

SELF-MANAGEMENT OF PHYSICAL ACTIVITY IN AFRICAN AMERICANS AND
HISPANICS WITH MULTIPLE SCLEROSIS: MIXED METHODS

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DEDICATION

I would like to thank my family and the members of my Graduate Committee. My family has supported me and given me the tools and inspiration to further my education. They have been and continue to be the guiding light in my life journey.

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by

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Abstract

BACKGROUND: People with multiple sclerosis (MS) are prone to inactivity due to mobility impairments, which too often leads to obesity and other secondary conditions (e.g. depression, diabetes). Minorities with MS have health disparities when compared to Caucasians with MS, but the current health behavior theories were developed and validated mainly among the Caucasian population. There is a paucity of research considering multicultural perspectives for minorities with MS. The present study used the Health Action Process Approach (HAPA) as a theoretically driven framework to study how people with MS, specifically African Americans (AF) and Hispanics, self-manage their physical activity (PA).

SUBJECTS: Eighteen AF (4 males, 14 females) with MS were recruited, ages 27-61 years old ($M = 44.72$, $SD = 8.89$). Three Hispanics (3 females) with MS were recruited, ages 27-54 years old ($M = 38.33$, $SD = 14.01$). They were all diagnosed with MS on average about 8 years prior ($M = 7.83$, $SD = 5.58$) and the majority of the participants ($n = 18$, 86%) lived in the Dallas-Forth Worth area.

METHODS: Recruiting flyers were posted in the Multiple Sclerosis Clinic at UT Southwestern Medical Center, neurology clinics, churches in the community, and the National Multiple Sclerosis Society website. This study used a mixed methods research design. Qualitative data, used to gather minorities' perspectives of their self-promotion of PA, was collected via focus groups and phone interviews; this data was transcribed verbatim and coded. For quantitative data, each participant filled out several HAPA surveys to assess severity of symptoms, self-efficacy, coping and planning, and PA engagement.

RESULTS: An independent samples t-test was conducted to examine whether there was a significant difference between AF and Caucasians in self-evaluation of HAPA constructs, using an archived data of 170 Caucasians with MS as a norm for following comparisons. All measured HAPA constructs for PA were not significantly different between AF and Caucasians with MS. Interestingly, AF with MS had stronger intention to eat healthily (when comparing 18 Caucasians and 18 AF, $t = -3.29$, $df = 34$, $p = 0.002$; when comparing a norm database of 170 Caucasians and 18 AF, $t = -2.31$, $df = 186$, $p = 0.02$). However, Caucasians with MS had higher recovery self-efficacy for nutrition than the counterpart (comparing 170 Caucasians and 18 AF, $t = 2.63$, $df = 186$, $p = 0.009$). Qualitative analyses of transcriptions from six focus groups produced significant themes of self-motivated regulation of health promotion for minorities with MS. Significantly, modified item content on some HAPA-based measures is required to make the model more conducive to AF. For example, the study found that PA has been redefined for minorities with MS, self-efficacy is based on successful daily functional PA, it is not necessary to make a PA schedule because the course of MS is unpredictable, and self-defined PA goals vary according to daily MS course.

DISCUSSION: Although many HAPA constructs were shared amongst AF, Hispanics, and Caucasians, this study discovered many new themes that were related to how minorities with MS approach PA. AF with MS redefined exercise as being any body movement costing physical energy. For AF, the fear of losing life roles and daily functioning was motivation to persevere and do any PA given the opportunity. In contrast to many studies on AF, this study showed AF with MS do not need social support from family or friends to do PA because they view it as self-responsibility and they have learned to be independent. For Hispanics, it appeared as though

collective family thoughts regarding exercise were more influential on the intention to engage in PA. AF and Hispanics with MS agreed healthy eating habits had equal importance to PA for people with relatively severe MS status. Being AF commonly led to late treatment of MS among the focus group participants.

Keywords: multiple sclerosis, African Americans, Hispanics, health promotion, physical activity, focus group.

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LIST OF ABBREVIATIONS

AF– African Americans

HAPA – Health Action Process Approach

MS – Multiple sclerosis

PA – Physical activity

SPSS – Statistical Package for the Social Sciences

QoL – Quality of life

SCT – Social Cognitive Theory

TPB – Theory of Planned Behavior

TRA – Theory of Reasoned Action

PBC – Perceived Behavioral Control

BREQ – Behavior Regulation Exercise Questionnaire

CHAPTER ONE

Introduction

A life-long chronic medical condition consequently has draining economic and social costs (National Institutes of Health, 2011). The healthcare system in the United States is conditioned to treat one ailment at a time; however, many Americans suffer from simultaneous multiple secondary conditions (e.g. overweight, obesity, diabetes, cardiovascular disease, etc.) because of disability and chronic illness (e.g. multiple sclerosis) (U.S. Department of Health & Human Services, 2011). Such secondary conditions can be prevented and improved by health promotion behavior (e.g. doing physical activity and eating healthily). Approximately 400,000 people in the United States have multiple sclerosis (MS) and it affects about 2.5 million people worldwide (Chronic Conditions: Making, 2004). MS is an autoimmune disorder that attacks the central nervous system and causes mobility impairment and decline of cognitive function. This disease poses a challenge for many people with MS because of the expensive treatment required to handle the debilitating consequences of secondary health conditions. Fortunately, health promotion is a cost efficient way to reduce this expense and helps prevent or improve secondary conditions (Chiu, 2009; Lynch & Chiu, 2009). There is no cure for MS yet, but there are economical strategies that help control the progression of MS, those being self-management of health promotion strategies (Chronic Conditions: Making, 2004).

Health Promotion and Disparity

Evidence suggests regular engagement in physical activity (PA) can help minimize the occurrence of secondary health conditions and improve quality of life (QoL) in persons diagnosed with multiple sclerosis (MS) (Bombardier, Wadhwani, & LaRotonda, 2005). Studies

have shown that self-efficacy and social support to do PA have positive effects on improving QoL, depression, fatigue and pain caused by MS (Motl, McAuley, Snook, & Gliottoni, 2009). Fatigue is the most common symptom that prevents people with MS from being physically active, and research has shown that PA can reduce their fatigue (Bombardier et al., 2005; Motl et al., 2009). The more physically active someone is the more likely they will be able to withstand fatigue (Mollaogou & Uston, 2009).

Although physical activity is recommended to people with MS, a higher percent of people with MS are sedentary and obese than people without MS (Bombardier et al., 2005; Motl et al., 2009; Slawta et al., 2003). Unfortunately, minorities have higher rates of physical inactivity and obesity (Gordon-Larson & Popkin, 2011). It is important to know what strategies work best for motivating people to perform and maintain physical activity, especially for minorities.

Theoretical Framework

The Health Action Process Approach (HAPA) was developed by Ralf Schwarzer in 1992. The HAPA is comprised of current health behavior theories that have been validated among the majority group (i.e. Caucasians). This model is based on three health behavior theories (Schwarzer, 1992): Social Cognitive Theory (SCT) (Bandura, 1997), Stages of Change (Prochaska, DiClemente, & Norcross, 1992), and Theory of Planned Behavior (TPB) (Ajzen, & Fishbein, 1980). The HAPA model has proven to be valid with people with cardiovascular disease (Luszczynska & Sutton, 2006; Schwarzer, Luszczynska, Ziegelmann, Scholz, & Lippke, 2008), but not specifically for people with MS until recently (Chiu, Lynch, Chan, & Berven, 2011). Additionally, the majority of the research has predominantly involved Caucasian

participants. Although MS affects Caucasians more frequently, MS is indiscriminant and affects all races. Studies have shown differences in clinical characteristics in respect to race (Cree, Khan, Bourdette, Goodin, & Cohen, 2004). Research suggests further studies with minority populations are needed to find out if the current model works for minorities and to find any culturally specific motivations and self-management mechanisms for minorities (Chiu et al., 2011; Chiu, Lynch, Chan, & Rose, 2012).

Purpose of the Study

The purpose of the study is to find out multicultural factors promoting physical activity in African Americans and Hispanics with MS, using the HAPA as a framework to design a focus group study.

CHAPTER TWO

Review of the Literature

Multiple Sclerosis

Multiple sclerosis (MS) is an autoimmune disease that affects the brain and the central nervous system (Richman & Schub, 2010). The myelin sheath, the protective covering that surrounds nerve cells, deteriorates causing disruptions in nerve impulses. The body's immune cells attack the nervous system, which causes inflammation that result in nerve damage in the brain or spinal cord. There are four courses of MS: relapsing-remitting, primary-progressive, secondary-progressive, and progressive-relapsing. The majority of people diagnosed with MS have the relapsing-remitting course, the least severe of the four. During this course people experience clearly defined attacks, but has partial or complete recovery. During the remission there is no disease progression. In the primary-progressive course there are no distinct relapses or remissions. After relapse there may be a partial recovery but the progression of the disease varies over time. With the secondary-progressive course, the disease progresses more steadily and is not marked by attacks. The most rare course, progressive-relapsing, is discernable by its steady worsening of symptoms from the date of diagnosis. The disease progresses without remissions and the individual may or may not experience any recovery. The cause of MS is unknown, and is thought to be a combination of genetic and environmental factors (Fleming, 2002). There is no known cure for the disease and medications are aimed at slowing down the degeneration of the myelin sheath (Fleming, 2002).

Common problems experienced by individuals with MS include: fatigue, numbness and tingling, weakness, muscle stiffness or spasms, tremors, slurred speech, difficulty walking and

problems with balance (Fleming, 2002; Motl & McAuley, 2009; Roessler, Rumrill, & Fitzgerald, 2004). Fatigue is the most common symptom across the courses (Mollaoglu & Ustun, 2009).

Although MS is a debilitating disease for any individual diagnosed, symptom severity is greater in African Americans and Hispanics. The MS Severity Score for African Americans ($M = 4.3$, $SD = 2.9$) was greater than for Caucasians ($M = 3.8$, $SD = 2.5$), despite shorter disease duration in African Americans, indicating a more aggressive clinical disease (Weinstock-Guttman et al., 2010). Larger proportions of Hispanics (44.2%) and African Americans (45.8%) reported at least mild depression compared to only 38.7% of Caucasians (Buchanan et al., 2010).

MS symptoms mentioned earlier could result in physical inactivity and a sedentary lifestyle, putting people with MS at a higher risk for obesity than the general population (Bombardier, Wadhvani, & LaRotonda, 2005; Motl, 2008; Motl & McAuley, 2009; Motl, McAuley, & Snook, 2005). Some of the consequences of excess weight and obesity are premature death, heart disease, diabetes, cancer, arthritis, poor self-esteem, and depression (Physical Activity Guidelines Advisory Committee, 2008).

Physical Activity and Obesity in African Americans and Hispanics

According to the National Health and Nutrition Examination Survey data during 1999-2004, about 34% of US adults are obese ($BMI \geq 30 \text{ kg/m}^2$), while 44% of non-Hispanic black adults and 39% of Mexican-American are obese. African American and Hispanic adults have a lower percentage of physical activity than Caucasians (CDC, 2008). Sivalingam et al. (2011) found African American (AF) and Hispanic adults were significantly less likely to self-report obesity and less likely to link obesity and health concerns. AF and Hispanic adults tend to underestimate being overweight or obese (Gillum & Sempos, 2005). Young, Gittelsohn,

Charleston, Felix-Aaron, and Appel (2001) have shown African American women are prone to a more sedentary lifestyle than Caucasian women. The behavioral aspects of these differences between ethnicities have been studied in weight loss intervention studies due to statistics showing evidence that African American women are more likely to do less physical activity and exercise and have higher rates of obesity compared to Caucasian women. Qualitative data show there are interventions that can be more effective when catered to different cultures. It is important to study different cultures in order to gather more information about lifestyles, values, and beliefs to develop the best health promotion strategies because most intervention programs are designed to benefit the majority.

Although Hispanic Americans have lower mortality of cardiovascular disease than non-Hispanic Whites, they have higher rates of diabetes, obesity, and physical inactivity (CDC, 2008). Studies have found the prevalence of being overweight and obese in Hispanic women is 71.9%, and the prevalence of lack of leisure-time exercise is 74% (Crespo, Smit, Andersen, Carter-Pokras, & Ainsworth, 2000; Flegal, Carroll, Ogden, & Johnson, 2001). However, factors contributing to promote physical activity of Hispanic women have been understudied; the future studies need to know possible factors from cultural, social and contextual resources of Hispanics (Keller & Fleury, 2006). Self-efficacy and social support have been two common major factors related to physical activity of Hispanic women (Evenson, Sarmiento, Tawney, Macon, & Ammerman, 2003).

Health promotion interventions cannot have optimum effectiveness if the social and cultural constructs are not considered in what creates a sedentary lifestyle for minorities. Self-management of physical activity has shown to be difficult in physically able individuals. It

appears more complex in minorities, and even more complicated in AF and Hispanics with MS.

It is important to understand people with disabilities, such as MS, have more barriers preventing them from being fully capable of engaging in physical activity.

Health Promotion for People with Multiple Sclerosis

Healthy People (2000) indicated that 75% of disabling conditions could be attributed to common chronic diseases such as arthritis, heart disease, emphysema, and MS (U.S. Department of Health & Human Services, 1990). Kinsinger, Lattie and Mohr (2010) have found through their studies that health promotion can help alleviate depression, symptom severity, and improve cognitive functioning. Health promotion activities are compiled of several factors that generally have been shown to improve the quality of life in people with disabilities. Physical activity, nutrition, interpersonal support, self-actualization, stress-management, and health responsibility are all the factors that will contribute to an individuals' lifestyle by maintaining functioning, facilitating self-management, and preventing secondary conditions (Ennis, Thain, Boggild, Baker, & Young, 2006).

Research has indicated that physical activity (e.g., aerobic/resistance exercise, yoga, stretching, and walking) can significantly improve MS symptoms (Bombardier et al., 2005; Stuifbergen, 1992). Motl et al. (2005) conducted a meta-analysis and found a medium to large negative effect between physical activity and disability (weighted mean ES = -0.60, 95% CI = -0.44, -0.77). Motl and McAuley conducted a 6-month longitudinal study and found that change in physical activity was associated with residual change in functioning ($\beta = .22, p < .05$) and change in functioning was associated with change in disability ($\beta = .20, p < .05$). Another study evaluated exercise determinants based on the motivation protection theory and found that

severity of impairment is related to exercise intention (Tulloch, Reida, D'Angelo, Plotnikoff, Morrina, Beatona, & Papadakisa, 2009). Clearly, symptom severity can affect intention and engagement in physical activity, whereas engagement in physical activity can in turn ameliorate MS symptoms and secondary health problems associated with an inactive lifestyle.

Stuifbergen and Rogers (1997) indicated that the effects of severity of MS on health-related quality of life and life satisfaction can be partially mediated by health promoting behaviors, resources, barriers, self-efficacy, and acceptance of MS. They suggested that health promotion interventions for people with MS must include increased specific self-efficacy, decreased barriers, and enhanced social support. Such interventions for people with MS improved their physical and mental health significantly. Other health promotion programs such as the Living Well program (Ravesloot et al., 1998; Ravesloot, Seekins, & White, 2005) and the OPTIMISE program (Ennis, Thain, Boggild, Baker, & Young, 2006), also support the idea that engaging in physical activity improves quality of life and wellness, reduces disability, and improves functioning in people with disabilities including those with MS.

Stuifbergen and colleagues (Stuifbergen, 2006; Stuifbergen, Seraphine, & Roberts, 2000) affirmed that effective health promotion interventions must encourage self-initiated health behaviors (e.g., physical activity) and emphasize the need to enhance personal responsibility and commitment to a healthy lifestyle. Therefore, how well people with MS manage their physical health depends more on what they do themselves than on what is done to them. However, learning and practicing adaptive physical activity self-management techniques can be challenging and behavior changes necessary for physical activity self-management are unlikely to occur in the absence of significant motivation. With varying degrees of success, rehabilitation

and health psychologists have been exploring the use of motivation-focused interventions to help individuals with chronic illness and disability engage in health promotion behaviors.

Undoubtedly, there is a need for more theory-driven, but multiculturally sensitive research, to better understand motivation, coping, and physical activity self-management and to guide the development and validation of evidence-based physical activity interventions for people with MS, especially minorities with MS.

Benefits of Physical Activity for People with Multiple Sclerosis

Physical activity (PA) can help improve overall quality of life (QoL) and strengthen self-efficacy and self-management of regular engagement in PA (Motl et al., 2009). Self-efficacy is positively correlated with physical and psychological health. In a study done by Motl et al., it was found that PA has an indirect positive effect on the QoL for people with MS. Taking into account fatigue, disability, mood, pain, self-efficacy, and social support, 292 participants were followed over a 7-day period to observe their PA. They were all tested for each of the intermediate variables above, and according to these results persons with MS who engaged in PA reported a higher QoL. They reported lower depression ($\gamma = -0.31$), fatigue ($\gamma = -0.46$), and pain ($\gamma = -0.19$), and higher social support ($\gamma = 0.20$) and self-efficacy ($\gamma = 0.41$). The data were analyzed using covariance modeling in Mplus 3.0 life (Motl et al., 2009). The model provided an exceptional fit for the data ($\chi^2 = 51.33$, $df = 18$, $p < 0.001$, standardized root mean squared residual = 0.03, comparative fit index = 0.98). Motl et al. concluded that PA rendered an improvement in the QoL for persons with MS, while other factors played an important role.

Physical activity can help improve depression and fatigue in persons with MS (Stroud & Minihan, 2009). Stroud and Minihan found people with MS who exercised at least 30 minutes twice a week reported having less depression, less fatigue, and a higher QoL. One hundred and twenty-one participants, either exercisers or non-exercisers, were given questionnaires to determine the severity and progression of disease, their depression, fatigue, and perceived QoL. Those classified as exercisers scored better on Beck's Depression Inventory, Health Status Questionnaire Short-Form 36, and Modified Fatigue Impact Scale. Motl, Goldman, and Benedict (2010) found PA or exercise can help increase muscle strength and delay the onset or progression of mobility impairment, such as walking impairment, which is a major issue in persons with MS. Thirty people with MS wore a pedometer and a single-axis accelerometer for seven days and completed the Godin Leisure-Time Exercise Questionnaire. They also went through a 7-day physical activity recall and an Expanded Disability Status Scale (EDSS) assessment for measuring mobility disability. There were statistically significant and medium sized correlations between EDSS scores and physical activity as measured by total daily activity counts from the accelerometer ($r = -0.37, p < 0.01$) and the daily step counts from the pedometer ($r = -0.34, p < 0.01$). These results show that there is evidence of a link between objectively measured physical activity and mobility disability in a small sample of ambulatory people with MS (Motl, Goldman, & Benedict, 2010).

A similar study done by Motl and Snook (2008) assessed the association between accelerometer activity counts as an objective measure of PA and scores from the Multiple Sclerosis Walking Scale-12. This is a 12-item patient-rated outcome for measuring the impact of MS on mobility disability that has been validated and included in clinical trials involving people

with MS. One hundred and thirty-three participants completed the Multiple Sclerosis Walking Scale-12 and the EDSS and wore a single-axis accelerometer over a 7-day period. There were statistically significant correlations between total daily activity counts from the accelerometer and Multiple Sclerosis Walking Scale-12 scores in the overall sample ($r = -0.64, p < 0.01$) and in the subsamples of people with mild-to-moderate (EDSS scored of 1-4.5; $r = -0.51, p < 0.01$) and moderate-to-severe (EDSS scored 5-8; $r = -0.48, p < 0.01$) MS-related disability. Their results show evidence of a link between objectively measured PA and mobility capacity in MS (Motl & Snook, 2008).

