhancement score was automatically zero because an association could not be created with a constant variable. However, when examined as one overall scale, there would be variability as long as the importance scores for one subscale were different from the other subscale. For example, if individualistic traits were each given an importance score of 5, the association between self-enhancement and importance would be zero because the importance rating is a constant. But, as long as the importance ratings for collectivistic traits include a rating other than 5, then a tactical self-enhancement score for the overall scale items could be computed, though it would be based on the variability of the collectivistic ratings. Likewise, if the traits for the individualistic subscale were given the same importance score, and the collectivistic subscale items were given the same importance score, but those scores were different from each other, the association score for each subscale would be zero, but when the subscales were combined a score

would be computed. This association may be misleading though because a subscale could differentially impact an overall tactical self-enhancement score. Therefore, in order to understand any differences in psychological or physical well-being predicted by tactical self-enhancement, the individualistic and collectivistic subscales are used as independent predictors.

Factor Analysis of Dependent Variables. A factor analysis was performed to test whether one overall measure of psychological well-being and one overall measure of physical well-being could be formed at each time point. First, the correlations among the nine measures that assessed psychological well-being at a given time point (*Beck Depression Inventory*, Beck & Steer, 1987; *Hospital Anxiety and Depression Scale*, Zigmond & Snaith, 1982; *Perceived Stress Scale*, Cohen, Kamarck, & Mermelstein, 1983; *Satisfaction with Life*, Pavot, & Diener, 1993; *Subjective Well-Being*, Sevastos, Smith, & Cordery, 1992; *Positive and Negative Affect Scale,* Watson & Clark, 1994; *the Life Satisfaction Survey,* Chubon, 1990; and the psychological well-being composite score of the *Multiple Sclerosis Quality of Life Instrument*, Vickery, Hays, Harooni, Myers, & Ellison, 1995) and the correlations among the four measures that assessed physical well-being at a given time point (*Multiple Sclerosis-Related Symptom Checklist*, Gulick, 1989; *Activities of Daily Living Self-Care Checklist for Persons with Multiple Sclerosis* and *the Activities of Daily Living Help From Others Form*, both by Gulick, 1988; and the physical well-being composite score of the *Multiple Sclerosis Quality of Life Instrument*, Vickery, Hays, Harooni, Myers, & Ellison, 1995) were examined. The correlations among each set of measures was inspected and contained correlations greater than .30, suggesting that perhaps a single measure of each type of well-being would be more reliable. To test this, a factor analysis was performed for each type of well-being at each time. Notably, a confirmatory factor analysis was

unable to be performed for the psychological well-being and physical well-being due to the small sample size at each time of assessment.

Psychological well-being. The nine psychological well-being measures were subjected to principal components analysis (PCA) using SAS PROC FACTOR at each time of assessment. Prior to performing each PCA the suitability of the data for factor analysis at each time point was assessed. At each assessment, the Kaiser-Meyer-Oklin values were each greater than there recommended value of .6 (Kaiser, 1970; 1974), and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix of psychological well-being measures at each time. Each PCA consistently revealed the presence of 1 component at each time point. The values generated for the tests of suitability for factor analysis, the eigenvalues, and the percent of variance explained by each eigenvalue can be found in Table 3. Given that only 1 component was present at each time point, the data could not be rotated. The factor loadings for each scale at each time point are greater than .3 and presented in Table 4.

Each scale included in the single index of psychological well-being was standardized across time (in order to retain any between-time differences) and averaged together to create a composite psychological well-being score for each time of assessment.

Physical well-being. The four physical well-being measures were subjected to principal components analysis (PCA) using SAS PROC FACTOR at each time of assessment. Prior to performing each PCA the suitability of the data for factor analysis at each time point was assessed. At each assessment, the Kaiser-Meyer-Oklin values were each greater than there recommended value of .6 (Kaiser, 1970; 1974), and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix of

psychological well-being measures at each time. One exception is at Time 4; the Kaiser-Meyer-Oklin value was lower than .4, however the data satisfied each of the other criteria for PCA suitability, and thus the PCA was performed. Each PCA consistently revealed the presence of 1 component at each time point. The values generated for the tests of suitability for factor analysis, the eigenvalues, and the percent of variance explained by each eigenvalue are presented in Table 3. Given that only 1 component was present at each time point, the data could not be rotated. With the exception of one measure at Time 4, all the factor loadings for each scale at each time point are greater than .3 and are presented in Table 4. The results of these analyses support the use of a single index of physical well-being at each time point.

Each scale included in the single index of physical well-being was standardized across time (in order to retain any between-time differences) and averaged together to create a composite physical well-being score.

Attrition

At each time of assessment, the questionnaire was emailed to all 103 individuals invited to participate in the study, allowing for individuals who did not participate in the initial assessment, or who skipped an assessment to participate in a subsequent assessment. Table 1 provides the number of male and female participants who began and completed the study at each time point, by their course of MS. Of the 103 individuals invited to participate in the study, 68% began the study and provided usable data points, however for the measures used in the present study, 63% of the those invited provided usable data (i.e., the predictor and outcome variables). Seven participants only provided data at Time 1. At Time 2, 59% of originally invited participants provided usable data. However, four participants only provided usable data at Time 2, and five participants did not return after Time 2. At Time 3, 45% of originally invited

participants provided usable data. Seven participants missed Time 3, and one participant missed Time 1 and Time 3. At Time 4, 43% of the originally invited participants provided usable data. However, two participants only provided any data for Time 4.

Did participants differentially drop out of the study based on their prior responses? In order to examine whether differential attrition occurred, that is, whether participants' prior well- was different for participants who did versus did not drop out of the study, a 3-lag multi-level pattern-mixture model was used where prior psychological and physical well-being was predicted by whether participants provided data at the next time point. As suggested by Little (1993;1995) and illustrated by Hedeker and Gibbons (1997) the pattern-mixture approach to examining attrition is useful for data that is missing at random (i.e., dependent on observed data, such as model covariates, or predictor variables, and previous responses to dependent variables), which is often the case with missing data that is related to the observed dependent variable (Hedeker & Gibbons, 1997).

The first step of pattern-mixture modeling is to categorize participants into patterns based on their responses at each assessment. Participants were categorized into one of three patterns based on the data provided at each time of assessment. Pattern 1 consisted of participants who provided data at every assessment, allowing them to be included in each lag of analysis. Pattern 2 consisted of participants who provided data either at a single time point or at non-consecutive time points, preventing them from being included in any lag of analysis. Pattern 3 consisted of participants who inconsistently provided data, allowing them to be included in at least one lag of analysis but not all lags of analysis. The number of participants in each pattern trended towards being significantly different, χ^2 (2, N = 73) = 4.63, p = .09. Next, I regressed well-being at time t-1 (either psychological or physical) on a factorial crossing of pattern and self-enhancement at

time *t*-1 (outcome-related or unrelated), and controlled the other form of well-being not being assessed in the given analysis (i.e., physical or psychological) at time *t*-1, age, lag, and sex. Given the small sample of men included in the study, sex was controlled for but not included as an interactive predictor in any of the analyses. For all analyses, Proc Mixed in SAS was used with an unstructured variance-covariance matrix to control the within-subject nature of the participants' responses over time and between-within degrees of freedom were used (all effects were consistent when using Kenward-Rogers degrees of freedom). All predictor variables were grand mean centered.

Regarding psychological well-being, participants who dropped out of the study did not vary significantly from those who remained in the study on their previous assessment of psychological well-being. However, previous physical well-being of participants who dropped out of the study did differ from those who did not drop out of the study. In general, participants who provided inconsistent data (pattern 3) reported better physical well-being than participants who were included in the lagged analyses (pattern 1) and not included in the lagged analyses (pattern 2). When examining previous outcome-related self-enhancement as a potential moderator, there was a significant pattern main effect, $F(2, 66) = 5.49$, $p = .006$, and it was not qualified by an interaction with outcome-related self-enhancement. Participants who were in pattern 3 had significantly higher previous physical health ($M = .39$, $SE = .13$) than participants who were in pattern 1 ($M = -.12$, $SE = .12$), $t(66) = -2.92$, $p = .005$, and pattern 2 ($M = -.24$, $SE = .19$), $t(66) = -2.69$, $p = .009$, and previous physical health for participants in pattern 1 and 2 did not differ. When examining previous individualistic tactical self-enhancement as a moderator, there was a significant main effect for pattern, $F(2, 66) = 4.68$, $p = .01$, such that participants in pattern 3 reported significantly better previous physical well-being ($M = .36$, $SE = .13$) than

participants in pattern 1 (M = -.11, SE = .12), t(66) = -2.75, p = .008, and pattern 2 (M = -.18, SE = .19), t(66) = -2.38, p = .02, and previous physical health for participants in pattern 1 and 2 did not differ. Finally, when examining previous collectivistic tactical self-enhancement as a moderator, there was a significant main effect for pattern, F(2, 66) = 4.67, p = .01, such that participants in pattern 3 reported significantly better previous physical well-being (M = .37, SE = .13) than participants in pattern 1 (M = -.10, SE = .12), t(66) = -2.74, p = .008, and pattern 2 (M = -.19, SE = .20), t(66) = -2.37, p = .02, and previous physical well-being for participants in pattern 1 and 2 did not differ.