The next study by Weikert, Motl, Suh, McAuley, and Wynn (2010) involved a secondary analysis of data from an ongoing longitudinal study of symptoms and PA and focused on the association between PA and walking impairment in a large cohort of persons with MS ($N = 269$). The participants wore a single-axis accelerometer over a 7-day period and completed the Godin Leisure-Time Exercise Questionnaire, International Physical Activity Questionnaire, Multiple Sclerosis Walking Scale-12, and Patient-Determined Disease Steps. Bivariate correlation and confirmatory factor analyses indicated that (a) Godin Leisure-Time Exercise Questionnaire and International Physical Activity Questionnaire scores were strongly correlated and loaded significantly on a physical activity factor, (b) Multiple Sclerosis Walking Scale-12 and Patient-Determined Disease Steps scores strongly correlated and loaded significantly on a walking mobility factor, and (c) there was a moderate and statistically significant association between the PA and walking mobility factors ($r = -0.40, P < 0.01$). Such data by Weikert et al. further indicate that PA is associated with mobility disability, but this time in a large sample of persons with MS using advanced statistical methodology.

The previously reviewed studies have been cross-sectional and limit inferences about change. Using a panel design, Motl, McAuley, Wynn, and Vollmer (2010) next examined PA as a predictor of disability progression in persons with MS over a 6-month period. Panel designs involve the collection of observations or data at more than one point in time using the same persons, and this design allows for studying the dynamics of relationship changes over time. Panel analysis is an appropriate analytic procedure for testing hypothetical relationships about the effects of changes in variables on one another over time. The sample ($N = 269$) of persons with MS completed the Godin Leisure-Time Exercise Questionnaire, International Physical Activity Questionnaire, Multiple Sclerosis Walking Scale-12, and Patient-Determined Disease Steps before and after a 6-month observational period. The panel analysis indicated that baseline physical activity had a direct effect on walking impairment (path coefficient = -0.31), and change in physical activity across a six-month period had a direct effect on residual change in progression of walking impairment (path coefficient = -0.16). The findings provide preliminary support for a reduction in PA as a predictor of walking impairment over time in persons with MS (Motl et al., 2010). Motl et al. found the delivery of an intervention that increases PA through exercise training or principles of behavior change could forestall, stabilize, or improve walking impairment in MS.

Snook and Motl (2009) examined the overall effect of exercise training on walking mobility among persons with MS using meta-analytic procedures. Studies were selected if they measured walking mobility using instruments identified as acceptable walking mobility constructs and outcome measures for persons with neurological disorders, before and after an intervention that included exercise training. They excluded published studies that only included

physical therapy or exercise training as a small part of a physiotherapy program. This allowed for a focus on exercise training effects on walking outcomes. Of the 43 published papers located and reviewed, only 22 provided enough data to compute effect sizes expressed as Cohen's *d*. They retrieved 66 effect sizes from the 22 publications, which included 609 participants with MS, and the weighted mean effect size was $g = 0.19$ (95% confidence interval = 0.09, 0.28). This effect size is small by conventional standards; nevertheless, the effect size might have clinical relevance when compared with the overall effectiveness of disease modifying agents for reducing disease progression and EDSS scores ($d = 0.20$) (Snook & Motl, 2009). The cumulative evidence from the meta-analysis supports the argument that exercise training is associated with a small, but potentially meaningful, improvement in walking mobility among persons with MS (Snook & Motl, 2009).

Overall, the accumulating evidence supports the argument that increased PA and exercise training will have short term and long term beneficial effects on walking function in persons with MS (Motl et al., 2010). This is based on cross-sectional, longitudinal, and experimental research designs that included variety in the breadth of measures of walking and persons with MS and a compilation of interventions. This research further lays the foundation for the consideration of exercise for addressing mobility impairment in MS. PA is a cost efficient alternative that has proven to lessen the effects of or prevent secondary conditions caused by MS.

Health Action Process Approach

The Health Action Process Approach (HAPA) is a motivational model of health promotion, designed by Ralf Schwarzer (1992) to predict self-regulatory health-promotion

behaviors. It focuses on the social cognitive predictors for action change and the maintenance of those behaviors. An individual's intention of changing behavior is motivated by their self-efficacy, outcome expectancy, and risk perception, while simultaneously they evaluate and cope with barriers to adopt healthy behaviors. After they change their behavior, they will make action planning and coping planning in order to perpetuate their volition to maintain their adopted behavior and even to resume their behavior when they need to recover from a relapse, such as the relapse of MS. The HAPA model is a combination of a continued and a stage model. It is continued in the sense that it bridges an individual's intention and action. It is stage-specific in the sense that it has two clear phases, the motivational and volitional phases. The Stages of Change in DiClemente and Prochaska's Transtheoretical model (1982) is used in Schwarzer's model to track the process of change from the initial intention to performing and maintaining the action. In the HAPA model, Bandura's Social Cognitive Theory (1986) is used to validate the assumption that people must believe they are capable of changing a specific behavior when they evaluate the pros and cons of behavior change in their context. Further, in order to extend their intention into action, they need to have a when, where, and how plan to implement their changed behavior. They also need a coping plan to solve predictable or unpredictable difficulties for resuming after a relapse.

Specifically, in the HAPA model, there is a preintentional motivation phase that requires a person to believe they can perform the action and have the confidence to know they can do it, called action self-efficacy (Schwarzer, 1992). The higher action self-efficacy a person has, the more likely the person will follow through with the action. There is the post-intentional volition phase, in which the person needs maintenance self-efficacy and recovery self-efficacy, this

allows them to make a detailed plan to maintain their goals. Maintenance self-efficacy is necessary to maintain the action despite setbacks or alterations of the original plan (Schwarzer, 1992). The higher the maintenance self-efficacy, the more likely a person will be able to make adjustments and stay confident about their self regulatory behaviors. Recovery self-efficacy is equally important because the stronger it is the more a person can return to action after a setback or failure (Schwarzer, 1992). Schwarzer and Lippke (2011) found social support to be a major resource that builds resiliency. It was also found that exercise with a partner increases exercise adherence and self-efficacy (Schwarzer & Lippke, 2011).

The HAPA model has five principles that are use to relate the approach to health interventions (Schwarzer & Lippke, 2011). The first principle is motivation and volition. People have to go through the motivation phase first to cultivate their intentions; from there they can enter the volition stage. Next, there are two volitional phases: intenders and actors. There are those who have acted upon their intentions and those who have not. People who have not acted upon their intentions reported notably less self-efficacy, intention, and planning than intenders (Schwarzer & Lippke, 2011). Principle three is postintentional planning. Planning acts as the facilitator between intentions and behavior. Principle four is action planning and coping planning. Action planning pertains to the exact time, date, and location of the healthy behavior and coping planning includes having alternatives for overcoming potential barriers. Principle five is phase-specific self-efficacy. Self-efficacy is a constant throughout all the principles; however, it carries different meanings in each stage. There is preintentional self-efficacy, maintenance self-efficacy, and recovery self-efficacy.

Social Cognitive Theory in the HAPA model. Albert Bandura established Social Cognitive Theory (SCT) in 1986. He strongly believed that self-efficacy is a stronger predictor of adoption, initiation, and maintenance of health behavior transformation, than risk perception or outcome expectancy (Bandura, 1986). When a person has strong self-efficacy, they feel confident and ready to change and achieve their goals. Bandura believed without self-efficacy a person may feel depressed and not see him or herself as being effective or efficient enough to perform a health behavioral change. Physical, social, and self-evaluative outcome expectancies are the outcomes people expect from their actions (Bandura, 1986). Physical outcome expectancy is what is expected to happen in a person's health after a behavior change. Social outcome expectancy is the social response expected after a behavior change (Bandura, 1986). Self-evaluative outcome expectancy is consequently related to personal internal standards (Bandura, 1986). It is essential to know a person's perceived self-efficacy in order to determine how motivated, resilient, and persistent they will be in health-enhancing behaviors (Chiu, 2009). Self-efficacy also regulates what kinds of goals a person makes and the outcome they expect from them (Bandura, 1986). It is important to build self-efficacy because it will be the most influential factor in making a lasting health change (Chiu, 2009).

Stages of Change in the HAPA model. Diclemente and Prochaska (1982) developed the Transtheoretical model, also known as the Stages of Change model. This model consists of five stages describing a person from not thinking about making a change to maintaining changes (DiClemente & Prochaska, 1982). The five stages are precontemplation, contemplation, preparation, action, and maintenance. In the precontemplation phase a person has no intention to act in the next 6 months and in contemplation intends to act within the next 6 months. In

preparation, a person may have unsuccessfully taken action in the past year but intends to take action within the next 30 days. The action phase is the performance of the intended behavior, and maintenance is the act of continuing the action and preventing any relapse. The stages represent a continuum and a person may recycle among these stages.

Theory of Planned Behavior in the HAPA model. Icek Ajzen's Theory of Planned Behavior (TPB) (Ajzen, 1991) is an extension of an earlier Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), including perceived behavioral control (PBC) to TRA. PBC is a person's perceptions of controlled resources related to action in order to further make the action feasible by him/herself with accessible resources. The TPB explains how peoples' intent to act is based on attitude, subjective norms and PBC. Meanwhile behavioral beliefs form attitude, normative beliefs form subjective norms, and control beliefs form PBC.

African American and Hispanic aspects of Health Action Process Approach. There is a need to clarify the meaning of physical activity to African Americans and Hispanics with MS, especially when they are limited from doing the typical exercises that are typically performed by people without disabilities. Although studies have proven social cognitive determinants are important for doing PA, most of these studies are implemented among Caucasians. Based on our understanding, there are not many studies specific to Social Cognitive Theory, Stages of Change, and Theory of Planned Behavior for AF and Hispanics. Studies are also rare for minorities with disabilities, specifically MS.

African American and Hispanic aspects of Social Cognitive Theory. Empirical evidence suggests culture plays a large role in implementing and sustaining physical activity in minorities (D'Alonzo & Fischetti, 2008). In a study done by D'Alonzo and Fischetti, African

American (AF) and Hispanic females, considered irregular exercisers, participated in focus groups structured around a Social Cognitive Theory (SCT) construct for health promotion. Their responses were put into seven thematic categories: general impression of exercise, exercise role models, social support, benefits of exercise, constraints to exercise, exercise preferences, and cultural issues influencing exercise. Both minority groups regarded exercise as a strenuous, vigorous activity (D'Alonzo & Fischetti, 2008). They felt people exercise for appearance enhancing purposes, not for health promotion or disease prevention. The AF participants reported a family member provided the most encouragement to exercise. Hispanic participants reported they had to motivate themselves because their family members usually did not exercise. Social support was important for both groups because they felt having an exercise partner provided more motivation. AF stated activities such as running or being on the treadmill are exercises they prefer to do alone. All the participants saw exercise as an activity that made them feel good upon completion. It was an accomplishment to finish a work out. The AF responders indicated many constraints to exercise. They reported they felt gyms were catered to experienced exercisers and they did not feel confident trying to use all the exercise machinery. They were conscious of others looking at them as if they did not know what they were doing.

The constraints for Hispanics were of a different origin. They reported more familial restrictions, such as childcare, commuting, and working. As far as exercise preferences, both groups preferred to exercise in a facility that had people that looked similar to them in terms of race or body type. They reported feeling uncomfortable when it was a predominantly Caucasian environment. Some of the Hispanic women, who were not born in the United States, felt exercise is regarded as unfeminine and vigorous activities, which were not fit for women. They

stated there was not much family support for it and often were encouraged to embrace being curvy. Oftentimes, they put their family's needs over their own, which may contribute to low self-efficacy. AF participants had similar views, but they indicated they felt pressure to exercise to refrain from becoming overweight or to fit mainstream Caucasian standards of beauty. They did not feel it was right to exercise for aesthetical value.

Both groups of women viewed exercise as beneficial for weight control and appearance (D'Alonzo & Fischetti, 2008). However, Black women experienced negative social outcome expectancy, and resented pressure to exercise in order to conform to a standard of beauty. They exercised for more personal reasons, which enabled them to willingly adapt physical activity and maintain it. Time and environmental constraints was a mutual barrier to exercise. AF women felt motivated to exercise when they had a workout partner or had someone to compete against. In contrast, Hispanic women were not encouraged to exercise or they put their families first.

The results of this study support the SCT belief that culture outlines self-efficacy and outcome expectations. With culturally sensitive adjustments, SCT can be used for exercise interventions for AF and Hispanic women. The interventions are different for each group; Hispanic women should be encouraged to have their family members participate in exercise and learn the health benefits that result from regular physical activity. For AF women it would be helpful to put less emphasis on the weight loss as an outcome, and bring motivation to the aspect of feeling good after physical activities and meeting new people.

An exploratory study (Ryan, 2005) assessed the effect of task, schedule, and response efficacy beliefs and physical-health, mental-health, and self-evaluative outcome expectancies on self reported physical activity levels. This study compared the results of college-aged Hispanic

and Caucasian males and females. Participants in Ryan's study filled out the Exercise Self-

Report Schema Questionnaire to report their physical activity levels and self-evaluative expectancies of exercise. The participants were asked questions on a Likert scale to measure their task and scheduling efficacy. Their response efficacy was measured by asking them what level of fitness was required to achieve a certain goal. Physical-health and mental-health expectancies were measured on a Likert scale as well, measuring how effective they felt exercise was under different physical and mental conditions.

There were four significant SCT predictors for activity levels in Hispanics: perceived efficacy in performing cardiovascular exercise, significant latency to cardiovascular exercise condition effects, mental-health expectancies for cardiovascular exercise, and self-evaluative expectancies for exercise efforts (Ryan, 2005). Hispanics felt more of a time investment was necessary to obtain exercise benefits. The findings showed that Hispanics perceived efficacy of performing physical activity was predictive of their self-reported activity. However, although they felt they could perform the activity, scheduling efficacy was the main deterrent. They were able to start physical activity, but maintaining it was difficult. Their task efficacy was a strong predictor for intending to do exercise, while the scheduling efficacy was a predictor for maintaining the exercise over time. The results of the study showed Hispanics saw mental-health opposed to physical-health as strong outcome expectancy. The mental-health expectancy contributed more to the reported activity levels because they saw physical activity as a remedy to mental-health related issues such as anxiety or depression.

African American and Hispanic aspects of the Stages of Change. Landry and Solmon (2004) studied AF women and how they determine their physical activity (PA) patterns.

National surveys show they have a higher risk of being inactive due to a combination of their race and age. The participants were 105 AF women in the 45-70 age range and they were given the Stage of Exercise Scale (SOES). This scale has 5 stages constructed like the Transtheoretical Model of behavior change: precontemplation, contemplation, preparation, action and maintenance. The participants are supposed to rate how important PA is to them and how often they engage in PA. They were also given the Behavior Regulation Exercise Questionnaire (BREQ) which measures external regulation, introjected regulation, identifies regulation and intrinsic motivation. The results showed two of the women were in the precontemplation stage, 26 in the contemplation stage, 50 in the preparation stage, seven in the action stage, and 20 in the maintenance stage. This suggests, someone in the volitional stages of exercise are more self-determined to exercise. Extrinsic regulation did not have a significant impact on motivating these women to exercise. The women who exercised regularly over a period of time were the most self-motivated. Identified regulation was a positive motivator because the women were doing the physical activities because they saw the benefits of it. Intrinsic motivation had the strongest effect on the level of PA these women participated in. They were motivated to exercise because PA was enjoyable to them. The participants in the preparation, action, and maintenance stages were more self-determined and more motivated to exercise.

A study by Garber, Allsworth, Marcus, Hesser, and Lapane (2008) was conducted to measure how variables such as race, marital status, and education would influence where a person was in the stages of change regarding PA. Five questions were used to gauge where the participants' intention was to partake in PA and the results of this study represent a population of 742,363 people. A predictor for being in the precontemplation stage compared to maintenance

was being Hispanic, partial high school completion, a health constraint, and feelings of unhealthiness (Garber et al., 2008). A predictor for being in the contemplation stage included being Hispanic, having less than an 8th grade education, and seldom feeling healthy. AF who stated feeling healthy and energetic for 0 to 20 days in the past month were the most likely to be in the preparation stage.

The race of the participant played a large role in determining if they were in the precontemplation or contemplation stages (Garber et al., 2008). Compared to Caucasians, Hispanics were two times as likely to be in precontemplation or contemplation, and half as likely to be in preparation. AF were twice as likely than Caucasians to be in preparation. According to this study, Hispanics and AF were more likely to be in the intentional phases (e.g., precontemplation, contemplation) of the Stages of Change rather than in the volitional stages (e.g., preparation, action, maintenance) of it.

African American and Hispanic aspects of the Theory of Planned Behavior. Blanchard, Fisher, Sparling, Nehl, Rhodes, Courneya, and Baker (2008) examined how the Theory of Planned Behavior (TPB) could explain PA intention of AF and Caucasian students. Two hundred and thirty-eight AF and 197 Caucasian college age participants were involved in this study. The participants were given a TPB questionnaire and a week later, were given another questionnaire to measure their PA in the past week. They measured the attitude, perceived social pressure to perform, and perceived behavioral control.

AF had higher instrumental attitudes, meaning they found PA more enjoyable than Caucasians (Blanchard et al., 2008). However, this attitude was not a strong predictor of

intention to perform PA. Perceived behavioral control was a significant predictor for intention to perform PA in AF. Perceived social pressure was not a significant predictor for either ethnicity.

A similar study was done by Blanchard, Nehl, Fisher, Sparling, and Courneya (2003), assessing the impact of ethnicity on TPB in exercise. Ninety-four AF and 90 Caucasian college-age students were used in this study, and they completed a TPB questionnaire measuring the same 3 determinants of intention to exercise as the previous study. This study heeded the same results: attitude and perceived behavior control were significant predictors of intention to perform PA, and subjective norm was not. The unique difference in regards to TPB is the difference in the type of attitude that influences intent. For AF males, affective attitudes were higher, meaning they felt exercise was a stress reliever that in turn caused them to feel better. Instrumental attitudes were stronger for AF females because they felt it would help with weight loss.

The HAPA is comprised of current health behavior theories that have been validated among the majority group (i.e. Caucasians). This model is based on three health behavior theories: Social Cognitive Theory (SCT), Stages of Change, and Theory of Planned Behavior (TPB). This model is designed to integrate intention and action with SCT. However, these theories do not consider the influence of disability, such as MS.

There were major cultural differences comparing motivations to adopt and maintain exercise between AF, Hispanics, and Caucasians. Research suggests encouragement from a family member is necessary for AF to adopt regular exercise and Hispanics are more self-motivated (D'Alonzo & Fischetti, 2008). Bandura (1986) believed the absence of self-efficacy could leave a person feeling depressed and unable to perform a health behavior change.

Depression was reported higher in minorities than Caucasians resulting in lower intentions to exercise (Weinstock-Guttman, 2010). It is suggested health promotion for people with MS must include: increased self-efficacy, decreased barriers, and enhanced social support (Stuifbergen & Rogers, 1997). There is not a sufficient amount of research to conclude if this criterion is consistent with AF and Hispanics. If so, further research needs to be done to find out if there are differences in perceived barriers between cultures. Studies show minorities tend to have greater MS symptom severity than Caucasians, and greater symptom severity results in less intention to exercise (Tulloch et al, 2009). The disparities between cultures could warrant for modifications to health promotion interventions.

The majority of research using the HAPA model has been done on Caucasians with a disability. The HAPA model has recently been shown effective for people with MS, however, the sample was predominately Caucasian. In concordance with a disability, research suggests further studies with minority populations are needed to find out if the current model works for minorities and to find any culturally specific motivations and self-management mechanisms for minorities. Therefore, the present proposal would like to study cultural factors promoting AF and Hispanics with MS to do PA, using focus groups to capture the voice of an understudied population.

CHAPTER THREE

Methodology

Participants

Participants were AF or Hispanic, between 18-70 years old, and able to read, speak and listen to English. They have all been diagnosed with MS and lived in the community, with the exception of two participants who lived out of state. Originally, participants were recruited from flyers posted in the MS clinic at the University of Texas Southwestern Medical Center at Dallas. Difficulty with data collection resulted in alternative recruiting strategies. Participants were recruited from neurology consultants and flyers posted in churches in the community. Also, the study was added to an academic research website and the National Multiple Sclerosis Society website in order to increase participation. Interested participants called the researchers and were scheduled for a focus group or to set up a phone interview. Focus groups were the main source of data collection. Phone interviews were used to gather information from participants who did not live in the community or surrounding area in lieu of attending a focus group. It is ideal to have 2-5 groups for each category of participants because there is no concrete instruction concerning the number of groups needed to reach theme saturation (Carlsen & Glenton, 2011). Morse (2007) says the quality of the data derived is more important than the quantity of transcribed material. All participants were informed that the focus groups and phone interviews would be recorded only for research purposes. After attending a focus group or completing a phone interview, every participant received a \$40 gift card as a token of our gratitude.

The research packet included a cover letter (see Appendix A), an announcement/one-page flyer (see Appendix B), and a questionnaire.

The present study used a mixed method approach. The questionnaire was analyzed using a quantitative descriptive research method and the focus group interviews were explored using a qualitative method. Using a qualitative approach, our study allowed participants to openly express their understandings, outlooks, and perceptions about the questions with greater intensity than solely using a quantitative method would allow.

Before attending a focus group or engaging in a phone interview, participants were given a HAPA measure packet in order to understand their evaluations about HAPA constructs. The packet includes 14 sections of measures: demographics, Center for Epidemiologic Studies Short Depression Scale (CESD-10), severity of MS, action self-efficacy, outcome expectancy, risk awareness, resources, intention, action planning and coping planning, maintenance self-efficacy, recovery self-efficacy, health promotion behavior, health related quality of life, and subjective well being.

A focus group is a small group of people that come together and discuss a focused topic guided by a moderator (Stewart et al., 2007). It is not meant to be a question-and-answer session, but a discussion and interaction of viewpoints on a presented topic. Stewart et al. (2007) indicates the groups should consist of about 8-12 people, preferably a heterogeneous group as far as gender, and homogeneous as far as diversity. Research has shown that mixed gender groups are more cohesive and the participants are more likely to open up to each other. It has also found that more diverse groups can lead to more opposing viewpoints and conflict. The role of the moderator is to keep the flow of the interaction going while keeping the discussion on the focused topic. Focus groups are a useful form of qualitative data collection because they allow

the researcher to probe further into responses to get a clearer picture of what they are looking for and to observe nonverbal responses from the participants. The researcher has the opportunity to build off of responses for a deeper meaning and participants also can build off of each other, expressing agreement or disagreement. This information helps the researcher get a stronger view of why participants accept or refuse certain concepts in the topic of discussion.

The focus groups were conducted in different groups according to race (e.g., African Americans and Hispanics) and insurance providers (e.g., referred by the University of Texas Southwestern Multiple Sclerosis Clinic and Parkland Hospital). The discussions were separated because of a disparity in health care provided due to insurance, and research has shown group discussion to be more honest and open when held with participants who are similar.

The moderator was trained to conduct focus groups and used a set of open-ended questions to incite discussion. Each group was audio and video recorded. Each discussion lasted approximately 1-1½ hours. In each focus group, they were asked how they exercised, what factors help them to begin and maintain exercise, what deters them from exercising, what makes them feel confident, how does their social support and community help them exercise, how do they plan for exercise, how they define health promotion, how they define exercise, and what does having MS mean to them.

Measures

The following is a description of the measures used to quantify the HAPA constructs, including a measure to assess mental status.

Mental status as demographic information. The Center for Epidemiologic Studies Depression Scale-Short Form (CESD-10) was developed by Andresen, Malmgren, Carter, and

Patrick (1994) to operationalize depressive symptomatology in the general population. The CESD-10 is composed of 10 items. The items are rated from the perspective of how often the respondent felt this way during the past week using a 4-point Likert type scale of 0 (rarely or none of the time, less than 1 day), 1 (some or a little of the time, 1-2 days), 2 (occasionally or a moderate amount of time, 3-4 days), and 3 (all of the time, 5-7 days). The total score can range from 0 to 30. A score of 10 or above is indicative of depressive symptoms.

Severity of Multiple Sclerosis. Two subscales from the *Minimal Record of Disability* (MRD) measured the severity of MS. The MRD was developed by the International Federation of Multiple Sclerosis Societies (1984) to operationalize the perception of the severity of MS by evaluating symptoms and independence in activities of daily living. It has two subscales, the *Incapacity Status Scale* (ISS) and the *Environment Status Scale* (ESS). The ISS focuses on functional disability in activities of daily living and is composed of 16 items. Each item is rated on a 5-point Likert type scale of 0 (no disability), 1 (mild disability), 2 (moderate disability), 3 (severe disability), and 4 (most disability). The ESS has an emphasis on social impairment as a result of the illness and is composed of 7 items. Each item is rated on a 6-point Likert type scale of 0 (no disability), 1 (mild disability), 2 (moderate disability), 3 (severe disability), 4 (most disability), and 5 (totally lost).

Action self-efficacy. Action self-efficacy was quantified by two variables, as assessed by: the *Action Self-Efficacy Scale for Healthy Eating Habit* (ASES-Healthy Eating Habits) and the *Action Self-Efficacy Scale for Exercise* (ASES-Exercise). Schwarzer and Renner (2000) developed these scales to operationalize action self-efficacy related to eating a low-fat, high-fiber diet, and exercising regularly. The ASES-Healthy Eating Habits scale and ASES-Exercise scale

are composed of two items each. They are rated using a 4-point Likert type scale of 1 (very uncertain), 2 (rather uncertain), 3 (rather certain), and 4 (very certain). The total scores can range from 2 to 8.

Outcome expectancy. Outcome expectancy was measure by two measured variables: *Outcome Expectancy Scale for Healthy Eating Habits* (OES-Healthy Eating Habits) and *Outcome Expectancy Scale for Exercise* (OES-Exercise). Schwarzer and Renner (2000) developed these scales to operationalize the perception of outcome expectancy related to eating a low-fat, high-fiber diet, and exercising regularly. They are each composed of three items. These items are rated on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3 (mostly true), and 4 (exactly true).

Risk perception. Risk perception assessment was measured by the *Health/Safety Risk Perceptions Scale* (HRPS) and the *Health/Safety Expected Benefits Scale* (HEBS). Weber, Blais, and Betz (2002) developed the HRPS to operationalize the likelihood that people would engage in risky and harmful health behaviors, along with the perception of the magnitude of the risks related to these risky health behaviors. The HRPS is composed of six items. The items are rated on a 5-point Likert type scale from 1 (not at all risky) to 5 (extremely risky). The total score can range from 6 to 30. They also developed the HEBS, which is used to operationalize the perception of the benefits of engaging in positive health activities. It is composed of six items. The items are rated on a 5-point Likert type scale from 1 (no benefits at all) to 5 (great benefits).

Resources. Resources were quantified as a measured variable: using both the *Barriers to Health Promoting Activities for Disabled Persons Scale* (BHADP) and the *Berlin Social-Support Scales* (BSSS). The BHADP was developed by Becker, Stuifbergen, and Sands (1991) to

operationalize perceptions of barriers to health promoting activities. It is composed of 18 items and three subscales: intrapersonal barriers, interpersonal barriers, and environmental barriers. Items are rated using a 4-point Likert type scale of 1 (never), 2 (sometimes), 3 (often), and 4 (routinely). The total score can range from 18 to 72. A high score means greater perceived barriers.

The BSSS was developed by Schwarzer and Schulz (2000) to operationalize cognitive and behavioral aspects of social support; quantity, type, and function of social support in general and in stressful circumstances as well as dyadic support interaction in stressful situations. It is composed of 52 items and six subscales: perceived available support, need for support, support seeking, actual received support, provided support, and protective buffering scale. Only three of the BSSS subscales were used in this study. The *Perceived Available Support Subscale* is composed of 8 items. The *Need for Support Subscale* is composed of 4 items. The *Support Seeking Subscale* is composed of 5 items. The items are rated using a 4-point Likert type scale of 1 (strongly disagree), 2 (somewhat disagree), 3 (somewhat agree), and 4 (strongly agree).

Intention. Intention was measured by four subscales of the *Health Behavior Intention Scale* (HBIS). It was developed by Renner and Schwarzer (2005) to operationalize the concept of intention to engage in health behavior. It is composed of 10 items; 4 items relevant to this study were used. The items were rated on a 7-point Likert type scale from 1 (do not intend at all) to 7 (strongly intend). The total score for the intention variable can range from 10 to 70.

Action planning and coping planning. Action planning and coping planning were quantified by two measured variables based on composite action and coping planning scores obtained from two measures: the *Action Planning and Coping Planning Scale for Exercise*

(APCPS-Exercise) and the *Action Planning and Coping Planning Scale for Nutrition Habits*

(APCPS-Nutrition). Sniehotta, Schwarzer, Scholz, and Schuz (2005) developed the APCPS-

Exercise to operationalize the metacognition of action planning and coping planning for exercise.

It is composed of nine items and two subscales: action planning and coping planning. Items are

rated on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3 (mostly true), and 4

(exactly true). The total score for the action planning subscale can range from 5 to 20 and the

total score for the coping planning subscale can range from 4 to 16.

Renner and Schwarzer (2005) developed the APCPS-Nutrition to operationalize the metacognition of action planning and coping planning for developing good nutrition habits. It is

composed of five items and two subscales: action planning and coping planning. Items are rated

on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3 (mostly true), and 4 (exactly

true). The total score of action planning can range from 2 to 8 and the total score for coping

planning can range from 3 to 12.

Maintenance self-efficacy. Maintenance self-efficacy was quantified by two measured variables, as assessed by: the *Maintenance Self-Efficacy Scale for Exercise Regularly* (MSES-

Exercise), the *Maintenance Self-Efficacy Scale for Change of Nutrition Habits* (MSES-

Nutrition), and the *Stress Reduction Subscale of the Strategies Used by People to Promote*

Health (SPPHS). Luszczynska and Sutton (2006) developed the MSES-Exercise scale to

operationalize people's perception of their maintenance self-efficacy to exercise regularly. It is

composed of 4 items rated on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3

(mostly true), and 4 (exactly true). The total score can range from 4 to 16.

Renner and Schwarzer (2005) developed the MSES-Nutrition to operationalize peoples' perception of their confidence and ability to maintain good nutritional habits. It is composed of 4 items rated on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3 (mostly true), and 4 (exactly true). The total score can range from 4 to 16.

The SPPHS was developed by Lev and Owen (1996) to operationalize the concept of ability and confidence to use effective health promotion strategies. The *Stress Reduction Subscale* of the SPPHS was used in this study. The subscale is composed of 6 items rated using a 5-point Likert type scale ranging from 1 (very little confidence) to 5 (a lot of confidence). The total score can range from 6 to 30.

Recovery self-efficacy. Recover self-efficacy was quantified by two measured variables, as assessed by the *Recovery Self-Efficacy Scale for Exercise Regularly* (RSES-Exercise) and the *Recovery Self-Efficacy Scale for Healthy Nutrition Habits* (RSES-Nutrition). Luszczynska and Sutton (2006) developed these scales to operationalize the concept of recovery self-efficacy for regular exercise and healthy nutrition habits. Items are rated on a 4-point Likert type scale of 1 (not at all true), 2 (barely true), 3 (mostly true), and 4 (exactly true). The total scores can range from 3 to 12.

Health promotion behavior. Health promotion behavior was quantified by two measured variables using: the *Physical Activity Stages of Change Instrument* (PASC) and the *Healthy Diet Stages of Change Instrument* (HDSC). Nigg, Hellsten, Norman, and Braun et al. (2005) developed these instruments to operationalize the concept of readiness to engage in physical activities and healthy eating. They are composed of 4 items rated on a dichotomous "yes" or "no" format. A scoring scheme was provided by Nigg et al. to convert the scores in the

four items to represent the degree of engagement in physical activities and healthy eating along a 5-point continuum, with 1 = precontemplation, 2 = contemplation, 3 = preparation, 4 = action, 5 = maintenance. Individuals with scores of 4 and 5 are considered actively engaging in physical activities or healthy eating for the purpose of this study.

Health-related quality of life. Health-related quality of life (QoL) was quantified by two measured variables using the *MOS Short form Health Survey* (SF-12v2). Ware, Kosinski, and Keller (1996) developed the SF-12v2 to operationalize the concept of health-related QoL. It is composed of 12 items and eight subscales: physical functioning, role limitations due to physical problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health. Items are rated on either a 5-point Likert type scale of 1 (excellent), 2 (very good), 3 (good), 4 (fair), and 5 (poor) for 10 of the items, or a 3-point Likert type scale of 1 (yes, limited a lot), 2 (yes, limited a little), and 3 (no, not limited at all) for items #2 and #3. The 12 items are summed as a physical component summary scale (PCS), a mental component summary scale (MCS), and a total score. The scores are standardized on a general population sample as well ($M = 50$, $SD = 10$).

Subjective well-being. Subjective well-being was quantified by two measured variables, as assessed by: the *Satisfaction with Life Scale* (SWLS) and *Subjective Happiness Scale* (SHS). Diener, Emmons, Larsen, and Griffin (1985) developed the SWLS to operationalize the concept of satisfaction with life. It is composed of five items rated on a 7-point Likert type scale of 1 (strongly agree), 2 (disagree), 3 (slightly agree), 4 (neither agree nor disagree), 5 (slight agree), 6 (agree), and 7 (strongly agree). The total score can range from 5 to 35, with higher scores indicating greater life satisfaction.

Lyubomirsky and Lepper (1999) developed the SHS to provide a global measure of subjective happiness. It is composed of four items scored on a 7-point Likert type scale ranging from 1 (not a very happy person or not at all) to 7 (a very happy person or a great deal). A total score for happiness is obtained by computing the means of the scores, with higher means reflecting a higher level of happiness.

The above information describing the instruments used is summarized in Table 1.

Data Analysis

The Statistical Package for the Social Sciences (SPSS 19.0) was used to do the introductory data analyses such as screening data and computing descriptive statistics for the demographic variables and the measured variables (e.g., score ranges, means, standard deviations, frequencies, percentages, and cut off scores when appropriate). The data from the questionnaires were input into SPSS for further analysis.

The results of the AF data were compared to a sample of Caucasians with MS ($N = 170$) using an independent samples t-test to see if there were any significant differences ($p < .05$). The results were also compared to a randomly selected sample of Caucasians with MS ($n = 18$) using an independent samples t-test. There were no comparisons using the Hispanic results because the sample size was too small ($n = 3$). Comparing a randomly selected sample ($n = 3$) of AF and Caucasians with MS would not produce generalizable results.

Qualitative data aims to provide understanding to the hypothesis rather than find generalizable results (Marshall, 1996). After transcription of the focus groups common themes were found amongst the participants. My thesis committee chair, myself, and a 3rd party coded the themes. This study uses the Health Action Process Approach (HAPA) model for the

theoretical foundation to help regulate interpretation of the transcriptions. After transcription of the focus groups, common themes were found amongst the participants. The researchers of the present study further examined the reliability and validity of qualitative analysis of the transcriptions by individually coding the transcripts. In order to reach a shared coding strategy, the researchers would come together to review each other's coding and would make revisions based on a common strategy. Revisions were made three times until both researchers agreed on the detailed coding stratagem. Once there was a set of agreed upon detailed codes, the second round of coding for themes commenced. The researchers reviewed each other's themes and made two revisions to reach agreement on the themes. The transcriptions were read several times by each researcher to uncover all the concepts and to reach a consensus on the themes. The researchers discussed the themes to conclude how the themes would be used to modify intervention development.

The process of reliability and validity of the qualitative analyses (see Appendix C) and list of agreed codes (see Appendix D) can be found in the Appendix section.

CHAPTER FOUR

Results

Participants

African American participants. Five African American focus groups were held, including 18 participants total. Participants were 27-61 years old ($M = 44.72$, $SD = 8.89$). There were 14 female participants (77.8%) and four male participants (22.2%). On average, participants reported living with MS 7.83 years ($SD = 5.58$). Most participants were married ($n = 9$, 50%), while the remaining participants were never married ($n = 4$, 22.2%), divorced ($n = 2$, 11.1%), widowed ($n = 1$, 5.6%), separated ($n = 1$, 5.6%), or co-habiting ($n = 1$, 5.6%). Eight (44.4%) of the participants affiliate themselves with the Baptist religious tradition; four (22.2%) Methodist; three (16.7%) Protestant; and three (16.7%) Christian. In terms of highest education level completed, four (22.2%) graduated from high school; seven (38.9%) completed some college courses; three (16.7%) graduated from college; and four (22.2%) had graduate school education.

The current vocational status of the sample included seven (38.9%) employed full-time; five (27.8%) retired due to MS; four (22.2%) who were unemployed; and four (22.2%) employed part-time. The current occupations of the participants were comprised of five (27.8%) doing clerical work or sales; four (22.2%) service workers; three (16.7%) professionals; two (11.1%) operators; two (11.1%) who do not currently have an occupation; one (5.6%) manager; and one (5.6%) student. In terms of sources of income, eight (44.4%) participants reported their main source of income as their own employment; other sources of income were via employment of a

family member ($n = 4$, 22.2%), supplemental security income ($n = 1$, 5.6%), social security disability insurance ($n = 4$, 22.2%), and private disability ($n = 2$, 11.1%).

There were eight participants (44.4%) receiving health insurance privately through employment; five (27.8%) via Medicare; four (22.2%) via Medicaid; three (16.7%) receiving health insurance through other means; and one (5.6%) receiving private insurance through other means. There was one participant (5.6%) who did not use health insurance. In terms of total household income in the past 12 months, 33.3% ($n = 6$) earned under \$24,999; 22.2% ($n = 4$) earned \$25,000 to \$34,999; 16.7% ($n = 3$) ranging from \$35,000 to \$49,999; 16.7% ($n = 3$) earned over \$75,000; and 11.1% ($n = 2$) earned \$50,000 to \$74,999. In terms of living area, 16 participants (88.9%) lived in a large urban area (population over 100,000); one (5.6%) lived in a medium urban area (population 20,000-99,999); and one (5.6%) lived in a suburban area or small town (population under 20,000). In the sample, four participants (22.2%) lived alone; five (27.8%) lived with one other person; six (33.3%) lived with two people; one (5.6%) lived with three other people; one (5.6%) lived with four other people; and one (5.6%) lived with six other people.