Further, I examined whether the trajectory of physical health varied as a function of pattern and time (with time mean-centered) and the effects are consistent with the previous analysis. The main effect for pattern was significant, F(2, 70) = 4.43, p = .02, such that participants in pattern 3 reported higher physical well-being (M = .41, SE = .14), than participants in pattern 1 (M = -.15, SE = .12), t(70) = -2.97, p = .004, and participants in pattern 2 (M = .01, SE = .18), t(70) = -1.80, p = .004, and physical well-being for participants in pattern 1 and 2 did not differ. This effect was not qualified by an interaction with time, which suggests that the trajectory of physical well-being did not vary across time for participants in different patterns of responding. Taken together, these findings suggest that participants who inconsistently participated in the study (pattern 3) had better physical well-being at their previous assessment than participants who were included in each lag of analysis (pattern 1) and participants who were not included in any lag of analysis (pattern 2).

Descriptive Statistics and Correlations

The means, standard deviations, and scale reliabilities by time are presented in Table 2 (as previously noted) for predictor variables, Table 5 for psychological well-being outcome

measures, and Table 6 for physical well-being outcome measures. Each scale had good reliability at each time point.

Table 7 provides the correlations between predictor variables. As expected, the outcome-related self-enhancement was highly, significantly correlated with itself at each time point. To examine the correlations among the outcome-unrelated self-enhancement measure, it was broken down into its two subscales: individualistic and collectivistic. Each subscale was not consistently correlated with itself at each time point; for both scales the Time 4 assessments were not significantly correlated with previous assessments. Further, the individualistic and collectivistic subscales were not correlated at each time point.

The correlations among dependent measures were examined in two ways. The first way examined the correlations between each dependent measure at each time point (i.e., each scale that is included in the overall psychological well-being measure and the overall physical well-being measure). The pattern of correlations it is somewhat complex given the number of dependent measures included in the analyses. First, it was important to examine whether each dependent measure was internally consistent across time by examining the how correlated each dependent measure is with itself at each time point. In general, the dependent measures were internally consistent across time, with correlations ranging from $r = .70 – .95$ across each scale. Next, the extent to which the dependent measures were correlated with each other at the same point of time was examined. Within any one time, the correlations for dependent measures ranged from $r = .04 –.95$ (i.e., depression at Time 1 correlated with physical well-being at Time 1). The lowest correlations tended to be between measures that correspond to psychological well-being and measures that correspond to physical well-being. Finally, the extent to which each dependent measure was correlated with each other dependent measure at other points in time

(i.e., depression at Time 1 with physical well-being at Time 4) was examined. These correlations also encompass a large range, $r = .01 – .88$, with correlations tending to become non-significant the greater the time distance between the assessment.

The second way of examining the correlations was to correlate each overall measure of psychological well-being and overall physical well-being at each time point. The correlations of the overall measure of psychological well-being and physical well-being at each time point is presented in Table 8. Psychological well-being and physical well-being was each highly correlated with itself at each time point. The inter-correlations between psychological well-being and physical well-being at each time point were less correlated, with correlation coefficients ranging from $r = .03 – .45$.

Cross-Sectional Analyses: Does Disease Severity Moderate the Association between Self-Enhancement and Well-Being at the Same Time Point?

I first examined whether well-being (either psychological or physical) is cross-sectionally associated with self-enhancement (either outcome-related or unrelated), and whether this association varies by disease severity (i.e., course of MS). I regressed well-being (psychological or physical) on a factorial crossing of self-enhancement (outcome-related or unrelated), course of MS, and time and controlled for the any additional effects of age, sex, and other form of well-being not being assessed in the given analysis (i.e., psychological or physical), using multilevel modeling analysis (Raudenbush & Bryk, 2001). For all analyses, Proc Mixed in SAS was used with an unstructured variance-covariance matrix to control the within-subject nature of the participants' responses over time and between-within degrees of freedom were used (all effects were consistent when using Kenward-Rogers degrees of freedom). All predictor variables were grand mean centered.

Additionally, the effects reported below are consistent, based on the direction of effects and *p*- values, when examined by simultaneously controlling for the other forms of self-enhancement in the same model (i.e., examining the interactive effects of outcome-related self-enhancement and course on health while controlling for the interactive effects of outcome-unrelated self-enhancement and course).

Psychological Well-Being.

Outcome-related self-enhancement. Outcome-related self-enhancement was unassociated with psychological well-being cross-sectionally, B = .02, *SE* = .02, *F*(1, 69) = .1.32, *p* = .25. This effect was not qualified by an outcome-related self-enhancement by course interaction, B = .00, *SE* = .02, *F*(1, 69) = .05, *p* = . 82, or an outcome-related self-enhancement by time interaction, B = .00, *SE* = .01, *F*(1, 69) = .13, *p* = . 72. These findings suggest that outcome-related self-enhancement is not associated with psychological well-being at the same time point, and that the association does not vary by course or time.

Outcome-unrelated self-enhancement. The individualistic tactical self-enhancement main effect was trending towards significance, suggesting a positive cross-sectional association between individualistic tactical self-enhancement and psychological well-being, B = .07, *SE* = .04, *F*(1, 69) = 2.86, *p* = .10, η^2 = .20. This effect was not qualified by an individualistic tactical self-enhancement by course interaction, B = -.04, *SE* = .04, *F*(1, 69) = 1.20, *p* = .82, or an individualistic tactical self-enhancement by time interaction, B = -.03, *SE* = .03, *F*(1, 69) = .69, *p* = .41. These findings suggest that individualistic tactical self-enhancement may be cross-sectionally associated with psychological well-being but that the association does not vary by course or time.

A collectivistic tactical self-enhancement main effect indicated that collectivistic tactical self-enhancement was positively associated with well-being cross-sectionally, B = .09, *SE* = .03, $F(1, 69) = 9.11$, $p < .01$, $\eta^2 = .34$. This effect was not qualified by a collectivistic tactical self-enhancement by course interaction, B = .01, *SE* = .03, $F(1, 69) = .18$, $p = .67$. However, the collectivistic tactical self-enhancement by time interaction was trending towards significance, B = -.05, *SE* = .03, $F(1, 69) = 2.50$, $p = .12$, $\eta^2 = .19$. I decomposed the interaction to examine the simple slopes of collectivistic tactical self-enhancement on psychological well-being at each time. As depicted in Figure 1, the slope of collectivistic tactical self-enhancement was significant at Time 1, B = .16, *SE* = .06, $F(1, 69) = 7.31$, $p < .01$, $\eta^2 = .31$, Time 2, B = .12, *SE* = .04, $F(1, 69) = 9.53$, $p < .01$, $\eta^2 = .35$, and Time 3, B = .07, *SE* = .03, $F(1, 69) = 5.43$, $p < .05$, $\eta^2 = .27$, but not at Time 4, B = .03, *SE* = .05, $F(1, 69) = .29$, $p = .59$. At Time 1, 2, and 3, collectivistic tactical self-enhancement was associated with more positive psychological well-being.

Physical Well-Being.

Outcome-related self-enhancement. The outcome-related self-enhancement main effect was trending towards significance, suggesting a positive cross-sectional association between outcome-related self-enhancement and physical well-being, B = .03, *SE* = .02, $F(1, 69) = 2.45$, $p = .12$, $\eta^2 = .19$, such that outcome-related self-enhancement is cross-sectionally associated with better physical health. The association between course of MS and physical health was also significant, B = -.28, *SE* = .08, $F(1, 69) = 12.94$, $p < .001$, $\eta^2 = .40$, such that participants with less severe courses of MS have better physical well-being. However, both main effects were qualified by an outcome-related self-enhancement by course interaction that was trending towards significance, B = -.03, *SE* = .02, $F(1, 69) = 2.27$, $p = .14$, $\eta^2 = .18$, suggesting that the positive association between outcome-related self-enhancement and physical well-being

may vary by course of MS but this association does not vary by time of assessment. I decomposed the interaction to examine the simple slopes of outcome-related self-enhancement on physical well-being for each course of MS. As depicted in Figure 2, the slope of outcome-related self-enhancement was significant for participants with course 1, B = .07, *SE* = .03, $F(1, 69) = 4.74$, $p < .05$, $\eta^2 = .25$, and course 2, B = .04, *SE* = .02, $F(1, 69) = 3.08$, $p = .08$, $\eta^2 = .21$, but not for course 3, B = .01, *SE* = .03, $F(1, 69) = .04$, $p = .85$, or course 4, B = -.03, *SE* = .05, $F(1, 69) = .35$, $p = .56$. For participants with less severe courses of MS, outcome-related self-enhancement was cross-sectionally associated with better physical well-being.

The outcome-related self-enhancement main effect was also qualified by a outcome-related self-enhancement by time interaction that was trending towards significance, B = -.02, *SE* = .01, $F(1, 69) = 2.10$, $p = .15$, $\eta^2 = .17$, suggesting that the positive association between outcome-related self-enhancement and physical well-being may vary by time of assessment. I decomposed the interaction to examine the simple slopes of outcome-related self-enhancement on physical well-being at each time. As depicted in Figure 3, the slope of outcome-related self-enhancement was significant at Time 1, B = .06, *SE* = .03, $F(1, 69) = 4.74$, $p < .05$, $\eta^2 = .25$, and at Time 2, B = .04, *SE* = .02, $F(1, 69) = 3.58$, $p = .06$, $\eta^2 = .22$, but non-significant at Time 3, B = .03, *SE* = .03, $F(1, 69) = 1.34$, $p = .25$, and Time 4, B = .01, *SE* = .03, $F(1, 69) = .14$, $p = .71$.