In terms of health related conditions, about 66.7% of the participants were being treated for another health problem, more specifically, being overweight ($n = 2$, 11.1%), high blood pressure ($n = 4$, 22.2%), high cholesterol ($n = 1$, 5.6%), diabetes ($n = 2$, 11.1%), and other conditions ($n = 6$, 33.3%). The average number of children per participant was 1.67 ($SD = 1.65$).

When asked if health practices related to diet had changed since MS diagnosis, eight (44.4%) noted a change in their diet (e.g., adopted better eating habits), while 10 (55.6%) reported their diet did not change. In regards to exercise, 14 of the participants (77.8%) had a

change in their exercise practice since diagnosis of MS, while 4 (22.2%) did not. Regarding sleep patterns, 11 of the participants (61.1%) noted there was a change in sleep pattern (e.g., insomnia), while seven (38.9%) had no change in their sleep pattern since diagnosis. Health practices related to relaxation changed for seven of the participants (38.9%) but did not for 11 (61.1%) of them.

In terms of receiving health care and rehabilitation services, most participants received medical treatment ($n = 13$, 72.2%), physical therapy ($n = 4$, 22.2%), occupational therapy ($n = 2$, 11.1%), exercise therapy ($n = 1$, 5.6%), individual therapy ($n = 2$, 11.1%), and other health care or rehabilitation services ($n = 3$, 16.7%). No one in the sample indicated they received group counseling, psychological assessment, vocational assessment, or vocational/employment training/placement.

When asked where physical exercise was available in their community, 12 (66.7%) responded physical exercise was available in their homes with exercise equipment; five (27.8%) did physical activity in community recreational clubs; four (22.2%) did physical exercise in community centers with exercise equipment; eight (44.4%) did physical exercise on neighborhood walking and bike paths; three (16.7%) did physical exercise in private health clubs; and two (11.1%) did physical exercise via other means in the community. Participants were asked how often per week they ate outside of their home; of the sample, 10 (55.6%) ate out 3-5 times per week; four (22.2%) did not eat outside the home in a given week; three (16.7%) ate out at least one meal per day, and one (5.6%) ate every meal outside the home.

Hispanic participants. One Hispanic focus group was held, including three participants total. Participants were 27-54 years old ($M = 38.33$, $SD = 14.01$). There were three female

participants (100%). There were two (66.7%) participants who were married and one (33.3%) who was divorced. One (33.3%) of the participants affiliated themselves with the Catholic religious tradition and two (66.7%) did not specify their religious preference. In terms of highest education level completed, one (33.3%) graduated from high school; one (33.3%) completed some college courses; and one (33.3%) graduated from college.

The current vocational status of the sample included three (100%) who were employed full-time. The current occupations of the participants were comprised of one (33.3%) doing clerical work or sales; one (33.3%) service worker; one (33.3%) professional; and one (33.3%) manager. In terms of sources of income, three (100%) participants' main source of income was listed as their own employment and one (33.3%) also received SSI.

There were three participants (100%) receiving health insurance privately through employment and one (33.3%) receiving health insurance privately through other means. One of the participants received insurance from both parties. In terms of total household income in the past 12 months, 33.3% ($n = 1$) earned \$25,000 to \$34,999; 33.3% ($n = 1$) ranging from \$35,000 to \$49,999; and 33.3% ($n = 1$) earned over \$75,000. In terms of living area, one participant (33.3%) lived in a large urban area (population over 100,000); one (33.3%) lived in a medium urban area (population 20,000-99,999); and one (33.3%) lived in a suburban area or small town (population under 20,000). In the sample, one participant (33.3%) lived alone; one (33.3%) lived with one other person; and one (33.3%) lived with five other people.

In terms of health related conditions, 100% of the participants were being treated for another health problem, more specifically, being overweight ($n = 1$, 33.3%) and high blood

pressure ($n = 2$, 66.7%). One participant (33.1%) has one child and one participant (33.1%) has four children.

When asked if health practices related to diet had changed since MS diagnosis, one (33.3%) noted a change in their diet (e.g., adopted better eating habits), while two (66.7%) reported their diet did not change. In regards to exercise, three of the participants (100%) had a change in their exercise practice since diagnosis of MS. Regarding sleep patterns, two of the participants (66.7%) noted there was a change in sleep pattern (e.g., insomnia), while one (33.3%) had no change in their sleep pattern since diagnosis. Health practices related to relaxation changed for three of the participants (100%).

In terms of receiving health care and rehabilitation services, all participants received medical treatment ($n = 3$, 100%), physical therapy ($n = 1$, 33.3%), individual therapy ($n = 1$, 33.3%), and psychological assessment ($n = 1$, 33.3%). No participants endorsed utilizing occupational therapy, exercise therapy, group counseling, vocational assessment, or vocational/employment training/placement.

When asked where physical exercise was available in their community, one (33.3%) responded physical exercise was available in their home with exercise equipment; one (33.3%) did physical activity in a community recreational club; one (33.3%) did physical exercise in a community center with exercise equipment; two (66.7%) did physical exercise on neighborhood walking and bike paths; and two (66.7%) did physical exercise in private health clubs. Participants were asked how often per week they ate outside of their home; of the sample, two (66.7%) ate out 3-5 times per week and one (33.3%) ate every meal outside the home.

The above demographic and health related information is summarized in Table 2.

Descriptive statistics for African Americans. The presence of depressive symptoms was measured by the *Center for Epidemiologic Studies Short Depression Scale* (CESD-10) with total scores greater than 10 indicating depressive symptoms. The total scores ranged from 2.00 to 22.00, with an average total score of 12.94 ($SD = 6.47$), indicating mild to moderate depressive symptoms in the African American (AF) sample. The item scores ranged from 0 to 2.00, with an item mean of 1.29 ($SD = 0.65$), indicating the average endorsement score for each item ranged between 1 (some or a little of the time [1-2 days]) and 2 (occasionally or a moderated amount of time [3-4 days]).

The severity of MS was measured by the Minimal Record of Disability (MRD), which has two subscales, the Incapability Status Scale (ISS) and the Environment Status Scale (ESS). On the ISS (which measures ambulation, medical problems, and fatigability). The scores ranged from 0 to 3.00, with an average item rating of 1.07 ($SD = 0.87$), between 1 (mild disability) and 2 (moderate disability). This indicated that the conditions of the participants' functional disability in activities of daily living were between mild and moderate disability. On the ESS (which measures work status and social activity), the scores ranged from 0.00 to 3.00, with an average item rating of 0.98 ($SD = 0.92$), between 0 (no disability) and 1 (mild disability). This indicated that their social impairment as a result of MS was between no disability and mild disability.

Action Self-Efficacy scale for Healthy Eating Habit had scores ranging from 1.00 to 4.00, with an average item score of 3.14 ($SD = 0.85$), between 3 (rather certain) and 4 (very certain). The scores for *Action Self-Efficacy for Exercise* ranged from 1.00 to 4.00, with an average item score of 2.75 ($SD = 0.81$), between 2 (rather uncertain) and 3 (rather certain). This indicates that

the current sample feels more confident about overcoming barriers to healthy eating habits than exercise.

Outcome expectancy in regard to the benefits of adopting healthy eating habits ranged from 1.00 to 4.00, with an average item score of 2.93 ($SD = 0.93$), between 2 (barely true) and 3 (mostly true). The range for outcome expectancy for the benefits of exercise was between 2.00 and 4.00, with an average item score of 3.22 ($SD = 0.66$), between 3 (mostly true) and 4 (exactly true). This indicates that the current sample believe in the potential positive effects of exercising relatively more than eating healthy.

The Health/Safety Risk Perceptions Scale (HRPS) and the Health/Safety Expected Benefits Scale (HEBS) both measured risk awareness. The scores on the HRPS ranged from 2.00 to 5.00, with an average of 4.08 ($SD = 0.90$), between 4 (moderately risky) and 5 (extremely risky). This indicates participants were aware of the risk of engaging in unhealthy behaviors. Scores ranged from 2.00 to 5.00 on the HEBS with an average of 4.58 ($SD = 0.69$), between 4 (moderate benefits) and 5 (great benefits). This indicates they strongly agreed with the benefits of health promotion behaviors.

Obstacles to health behaviors were measured by the Barriers to Health Promotion Activities for Disabled Persons Scale (BHADP). The frequency of how often specified problems kept them from taking care of their health ranged from 1.00 to 3.00, with an average rating for each item of 1.79 ($SD = 0.45$), between 1 (never) and 2 (sometimes). This indicates that, for the current AF sample, their ability to take care of their health was rarely hindered by problems.

Perceived social support, need for support, and sought out support was measured using the Berlin Social-Support Scales (BSSS). The item scores ranged from 1.00 to 4.00, and on

average participants rated each item on the BSSS as 3.03 ($SD = 0.60$), between 3 (somewhat disagree) and 4 (strongly agree). This indicates the current sample agrees they have available social support, there is a need for social support, and they seek social support in times of weakness.

The intention to adopt or maintain health behavior was measured by the Health Behavior Intention Scale (HBIS). With responses ranging from 3.00 to 7.00, on average, participants rated the degree to which they intend to exercise (i.e., item #9 and #10) as 5.75 ($SD = 1.50$), between 5 (moderately intend) and 6 (strongly intend). This indicates a fairly strong intention to exercise. Regarding intentions to eat a healthy diet (i.e., item #1, #2, #3, #6, and #8), the scores ranged from 3.00 to 7.00, with an average rating of 5.59 ($SD = 1.25$), between 5 (moderately intend) to 6 (strongly intend). This indicates a fairly strong intention to eat a healthy diet.

In terms of action planning and coping planning for nutrition habits scores ranged from 1.00 to 4.00. On average, participants rated their healthy eating habits action planning as 3.00 ($SD = 0.97$), at mostly true for having action planning regarding healthy eating habits. Participants rated coping planning regarding healthy eating habits as 2.76 ($SD = 0.91$), between 2 (barely true) and 3 (mostly true). This indicates the current AF sample has concrete plans for changing nutrition habits and maintaining them.

In terms of action planning and coping planning for exercise scores ranged from 1.00 to 4.00, on average, participants rated items regarding action planning for exercise as 2.89 ($SD = 0.87$), between 2 (barely true) and 3 (mostly true). The average rating for exercise coping planning was 2.50 ($SD = 1.06$), between 2 (barely true) and 3 (mostly true), indicating the current AF sample have concrete plans for exercising and maintaining it.

Maintenance self-efficacy for nutrition and exercise had scores ranging from 1.00 to 4.00, with an average rating for maintenance self-efficacy related to healthy eating of 2.90 ($SD = 0.90$), between 2 (barely true) and 3 (mostly true). Participants rated their exercise maintenance self-efficacy as 2.89 ($SD = 0.89$), between 2 (barely true) and 3 (mostly true). This indicates that the current sample feels confident to stick to a healthy diet and regular exercise despite obstacles.

Strategies to promote health were examined using the stress reduction subscale of the Strategies Used by People to Promote Health Scale (SPPHS). With a range of 1.00 to 5.00, on average, participants rated their ability to use stress reduction techniques in order to promote their health as 3.19 ($SD = 1.26$), between 3 (moderate confidence) and 4 (fair confidence). This indicates the current sample feels a moderate amount of confidence to use stress reduction techniques.

Recovery self-efficacy related to adopting healthy eating habits and exercising had scores ranging from 1.00 to 4.00. On average, participants rated their recovery self-efficacy for eating healthy as 2.57 ($SD = 0.98$), between 2 (barely true) and 3 (mostly true). In regards to recovery self-efficacy in exercise, the average item rating was 2.78 ($SD = 0.78$), also between 2 (barely true) and 3 (mostly true). This indicates the current sample viewed themselves as being confident about restarting healthy habits after a relapse.

Health-related quality of life was measured using the MOS Short-Form Health Survey (SF-12v2) ($M = 50, SD = 10$) with scores ranging from 0-100, including two subscales. One subscale provides a standardized score for physical health (PCS), with a range of 32.00 to 69.00 and ($M = 50.00, SD = 10.00$). The other subscale provides a standardized score for mental health

(MCS), with a range of 29.00 to 64.00 and a mean score of 50.00 ($SD = 10.00$). This indicates the quality of life of the current AF sample was comparable to a general population sample.

Participants' subjective well-being was measured using the Satisfaction with Life Scale (SWLS) and the Subjective Happiness Scale (SHS). With a range of 1.00 to 7.00, the average SWLS item score was 3.87 ($SD = 1.77$), between 3 (slightly disagree) and 4 (neither agree nor disagree). This indicates a slight disagreement or indifference to current level of life satisfaction in the sample. With a range of 2.00 to 7.00, the participants' item mean on the SHS was 5.15 ($SD = 1.42$), between 5 (moderately happy) and 6 (fairly happy). This indicates an above average level of subjective happiness for the current AF sample.

Descriptive statistics for Hispanics. The possibility of depressive symptoms was measured by the Center for Epidemiologic Studies Short Depression Scale (CESD-10), with total scores greater than 10 indicating depressive symptoms. The total scores for each item ranged from 1.00 to 3.00, with an average item mean of 1.83 ($SD = 0.71$) indicating that the average endorsement score for each item ranged from 1 (some or a little of the time [1-2 days]) and 2 (occasionally or a moderated amount of time [3-4 days]). Based on the item range, these scores indicate a mild to moderate amount of depression in the Hispanic sample.

The severity of MS was measured by the Minimal Record of Disability (MRD), which has two subscales, the Incapability Status Scale (ISS) and the Environment Status Scale (ESS). On the ISS (e.g., ambulation, medical problems, fatigability), the scores ranged from 0.00 to 2.00, with an average item rating of 1.23 ($SD = 1.06$), between 1 (mild disability) and 2 (moderate disability). This indicated the conditions of the participants' functional disability in activities of daily living were between mild disability and moderate disability. On the ESS (e.g.,

work status, social activity), the scores ranged from 0.00 to 3.00, with an average item rating on the ESS of 1.43 ($SD = 1.43$), between 1 (mild disability) and 2 (moderate disability). This indicated their social impairment as a result of MS was between mild disability and moderate disability.

Action Self-Efficacy for Healthy Eating Habits had scores ranging from 1.00 to 3.00, with an average item score of 2.33 ($SD = 1.15$), between 2 (rather uncertain) and 3 (rather certain). This indicates that the current sample feels somewhere between rather uncertain and rather certain in their ability to overcome obstacles to healthy eating. This wide range could mean some patients need more education on how to have healthy eating habits, while others have known what to do. The scores for action self-efficacy related to physical exercise ranged from 1.00 to 2.00, with an average item score of 1.67 ($SD = 0.58$), between 1 (very uncertain) to 2 (rather uncertain). This indicates that the current sample does not feel confident in their ability to overcome obstacles to exercise.

Outcome Expectancy Scale for Healthy Eating Habits ranged from 3.00 to 4.00, with an average item rating of 3.44 ($SD = 0.51$), between 3 (mostly true) and 4 (exactly true). *Outcome Expectancy Scale for Exercise* ranged from 3.00 to 4.00, with an average item rating of 3.22 ($SD = 0.19$), between 3 (mostly true) and 4 (exactly true). This indicates that the current sample believes in the potential positive effects of exercising and eating healthy.

The Health/Safety Risk Perceptions Scale (HRPS) and the Health/Safety Expected Benefits Scale (HEBS) measured risk awareness. The scores ranged from 4.00 to 5.00 on the HRPS, with an average of 4.50 ($SD = 0.00$), between 4 (moderately risky) and 5 (extremely risky). This indicates that participants were aware of the risk of engaging in unhealthy

behaviors. Participants scores ranged from 4.00 to 5.00 on the HEBS, with an average of 4.67 ($SD = 0.29$), between 4 (moderate benefits) and 5 (great benefits). This indicates that they strongly agreed with the benefits of health promotion behavior.

Obstacles to health behaviors were measured by the Barriers to Health Promotion Activities for Disabled Persons Scale (BHADP). The frequency of how often specified problems kept them from taking care of their health ranged from 1.00 to 3.00, with an average rating for each item of 2.24 ($SD = 0.72$), between 2 (sometimes) and 3 (often). This indicates that for the current Hispanic sample, their ability to take care of their health was hindered by problems.

Perceived social support, need for support, and sought out support was measured using the Berlin Social-Support Scales (BSSS). The items ranged from 2.00 to 4.00. On average, participants rated each item on the BSSS as 3.25 ($SD = 0.61$), between 3 (somewhat agree) and 4 (strongly agree). This indicates that the current sample agrees they have available social support, there is a need for social support, and they seek social support in times of weakness.

The intention to adopt or maintain health behavior was measured by the Health Behavior Intention Scale (HBIS), with responses ranging from 4.00 to 6.00. On average, participants rated the degree to which they intend to exercise (i.e., item #9 and #10) as 4.83 ($SD = 0.58$), between 4 (moderately intend) and 5 (fairly intend). This indicates a moderate to fair intention to exercise. Regarding intentions to eat a healthy diet (i.e., item #1, #2, #3, #6, and #8), the responses ranged from 3.00 to 6.00, with an average rating of 4.40 ($SD = 1.22$), between 4 (moderately intend) and 5 (fairly intend). This indicates a moderate to fair intention to eat a healthy diet.

In terms of action planning for nutrition, scores ranged from 1.00 to 3.00, with an average item rating of 2.17 ($SD = 0.58$), between 2 (barely true) and 3 (mostly true). Coping planning

regarding nutrition had scores that ranged from 2.00 to 3.00, with an average item rating of 2.44 ($SD = 0.51$), between 2 (barely true) to 3 (mostly true). This indicates the current Hispanic sample have concrete plans for changing nutrition habits and maintaining them.

In terms of action planning for exercise, the scores ranged from 1.00 to 3.00, with an average of 2.13 ($SD = 1.03$), between 2 (barely true) and 3 (mostly true). In regards to coping planning for exercise, the scores ranged from 1.00 to 2.00, with an average rating of 1.33 ($SD = 0.58$), between 1 (not at all true) and 2 (barely true). This indicates little to no concrete plans for exercising and maintaining it.

Maintenance self-efficacy for nutrition had scores that ranged from 2.00 to 3.00, with an average rating of 2.83 ($SD = 0.29$), between 2 (barely true) and 3 (mostly true). This indicates that the current sample feels confident to stick to a healthy diet. Participants scores for exercise maintenance self-efficacy ranged from 1.00 to 3.00, with an average rating of 1.75 ($SD = 1.09$), between 1 (not at all true) to 2 (barely true). This indicates little to no confidence to exercise regularly despite obstacles.

Strategies to promote health were examined using the stress reduction subscale of the Strategies Used by People to Promote Health Scale (SPPHS). With a range of 1.00 to 3.00, on average, participants rated their ability to use stress reduction techniques in order to promote their health as 2.00 ($SD = 1.00$), at little confidence. This indicates the current sample feels little confidence to use stress reduction techniques.

Recovery self-efficacy related to adopting healthy eating habits had scores that ranged from 2.00 to 3.00, with an average rating of 2.89 ($SD = 0.19$), between 2 (barely true) and 3 (mostly true). This indicates that the current sample views themselves as having confidence to

starter healthy eating habits after a relapse. In regards to recovery self-efficacy in exercise, the scores ranged from 1.00 to 3.00, with an average item rating of 2.00 ($SD = 0.88$), at barely true. This indicates the current sample views themselves as barely having confidence to restart exercise after a relapse.

Health-related quality of life (QoL) was measure using the MOS Short form Health Survey (SF-12v2) ($M = 5$, $SD = 10$) with scores ranging from 0-100, including two subscales. One subscale provides a standardized score for physical health (PCS), with a range of 42.00 to 62.00 and mean of 50.00 ($SD = 10.00$). The other subscale provides a standardized score for mental health (MCS), with a range of 39.00 to 60.00 and mean of 50.00 ($SD = 10.00$). This indicates the quality of life of the current Hispanic sample was comparable to a general population sample.

Participants' subjective well-being was measured using the Satisfaction with Life Scale (SWLS) and the Subjective Happiness Scale (SHS). With a range of 1.00 to 4.00, the average SWLS item score was 3.00 ($SD = 1.74$), at slightly disagree. This indicates the current sample slightly disagrees with statements measuring their current level of life satisfaction (e.g., In most ways my life is close to ideal). With a range of 4.00 to 5.00, the participants' item mean on the SHS was 4.58 ($SD = 0.14$), between a moderate to a fairly happy person. This indicates an average to above average level of subjective happiness for the current Hispanic sample.

The above descriptive statistics are summarized in Table 3.

Descriptive comparisons. An independent samples t-test was conducted to examine whether there was a significant difference between African Americans (AF) and Caucasians in self-evaluation of HAPA constructs. When examining the degree of engaging in healthy eating

and exercise habits, participants were scored using a 5-point engagement level scale (i.e., precontemplation, contemplation, preparation, action, and maintenance). There was a significant difference in intention for eating healthy for both comparison groups. For eating healthy, there were four (22.2%) AF participants in the preparation stage; four (22.2%) in the action stage; and 10 (55.6%) in the maintenance stage. In regards to engagement in exercise, one participant (5.6%) was in the contemplation stage; four (22.2%) in the preparation stage; four (22.2%) in the action stage; and nine (50%) in the maintenance stage. In terms of eating healthy, in the entire sample of Caucasians, four (2.4%) were in the precontemplation stage; four (2.4%) in the contemplation stage; 18 (10.6%) in the preparation stage; 17 (10%) in the action stage; 126 (74.1%) in the maintenance stage. Regarding exercise, in the entire sample of Caucasians, 33 (19.4%) were in the precontemplation stage; nine (5.3%) in the contemplation stage; 45 (26.5%) in the preparation stage; 18 (10.6%) in the action stage; 63 (37.1%) in the maintenance stage. For eating healthy in the subsample of Caucasians, there were two (11.1%) in the preparation stage; one (5.6%) in the action stage; and 15 (83.3%) in the maintenance stage. In terms of exercise, there was one participant (5.6%) in the precontemplation stage; six (33.3%) in the preparation stage; and 11 (61.1%) in the maintenance stage.

The above stages of change comparisons are summarized in Table 4.

There was no significant difference on the prevalence of depression (CESD-10) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 5.114$, $p = 0.03$, $t = -1.30$, $df = 19.15$, $p = 0.21$; when comparing 18 Caucasians and 18 AF, $F = 2.40$, $p = 0.13$, $t = -0.755$, $df = 34$, $p = 0.455$).

There was no significant difference in the severity of MS (MRD) in regards to activities of daily living for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 3.36$, $p = 0.07$, $t = -1.16$, $df = 186$, $p = 0.25$; when comparing 18 Caucasians and 18 AF; $F = 2.10$, $p = 0.16$, $t = -1.25$, $df = 34$, $p = 0.22$). There was also no significant difference in the severity of MS (MRD) in the social realm for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.64$, $p = 0.41$, $t = 0.42$, $df = 186$, $p = 0.68$; when comparing 18 Caucasians and 18 AF, $F = 0.40$, $p = 0.53$, $t = -0.81$, $df = 34$, $p = 0.42$).

There was no significant difference in action self-efficacy for adopting healthy eating habits for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.20$, $p = 0.66$, $t = -0.73$, $df = 186$, $p = 0.47$; when comparing 18 Caucasians and 18 AF, $F = 0.49$, $p = 0.49$, $t = -1.16$, $df = 34$, $p = 0.25$). There was no significant difference in action self-efficacy related to physical exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.001$, $p = 0.99$, $t = -0.48$, $df = 186$, $p = 0.63$; when comparing 18 Caucasians and 18 AF, $F = 0.78$, $p = 0.38$, $t = -0.75$, $df = 34$, $p = 0.46$).

There was no significant difference in outcome expectancy of eating healthy for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 3.96$, $p = 0.05$, $t = 0.75$, $df = 19.15$, $p = 0.46$; when comparing 18 Caucasians and 18 AF, $F = 3.61$, $p = 0.07$, $t = 0.55$, $df = 34$, $p = 0.59$). There was no significant difference in outcome expectancy of exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.13$, $p = 0.72$, $t = 0.73$, $df = 186$, $p = 0.47$; when comparing 18 Caucasians and 18 AF, $F = 0.68$, $p = 0.41$, $t = 0.25$, $df = 34$, $p = 0.80$).

There was no significant difference in the perceived risk of not engaging in health promotion behaviors (HRPS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.12$, $p = 0.73$, $t = -1.00$, $df = 186$, $p = 0.32$; when comparing 18 Caucasians and 18 AF, $F = 0.21$, $p = 0.65$, $t = -0.57$, $df = 34$, $p = 0.57$). There was no significant difference in the perceived risk of not doing exercise (HEBS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 3.67$, $p = 0.06$, $t = 0.69$, $df = 186$, $p = 0.50$; when comparing 18 Caucasians and 18 AF, $F = 3.33$, $p = 0.08$, $t = 0.43$, $df = 34$, $p = 0.67$).

There was no significant difference in the barriers to health promotion activities (BHADP) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.01$, $p = 0.93$, $t = 0.67$, $df = 186$, $p = 0.95$; when comparing 18 Caucasians and 18 AF, $F = 0.02$, $p = 0.90$, $t = -0.25$, $df = 34$, $p = 0.80$).

There was no significant difference in social support (BSSS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.62$, $p = 0.43$, $t = 0.05$, $df = 186$, $p = 0.97$; when comparing 18 Caucasians and 18 AF, $F = 0.66$, $p = 0.42$, $t = -1.18$, $df = 34$, $p = 0.25$).

There was no significant difference in intention to exercise (HBIS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.01$, $p = 0.91$, $t = -1.38$, $df = 186$, $p = 0.17$; when comparing 17 Caucasians and 18 AF, $F = 0.07$, $p = 0.79$, $t = -0.88$, $df = 34$, $p = 0.39$). There was a significant difference in intention of healthy eating (HBIS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.10$, $p = 0.75$, $t = -2.31$, $df = 186$, $p = 0.02$; when comparing 18 Caucasians and 18 AF, $F = 1.04$, $p = 0.32$, $t = -3.29$, $df = 34$, $p = 0.002$). African Americans with MS have stronger intention to eat healthy.

There was no significant difference in action planning for physical exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.41$, $p = 0.52$, $t = 0.15$, $df = 186$, $p = 0.88$; when comparing 18 Caucasians and 18 AF, $F = 0.20$, $p = 0.66$, $t = 0.50$, $df = 34$, $p = 0.63$). There was no significant difference in action planning for healthy eating for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 1.54$, $p = 0.22$, $t = -0.95$, $df = 186$, $p = -0.35$; when comparing 18 Caucasians and 18 AF, $F = 0.96$, $p = 0.33$, $t = -1.93$, $df = 34$, $p = 0.06$).

There was no significant difference in coping planning for physical exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.05$, $p = 0.82$, $t = -0.61$, $df = 186$, $p = 0.54$; when comparing 18 Caucasians and 18 AF, $F = 0.20$, $p = 0.66$, $t = -0.04$, $df = 34$, $p = 0.97$). There was no significant difference in coping planning for healthy eating for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.16$, $p = 0.69$, $t = -0.29$, $df = 186$, $p = 0.77$; when comparing 18 Caucasians and 18 AF, $F = 0.81$, $p = 0.38$, $t = -1.48$, $df = 34$, $p = 0.15$).

There was no significant difference in maintenance self-efficacy for exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.23$, $p = 0.63$, $t = -0.53$, $df = 186$, $p = 0.60$; when comparing 18 Caucasians and 18 AF, $F = 0.02$, $p = 0.90$, $t = -1.06$, $df = 34$, $p = 0.30$). There was no significant difference in maintenance self-efficacy for eating healthy for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.59$, $p = 0.45$, $t = 0.08$, $df = 186$, $p = 0.94$; when comparing 18 Caucasians and 18 AF, $F = 0.99$, $p = 0.33$, $t = -0.45$, $df = 34$, $p = 0.66$).

There was no significant difference in stress reduction techniques for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.47$, $p = 0.49$, $t = 0.57$, $df = 186$, $p = 0.57$; when comparing 18 Caucasians and 18 AF, $F = 0.74$, $p = 0.40$, $t = -0.64$, $df = 34$, $p = 0.53$).

There was a significant difference in recovery self-efficacy for healthy eating when comparing 170 Caucasians and 18 AF ($F = 3.23$, $p = 0.07$, $t = 2.63$, $df = 186$, $p = 0.009$). Caucasians with MS have higher recovery self-efficacy than the counterpart. There was no significant difference in recovery self-efficacy for healthy eating when comparing 18 Caucasians and 18 AF ($F = 1.95$, $p = 0.17$, $t = 1.55$, $df = 34$, $p = 0.13$). There was no significant difference in recovery self-efficacy for exercise for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.005$, $p = 0.95$, $t = 0.95$, $df = 186$, $p = 0.35$; when comparing 18 Caucasians and 18 AF, $F = 0.01$, $p = 0.94$, $t = 0.74$, $df = 34$, $p = 0.47$).

There was no significant difference in QoL for physical health (PCS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 1.11$, $p = 0.29$, $t = -0.60$, $df = 183$, $p = 0.55$; when comparing 18 Caucasians and 18 AF, $F = 3.98$, $p = 0.05$, $t = 0.09$, $df = 33$, $p = 0.93$). There was no significant difference in QoL for mental health (MCS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.002$, $p = 0.97$, $t = -0.47$, $df = 181$, $p = 0.63$; when comparing 18 Caucasians and 18 AF, $F = 0.01$, $p = 0.92$, $t = -0.67$, $df = 34$, $p = 0.51$).

There was no significant difference in life satisfaction (SWLS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.06$, $p = 0.81$, $t = -0.03$, $df = 186$, $p = 0.98$; when comparing 18 Caucasians and 18 AF, $F = 1.23$, $p = 0.39$, $t = -0.40$, $df = 34$, $p = 0.70$).

There was no significant difference in subjective happiness (SHS) for both comparison groups (when comparing 170 Caucasians and 18 AF, $F = 0.16$, $p = 0.69$, $t = -0.61$, $df = 186$, $p = 0.54$; when comparing 18 Caucasians and 18 AF, $F = 0.77$, $p = 0.39$, $t = -1.27$, $df = 34$, $p = 0.21$).

The above t-test comparisons are summarized in Table 5.

Qualitative Analysis

After rigorous triangulation, the qualitative analyses of transcriptions from six focus groups yielded meaningful, insightful themes of self-motivated regulation of health promotion from African Americans (AF) and Hispanics with MS.

African American themes. Themes found from AF focus groups include: “self defined exercise as any individualized functional daily physical activities (FDPA) being done at any time,” “self-quantify FDPA amount, frequency, duration, and burned calories,” “appreciation of residual mobility and functioning,” “convenient, accessible, comfortable, fun and safe environment to do FDPA,” “receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy,” “acceptance of the lifelong prognosis of MS based on good understanding and insight,” “coping with declined physical and mental conditions,” “stress and emotion management promotes adherence to PA and eating healthy,” “understanding the importance of PA for MS management and to maintaining daily functioning,” “the effect of sedentary lifestyle on MS symptoms,” “energy regulation and heat management,” “finding appropriate/suitable FDPA tailored to individual needs,” “pray (believe in God)/repeated self-encouragement to strengthen motivation,” “fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS,” “professionals coaching and encouragement that is individualized,” “a physician checking patients' exercise consistently

during regular appointments,” “a physician focused on medicine and epidemiology,” “norm expectations/societal attitude towards MS patients,” “delay in MS diagnosis and treatment due to rarity in AF population,” “more severe MS in AF population,” “recognized immediate-positive effects (aka short-term benefits) of FDPA,” “self monitor health, daily functioning, and role participation progress and maintenance due to FDPA,” “managing and scheduling time for FDPA that fits individual schedule,” “make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning,” “need for MS AT (cooling guard) and other specific cultural needs (a swimming cap) to participate in PA,” “increased self-efficacy through participating successfully in FDPA,” “self-initiation of self-duty on FDPA is more reliable than relying on social network support,” “eating healthy as a health-promoting behavior parallel with PA,” and “pride that comes from achievement of FDPA.”

The following quotes from AF focus group participants illustrate the basis for conception of each theme. “Self defined exercise as any individualized functional daily physical activities (FDPA) being done at any time:” Participants stated:

“We just pretty much limited what I would call exercise even though I do some things my squats and lunges and things like that. I can keep that up, I can keep that up.”

“At home I have a set of four pound dumbbells and I’ll get up and do my dumbbell exercises and then I do physical therapy.”

“Brisk walk, not just like walking through the mall...”

“I try to take the stairs if I can. I do not try to park close from the building I tried to park far from the building. Walking is my exercise. And like at the airport I walk...”

“If there's nothing else but checking the mail or at work, I tried to move a little bit when people say don't I do.”

“Self-quantify FDPA amount, frequency, duration, and burned calories.” Participants stated:

“I just get up in the morning and say I am going to take a walk and how my legs you are going to walk today.”

“I have a Wii I play the Wii because it let's me know how many calories I've burned.”

“I measure what I want to and I have done that for a period of time.”

“...15 min. of focused movement doing something, a conscious decision to move as opposed to random walking here and there.”

“I increase that a half-mile and then 1 mile and I decided to take a step forward every time so I don't say I'm ready to do two or 3 miles I just do as much as I can.”

“Appreciation of residual mobility and functioning,” participants stated:

“When I get up I pray and say look God, I'm about to work out I need you to help me.”

“I have pain but I feel good, I did what I needed to do then you say thank you Lord.”

“I think that being diagnosed with MS it made me kind of slow down with my life.”

“You know because we don’t have that much time we don’t know how long we’re going to be here we don’t know how long you’re going to be able to do something so you better do it now.”

“I go to work every day I motivate myself. I will not succumb to this.”

“Convenient, accessible, comfortable, fun and safe environment to do FDPA,”

participants stated:

“...wanting to be able to take your time and do it instead of having to rush through it because somebody’s waiting behind you...”

“...free classes at the MS Society on Wednesday all you have to do is give him a call and give him the time you want to come...”

“I get tired sometimes but I keep on going 45 min. to just walk.”

“...I’m enjoying myself because I’m doing something that I enjoy and so that is my exercise...”

“You know no one believes me but I really enjoy the stairmaster the elliptical, they have classes at my gym, you know, some weight training and some stuff like that.”

“Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy,” participants stated:

“Yeah I mean my husband would be one to push me and that’s no doubt about it and again that’s what I need.”

“...you go to these support groups and they tell you that you know you really have to exercise you need to exercise...”

“My husband exercises a lot so he encourages me and my daughters they encourage me.”

“...my husband he motivates me because he gets up and is going walking and asked me if I’m going to go with.”

“...you have to set yourself up around positive people...”

“Acceptance of the lifelong prognosis of MS based on good understanding and insight,” participants stated:

“When I got it I was like it is what it is. All I wanted to know really was I going to die? And when I found out I wasn’t going to die I was like phew okay cool.”

“...you just got to stay positive and have a good attitude.”

“You may not have all good days, you’ll have some bad days but more good days than bad days. But just get up and do it you can do it!”

“...depending on how my legs feel because my legs tell me if I will or not.”

“I want to know what this is I have. Live with it better.”

“Coping with declined physical and mental conditions,” participants stated:

“...you have to breathe, breathing is important to really get a good stretch.”

“...this stress is not going to get to me...”

“I’m not a depressed person so I’m going to make this bad situation a funny thing to me.”

“...I use a walker because they forced me to because I have fallen twice but I use it...”

“...depression if I’m depressed I don’t want to go to the gym and then it’s like I’ll force myself to go and its like I feel so much better.”

“Stress and emotion management helping contingency,” participants stated:

“...a death in the family... it’d be a week because I’d say crap I can’t do it. “

“I guess I just got sick and tired of feeling sick and tired like you cry and sometimes I get sick of hearing my own self.”

“I would lie if I say it be days I don’t want to give up.”

“I just got tired of feeling weak and tired and crying and sad all the time.”

“...stress management is something I know is my weakness and if I could learn how to stress manage uh without medication then that would be good but I don’t know how.”

“Understanding the importance of PA for MS management and to maintain daily functioning,” participants stated:

“The number one way I motivate myself to do exercise is knowing that me doing the exercise will get me out of this wheelchair for the second time.”

“I want to be motivated and keep myself going as much as I can. Everybody thought that I was gone break down but I am doing real good.”

“So usually people are encouraging me but I just do it because it makes me feel better...”

“I motivate myself like that because I look at this and I know that it affects

everybody differently but for me I am an acceptance to the rule because I will not wind up like that.”

“I have lost about 30 pounds just because I have tried to change my diet and I do exercise more...”

“The effect of sedentary lifestyle on MS symptoms,” participants stated:

“I’m trying to find anything and everything to do you know because even I’m not comfortable sitting for long periods of time because it seems like my legs get tight.”

“...I don’t feel very good when I sit around and don’t do anything. I don’t feel very good.”

“...a lot of times I do not feel like walking I just feel like laying in the bed and cut on the TV.”

“...like when I stay in the bed it’s like my head starts to hurt more or my legs get more stiff.”

“...if I haven’t gone in a couple of days I start feeling weak.”

“Energy regulation and heat management,” participants stated:

“...I’m somewhat intimidated by that equipment and because I don’t know how to use it and I don’t want to hurt myself and you know get overheated.”

“...if you can work around that fatigue you are in good shape...”

“I plan my stuff before 11:30, that’s how I do it.”

“I learned how to do what I could and could not do to push myself...”

“I know you can do too much and it can make you agitated and make things worse.”

“Finding appropriate/suitable FDPA tailored to individual needs,” participants stated:

“...start off light in simple in my life and simple was when I did join the gym I just stayed on the treadmill for 5 min.”

“...just do little simple things. Start out simple very simple. Just no more than arm lifts just do that several times...”

“...I just do as much as I can. Just enough to keep my body going.”

“A little progress is something.”

“I played soccer for almost 10 years I used to be able to run a mile in like 5 min. and I cannot do that anymore. So I was like okay I'm going to have to back the truck up.”

“Pray (believe in God)/repeated self-encouragement to strengthen motivation,” participants stated:

“...I was just hoping and praying hoping and praying to make it back home without falling...”

“I wake up just like you said and see the next day I can do it exercise, work, whatever it is. I mean that's my belief prayer my faith.”

“Ask God to help every day, every day is going to be different but you have to ask God to lead you and keep you strong.”

“...the other motivation for me is my religious foundation...”

“I don't know about anybody else but when I'm walking I can talk to God.”

“Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS,” participants stated:

“I thought when I heard MS that I was not going to be able to work. You know I was going to be in a wheelchair and I just did not know how my life was going to be.”

“...I want to exercise my foot and walk because I know that’s really really important but again I have that fear, you know, of okay how far are you going to get are you going to be able to make it back...”

“...I couldn’t eat. I couldn’t feed myself I couldn’t bathe myself I couldn’t do anything for myself so it was just hard.”

“...why they moved me to Tasabre 1st I was on Copaxone for acting like a year and I had an exacerbation I think I had two so they were like this isn’t working and I switched...”

“Yeah I know what you mean it slows you down.”

“Professionals coaching and encouragement that is individualized,” participants stated:

“I feel comfortable at the MS center because Trevor is there and he can tell me okay do this and I know that’s not going to be too much and I’m not going to burn myself out umm and get tired.”

“...regular physical therapy. He takes you in and he’ll assess you and then he will pick which exercises for you to start with.”

“...my physical therapist would tell me to do more exercises...”

“...happy go to physical therapy and my physical therapist told me she gave me exercises to do to stretch and things like that and help with the spasticity and stuff like that...”

“...the career coach she motivated me you know so you know that was good umm that helped me quite a bit with you know not just with motivation motivating me to do other things but encouraging me to work out because I didn’t know that it was possible for me...”

“A physician checking patients' exercise consistently during regular appointments,” participants stated:

“I have a doctor that diagnosed me he was so great...”

“I try to do stairs but the doctors have told me not to do stairs...”

“...I needed to do what doctors tell me to do.”

“She stay on me like you need to make sure you do...”

“...he’d get on me again and so I would say okay I’m going to start because I like to give him a good report.”

“A physician focused on medicine and epidemiology,” participants stated:

“Well she told me that they caught it early and then with treatment I should be able to keep the same lifestyle and work.”

“But she said no we caught it early and we are just going to have to get you on the treatment.”

“I guess they assume you will get that from your neurologist or physician.”

“I mean they I mean you know at least with my diagnosis they just got the diagnosis and some literature to tell me what to look for and how to, so really I was clueless.”

“...she told me it was okay at the time if I did but when I 1st 1st found out when I went to my neurologist I don't think we talked about exercise.”

“Norm expectations/societal attitude towards MS patients,” participants stated:

“...she said so when do you take time for yourself?”

“My social support friends, family, whatever they pretty much tell me you have to do it...”

“...then you can imagine what other people around you will start thinking.”

“I'm able to still get out and work and that's why I be careful about that.”

“It is like they are holding you accountable.”

“Delay in MS diagnosis and treatment due to rarity in AF population,” participants stated:

“...you have MS? Black people don't get MS.”

“...he said we're going to give it another like six months and I gave it six months and he said I think we need to send you to a neurologist.”

“...they told me that my doctor said black people don't get MS.”

“Somebody's not telling the truth here cause I'm seeing all these black people with MS and they said it was hard.”

“Every doctor that I go to that hadn't been in UT Southwest had been like “tell me about it, how did you get it? Do you know that's really rare?”

“More severe MS in AF population,” participants stated:

“...usually when you have MS and you have darker skin, either black or Hispanic, usually could be worse than with white people.”

“You know that actually we have a more aggressive form.”

“Recognized immediate-positive effects (aka short-term benefits) of FDPA,” participants stated:

“So I gut it out and I feel so much better after I’m done...”

“...you will feel better if you just get up and start moving...”

“...because stress is such a important factor with MS the exercise is a good stress reliever.”

“...I do a little arm exercises in my sleep to keep the circulation going because if I do not do that I can get up in the middle of the night and feel really can't.”

“...exercise releases those endorphins that make you feel better anyway.”

“Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA,” participants stated:

“I couldn’t even hop you know I couldn’t even hop up and down but just last week I did it you know, and I’m getting my little bounce back and it seems like I’m coming out of it a little bit more each month.”

“...knowing that the more exercise I do the better I’ll be.”

“...my passion is to keep myself healthy...”

“I am going to have a walker but I will never be in a wheelchair.”

“...when I walk now I can you know I can close my gait a little bit you know I'm not walking wide bases like I used to. So that's encouraging, that's encouraging me, because those are the things you can measure.”

“Managing and scheduling time for FDPA that fits individual schedule,” participants stated:

“You got to make time for it.”

“I had a little problem with knowing my limitations but after you get over that since I know what to do it's you know I don't need I need it to be more convenient. I need it to be more convenient and off all the other things that I have to do I you know you got to go to work, I got kids, all this stuff yeah so you know you have to, you got to make time for it.”

“Anytime I can get a little few minutes in the day I will try to do something that will kind of boost my mind...”

“No excuses. You have to make time for yourself, you know, people can say I don't have time but you have to make time.”

“I do try to park far you know to force myself to walk you know like when you park far away it's like you have to walk now. Or it don't take the elevator...”

“Make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning,” participants stated:

“I hadn't disclosed to anybody at work...”

“...my job is a community. Because I mean they will allow me to do whatever it is I need to do to make myself feel better.”

“I think it’s a combination of both I think you need encouragement from you family and friends.”

“I want to be able to go out and do my job. And they said well it’s hot out there, I said yeah I know.”

“My husband just won’t let me slack up.”

“Need for MS AT (cooling guard) and other specific cultural needs (a swimming cap) to participate in PA,” participants stated:

“...they won’t pay for the cooling guard. Because its experimental that what my insurance told me...”

“...let you purchase stuff that would help you.”

“I’ll have my big floppy hat on and all my little cooling stuff.”

“Your core body temperature increases by 1 degree is when everything is messed up.”

“...I guess I could do it but you have to give me a swimming cap.”

“Increased self-efficacy through participating successfully in FDPA,” participants stated:

“Once you start, it’s hard to start but if you remember what you were doing before where you were before, that depression, that sadness, that hurt before and if I do a little bit of this and it helps me not to go back there, that’s my motivation.”

“And I bet you anything you will feel better physically when you spend way more energy doing something that you love to do something that makes you feel better.”

“...you have a lot of people depending on you and you cannot do that in life and still live and function and have your own life as a person.”

“If you get up you can exercise.”

“What makes me confident is knowing that I can do something and that I will do something and when I do it and when I come through with it knowing that I just did that for myself on my own that is a big bonus.”

“Self-initiation of self-duty on FDPA is more reliable than relying on social network support,” participants stated:

“I just usually do it on my own.”

“I have to work out now it’s not an option. I want to because I want to get better.”

“You have to have some kind of faith that you can do what you need to do.”

“I have to push myself.”

“...it’s just me motivating me to do exercise so I have to get my own self motivated.”

“Eating healthy as a health-promoting behavior parallel with PA,” participants stated:

“As far as planning my goals are diet is one thing I need to make sure that I eat certain things and I’ve been doing pretty good.”

“...watch what I eat...”

“...I interpret healthy as let’s see, eating the right thing.”

“...I need to watch what I eat because I don’t have high blood pressure high cholesterol.”

“...I have tried to change my diet and I do exercise more...”

“Pride that comes from achievement of FDPA,” participants stated:

“And I have grandchildren and children who are watching how I handle this and it is going to be an inspiring to them to see that hey this is not going to take you down...”

“It took me a lot just to get up coming here today to get out of the bed this afternoon.”

“This lady stopped me one time and she said you know you have really motivated me this week.”

“...she is really working out. She’s got the gloves on this stuff and she is really working out it’s no joke. Y’all need to work out with her.”

“...I walked to the next machine they’ll look at me and I’m like you know you’re wasting time. You know you’re wasting your time and you’re in good shape.”

Hispanic themes. Themes found from the Hispanic focus group include: “reliance on other people for motivation to engage in PA (not necessarily together),” “understanding that exercise/diet is good for health in general,” “recognition that FDPA benefits overall well-being,” “find just right-challenging PA,” “defining exercise for regular people(-),” “family does not help maintain PA reliably,” “need an affordable place to do PA,” “attend a peer group (i.e. other people diagnosed with MS) that engages in PA together,” “PT is training, not exercise(-),” “focusing on MS systems(-),” “fears of losing daily functioning and life roles,” “functional daily physical activities (FDPA) drain MS patient's energy,” “FDPA is the prerequisite for typical exercise,” “perceived quantified progress increases self-efficacy,” “perceived quantified progress promotes adherence to PA and eating healthy,” “eating healthily

is important for health management,” “public health education of general population on doing PA does work for the Hispanic MS patients,” “ethnic communities have their own lifestyle, especially in regards to eating,” “appreciation of residual mobility,” “norm expectations/societal attitude towards MS patients,” and “energy and fatigue management.”

The following quotes from the Hispanic perspective illustrate the basis for conception of each theme. A (-) denotes the theme was constructed from statements that did not promote healthy exercise behaviors. “Reliance on other people for motivation to engage in PA (not necessarily together),” it was stated:

“I’m just not good at doing it I’m not disciplined.”

“Yes, someone coming into my house saying okay it is time it's 6 o'clock it's time to exercise that would be great.”

“I would feel committed then to do it, when I go home after work now I walk from the car from the garage to my bedroom and put on my pajamas.”

“I think that that kind of commitment or feeling like I owe it to somebody else.”

“I need somebody with me. Driving me to do it because I am not disciplined enough to do it on my own.”

“Understanding that exercise/diet is good for health in general,” it was stated:

“I think exercise is good for you...”

“I don’t say that I’m not motivated because I would like to feel better...”

“...you need to have a good diet and you need to exercise anyway but those things can happen to you even if you exercise. I know I am sounding very negative.”

When asked if there were any barriers to exercise respondent stated:

“No I have no excuses.”

“Recognition that FDPA benefits overall well-being,” it was stated:

“...if you start feeling just an overall well-being a little bit more energy...”

“Find just right-challenging PA,” it was stated:

“And I cannot jog or walk very far but I understand there are things I can do at home that would still be good for me.”

“I can do sit-ups, I could work out with an elastic belt you know the stretchy things. I can lift my legs I could lay in bed and lifted my legs up.”

“I can't walk into a zumba class and set reasonable expectations.”

“Physical therapy while it seems like the baby class you want to do more that seems like more real exercise but I'm not really capable of doing more so something like a I don't know I'd like to do like a three-day getaway but I think that that is practical.”

“Defining exercise for regular people(-),” it was stated:

“...exercise is getting your heart rate up your blood going.”

“Jogging, running, weightlifting, using the equipment, exercise bike, rowing machine, anything that is going to work your muscles or your lungs.”

“You want to get out and jog you know look good running down the street but you are at home stretching with the rubber band.”

When participant was ask if they did do their define exercise respondent stated

“No.”

“Family does not help maintain PA reliably,” it was stated:

“Yeah not really he runs some but hopefully he will not be there long.”

“...I live essentially alone but my son does not really factor into it.”

“...the problem with him is that it would be on his schedule and not mine...”

“Need an affordable place to do PA,” it was stated:

“...financially gyms are expensive even like a YMCA or YWCA even those they are expensive I could not afford to join a gym.”

“That is expensive that would be a barrier.”

“I have been dreaming about that that would be something that I would like to do because I think for me anyway I would have to start off so slow and really build up.”

“Attend a peer group (i.e. other people diagnosed with MS) that engages in PA together,” it was stated:

“A group setting maybe with other MS patients might be a good...”

“Yeah with people that are more like me and I don't go to a gym where I am looking at a lot of hard bodies that are 30 years younger and that's difficult and people who understand what it's like to drive your leg along ...”

“I do think that group might be a good way to get people started by you know again it had to kind of be something like that.”

“I would look for an MS boot camp where I could just go away stayed there for a few days you know like in MS spa and I could go in kind to relearn a lot of things

and be with people who have MS and eat right and exercise starting in baby steps.”

“PT is training, not exercise (-),” it was stated:

“...I do not consider I do not think you can really call that exercise. I do not really consider that exercise.”

“That is not exactly exercise but that is an exercise that I learned from the clinic.”

“Those are baby exercises.”

“...aerobic exercise is nothing that is really getting you going it is more training.”

“I mean it might just be laying in bed and trying to hold my leg up 10 seconds then resting than holding it up for 10 seconds, that is what I am calling the physical therapy.”

“Focusing on MS systems (-),” it was stated:

“I have some weakness in my right leg and right side.”

“...but when it hurts to do it and with MS when your mind tells your body to do something and then your body does not do it that is very frustrating.”

“...my back is hurting and I cannot stand straight up and my hip flexor is weak and my leg is dragging.”

“I am looking for improvement in my gait and my strength...”

“Your body does not want to do what your brain is telling it to do.”

“Fears of losing daily functioning and life roles,” it was stated:

“...very depressing to you now look at your foot and say to your toes move and they do not move and then I trip and I stumble a lot and that is depressing and it is hard.”

“MS is going to cause those things regardless...”

“Obviously the fear, the downside isn't doing it for me so I'm not sure that it can really that I can answer that.”

“I mean I am still able to walk. It's just hard, you know some days I can't, I can't walk. But you know one of the things that was a big blow for me was not being able to wear high heels.”

“...lucky I am walking out also I like to be able to work for 2 more years and have more energy you know when I get up and try to go to work in the morning so that I can work 2 more years.”

“Functional daily physical activities (FDPA) drain MS patient's energy,” it was stated:

“...because I cannot vacuum my house today and I worked from home instead of going into the office and I vacuumed my bedroom and that's tiring.”

“It is a lot of bending so yeah today I did dishes and that is emptying the dishwasher while I loaded the dishwasher and by then I'm very tired to because my right leg is so weak in my left leg is doing all the work.”

“To try to walk say around the block or you know even going to the grocery store is difficult for me. That amount of walking because doing that I am dragging my leg so it is not that I do not have the stamina for that kind of thing but I cannot carry my leg that far so that is the problem.”

“FDPA is the prerequisite for typical exercise,” it was stated:

“...if I can't vacuum my apartment how am I going to exercise?”

“...I tried to take care of the house and not should be a moderate amount of exercise or activity anyway.”

“Perceived quantified progress increases self-efficacy,” it was stated:

“...I think you need to see a little bit of progress...”

“...a little bit of progress makes you see that the goal is achievable, the goal you will keep after it.”

“Perceived quantified progress promotes adherence to PA and eating healthy,” it was stated:

“...it is like when you are on a diet when you lose 2 pounds you are motivated to lose 5 if you lose 5 you are motivated to lose 10.”

“Eating healthily is important for health management,” it was stated:

“I have a fairly healthy diet I don't eat salty foods...”

“Public health education of general population on doing PA does work for the Hispanic MS patients,” it was stated:

“They do not understand how frustrating that is to the next person that has MS.”

“...who do you think you are up and healthy telling me to exercise!”

“...I probably fall in the mid range of healthy Americans with the exception of the MS.”

“Ethnic communities have their own lifestyle, especially in regards to eating,” it was stated:

“...all of my family is in California like my brothers and sisters. So living in

Texas there's these Hispanic community and there is the Caucasian community.”

“Diet maybe like my friend who is Puerto Rican she eats the diet of the Puerto Rican islands.”

“I am far away from my family so I come into 2010 and I eat healthy and I don't eat the traditional Spanish dishes or Mexican dishes or things like that would be a cultural difference.”

“...still eating foods with a high fat content you know a lot of the carbohydrates.”

“Appreciation of residual mobility,” it was stated:

“I am fortunate that I am not in a wheelchair. So you know I will like to be able walk gracefully again.”

“Norm expectations/societal attitude towards MS patients,” it was stated:

“...people will say I know somebody who has MS she just sticks with a good diet and exercise and she is fine.”

“...you are getting sick because you did not exercise or like you are causing this yourself.”

“Energy and fatigue management,” it was stated:

“...you do what you can do without overextending yourself because by getting overtired you know you are doing more damage.”

Many of the preceding themes are effective for a more culturally perceptive intervention strategy.

CHAPTER FIVE

Discussion

Quantitative Study

African American outcomes on HAPA constructs. The results of this study concluded African Americans (AF) with MS reported mild to moderate depressive symptoms ($M = 12.94$, $SD = 6.47$) based on the CESD-10 average score where a score of 10 or above is indicative of depressive symptoms. The average *Minimal Record of Disability* scores indicated mild to moderate disability in their activities of daily living and social activity. Their action self-efficacy for healthy eating and exercise scores suggest that they possess different levels of confidence in their ability to adopt a low-fat, high-fiber diet, and exercise regularly. Action self-efficacy for healthy eating was 3.14, indicating rather certain to very certain. Conversely, their action self-efficacy for exercise was 2.75, indicating rather uncertain to rather certain. AF participants had relatively higher and confirmed confidence in healthy eating, while their action self-efficacy for exercise was a weaker, neutral confidence. This difference in scores may be due to the fact that MS reduces their physical mobility, balance and hand dexterity, and increases pain and fatigue. These physical symptoms serve as a reminder to exercise to AF participants who acknowledge that regular exercise improves their physical function over time. Their scores measuring outcome expectancy of the benefits (e.g., “If I eat healthy foods, that will be good for my blood pressure and cholesterol level.”) of healthy diet and physical activity indicate the current sample believe in the potential positive effects of exercising and eating healthy. Outcome expectancy for healthy diet was 2.92, indicating barely true to mostly true. However, outcome expectancy for

exercise was 3.22, indicating mostly true to exactly true. This difference in scores indicate AF with MS have stronger belief that exercise can bring them more positive effects, rather than eating healthy. They have awareness of the extremely high risks of engaging in unhealthy behaviors and believe engaging in health promotion behaviors will be beneficial to their overall health, especially physical health. Interestingly, the AF participants can acknowledge exercise effects on their MS symptoms, but eating healthily is perceived as weight control, blood pressure, and diabetes control, rather than MS management. It means current AF participants acknowledged that unhealthy behavior impedes their overall health, but not related to manage MS. However, their physicians rarely provide AF participants health promotion education (e.g., doing physical activities) and explain how such education can improve their MS symptoms and their overall health as well as quality of life. With an average score of 1.79 on the Barriers to Health Promoting Activities for Disabled Persons Scale, this indicated staying healthy for AF was rarely deterred by barriers (e.g. lack of money, lack of support from family/friends). They somewhat agreed or strongly agreed that they have support available, but they reported the most helpful support they could receive would be from a professional coach, to provide them individualized support and encouragement. One participant stated, “What would help me is if I had someone that I knew that person was trained and would say, hey, your limitations are this and don’t try to push it and stay within your limitations.” In addition, the responses from the focus group indicate the support from friends and family members are needed but not a deciding factor in doing PA. In contrast, their eating healthily intention and behavior, especially when they live with family members or socialize, would be easily compromised with companions. AF with MS had moderate intention to adopt healthy diet and exercise, although they had extremely

high risk perception of unhealthy behaviors. They reported barely having a concrete plan for doing regular exercise and eating healthily daily and even more barely to have a concrete coping plan for dealing with tempting distractions, inevitable sickness, or relapses into being sedentary and not eating healthily. They can adapt healthy eating and physical activity habits in daily life and maintain them in the event of an exacerbation or set back. They were moderately confident in their ability to stick to a healthy diet and regular physical activity since they scarcely had action and coping plans with moderate intention for regular exercise and eating healthily. They reported a moderate level of confidence in their ability to apply stress reduction techniques; however this group reported that they highly agree to have social support when they are under stress. It showed that the current participants would need to learn and practice some stress reduction strategies. Likewise, because of moderate maintenance self efficacy and barely action-coping planning of regular exercise and eating healthily, their recovery self-efficacy for two behaviors is moderate when they need to resume healthy eating and physical activity after a relapse. Although their physical and mental health was comparable to the general population, they reported feeling slight disagreement to neither agreement or disagreement when asked their current level of life satisfaction. This indicates that they apparently are not satisfied with their current life situations and they want to do more to make their life closer to what they would want ideally. They want to improve their current conditions living with MS. Similarly, they were not happy about their current life; they did not enjoy their life as much as others. It might indicate they may need health promotion psycho-education to cope healthily and positively with MS. Their dissatisfaction of life and unhappiness is in accordance with their moderate depression responses.