Outcome-unrelated self-enhancement. Neither the main effect of individualistic tactical self-enhancement nor its interaction with severity or with time was significant, all *F*'s < .30, suggesting that individualistic tactical self-enhancement is not cross-sectionally associated with physical well-being. The main effect for course was significant, B = -.28, *SE* = .08, $F(1, 69) = 12.90$, $p < .001$, $\eta^2 = .40$, such that participants with more severe courses of MS reported worse physical well-being, cross sectionally.

Neither the main effect of collectivistic tactical self-enhancement nor its interaction with severity or with time was significant, all F's < 1.30, suggesting that collectivistic tactical self-enhancement is not cross-sectionally associated with physical well-being. The main effect for course was significant, B = -.28, SE = .08, $F(1, 69) = 12.95$, $p < .001$, $\eta^2 = .40$, such that participants with more severe courses of MS reported worse physical well-being, cross sectionally.

Lagged Analyses: Does Self-Enhancement interact with Disease Severity to Predict Future Well-Being?

Next, I examined whether self-enhancement (either outcome-related or unrelated) is associated with future well-being (either psychological or physical), and whether this association varies by disease severity (i.e., course of MS). That is, does Time 1 self-enhancement predict Time 2 well-being, does Time 2 self-enhancement predict Time 3 well-being, and does Time 3 self-enhancement predict Time 4 well-being. Using a 3-lag multi-level model, I regressed well-being at time *t* (either psychological or physical) on a factorial crossing of self-enhancement at time *t*-1 (outcome-related or unrelated), and course of MS, and controlled for previous well-being at time *t*-1, the other form of well-being not being assessed in the given analysis (i.e., physical or psychological) at time *t*, age, and sex. Given the small sample of men included in the study, sex was controlled for but not included as an interactive predictor in any of the analyses. For all analyses, Proc Mixed in SAS was used with an unstructured variance-covariance matrix to control the within-subject nature of the participants' responses over time and between-within degrees of freedom were used (all effects were consistent when using Kenward-Rogers degrees of freedom). All predictor variables were grand mean centered.

Additionally, the effects reported below are consistent, based on the direction of effects and *p*- values, when simultaneously controlling for each form of self-enhancement in the same model (e.g., examining the interactive effects of outcome-related self-enhancement and course on health while controlling for the interactive effects of outcome-unrelated self-enhancement and course).

Psychological Well-Being.

Outcome-related self-enhancement. An outcome-related self-enhancement main effect indicated that previous outcome-related self-enhancement positively predicted subsequent psychological well-being, B = .05, *SE* = .02, $F(1, 52) = 6.65$, $p = .01$, $\eta^2 = .34$. This effect, however, was qualified by an interaction with course that trended towards significance, B = .02, *SE* = .01, $F(1, 52) = 3.23$, $p = .08$, $\eta^2 = .24$. I decomposed the interaction to examine the simple slopes of outcome-related self-enhancement on psychological well-being for each course of MS. As depicted in Figure 4, the slope of outcome-related self-enhancement suggests that previous self-enhancement is positively associated with future well-being for each course of MS, although only significant for course 2, B = .04, *SE* = .02, $F(1, 52) = 6.15$, $p < .05$, $\eta^2 = .11$, course 3, B = .07, *SE* = .02, $F(1, 52) = 7.49$, $p < .01$, $\eta^2 = .35$, and course 4, B = .09, *SE* = .03, $F(1, 52) = 6.66$, $p = .01$, $\eta^2 = .34$.

Outcome-unrelated self-enhancement. Neither the main effect of previous individualistic tactical self-enhancement nor its interaction with severity was significantly associated with future psychological well-being, all *F*'s < .15, suggesting that previous individualistic tactical self-enhancement is unrelated to subsequent psychological well-being.

A collectivistic tactical self-enhancement main effect indicated that previous collectivistic tactical self-enhancement negatively predicted subsequent psychological well-

being, B = -.09, *SE* = .03, *F*(1, 52) = 13.75, *p* < .001, η^2 = .46. That is, collectivistic tactical self-enhancement at a previous time point is associated with poorer subsequent psychological well-being. This effect was not qualified by an interaction with course of MS, B = -.00, *SE* = .03, *F*(1, 52) = .02, *p* = .88.

Physical Well-Being.

Outcome-related self-enhancement. An outcome-related self-enhancement main effect indicated that previous outcome-related self-enhancement negatively predicted subsequent physical well-being, B = -.06, *SE* = .02, *F*(1, 52) = 7.74, *p* < .01, η^2 = .36. That is, outcome-related self-enhancement at a previous time point is associated with poorer subsequent physical well-being. This effect was not qualified by an interaction with course, B = .01, *SE* = .02, *F*(1, 52) = .78, *p* = .38.

Outcome-unrelated self-enhancement. An individualistic tactical self-enhancement main effect indicated that previous individualistic tactical self-enhancement positively predicted subsequent physical well-being, B = .15, *SE* = .05, *F*(1, 52) = 10.58, *p* < .01, η^2 = .41. That is, individualistic tactical self-enhancement at a previous time point is associated with better subsequent physical well-being. This effect was not qualified by an interaction with course, B = .00, *SE* = .04, *F*(1, 52) = .01, *p* = .91.

Collectivistic tactical self-enhancement was not significantly associated with physical well-being, B = .01, *SE* = .03, *F*(1, 52) = .10, *p* = .76. However, the collectivistic tactical self-enhancement by course interaction trended toward significance, B = -.06, *SE* = .03, *F*(1, 52) = 3.50, *p* =.07, η^2 = .25, suggesting that the effects of prior collectivistic tactical self-enhancement on subsequent physical well-being varies by course of MS. I decomposed the interaction to examine the simple slopes of prior collectivistic tactical self-enhancement on subsequent

physical well-being for each course of MS. As depicted in Figure 5, the slope of collectivistic tactical self-enhancement suggests that previous collectivistic tactical self-enhancement is positively associated with future physical well-being for individuals with course 1 of MS, B = .08, *SE* = .04, $F(1, 52) = 3.91$, $p = .05$, $\eta^2 = .26$, but trending towards being negatively associated with subsequent physical well-being for individuals with course 4 of MS, B = -.11, *SE* = .08, $F(1, 52) = 1.80$, $p = .19$, $\eta^2 = .18$. Previous collectivistic tactical self-enhancement is not associated with subsequent physical well-being for individuals with course 2 or 3 of MS. These findings suggest that collectivistic tactical self-enhancement is associated with positive subsequent physical well-being for individuals who have the least severe course of MS but negative subsequent physical well-being for individuals with the most severe course of MS.

CHAPTER IV: DISCUSSION

Prior research suggests that, in controllable contexts, the association between self-enhancement and well-being varies as a function of circumstance severity such that self-enhancement is associated with favorable well-being in mild circumstances but unfavorable well-being in severe circumstances (O'Mara et al., 2011). The present study sought to empirically examine whether such patterns persists in a context that is less controllable than other contexts in which self-enhancement has been examined, such as having Multiple Sclerosis.

Several of the findings in the present study are consistent with previous research that examines the association between self-enhancement and well-being. Consistent with the work of Taylor and colleagues (see Taylor et al., 2000), suggesting that self-enhancement is associated with positive consequences for individuals in uncontrollable circumstances, the present findings suggest that collectivistic tactical self-enhancement is positively associated psychological well-being cross-sectionally, individualistic tactical self-enhancement is rending towards a significant positive association with psychological well-being cross-sectionally and positive subsequent physical well-being, and outcome-related self-enhancement is associated with positive subsequent psychological well-being. Consistent with the findings of O'Mara et al. (2011), which suggests that self-enhancement is most beneficial for individuals who are the least likely to be able to change their circumstances and that self-enhancement is harmful to the extent that individuals can improve his or her circumstances but do not because they have minimized their problems, the positive association between previous outcome-related self-enhancement and subsequent psychological well-being is qualified by an interaction with disease severity; outcome-related self-enhancement is associated with positive subsequent psychological well-being for individuals with more severe courses of MS. Importantly, the present study predicted

well-being from self-enhancement scores one month prior whereas O'Mara et al. (2011) was predicted mental health over the course of four years, and examined a context less controllable than that examined in O'Mara et al.

Although consistent with previous research, the present findings also suggest that self-enhancement is a double-edged sword in that it is associated with positive and negative psychological and physical well-being. Particularly, over time, previous outcome-related self-enhancement was positively associated with subsequent psychological well-being but negatively associated with subsequent physical well-being. Similarly, previous collectivistic tactical self-enhancement was negatively associated with subsequent psychological well-being but positively associated with subsequent physical well-being for individuals with less severe courses of MS. These findings illuminate the importance of examining the effects of self-enhancement, both outcome-related and outcome-unrelated, on psychological well-being and physical well-being independently and join other recent findings that suggesting that psychological processes once deemed positive are actually not invariantly positive (e.g., forgiveness; McNulty, 2008).

An additional goal of the present study was to examine the association between self-enhancement and well-being when self-enhancement is related and unrelated to the outcome. Presearch finds that when directed at a specific outcome, such as academic grade point average or longevity, self-enhancement is associated with improvements on that domain (e.g., Gramzow & Willard, 2008; Levy et al., 2003). The present study found that outcome-related and outcome-unrelated self-enhancement have independent effects on psychological well-being and physical well-being. Outcome-related self-enhancement was associated with positive subsequent psychological well-being and worse subsequent physical well-being. Individualistic tactical self-enhancement was unrelated to psychological well-being but associated with better subsequent

physical well-being. Collectivistic was associated with worse subsequent psychological well-being for individuals with less severe courses of MS and better subsequent psychological well-being for individuals with more severe courses of MS, and better subsequent physical well-being for individuals with less severe courses of MS and worse subsequent physical well-being for individuals with more severe courses of MS.

Contributions of the Present Study

The present findings offer several important contributions to the self-enhancement literature. First, the present findings join other empirical studies in suggesting that self-enhancement can have positive and negative effects on well-being. This is evidenced by a lack of consistent associations between self-enhancement and psychological well-being and physical well-being. For example, outcome-related self-enhancement is associated with positive subsequent psychological well-being, but poor subsequent physical well-being. Unlike previous empirical studies, however, the present study finds these inconsistent effects in a less controllable context; until now, a consistently positive association between self-enhancement and favorable psychological and physical well-being was found in such contexts (e.g., Bonanno et al., 2002; Reed et al., 1994; Reed et al., 1999; Taylor, 1983). The present findings are important regarding the extent to which self-enhancement is beneficial for coping with life events, such as chronic illnesses. Importantly, previous research suggests that self-enhancement may be beneficial for health in less controllable contexts because little can be done to change circumstances (Klein & Cooper, 2008; Rothbaum, Weisz, & Snyder, 1982); however, the present findings suggest that even in the context of an uncontrollable, incurable illness, such as MS, self-enhancement can be harmful as well as helpful.

Strengths and Limitations

The present findings have several strengths. First, the present study obtained multiple assessments of self-enhancement and well-being over the course of four-months. A criticism of research examining self-enhancement and subsequent well-being outcomes is that few studies examine the association over time (see Klein & Cooper, 2008). The design used in the present study made it possible to examine the association between self-enhancement and well-being at the same time point as well as subsequent time points. Second, the present study samples from a population that is at high risk for impairments in psychological well-being and physical well-being, therefore making it possible to assess the effect of self-enhancement on each of these outcomes. Third, the present study is among the few that examine the extent to which self-enhancement is associated with subsequent physical well-being. Much of the existing research that examines the association between self-enhancement and physical well-being defines physical well-being as possession of risk factors for poor future health and the extent to which individuals process health relevant information (see Klein & Cooper, 2008). Although the association between positive illusions and physical well-being has been examined among women with breast cancer and HIV-positive men (see Taylor et al., 2000), the present study is among the first to specifically examine the role of self-enhancement in predicting subsequent physical well-being among a sample of individuals experiencing a chronic but non-fatal illness. Fourth, the present study examines the role of severity in the association between self-enhancement and well-being in an uncontrollable context. The findings of the present study suggest that the severity of circumstances is indeed a moderator of the association between self-enhancement and well-being in such contexts. Fifth, a strength of the present study was the objective operationalization of problem severity. When diagnosed with MS, a medical doctor based classifies individuals into a course of MS based on the severity of the disease presentation thus

far. This course rating provides a more objective rating of an individual's illness, and one that is unrelated to the individual's self-perceptions. Given that the data reported in the study was entirely self-report, the objectivity of the course rating was important in assessing the severity of each participant's circumstances. Sixth, the longitudinal nature of the present study rules out socially desirable responding as a potential explanation for the present findings by partialling out previous outcomes in the lagged analysis. In order for social desirability to explain the present findings, social desirability would have had to change over time with the changes in the outcome variables. Finally, although the findings of the present study are correlational in nature, the direction of association is unidirectional. A limitation of previous work (e.g., O'Mara et al., 2011) is that it is uncertain whether self-enhancement is an antecedent or descendent of circumstance severity. In the present study, however, self-enhancement could not be a viable antecedent of MS.

The present findings also have several limitations. First, the sample size of the present study is small and the number of men and women is extremely unbalanced. Multiple sclerosis is more likely to afflict women than men (Kurtzke, 2000), which contributed to the small number of men in the present study, and in that regard the present sample reflects the prevalence of MS among men and women in the population. However, in order to make inferences about sex similarities or differences regarding the association between the interactive effects of self-enhancement and course on well-being, a larger number of men need to be included in future research samples. Second, the present findings are limited by evidence of differential attrition over time. Participants who did not return to the study after Time 1 and Time 2 differed from those who did return on their Time 1 and Time 2 outcome-unrelated self-enhancement score, respectively. Additionally, participants who did not return after Time 2 different from those who

did return on Time 2 physical well-being such that participants who did not return reported better physical well-being than those who remained in the study. This suggests that the findings could be based on people who were experiencing particularly poor physical well-being, limiting the internal validity of the present findings. Third, the measures of self-enhancement used in the present study do not discriminate between individuals who are biased from those who are accurate in their self-perceptions. A major concern with self-enhancement research is whether researchers are indeed tapping into a positive self-relevant cognitions and behaviors that are biased rather than just positive. The measures of self-enhancement used in the present study focused on the extent to which participants believed they were better than his or her average peer (other individuals of the same sex with the same course of MS). This better-than-average effect, or the tendency for people to evaluate himself or herself more positively than an average-peer is pervasive; it occurs for many types of judgments (e.g., Codol, 1975), and in non-college student samples (e.g., Cross, 1977). The better-than-average effect is most common among traits that are positive and controllable (Alick, 1985), which could limit the extent to which individuals evaluate themselves positively in regard to multiple sclerosis (the outcome-related self-enhancement). However, the better-than-average effect is also common among personally important dimensions (e.g., Sedikides et al., 2003), and seeing the self-positively in regard to MS is arguably a very important dimension for individuals with MS. The prevalence of the better-than-average effect, however, does not address the issue with its inability to distinguish between individuals who are biased versus accurate. The most ideal measures of positively biased self-perceptions are to compare self-ratings to actual events (see Klein & Cooper, 2008), with bias indicated by an individual's self-report deviating from actual events. Although the present study does not differentiate between individuals who are positive and individuals who are biased, the

present study is one of many that utilizes the better-than-average effect as an index of self-enhancement to predict well-being (e.g Gaertner et al., 2008; Taylor et al., 2003a; Zuckerman & O'Loughlin, 2006), providing a large base to compare the present findings against.

Directions for Future Research

The present study provides several directions for future research. First, in order to examine whether the present effects are due to biased self-perceptions or accurate self-perceptions, it is important to replicate the present study utilizing a more stringent measure of self-enhancement—outcome-related and outcome-unrelated—that uses an objective benchmark to assess the extent to which participants are being accurate versus biased. Second, in order to understand the role that the controllability of the context plays in the association between the interactive effects of self-enhancement and course on well-being, it is necessary to experimentally manipulate controllability and examine the association between self-enhancement and well-being at high and low levels of controllability. Third, although the present study used a longitudinal design, the participants were only followed for 90 days. O'Mara et al. (2011) followed participants over the course of 4 years, and perhaps a longer period of time is needed in order to better assess the interactive effects of self-enhancement and severity on well-being. Future research will benefit from examining the present population over longer periods of time. Finally, future research would benefit from examining the impact that self-enhancement has on different motivational processes related to coping and behavior. Gramzow & colleagues (e.g., Gramzow & Willard, 2008) consistently find that for individuals who are promotion focused, GPA exaggeration is associated with future academic improvements. Perhaps in the context of well-being, self-enhancement differentially impacts motivation to engage in positive-health behaviors, which subsequently impacts future well-being.

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APPENDICES

APPENDIX A: TABLES

Table 1-A.

Participants of Participants at each Assessment by Course of Multiple Sclerosis.

	Course				
	Relapse Remitting	Primary Progressive	Secondary Progressive	Progressive Relapsing	Total
Screener Survey					
Male	21	8	3	5	36
Female	225	18	27	13	283
Total	246	26	30	18	320
Time1 Selected					
Male	6	7	3	5	21
Female	24	18	27	13	82
Total	30	25	30	18	103
Time 1					
Male	4	3	3	2	12
Female	21	14 (12)	20 (18)	3 (2)	58 (53)
Total	25	17 (15)	23 (21)	5 (4)	70 (65)
Time 2					
Male	4	1	2	2 (1)	9 (8)
Female	20 (19)	12 (11)	19	4	55 (53)
Total	24	13	21	6	64 (61)
Time 3					
Male	4 (3)	1	2	1	8 (7)
Female	15	9 (8)	14 (13)	3	41 (39)
Total	19	10	16	4	49 (46)
Time 4					
Male	4 (3)	1	2	1	8 (7)
Female	13 (12)	5 (4)	18	3	39 (37)
Total	17	6	20	4	47 (44)

Note: Seven women indicated “other” as their course of MS in the screener. Participants who indicated “other” as their course of MS in the screener were asked to explain but were not selected to participate in the study; 1 woman indicated “other” at time 1 after being selected, but upon clarification indicated she indicated she had relapse remitting multiple sclerosis. Numbers

in parentheses indicate the number of participants who provided enough data to be included in the primary analyses if that number differed from the number of participants who provided any data (that may not necessarily be used for the present study).

Table 2-A.