Interestingly, all of the measured HAPA constructs for physical activities are not significantly different between AF and Caucasians with MS. This may be due to the general descriptions of HAPA construct items and the use of universal description of exercise, although the sample size of AF was obviously small and the score differences are very minor. Besides, it may be because the items are not contextualized for MS patients whose definitions of exercise have modified based on their physical conditions. Symptom severity and its influence on functioning and mobility can be an alternate predictor of self-evaluation of physical activity because depending on the extent of the limitations they may not be able to do exercise as easy as people without disability (Chiu et al., 2011). Their roles at home and in their workplace may be impacted as a result of their symptoms and dysfunctioning which can in turn effect their capability, self-efficacy, intention, and planning for physical activity and healthy eating. Given that the MS symptoms are worse in minority (Weinstock-Guttman et al., 2010), it is important to measure their disability influences in daily function and community participation. However, there is a significant difference in intention of healthy eating for both comparison groups (when comparing 18 Caucasians and 18 AF, $t = -3.29$, $df = 34$, $p = 0.002$; when comparing 170 Caucasians and 18 AF, $t = -2.31$, $df = 186$, $p = 0.02$). African Americans with MS have stronger intention to eat healthily. It could be because they reported AF culture eats a wide variety of foods that are fried and have high salt content and they very strongly believe that this imperils their overall health very much. Also, they reported being in situations where unhealthy eating was the easier option (e.g., meals at church, family food choices). These cultural eating habits can in turn raise awareness to make a change in eating habits. Logically, when comparing 170 Caucasians and 18 AF, Caucasians with MS have higher recovery self-efficacy for healthy eating

than the counterpart ($t = 2.63$, $df = 186$, $p = 0.009$). This may be due to the cultural pressure AF reported having to eat unhealthy food choices at church functions, or gatherings. Both Caucasian samples ($N = 170$, 74.1%; $n = 18$, 83.3%) had a higher percentage of people in the maintenance stage of healthy diet than AF (55.6%), which means there were more Caucasians successfully keeping up healthy eating behaviors. This would also account for the reasons they may feel more assured to continue their change despite an obstacle or setback. Also, the results of this study have shown AF are being diagnosed with MS much later than Caucasians and Hispanics. This late recognition results in worse symptoms in AF and later treatment than their counterparts.

Paradoxically, the current study has found AF regular exercise evaluations of action self efficacy, intention, action-coping planning, maintenance self-efficacy are slightly higher, but not significantly, than the Caucasians with MS. Based on the self-reported measurements, it might be because the present AF participants have slightly minor severity of physical functioning than the counterpart. Besides, many of them had been physically active before their MS onset. Additionally, they used a lot of self-cheering, such as praying, to strengthen their belief and confidence to initiate their physical activities. Further they showed that God would assist their capability to maintain their physical activity ability as long as they keep reminding themselves that God watches and believes they can do it. Interestingly, such social-cognitive differences have been more obvious, even slightly not significantly, in healthy eating behavior. This could be due to AF participants frying foods as their main cooking approach, and gathering feasts consists of foods high in fat, salt, and sugar. In addition, it may be useful to query Caucasian focus groups to get a clearer detailed picture of what is happening personally in their MS experience and make further comparison in terms of how they form modified physical activities,

action/maintenance/recovery self-efficacy, outcome expectancy, risk perception, and action-coping planning.

Hispanic outcomes on HAPA constructs. The results of this study concluded Hispanics with MS reported mild to moderate depressive symptoms. The average Minimal Record of Disability scores indicated mild to moderate disability in their capabilities and social activity. Action self-efficacy for healthy eating was 2.33, indicating rather uncertain to rather certain, producing a wide range of variability between participants. However, their action self-efficacy for exercise was 1.67, indicating very uncertain to rather uncertain. Hispanic participants had a fairly higher confidence in healthy eating, while their action self-efficacy for exercise was much weaker. These scores indicate some Hispanics recognized the importance of healthy eating, while others were not able to overcome obstacles that impede healthy eating. The low confidence in action self-efficacy for exercise may be due to the debilitating nature of MS coupled with the differing definition of exercise between the two cultures in the present study. Their scores measuring outcome expectancy of the benefits (e.g., “If I eat healthy foods, that will be good for my blood pressure and cholesterol level.”) of healthy diet and physical activity indicate the current sample believe in the potential positive effects of exercising and eating healthy. Outcome expectancy for healthy diet was 3.44, indicating mostly true to exactly true. Outcome expectancy for exercise was 3.22, indicating mostly true to exactly true. These scores indicate Hispanics with MS have strong belief that healthy eating and exercise can bring them positive effects. They have awareness of the extremely high risks of engaging in unhealthy behaviors and believe engaging in health promotion behaviors will be beneficial to their overall health, especially physical health. With an average score of 2.24 on the Barriers to Health

Promoting Activities for Disabled Persons Scale, this indicated staying healthy for Hispanics was sometimes to often deterred by barriers (e.g. too tired, no one to help me). They somewhat agreed to strongly agreed that they have support available, but they reported the most helpful support they could receive would be support from family and friends. One participant stated, “I need somebody with me. Driving me to do it because I am not disciplined enough to do it on my own.” Hispanics with MS had a moderate intention to eat healthy and do exercise based on their scores, although they had extremely high risk perception of unhealthy behaviors. They reported having a plan for how and when to change nutrition habits as barely true to mostly true, specifically when dealing with tempting distractions, inevitable sickness, or relapses into not eating healthily. They can adapt eating habits in daily life and maintain them in the event of an exacerbation or set-back. Their scores reflect a plan for how to watch out in order to maintain new nutrition habits as well as what to do in difficult situations in order to stick to intentions as barely true to mostly true as well, which is consistent with their action and coping planning scores and neutral to moderate intention to eat healthily. For exercise, they reported have a plan for when, where, and with whom to exercise as barely true to mostly true. Although the Hispanic sample portrayed a neutral to moderate intention to exercise, a plan for difficult situations or unexpected obstacles was not at all to barely true, indicating they had little to no confidence to stay physically active if they didn’t see the positive effects of exercise, it took too much time, they had to force themselves to do them daily, or if they are tempted to do something else instead. In contrast with the AF sample, the Hispanic sample reported little to less than neutral confidence in their ability to apply stress reduction techniques. This may be due to a difference of opinion for what is considered a stress reduction technique. Also, the AF sample

reported using their religious beliefs as a stress reliever, of which was not reported within the Hispanic sample. The lack of confidence in utilization of stress reduction techniques can result in increased depressive symptoms or exacerbations brought on by high stress. Their recovery self-efficacy to resume healthy eating after a relapse was displayed through barely true to mostly true in confidence, but barely true in confidence to resume exercise after a relapse. This is consistent with their moderate maintenance self efficacy and action and coping planning of eating healthy and less than moderate maintenance and coping planning for regular exercise. This may be due to the ease of being able to control eating habits opposed to exercise. It was reported in the Hispanic focus group that after a relapse, sometimes physical functioning would revert back to normal but sometimes it would not; eating healthy was a more manageable and stable task. In regards to their health-related quality of life, their mental and physical health were consistent with the general population. They reported feeling slight disagreement with their current level of life satisfaction; for example, they slightly disagreed when asked if their life was close to ideal. This indicates that they are not satisfied with their current life situations and they want to do more to make their life more idyllic. Likewise, they were not happy with current life and do not feel they are getting the most out of everything compared to others. This could mean they may need health promotion psycho-education to deal with MS more optimistically. Their moderate depression responses are analogous with their dissatisfaction of life and unhappiness.

Although no statistical parametric tests were run due to the small sample size of Hispanics, there were still notable differences between AF and Hispanics. Hispanics with MS reported their ability to take care of their health was hindered by problems more than AF with MS based on responses on the Barriers to Health Promoting Activities for Disable Persons Scale

(BHADP). This difference could be due to the discrepancy between marital statuses. The

BHADP contain statements such as, “no one to help me and lack of support from family/friends.” Having a partner in the home can eliminate these specific barriers. Many of the AF sample reported receiving this help and support to take care of their health from their husband or wife. Contrary to the AF sample, Hispanics reported little to no concrete plan for when, where, how, and with whom to exercise and little to no plan for sticking with it if something intervenes. This may be due to the differing views on the meaning of exercise and the time commitment it requires. The Hispanic sample stated a specific block of time must be set aside for exercise, while AF was more flexible with their plans. The Hispanic sample reported slightly greater MS severity (MRD-ISS, $M = 1.23$, $SD = 1.06$, MRD-ESS, $M = 1.43$, $SD = 1.43$) than AF (MRD-ISS, $M = 1.03$, $SD = 0.97$, MRD-ESS, $M = 0.98$, $SD = 0.92$) and also less intention to exercise. This was consistent with research done by Tulloch et al. (2009) that showed severity of impairment is related to exercise intention. Lastly, Hispanics rated their ability to do physical exercises regularly as not at all true to barely true. However, 100% of Hispanics reported a change in exercise after diagnosis of MS. This could mean the change after diagnosis was a decrease in exercise because of the symptoms of MS.

Qualitative Study

African American and Hispanic theme differences. There were several differences in themes found for each race including: self-defined exercise for AF, definition of exercise for Hispanics, focus on MS symptoms for Hispanics, self-initiation of PA for AF, need for company to exercise for Hispanics, and coping strategies for MS, including prayer, for AF.

African American women without MS view exercise as a strenuous, vigorous activity (D'Alonzo & Fischetti, 2008). Generally, exercise is defined as a planned, repetitive activity requiring physical exertion. African Americans with MS have self-defined exercise, modifying conventional exercise. African Americans with MS understand MS challenges physical functioning so they learned to modify the public understanding about exercise. They understand the prognosis of MS and have redefined exercise as being any body movement costing physical energy. They have recognized the results of their efforts and understand the importance of movement to manage MS symptoms. They have experienced the negative consequences of being sedentary, for example, sitting for long periods of time can increase symptom severity or can result in stiffness of the legs. Therefore, they find a way to be physically active without overexerting themselves. As a result of the modified definition of exercise; any body movement costing physical energy, there is no need to specifically plan exercise. This differs from action and coping planning in the HAPA model that requires a specific how, when, with whom, and where physical activity will take place and how to stick to those plans in difficult situations. They will set small achievable goals, for example, walking 15 minutes or less, household chores, or playing with children, which also strengthen self-efficacy and allow them to experience the immediate positive effects of doing PA. Patient defined PA is very flexible and can be done in any daily schedule as the opportunity arises. However, for participants who view exercise as a more strenuous activity and more traditional, for example, going to the gym for weight training or using cardio exercise machines, they reported they have to make a specific exercise schedule. They need to pay more attention to energy control; the chance of relapse increases due to

weather changes, operation hour, crowd, fast pace, and limited knowledge of use of exercise machinery, etc.

In congruence with previous research, Hispanic participants with MS considered exercise to be conventional (D'Alonzo & Fischetti, 2008). Although physical therapy and stretching were thought to be useful in building muscle and keeping limber, they were considered to be “baby exercises,” and not traditional exercise. Functional daily physical activity was a prerequisite for doing typical exercises but not a substitution. However, it was reported functional daily PA uses a great deal of energy and results in fatigue. The focus was on what can no longer be done rather than what can. There was a strong comparison of themselves to the normal population and the repercussions of MS on daily functioning. The Hispanic participants reported exercise was not thought to be feasible because of the energy cost, however, stretching, cleaning the house, or doing physical therapy were considered doable physical activities, but not necessarily exercise.

African Americans with MS from the present study proved to be very independent in their choice and self-initiation to do physical activity. They see it as a self-duty because they understand no one can do it for them. Stuijbergen (2006) corroborates this finding that effective health promotion interventions must encourage self-initiated PA and emphasize the need for personal responsibility. They realize they are living with MS and being sedentary is not a viable option if they hope to maintain their daily life functioning and role participation. This also contrasts with D'Alonzo and Fischetti (2008), because their findings suggest AF need a family member to encourage them to exercise. The current study found that unless a family member modeled health behavior, their intention or motivation was not affected by a lack of modeled

behavior. However, support from family and friends in the realm of healthy eating will be more critical because it requires more compromise to choose healthy foods for a family or group.

The Hispanic sample reported not being able to consistently engage in physical activity because they were not self-motivated. The absence of action self-efficacy can leave a person feeling incapable and unable to see themselves as effective and efficient to perform a health behavior change (Bandura, 1986). Hispanics with MS also feared losing their life roles and daily life functioning. However, the presence of MS symptoms did not serve as a motivator to exercise. This may be because the current Hispanic sample did not realize the short-term and long-term benefits of doing PA. The fear of declined functioning reduced confidence to do physical activity because the focus was on what they can no longer do, opposed to what they can do within their limitations. Dwelling on the MS symptoms perpetuates a negative mood and depressive symptoms. Unfortunately, this results in being more sedentary which in turn exacerbates current MS symptoms.

However, when asked how to generate motivation, Hispanic participants stated that support from family members or a friend would be necessary. They felt a companion was necessary to do exercise. Alone, the focus was on the MS symptoms, the decline of daily functioning, and the drain of energy FDPA causes. They reported if a family member or friend would exercise with them regularly, on a set schedule, they would be motivated to exercise. Research done by Ryan (2005) found Hispanics without a disability felt more of a time investment (e.g. specific time slot, routine) was necessary to obtain exercise benefits. Consistent with the current sample, Hispanics with MS reported if exercise were doable, it would have to be on a set schedule, and it would have to fit in with their other activities of daily living. It was

stated they would be more apt to challenge and push themselves if they had a partner or professional to accompany them physically or hold them accountable for planned exercise. Motivation is not generated intrinsically, like it is for AF.

Resuming physical activity after a temporary difficulty or relapse was generated through prayer and self-encouragement for AF, in addition to their insightful understanding of the relapsing and remitting cycle of MS. Many participants found strength through their belief in God and faith that a higher power will help them through challenging moments. In a study done by Dalmida, Holstad, Dilorio, and Laderman (2012), many women with HIV used spirituality as a tool to cope with stressors and demands of the disease. They reported that through a relationship with God, they were able to reduce their stress and worry about their health. The researchers found significant positive associations between spirituality and health-related quality of life (Dalmida et al., 2009; Dalmida et al., 2010). If depression were to deter exercise, the participants in the current study stated they would also use prayer and self-cheering to inspire self to do PA because they understand it is a necessary for their health and they know PA improves their mood. This is consistent with literature about exercise because PA improves mental health by reducing anxiety, depression, and negative mood, and by improving self-esteem and cognitive function (Sharma, Madaan, & Petty, 2006). AF with MS accepted the disease and felt better about it when they realized it was not as bad as it could be when they compare their symptoms to others. They believed God would not give them more than they could bear. These findings are consistent with previous research that suggest this personal relationship with God helps AF with MS to manage stress and emotions, be more resilient, and be more accepting of the diagnosis than the Hispanic sample (Dalmida et al., 2012).

African American and Hispanic theme similarities. Both races yielded common themes including: agreeing with peer group who have exercised regularly, having convenient and accessible means to do PA, understanding importance of PA, recognition of immediate and long term positive effects of PA, finding doable PA, energy, heat, and fatigue management, fear of MS prognosis, unreliable social support, norm expectations, self-monitoring of health and daily functioning, and importance of healthy eating.

Both groups believed being surrounded with people, more specifically people with a similar background, who engage in PA as their habit, would be motivating. Consequently, each focus group served as an informational motivational group therapy. Participants encouraged each other and shared useful information on doing physical activity and healthy cooking. This exchange gave the opportunity for similar people to discuss what they do for themselves and what methods work and which do not. Although, the Hispanic group contained one participant, the discussion of physical activity was motivating, and by the end of the group she left with a higher level of motivation to do PA than when she first entered.

AF and Hispanics reported wanting a convenient, accessible, and comfortable environment to do physical activity. Consistent with previous research, gyms are considered to be catered to experienced exercisers, and that functioned as a barrier for minorities without a disability (D'Alonzo & Fischetti, 2008). The participants in their study stated that people in gyms were typically doing vigorous exercises for aesthetical value rather than for health reasons. They felt more self-conscious in this atmosphere because they did not look like the other women in the gym. This is consistent with the responses from the current study. Both groups reported feeling intimidated by the gym because it was fast paced and the majority of the people in the

gym were doing strenuous, vigorous activities. The participants in the present study expressed their concerns about having a slower work-out pace due to MS and felt more self-conscious in an area where people did not understand their limitations. AF also would like MS assistive technology (e.g. cooling guards) and for specific cultural needs to be addressed (e.g., swimming cap) to increase the comfort and convenience of PA.

Both minorities with MS understood the importance of PA to their health and daily functioning. Although they have different perceptions of what exercise is, they understand the benefits of PA and how it is beneficial for MS in particular. They have experienced how it helps and this increases self-awareness of its importance. For example, participants stated PA helped with circulation and sleep, stress relief, and they felt better immediately after PA due to endorphin release.

Most participants indicated they learned over time how to manage their energy and how to handle heat and fatigue. Heat exacerbates MS symptoms and fatigue is known to be the most common barrier to physical activity in people with MS (Motl et al., 2009). They know what their limitations are because if they overexert themselves they will not be able to function the next day. Through trial and error they test their boundaries and they can do what they can to be physically active within those restraints. This is helpful because it allows them to be able to find a doable, yet challenging form of PA to remain active without overdoing it.

The fear of the MS prognosis was present for both groups. However, they served alternative purposes. Fear in AF was a motivator to do PA in order to be able to maintain daily life functioning and roles. Fear for the Hispanic sample was not a motivator because the focus on the prognosis inhibited action by dwelling on the negative aspects of MS.

Unreliable social support was common throughout both ethnic groups. Family members were not always encouraging or adept at setting an example to exercise or eat healthily. Having someone to encourage them, hold them accountable, and coach them were themes thought to be helpful in motivating them to adopt physical activity and maintain it. Although AF were self-motivated, they still appreciated the help of others in their personal plight. Both groups expressed the disappointment they faced when a family member or exercise partner were unreliable. However, studies that have evaluated the effectiveness of family-based social support and health behavior change have been inconclusive, some studies show it increases times spent exercising and frequency of exercise, but others show there is no difference (“Recommendations to increase,” 2002).

Both groups were faced with similar norm expectations. People expect them to have personal responsibility to engage in health behavior, but do not understand they have different restrictions and the traditional modeling of PA may not be adequate for people with disabilities. People without MS assume people with MS should do PA, while they do not need to because they do not have MS. People with MS are expected to be able to continue to perform daily life roles and functions after being diagnosed with MS. However, our participants reported their family members believe their dysfunctions due to MS make them different from regular people. One participant stated her siblings considered her to be “special” because she has MS and cannot do some of the things they do. This belief served as incentive to show that although there are limitations, they are still capable to continue to be active and participate in their daily life roles.