Cronbach Alpha and Descriptive Statistics for Predictor Variables

	Time 1				Time 2				Time 3				Time 4			
	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N
Outcome-Unrelated																
Self-Enhancement- All Items	.88	4.07	.76	67	.85	4.08	.72	63	.85	4.02	.68	47	.81	4.07	.66	46
Individualistic Items	.86	3.76	.98	67	.87	3.74	1.06	63	.87	3.63	1.00	47	.86	3.57	1.02	46
Collectivistic Items	.84	4.38	.79	67	.83	4.42	.75	63	.78	4.42	.65	47	.87	4.58	.78	46
Important Ratings- All Items	.92	4.53	.87	67	.92	4.56	.90	63	.91	4.05	.76	47	.91	4.44	.87	46
Individualistic Items	.88	4.29	1.00	67	.89	4.25	1.08	63	.87	4.23	.88	47	.88	4.17	1.08	46
Collectivistic Items	.90	4.77	.91	67	.90	4.86	.91	63	.90	4.78	.83	47	.92	4.71	.96	46
[a]Tactical Self-Enhancement	--	.39	.41	67	--	.30	.39	63	--	.43	.41	47	--	.38	.47	46
Individualistic Tactical SE	--	.24	.56	67	--	.17	.52	63	--	.16	.53	47	--	.21	.49	46
Collectivistic Tactical SE	--	.43	.58	67	--	.30	.53	63	--	.41	.59	47	--	.29	.50	46
Outcome-Related																
Multiple Sclerosis SE	--	4.66	1.24	67	--	4.63	1.32	63	--	4.62	1.26	47	--	4.78	1.33	46

Note: [a] Mean scores and standard deviations association scores are based on the association created from regressing self-enhancement onto importance ratings. All other scores are raw scale means and standard deviations.

Table 3-A.

Suitability of Data for Factor Analysis, Eigenvalues of and Percent of Variance Accounted for by the Common Factor for Psychological and Physical Well-Being by Time.

	Bartlett's Test of Sphericity[a]	Kaiser-Meyer-Oklin Value	Eigenvalue	% of Variance
		Psychological Well-Being		
Time 1	571.34	.91	30.59	95.27
Time 2	583.05	.88	39.99	93.95
Time 3[b]	514.47	.91	45.40	97.18
Time 4[b]	418.18	.87	43.91	91.91
		Physical Well-Being		
Time 1	71.44	.66	2.28	56.89
Time 2	52.33	.74	2.25	56.25
Time 3[b]	76.83	.63	2.48	62.07
Time 4[b]	65.40	.46	2.21	55.29

Note: [a] $df = 36$, $p < .0001$; [b] These data were Heywood cases, likely due to the small sample at the time of assessment, and a maximum likelihood method was used with a Heywood statement in the Proc Factor procedure.

Table 4-A.

Factor Loadings from Principal Components Analysis onto the Single Common Factor of Psychological Well-Being and Physical Well-Being

	Time 1	Time 2	Time 3	Time 4
		Psychological Well-Being		
BDI	.84	.69	.90	.86
HAD	.86	.54	.93	1.00
PS	.88	.67	.95	.76
SWB	.94	.67	.96	.85
SWL	.72	1.00	.66	.52
PA	.81	.64	.84	.72
NA	.76	.40	.87	.64
LSS	.91	.74	.90	.82
MHCOMP	.83	.49	.86	.91
		Physical Well-Being		
PHCOMP	.86	.82	.85	.79
MSSRC	.68	.65	.54	.09
ADL-S	.85	.84	.93	.88
ADL-H	.60	.66	.78	.89

Note: BDI = Beck Depression Inventory; HAD = Hospital Anxiety & Depression Scale; PS. = Perceived Stress; SWB = Subjective Well-Being; SWL = Satisfaction with Life; PA = Positive Affect ; NA = Negative Affect; LSS = Life Satisfaction Survey; MHCOMP = Mental Health Composite score of the MSQOL; PHCOMP = Physical Health Composite score of the MSQOL; MSSRC = Multiple Sclerosis Symptom Related Checklist; ADL-S = Activities of Daily Living-Self Care Form; ADL-H = Activities of Daily Living- Help from others Form.

Table 5-A.

Cronbach Alpha and Descriptive Statistics for Psychological Well-Being Measures

	Time 1				Time 2				Time 3				Time 4			
	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N
Overall Psychological Well-Being[a]	*.95*	*-0.01*	*.79*	*65*	*.96*	*0.00*	*.89*	*61*	*.97*	*-0.02*	*.96*	*46*	*.95*	*0.01*	*.87*	*44*
Quality of Life-Mental Health[b]	.71	52.58	20.70	65	.71	52.48	20.92	61	.76	51.40	22.64	46	.73	54.21	21.97	44
Beck Depression Inventory	.87	1.81	.41	65	.91	1.75	.47	60	.91	1.79	.49	46	.89	1.81	.44	44
Hospital Anxiety/Depression	.87	2.18	.52	65	.92	2.18	.60	60	.92	2.18	.61	46	.91	2.19	.60	44
Perceived Stress	.87	2.96	.61	65	.89	2.93	.65	59	.91	3.02	.74	46	.90	2.83	.70	44
Subjective Well-Being	.96	3.58	1.03	65	.97	3.57	1.09	59	.96	3.52	1.12	46	.96	3.57	1.11	44
Satisfaction with Life	.88	3.13	1.14	65	.89	3.11	1.20	59	.92	3.23	1.39	46	.92	3.03	1.36	44
Positive Affect	.94	2.08	.85	65	.94	2.75	.93	59	.96	2.74	.96	46	.94	2.62	.93	44
Negative Affect	.91	4.40	1.09	65	.92	2.19	.79	59	.92	2.24	.87	46	.93	2.12	.84	44
Life Satisfaction Survey	.86	4.02	.95	65	.89	4.07	1.06	59	.90	4.01	1.15	46	.87	4.04	.99	44

Note: [a] Mean scores and standard deviations association scores are based on the association created from regressing self-enhancement onto importance ratings. All other scores are raw scale means and standard deviations. [b] The Quality of Life- Mental health scale is a composite score of subscales from the Multiple Sclerosis Quality of Life Scale that are relevant to mental health.

Table 6-A.

Cronbach Alpha and Descriptive Statistics for Physical Well-Being Measures

	Time 1				Time 2				Time 3				Time 4			
	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N	α	M	*SD*	N
Overall Physical Well-Being[a]	*.74*	*0.04*	*.76*	*65*	*.73*	*0.06*	*.75*	*61*	*.78*	*-0.04*	*.80*	*46*	*.66*	*-0.09*	*.71*	*44*
Quality of Life- Physical Health[b]	.78	42.04	16.64	65	.76	43.23	16.24	61	.79	42.13	17.06	46	.68	39.36	14.10	44
MS Symptom Related Checklist	.92	3.47	1.07	65	.91	3.44	1.04	61	.91	3.46	1.00	46	.85	3.67	.88	44
Activities of Daily Life- Self	.91	4.40	1.09	65	.90	4.50	1.01	59	.91	4.30	1.21	46	.85	4.31	.99	43
Activities of Daily Life- Help	.93	2.03	1.14	65	.93	2.16	1.28	59	.93	2.23	1.29	46	.94	2.18	1.29	43

Note: [a] Mean scores and standard deviations association scores are based on the association created from regressing self-enhancement onto importance ratings. All other scores are raw scale means and standard deviations. [b] The Quality of Life- Physical health scale is a composite score of subscales from the Multiple Sclerosis Quality of Life Scale that are relevant to physical health.

Table 7-A.

Bivariate Correlations among Predictor Variables at each Time.

	MSENH				IND-TAC				COL-TAC			
	1	2	3	4	1	2	3	4	1	2	3	4
MSENH												
Time 1	--	.61** **	.78** **	.51** *	.01	-.11	-.10	-.06	-.07	-.19	-.03	.04
Time 2		--	.79** **	.66** **	-.11	-.08	-.24	-.12	-.27	-.29	-.26†	-.08
Time 3			--	.68** **	.04	.04	-.21	-.23	-.12	-.36	-.13	.17
Time 4				--	.02	.12	-.06	.01	-.19	-.54**	-.12	.08
IND-TAC												
Time 1					--	.23†	.34*	.17	.31**	.15	.06	-.12
Time 2						--	.27†	.02	.18	.13	.39**	-.02
Time 3							--	.49**	.12	.23	.07	-.31†
Time 4								--	-.22	-.12	-.04	.14
COL-TAC												
Time 1									--	.45** *	.38**	-.13
Time 2										--	.35	-.13
Time 3											--	.09
Time 4												--

Note: † = $p < .10$, * = $p < .05$. ** = $p < .01$, *** = $p < .001$, **** = $p < .0001$. MSENH = Outcome-related self-enhancement; IND-TAC = Individualistic subscale of the Outcome-Unrelated tactical self-enhancement scale; COL-TAC = Collectivistic subscale of the Outcome-Unrelated tactical self-enhancement scale.

Table 8-A.

Bivariate Correlations among Dependent Variables.

	Psychological Well-Being				Physical Well-Being			
	1	2	3	4	1	2	3	4
Psychological Well-being								
Time 1	--	.91***	.91***	.91***	.30*	.35**	.31*	.03
Time 2		--	.94***	.93***	.33*	.42***	.45**	.15
Time 3			--	.96***	.31*	.44**	.44**	.11
Time 4				--	.21	.31†	.28	.18
Physical Well-Being								
Time 1					--	.91***	.92***	.93***
Time 2						--	.91***	.87***
Time 3							--	.93***
Time 4								--

Note: $^{\dagger} = p < .10$, $^{*} = p < .05$. $^{**} = p < .01$, $^{***} = p < .001$, $^{****} = p < .0001$.

APPENDIX B: FIGURES

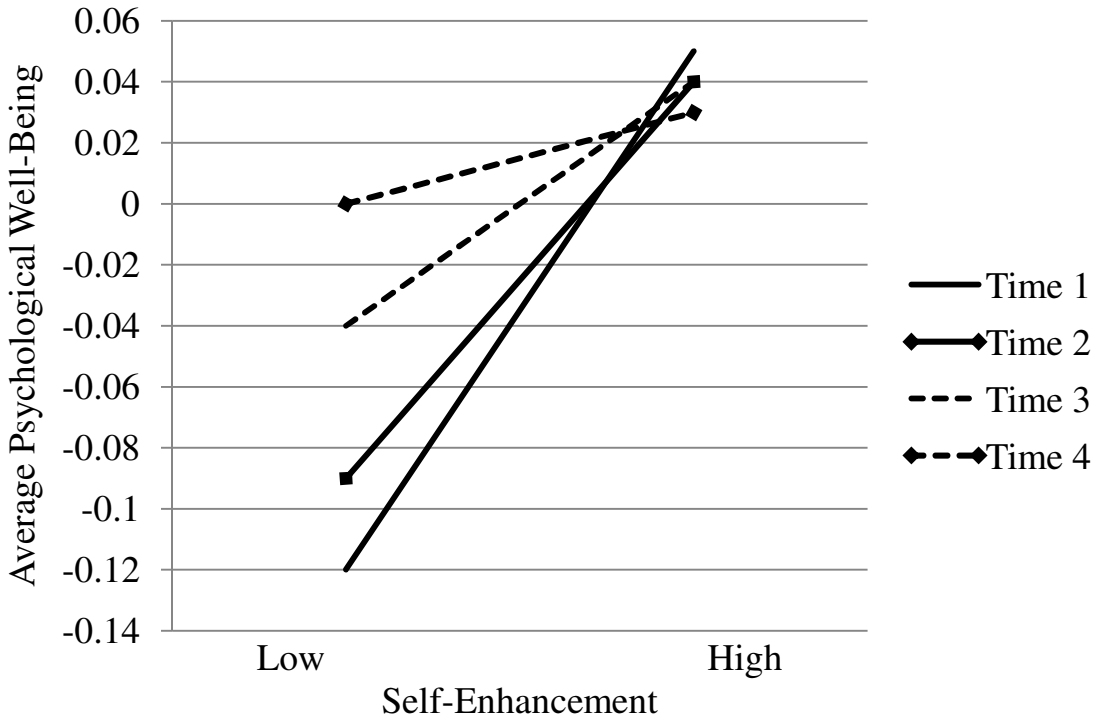

Figure 1-B. *The Association between Collectivistic Tactical Self-Enhancement and Psychological Well-Being at each Time of Assessment.*



Figure 2-B. *The Cross-Sectional Association between the Outcome-Related Self-Enhancement by Course Interaction and Physical Well-Being.*

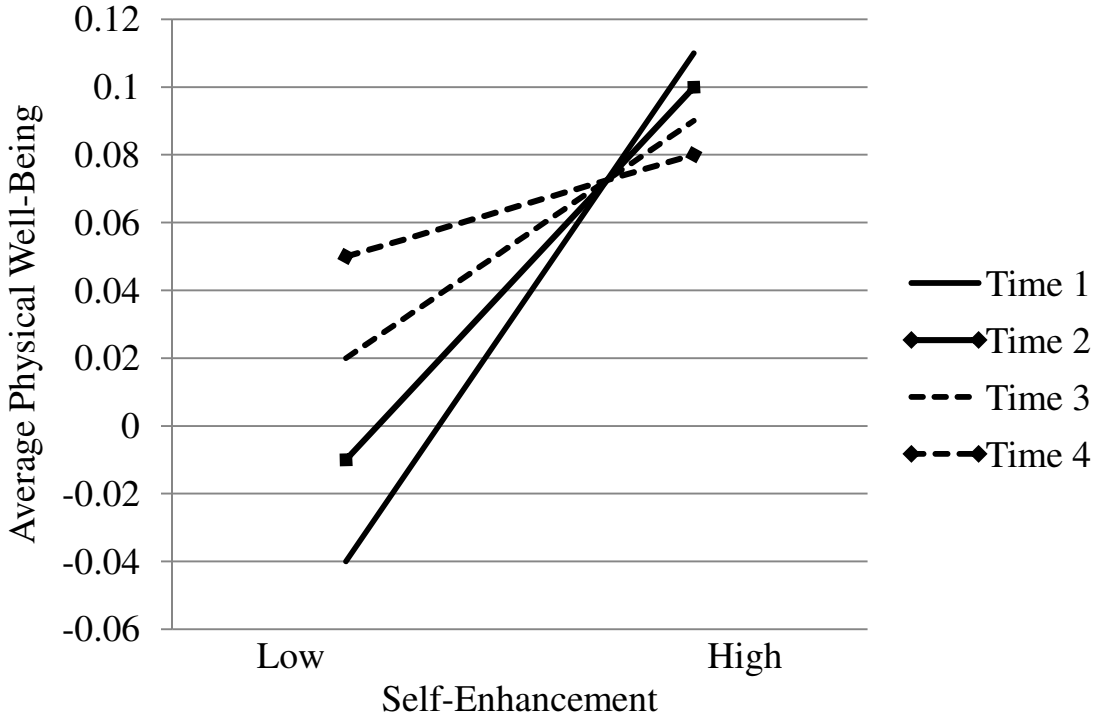

Figure 3-B. *The Association between Outcome-Related Self-Enhancement and Psychological Well-Being at each Time of Assessment.*

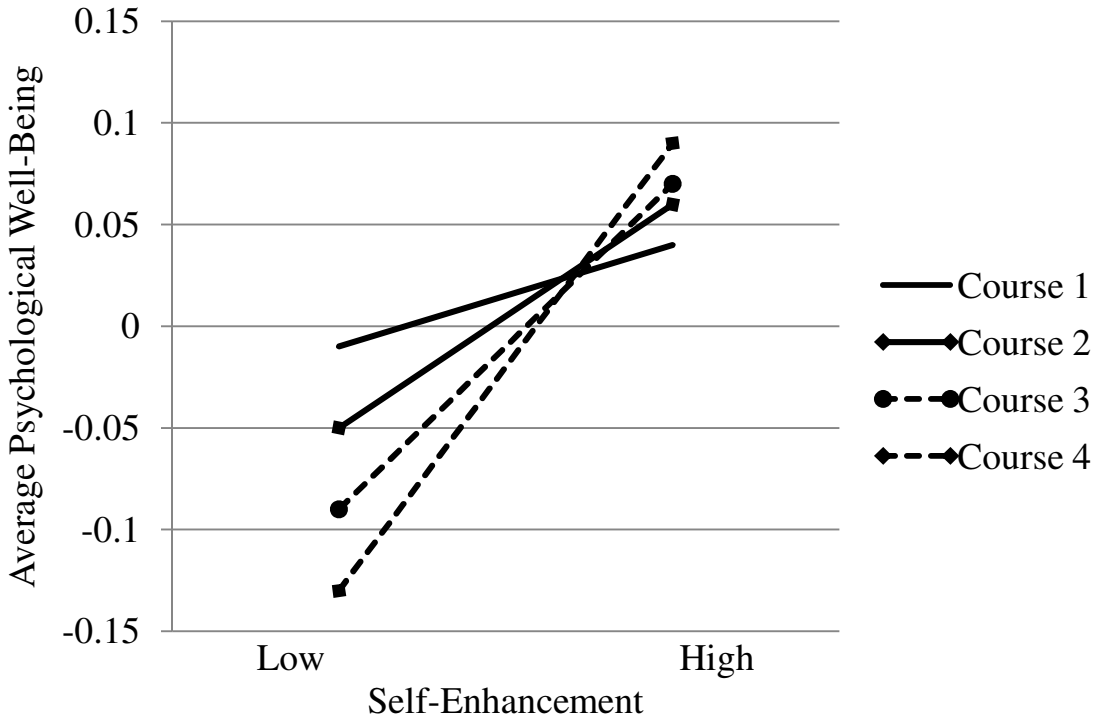

Figure 4-B. *The Interactive Effects of Prior Outcome-Related Self-Enhancement and Course for Subsequent Psychological Well-Being.*

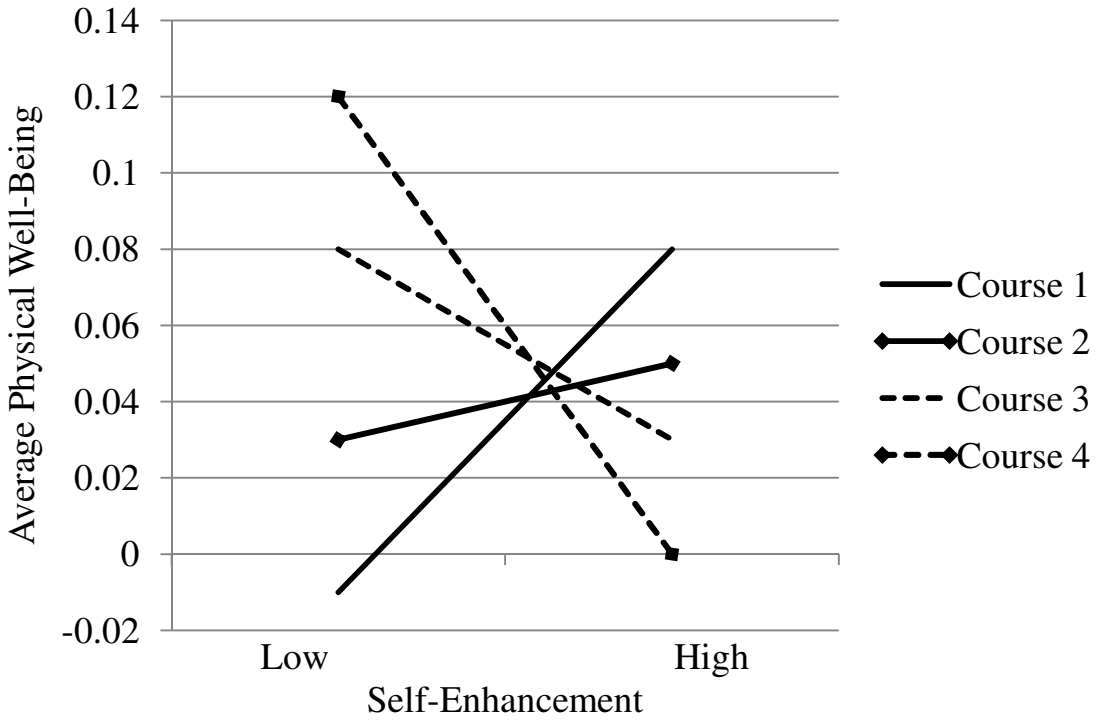

Figure 5-B. *The Interactive Effects of Prior Collectivistic Tactical Self-Enhancement and Course for Subsequent Physical Well-Being.*

APPENDIX C: MEASURES

Tactical Self-Enhancement

(Sedikides, Gaertner, & Toguchi, 2003).

Using the following scale, please rate yourself on the following traits, relative to the average person of similar age and sex with multiple sclerosis.

1	2	3	4	5	6
Definitely less	Somewhat less	Slightly less	Slightly more	Somewhat more	Definitely more

Compared to other persons of the same age and sex with multiple sclerosis, I am…

1. Free	_____	9. Agreeable	_____
2. Independent	_____	10. Compromising	_____
3. A Leader	_____	11. Cooperative	_____
4. Original	_____	12. A Good Listener	_____
5. Self-reliant	_____	13. Loyal	_____
6. Separate	_____	14. Patient	_____
7. Unconstrained	_____	15. Respectful	_____
8. Unique	_____	16. Self-Sacrificing	_____

Using the scale below, rate the extent to which each trait is important to you, personally.

1	2	3	4	5	6
Very unimportant	Moderately unimportant	Slightly unimportant	Slightly important	Moderately important	Very Important

1. Free	_____	9. Agreeable	_____
2. Independent	_____	10. Compromising	_____
3. Leader	_____	11. Cooperative	_____
4. Original	_____	12. Good Listener	_____
5. Self-reliant	_____	13. Loyal	_____
6. Separate	_____	14. Patient	_____
7. Unconstrained	_____	15. Respectful	_____
8. Unique	_____	16. Self-Sacrificing	_____

Multiple Sclerosis-Related Self-Enhancement

People vary in how good a patient they are. A good Multiple Sclerosis patient engages in behaviors that promote health and wellness and prevent declines in health and wellbeing. For example, a good patient takes their medicine as prescribed, attends all doctors appointments as scheduled, engages in exercise and stretching activities, maintains a balanced diet low in fat and high in fiber, does not smoke cigarettes, and speaks with their physician about how much alcohol is appropriate to drink and how often.

Relative to the average person of similar age and sex with multiple sclerosis, how good of a MS patient are you?

1	2	3	4	5	6
Very bad	Moderately bad	Slightly bad	Slightly good	Moderately good	Very good

Multiple Sclerosis Related Symptom Checklist
(Gulick, 1989)

Using the following scale, please rate the extent to which you experience each of the following symptoms over the past 30 days.

0	1	2	3	4	5
Never					Always

1. Arm weakness
2. Leg weakness
3. Spasms
4. Tremors
5. Knee locking
6. Balance problems
7. Falling
8. Urine frequency: Day
9. Urine frequency: Night
10. Trouble making it to the bathroom: Day
11. Trouble making it to the bathroom: Night
12. Loneliness
13. Depression
14. Anxiety
15. Pain
16. Burning
17. Numbness
18. Pins and needles
19. Double vision
20. Blurred vision
21. Difficulty swallowing
22. Forgetfulness

Beck Depression Inventory
(Beck & Steer, 1987)

1.
I do not feel sad.
I feel sad.
I am sad all the time and I can't snap out of it.
I am so sad or unhappy that I can't stand it.

2.
I am not particularly discouraged about the future.
I feel discouraged about the future.
I feel I have nothing to look forward to.
I feel that the future is hopeless and that things cannot improve.

3.
I do not feel like a failure.
I feel I have failed more than the average person.
As I look back on my life, all I can see is lots of failures.
I feel I am a complete failure as a person.

4.
I get as much satisfaction out of things as I used to.
I don't enjoy things the way I used to.
I don't get real satisfaction out of anything anymore.
I am dissatisfied or bored with everything.

5.
I don't feel particularly guilty.
I feel guilty a good part of the time.
I feel guilty most of the time.
I feel guilty all of the time.

6.
I don't feel I am being punished.
I feel I may be punished.
I expect to be punished.
I feel I am being punished.

7.
I don't feel disappointed in myself.
I am disappointed in myself.
I am disgusted with myself.
I hate myself.

8.
I don't feel I am any worse than anybody else.

I am critical of myself for my weakness or mistakes.
I blame myself all of the time for my faults.
I blame myself for everything bad that happens.

9.
I don't have any thoughts of killing myself.
I have thoughts of killing myself, but I would not carry them out.
I would like to kill myself.
I would kill myself if I had the chance.

10.
I don't cry any more than usual.
I cry more than I used to.
I cry all the time now.
I used to be able to cry, but now I can't cry even though I want to.

11.
I am no more irritated now than I ever am.
I get annoyed or irritated more easily than I used to.
I feel irritated all the time now.
I don't get irritated at all by the things that used to irritate me.

12.
I have not lost interest in other people.
I am less interested in other people than I used to be.
I have lost most of my interests in other people.
I have lost all of my interest I other people.

13.
I make decisions about as well as I ever could.
I put off making decisions more than I used to.
I have greater difficulty in making decisions than before.
I can't make decisions at all anymore.

14.
I don't feel I look any worse than I used to.
I am worried that I am looking old or unattractive.
I feel that there are permanent changes in my appearance that make me look unattractive.
I believe that I look ugly.

15.
I can work about as well as before.
It takes an extra effort to get started at doing something.
I have to push myself ever hard to do anything.
I can't do any work at all.

16.
I can sleep as well as usual.
I don't sleep as well as I used to.
I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
I wake up several hours earlier than I used to and can't get back to sleep.

17.
I don't get more tired than usual.
I get tired more easily than I used to.
I get tired from doing almost anything.
I am too tired to do anything.

18.
My appetite is no worse than usual.
My appetite is not as good as it used to be.
My appetite is much worse now.
I have no appetite at all anytime.

19.
I haven't lost much weight lately.
I have lost more than 3 lbs.
I have lost more than 6 lbs.
I have lost more than 9 lbs.

19a.
I am purposely trying to lose weight by eating less. YES or NO.

20.
I am no more worried about my health than usual.
I am worried about physical problems such as aches and pains, upset stomach, or constipation.
I am very worried about physical problems and it's hard to think of much else.
I am so worried about my physical problems that I can't think about anything else.

21.
I have not noticed any recent change in my interest in sex.
I am less interested in sex than I used to be.
I am much less interested in sex now.
I have not lost interest in sex completely.

Hospital Anxiety and Depression Scale

(Zigmond & Snaith, 1982)

1. I feel tense or "wound up":

Most of the time	1
A lot of the time	2
Time to time; occasionally	3
Not at all	4

2. I still enjoy the things I used to enjoy:

Definitely as much	1
Not quite as much	2
Only a little	3
Hardly at all	4

3. I get a sort of frightened feeling as if something awful is about to happen:

Very definitely and quite badly	1
Yes, but not too badly	2
A little but it doesn't worry me	3
Not at all	4

4. I can laugh and see the sunny side of things:

As much as I always could	1
Not quite so much	2
Definitely not so much now	3
Not at all	4

5. Worrying thoughts go through my mind:

A great deal of the time	1
A lot of the time	2
From time to time but not too often	3
Only occasionally	4

6. I feel cheerful:

Not at all	1
Not often	2
Sometimes	3
Most of the time	4

7. I can sit at east and feel relaxed:

Definitely	1
Usually	2
Not often	3
Not at all	4

8. I feel as if I am slowed down:

Nearly all the time	1
Very Often	2
Sometimes	3
Not at all	4

9. I get a sort of frightened feeling like “butterflies” in the stomach:

Not at all	1
Occasionally	2
Quite often	3
Very Often	4

10. I have lost interest in my appearance:

Definitely	1
I don’t take as much care as I should	2
I may not take quite as much care	3
I take just as much care as ever	4

11. I feel restless as if I have to be on the move:

Very much indeed	1
Quite a lot	2
Not very much	3
Not at all	4

12. I look forward with enjoyment to things:

As much as I ever did	1
Rather less than I used to	2
Definitely less than I used to	3
Hardly at all	4

13. I get sudden feelings of panic:

Very often indeed	1
Quite often	2
Not very often	3
Not at all	4

14. I can enjoy a good book or radio or TV program:

Often	1
Sometimes	2
Not often	3
Very seldom	4

Perceived Stress Scale

(Cohen, Kamarck, & Mermelstein, 1983)

In the past month, how often have you...

1 = never
2 = rarely
3 = occasionally
4 = frequently
5 = always

(Please **CIRCLE** the appropriate number.)

1. been upset because of something that happened unexpectedly?	1 2 3 4 5
2. felt that you were unable to control the important things in your life?	1 2 3 4 5
3. felt nervous and stressed?	1 2 3 4 5
4. successfully dealt with irritating life hassles?	1 2 3 4 5
5. felt that you were effectively coping with important changes that were occurring in your life?	1 2 3 4 5
6. felt confident about your ability to handle your personal problems?	1 2 3 4 5
7. felt that things were going your way?	1 2 3 4 5
8. felt that your could not cope with all the things that you had to do?	1 2 3 4 5
9. been able to control irritations in your life?	1 2 3 4 5
10. felt that you were on top of things?	1 2 3 4 5

Subjective Wellbeing Scale
(Sevastos, Smith, L, & Cordery, 1992)

Thinking of the past month, how often have you felt each of the following?

1 = never
2 = rarely
3 = occasionally
4 = sometimes
5 = often
6 = always

(Please **CIRCLE** the appropriate number.)

tense	1 2 3 4 5 6	uneasy	1 2 3 4 5 6
worried	1 2 3 4 5 6	calm	1 2 3 4 5 6
contented	1 2 3 4 5 6	relax	1 2 3 4 5 6
depressed	1 2 3 4 5 6	gloomy	1 2 3 4 5 6
miserable	1 2 3 4 5 6	cheerful	1 2 3 4 5 6
enthusiastic	1 2 3 4 5 6	optimistic	1 2 3 4 5 6

Satisfaction with Life Scale
(Pavot, & Diener, 1993)

Below are five statements with which you may agree or disagree. Thinking back to the past month, please indicate your agreement with each item using the following scale:

1 = strongly disagree
2 = disagree
3 = slightly disagree
4 = slightly agree
5 = agree
6 = strongly agree

(Please **CIRCLE** the appropriate number.)

1. In most ways, my life is close to my ideal.	1 2 3 4 5 6
2. The conditions of my life are excellent.	1 2 3 4 5 6
3. I am satisfied with my life.	1 2 3 4 5 6
4. So far, I have gotten the important things I want in life.	1 2 3 4 5 6
5. If I could live my life over, I would change almost nothing.	1 2 3 4 5 6

Positive and Negative Affect Scale
(Watson & Clark, 1994)

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate t o what extent you have felt this way during the past month. Use the following scale to record your answers:

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____ cheerful	_____ sad	_____ active	_____ angry at self
_____ disgusted	_____ calm	_____ guilty	_____ enthusiastic
_____ attentive	_____ afraid	_____ joyful	_____ downhearted
_____ bashful	_____ tired	_____ nervous	_____ sheepish
_____ sluggish	_____ amazed	_____ lonely	_____ distressed
_____ daring	_____ shaky	_____ sleepy	_____ blameworthy
_____ surprised	_____ happy	_____ excited	_____ determined
_____ strong	_____ timid	_____ hostile	_____ frightened
_____ scornful	_____ alone	_____ proud	_____ astonished
_____ relaxed	_____ alert	_____ jittery	_____ interested
_____ irritable	_____ upset	_____ lively	_____ loathing
_____ delighted	_____ angry	_____ ashamed	_____ confident
_____ inspired	_____ bold	_____ at ease	_____ energetic
_____ fearless	_____ blue	_____ scared	_____ concentrating
_____ disgusted with self	_____ shy	_____ drowsy	_____ dissatisfied with self

The Life Satisfaction Survey
(Chubon, 1990)

Please answer the following 20-items using the scale provided below.

1	2	3	4	5	6	7
Agree Very Strongly						Disagree Very Strongly

1. I feel safe and secure.
2. My health is good.
3. I have too few friends whom I can count on.
4. I like myself the way I am.
5. I am better off than most people in this country.
6. I feel constantly under pressure.
7. I don't eat very well.
8. My future is hopeless.
9. I am a happy person.
10. There are always people willing to help me when I really need it.
11. My income is a consistent
12. My sleep is restful and refreshing.
13. I don't get the love and affection I need.
14. I don't have any fun or relaxation.
15. Services provided by government agencies meet my needs.
16. I am able to go when and where I need to go.
17. I am satisfied with my main life role now as a worker, student, homemaker, retiree, patient, or other classification.
18. There is little that I am able to enjoy in my community and surroundings.
19. I am exhausted well before the end of the day.
20. I have too little control over my life.

The ADL Self-Care Checklist for Persons with Multiple Sclerosis- Self Form and Help from others

(Gulick, 1988).

Fifteen statements about activities of daily living (ADL) such as dressing, walking, and travel are presented. Please rate each statement according to how frequently YOU perform the behavior. Base your ratings on a TYPICAL day.

0 = Never
1 = Almost never
2 = Occasionally
3= Usually
4 = Almost always
5 = Always

1. Cut your food.
2. Get in and out of the tub or shower.
3. Turn from side to side while in a lying position.
4. Work buttons/zippers/laces.
5. Walk inside the house.
6. Walk up or down a ramp.
7. Get to and from your present method of travel (car, bus, etc).
8. Read printed material.
9. Use a telephone.
10. Write clearly.
11. Participate in social activities outside the home.
12. Participate in recreational activities outside the home.
13. Confide in someone special.
14. Exchange loving glances with someone special.
15. Experience satisfactory sexual activity.

Now, you are asked to rate the following 11 questions again according to how much HELP FROM OTHERS you receive in performing each activity. Base your ratings on a TYPICAL day.

1. Cut your food.
2. Get in and out of the tub or shower.
3. Turn from side to side while in a lying position.
4. Work buttons/zippers/laces.
5. Walk inside the house.
6. Walk up or down a ramp.
7. Get to and from your present method of travel (car, bus, etc).
8. Read printed material.
9. Use a telephone.
10. Write clearly.
11. Participate in social activities outside the home.
12. Participate in recreational activities outside the home.

Behavioral Information

Please answer each of the following questions based on your behavior in the past 30 days.

1. How many days did you work out? (e.g., go to the gym, lift weights, take walks, go for runs, ride a bicycle, etc.)

2. How many days did you eat something unhealthy, or something that you shouldn't have?

3. Are you currently taking any medication?
   Yes
   No

   3a. (if Yes) How many days did you take your medicine incorrectly (e.g., took it late, missed a dose, doubled a dose).

4. How many doctor's (medical or psychological) appointments did you miss?

5. How many days did you smoke cigarettes?

7. How many cigarettes did you smoke per day?

8. How many days did you drink alcohol?

9. How many drinks did you have per day?

8. On average, how many hours of sleep did you get each night?

Multiple Sclerosis Information & General Demographic Information

1. At what age were you diagnosed with Multiple Sclerosis?

4. What was your first symptom(s) of Multiple Sclerosis?

2. What is your religion?

3. What is your highest academic degree earned?

High School
Associate's Degree
Bachelor's Degree
Master's Degree
Doctoral Degree
Other

4. Please list the address to which you would like your Target gift card mailed to.

5. What is your current age?

6. What course of Multiple Sclerosis were you diagnosed with? Please select one of the following:

_____ Relapse-Remitting
_____ Primary-Progressive
_____ Secondary-Progressive
_____ Progressive-Relapsing
_____ Other (please explain)

7. Have you received any kind of medical treatment for MS? If so, please list each treatment and the length of time you received the treatment.

8. Are you currently receiving any kind of medical treatment for MS? If so, please list the treatment and the length of time you have been receiving it.

9. Have you received any kind of non-medical treatment for MS (e.g., homeopathic treatment)? If so, please list each treatment and the length of time you received the treatment.

10. Are you currently receiving any kind of non-medical treatment for MS (e.g., homeopathic treatment)? If so, please list the treatment and the length of time you have been receiving it.

11. Did you need any physical help answering the questions in this study? If so, please explain.

12. Did you need any help recalling details of your health in order to accurately answer the questions in today's study? If so, please explain.

13. Are you currently working? If yes, please describe your job and how long you have been working there.

14. What is your marital status?

_____ Single
_____ Engaged
_____ Married
_____ Divorced
_____ Widowed

15. What is your household annual income?

_____ Less than $10,000
_____ $10,000 - $30,000
_____ $30,000 - $50,000
_____ $50,000 - $70,000
_____ $70,000 - $90,000
_____ Greater than $90,000

VITA

Erin Marie O'Mara was born in Huntington, NY, to Josephine Barbati and Gerald O'Mara and has a younger sister, Nicole. Erin attended Saint Anthony's High School in South Huntington. She attended Quinnipiac University in Hamden, CT, and majored in Psychology and Sociology with a concentration in Human Services, was a four-year varsity letter winner in women's lacrosse, and the team co-captain her senior year. Erin obtained a Bachelor of Arts degree from Quinnipiac University in 2003. She then earned a Master of Arts degree in Health Psychology in 2005 from Northern Arizona University in Flagstaff, AZ. In 2005 Erin began the Ph.D. program in Experimental Psychology with a concentration in Social Psychology at the University of Tennessee, Knoxville. Erin worked with advisor Lowell Gaertner and graduated with a Doctorate of Philosophy degree in Psychology in August of 2011. Erin accepted an assistant professor position in the department of psychology at the University of Dayton in Dayton, OH, and begins this position in August of 2011.