Self-monitoring symptoms and quantifying how much they can do by finding doable but beneficial PA has helped AF and Hispanics with MS to encourage themselves, maintain PA,

preserve their current daily functioning, and prevent worse MS long-term outcomes. Both groups had goals for their future: they wanted to be able to continue working and be an active family member. Tracking and seeing their progress from PA by feeling good on a daily basis, better physical and mental health, and MS progress control, will help to motivate to do PA, which in turn will help them achieve their personal goals. When long-term goals are broken down into short-term goals, they can improve self-regulation through their effects on motivation, learning, self-efficacy, and self-evaluation of progress (Bandura, 1997; Schunk, 1995). Goals motivate people to put forth effort needed to meet task demands and help people focus on the task, select appropriate goals, and monitor their progress on their goals (Schunk, 2001). Self-evaluations of progress strengthen self-efficacy and help to sustain motivation (Schunk, 2001). Goal attainment builds self-efficacy and helps them to select new, challenging goals (Schunk, 2001).

An interesting theme found between both groups was the equal importance of healthy eating to exercise when there is a relatively severe MS status. Both groups reported an unhealthy trend of eating amongst their cultures. AF reported that eating fried foods was common in AF culture and turning down food was offensive. They indicated a struggle trying to find a healthy balance of healthy eating but understand its importance to their personal health and any other chronic conditions (e.g. diabetes, high blood pressure, high cholesterol). The Hispanic sample concluded the Hispanic culture has its own lifestyle in regard to eating, and understands it is unhealthy because traditional Spanish and Mexican dishes have a high saturated fat and salt content. MS specialists recommend that people with MS adhere to the same low-fat, high fiber

diet that is recommended for the general population. There is some evidence that a diet low in saturated fats may have some benefit for people with MS (Nutrition and Diet, 2012).

Theoretical conceptual codings of African Americans and Hispanics. Themes from both groups were categorized to get a clearer view of the theoretical concepts.

Cultural characteristics. The themes regarding cultural characteristics were put into three domains: culture of medicine, African American (AF) character, and eating style. AF participants reported that their physicians primarily focused on medicine and epidemiology. There was very rare discussion about health promotion behaviors. However, a few participants mentioned how helpful it would be if a physician would check on their exercise when they have doctors' appointments. Therefore, a doctor needs health promotion education to deliver to MS patients. AF participants stated that they received an MS diagnosis very late. They reported their doctors were reluctant to diagnose AF with MS because it is less prevalent in minorities. The delayed MS diagnosis and treatment is unfortunate because AF and other minorities (e.g. Hispanics) typically have higher symptom severity (Weinstock-Guttman et al., 2010). The Hispanic participant reported she was diagnosed very quickly; her physician did not rule out MS because of her skin color. Both groups reported cultural differences in eating patterns and stressed the importance of adhering to a healthier diet. AF participants stated their culture is rich in fried foods and foods with high fat and salt content. Hispanic participants said in their culture foods are typically high in fat and salt. They reported a healthier eating style would help with overall health because food intake influences physical conditions, such as weight, blood pressure and sugar, but not specific for managing MS symptoms.

Self-defined exercise as functional daily physical activity. AF with MS self-defined exercise as being any individualized just-right challenging FDPA being done at any time or with just-right challenge. This finding is inconsistent with previous research in which AF define exercise traditionally. Previous research shows African American women without MS view exercise as a strenuous, vigorous activity, and generally, exercise is defined as a planned, repetitive activity requiring physical exertion (D'Alonzo & Fischetti, 2008). AF considered walking, physical therapy, household chores, recreational physical activity game media programs (e.g., Wii), and playing with children as physical activity that equates to exercise because they have experienced the negative effects of being sedentary and these types of PA have proven to have positive effects on their bodies. They were able to find a challenging, yet doable, amount of PA, in accumulated short bouts, to keep their bodies moving for an extended time without exhaustion. On the other hand, Hispanics in the sample did not redefine exercise. Physical therapy and walking were not considered exercises by the Hispanic sample; they were thought to be useful, but not a substitute for jogging or lifting weights.

Quantify self-monitoring. Both groups felt measurable progress was important to increase their self-efficacy and find out what doable PA is and what may be overexerting. By monitoring the amount and frequency of FDPA they engage in, they can give themselves a clearer picture of what they can expect to do in the future and how they can modify their personal goals. This is important because goal setting theory suggests setting specific goals leads to higher performance when compared to not setting a goal or having a vague, nonquantitative goal (Strecher, Seijts, Kok, Latham, Glasgow, DeVellis, Meertens, & Bulger, 1995).

Appreciation. AF and Hispanics expressed their gratefulness for their current mobility and functioning, for example, they reported being grateful they were still able to go to work and they were not wheel chair bound. They appreciated the fact they were still able to be an active family member and perform their work duties. AF with MS compared their symptoms to people who were not ambulatory, or could not see, or speak. The Hispanic sample stated that they felt fortunate to not be wheelchair bound. This cycles into their inner motivation to continue to do what is necessary to maintain their current functioning. The participants know MS is a life-long disease that deteriorates their bodies over time and mobility and daily functioning are time-limited luxuries.

Supporting resources. Across the board an affordable, convenient, accessible, comfortable, fun, and safe environment was necessary to do physical activity. Being surrounded by people who understand MS, such as professionals and people with MS, was important to all participants. Participants reported that in a gym they felt self-conscious because they had to work at a slower pace. They felt they were perceived as awkward because the conventional exerciser or personal trainer does not understand their disease or the limitations they have. They did not feel welcomed or safe in the conventional gym environment. They reported this would help raise their action self-efficacy to be physically active. AF reported heat as being a deterrent to PA, and having some type of cooling device would help them to be able to be a more active participant in activities or responsibilities that require being outside. A specific cultural need for AF was a swimming cap. Female participants stated they would be more apt to participate in water aerobics if they received this reasonable accommodation.

Model for health promotion behavior. The presence of people who are eating healthy and exercising regularly, serve as models for minorities with MS. It enhances their motivation because they are surrounded by people with the same goals. Also, the presence of a professional (e.g. physical therapist, career coach, exercise trainer), who understands how MS affects everybody differently was important to the participants because they are able to get individualized management. A professional will know how to push them within the limitations placed on them by MS. Being held accountable by a physician, family member, or friend was a motivator to do PA because they would feel shamed if they were not able to relay a good report. One participant stated she felt good when she knew she could tell her doctor she had been exercising. Although AF with MS saw the benefit of this support it was not necessary for them to engage in PA actively. However, the Hispanic sample found a companion to be critical for PA. They require a group setting of people with MS doing PA or someone close to them to do PA with them. Solitary PA was not ideal for the Hispanic sample. The thought of doing PA alone was unfavorable and there was no motivation to do PA unaccompanied.

Coping with MS prognosis. AF exuded an acceptance of MS compared to the Hispanic sample; therefore, coping strategies differed between the groups. AF participants yielded a higher ability to use stress management techniques, for example, prayer, PA, and attending church, and reported this helped with their stress levels and emotional fluctuations by giving them an outlet to release their troubles. They used these techniques along with learning about the disease, paying attention to biological health, and reframing negative thoughts about MS to cope with their declining physical and mental conditions, rather than focusing on the MS symptoms like the Hispanic sample. AF view of MS was more functional-oriented compared to

the Hispanic view, which was more symptom-oriented. This yielded the AF goal to be to maintain the best level of daily functioning because this belief of MS renders more focus on health self-management. The Hispanic sample did not report any specific coping strategies; exercise was avoided because FDPA drained the energy needed to do it.

Self-awareness of importance of PA. Both groups understood the importance of PA for MS management and maintaining daily life functioning. AF reported experiencing the effects of being sedentary, for example, increased symptoms severity and negative feeling when sitting around, and recognizing the difference they felt when they did PA, for example, increased confidence and stress relief. The release of endorphins resulted in feeling better rather than allowing depressive symptoms to become more prevalent while being sedentary ("Exercise and endorphins," 2008). AF participants reported that even though they may not feel like doing PA, they remember the effects of it and it motivates them. Although the Hispanic sample did not redefine exercise, they reported the benefits they received from doing physical therapy, such as less spasticity and increased muscle strength.

Spiritual resources. Reliance on God was a consistent theme for the majority of AF participants. They would use prayer as their main connection to God, a Higher Power. They would pray to God for strength and trust in Him that He would not give them more than they could handle. They would talk to God when they felt there was not anybody else who could hear the desires of their hearts. Prayer was a source of strength to overcome obstacles, for example, needing physical strength when feeling weak, and to keep a positive state of mind despite the circumstances. AF reported prayer and church attendance was a way to express their gratitude to God for being with them when no one else is and for providing them strength to cope with MS

and the limitations it places upon them. Many participants stated that without God they would not be where they are today because through His grace and mercy they have been able to make it this far, without Him they would have succumbed to MS and let it overcome them. Instead their belief in God helps them to take action and be strong because religion is based on faith in God's promises and He promises that if you believe in Him, He will give a peace that surpasses all understanding. AF also reported internally encouraging themselves, by saying in their minds they are capable of doing something difficult when they come across an obstacle, and once they overcome it their faith in themselves increases and they know they can push themselves next time to do it again. Their self-encouragement is positive and helps them strive for achievement and be resilient. Also, being a role model for their families who see them persevering despite MS builds their achievement and pride because it is self-rewarding. One participant stated that she felt good at the gym when she was being more effective with her PA routine than other people who do not have a disability.

Fears of MS prognosis. The fear of losing life roles and daily functioning was inner motivation to persevere, control MS, and improve the symptoms by doing any PA given the opportunity. Fear is a motivation in itself; therefore, fear as motivation coupled with the reinforcement of drive reduction of fear is an example of behavior leading to a new learned response (Kidd & Kidd, 1972). The fear of loss works as motivation for drive to eliminate the probability of losing life roles and daily functioning. They realize MS is a long-term fight and understand health promotion behaviors are critical to maintain their capabilities because without it their symptoms can worsen and subject them to a less favorable prognosis. The unexpected MS symptoms are a motivator to do physical activity because during these exacerbations

mobility and daily functioning are compromised. For example, waking up one morning and the left side of your face is numb or not being able to move your toes unexpectedly. The symptoms function as a reminder to move the body.

Hispanics with MS also feared losing their life roles and daily life functioning. However, the presence of MS symptoms did not serve as a motivator to exercise. While only focusing on MS symptoms, the fear of declined functioning reduced confidence to do PA because the focus was on what they can no longer do opposed to what they can do within their limitations. Dwelling on the MS symptoms perpetuates a negative mood and depressive symptoms. This results in being sedentary, which in turn exacerbates current MS symptoms.

Outside attitude. Norm expectations towards people with MS were that PA was a self-responsibility and MS in itself should be a reason to exercise. In addition, the public caters health promotion to the normal population of people without a disability. Conventional methods of PA does not work for MS patients because their limitations are not being taken into account by the general public and environmental concerns, such as heat sensitivity, and people's attitudes towards people with MS. Also, participants reported nondisclosure to their jobs because they did not want to risk being looked at differently or incapable of performing their work tasks. With the choice to keep their diagnosis private, it influences them to compensate in places they are lacking and do what it takes to sustain their current performance level. However, if they felt they would be accepted and not looked at differently because they have MS, they could receive work accommodations that would not require them to expend more energy into keeping it undisclosed. It is beneficial to them when the outside world understands MS and its influences on daily life

functioning and mobility. Outside knowledge on how PA and eating healthy is beneficial to people with MS could help construct a sounder environment for people with MS.

Integrating PA into daily routines. AF participants consistently reported setting small achievable goals (e.g., 45 minute walking DVD, five minute walk, five minutes playing with children). PA is put very flexibly into their schedule and is performed when it is convenient, it does not have to be a fixed, planned time slot. It was not necessarily planned but a conscious effort to move daily was in place. However, for participants who view PA as a more vigorous activity and prefer to do PA at a gym, a specific exercise schedule was used. The Hispanic sample preferred having a set schedule to do PA, including someone to do it with them physically.

Experienced self-efficacy. AF participants reported that overcoming challenges and being able to exercise repeatedly builds their confidence. When they feel accomplished they are able to prove to themselves what they are capable of achieving when they are worried about degenerative functioning. Their self-efficacy increases when they follow through with their PA goals and they see improvements in their physical and mental health. Knowing they will encounter difficulties and knowing how they will cope with them using a concrete plan helps prepare them to continue to build self-confidence through achievement. Having the ability to perform daily functions helps to pull them together and believe in their capability.

Self-initiation of PA commitment. AF participants viewed PA as a self-duty because they realized they could not depend on others to help them exercise. Social support is not always reliable or may not set a positive example of health promotion behavior because they may not be doing PA, eating healthy, or may not have a condition that requires them to engage in health

promotion behaviors. They are mindful of the long-term outcomes of MS and influences on daily functioning, and this helps them to be self-motivated. They understand that knowing the benefits of PA on MS is not enough, and they must take action in order to maintain daily functioning to the best of their ability.

The study has shown the modified definition of exercise, fears, task self-efficacy, outcome expectancy, risk perceptions, and resources serve specific functions in motivating AF and Hispanics to do PA or eat healthy. Social Cognitive Theory states that task self-efficacy is a strong predictor for PA. Outcome expectancy for exercise in the HAPA model focuses on generally feeling better and improving cholesterol level and blood pressure. The findings from this study conclude that the outcome expectancy of AF with MS is to maintain their daily life functioning and roles. This suggests that in order to motivate people with MS to do health promotion behaviors, the focus from physicians must be geared towards what can be done to improve or maintain their daily life functioning and language depicting this goal must also be used with MS patients.

Their motivation for adoption of this health promotion behavior is different than the items listed in the HAPA model. Given the new definition of exercise from AF, action planning and coping planning for exercise is not concrete. It is very flexibly put into their schedule, and the majority of AF with MS who do PA regularly did not have a specific plan for it.

Limitations

The study was primarily limited by the small sample size for both African Americans and Hispanic participants. Our sample did not respond to the flyers but were receptive to professionals they were personally working with who advocated the study. Only after this

encouragement from professionals, did they reach out to participate in the study. This may be due to a more introverted type of seeking-help character. It appears as though participation was an option only after prompting or approval from another person. Ideally, the Hispanic sample size would have been closer to the AF sample size in order to reach theme saturation and make more valid comparable differences. Also, the samples were limited to only one medical center, which could be another limitation in terms of diversity. To increase Hispanic participation, more individual outreach between the researcher and the targeted population may have been helpful. If the study could employ a professional to translate English to Spanish, opportunities to have more Hispanic patients with MS interested in the study could have increased. This study solely relied on focus groups initially and gradually incorporated other means of recruiting participants (e.g. adding study to National MS Society website, accepting phone interviews). Utilizing these methods as well as the original recruitment method initially would have helped to increase the sample size. Due to late incorporation of additional recruitment methods and time constraints, four participants could not participate in the study. These methodology revisions can help lessen the time needed to collect data whilst bringing in more participants. Additionally, the present findings suggest that the HAPA-based measures need to be modified in item content.

Although the coding procedure was carefully documented very precisely to serve as evidence for validity and reliability; it may be seen as a limitation because coding software was not utilized. Researchers have agreed manual coding is acceptable when there are a small number of transcriptions (Gibbs, 2002).

Future Research

Future research with a larger sample of African American and Hispanics with MS should further inquire if there is assistive technology or cultural accommodations they may need to adopt and maintain regular physical activities. The African Americans participants in this study reported wanting this assistance, and there is a possibility Hispanics may also request that insurance companies provide assistance in purchasing exercise videos and other affordable means of exercise, but it was not directly asked to the Hispanic sample in this study. It will be useful to inquire about these types of assistance to a Hispanic sample once they have been educated on the new definition of PA and how these types of assistance and accommodations can be as conducive to them as common exercise.

Recreational media games were seen to be physical activities for the AF sample and they were reported to be helpful in improving MS symptoms. It may be useful for health insurance companies or health policy providers to consider covering the cost of building a home-based physically active environment for people with MS. Over years, future research can test this new development to see how much health care costs decrease at the expense of reduced secondary conditions due to MS and MS related symptoms and disability.

The Hispanic sample in the current study was composed of three single women that essentially lived alone. Future research should explore the role of marital support or having other people present in the household on the effect of exercise intention. Most AF in the sample were married or was living in a household with at least one other person, whether it be a spouse, their parents, or their children. One AF with MS lived alone, and compared to the other members of the group who lived with other people, this participant had the least amount of self-efficacy. She exhibited the least amount of acceptance of MS and was more focused on her

symptoms rather than finding ways to overcome them. She reported the group setting was motivational and helped her gain insight on her unanswered questions about MS.

In future research it will be useful when asking AF with MS about their social support, which avenue is the most critical to them. It was reported that friends, family, and physician support were important, but it was not specified which support held the most leverage.

Participants were asked about their personal experience with MS, but in the last focus group it was revealed that although they currently accept MS and do PA, it took quite a bit of time to get to that point. Future research should question how long it took to accept the MS diagnosis and begin doing PA. Also, it would be useful to know how they learned that physical activity was important to their personal experience with MS. One participant in the last focus group stated she had looked on the internet to learn about the importance of PA to MS. It was found that physicians focus on medicine and epidemiology rather than PA, and in order to raise more awareness about the importance of exercise for AF with MS in the future, it would be helpful to know what the commonly used sources to find this information are.

The generalizability of the study can be improved by recruiting from a wider range of resources to include a more solid representation of individual characteristics. For example, the current study recruited from one MS center and one hospital in Dallas, Texas. It is possible this area has more resources for PA than a smaller town or a city where there is not a MS center. It would be useful to have a more widespread sample to make sure the themes have consistency across different elements within cultures.

Implications

African Americans with MS who initiated physical activity (PA) found it was easier to maintain when they were able to be self-paced, without time constraints, and it was affordable. With regard to affordability, participants would prefer their insurance to pay for assistive technology, such as a cooling guard to give them more opportunity to do PA. Female participants also suggested the availability of swimming caps for water aerobics, to protect their hair from chlorine. These are reasonable accommodations that would help AF to be more physically active. Many participants reported using exercise DVD's or interactive games (e.g., Wii) to do physical activity in the comfort of their homes. It would be beneficial to AF with MS if their health insurance would also help purchase these affordable exercise options to help them do tolerable, fun, and convenient PA.

Based on the Hispanic sample, it appeared as though collective family influence versus the self-motivation of AF to exercise were more influential on the intention to engage in PA. Providing family education for Hispanics would be useful. Involving the family by helping them understand the importance of physical activity to MS prognosis can in turn build the support Hispanics need from their families to do PA. It would also be useful to tell family members that doing PA together at a specific time can help their loved one with MS to exercise.

Previous research has suggested the idea of designing counseling (e.g., motivational interviewing) to examine the effects of this health promotion intervention on health behavior of people with MS (Chiu, 2009). The focus groups served as an informational motivational group and it proved to be therapeutic. Many participants stated they had not been involved in a group like this before but found it helpful because participants encouraged each other and shared useful

information on doing PA and healthy eating. This interchange of information was shown to be a useful health promotion intervention.

African Americans and Hispanics with MS have different perceptions and interpretations of exercise. However, it was agreed that healthy eating habits have equal importance to PA when they have relative severe MS status. It would be useful for health promotion outlets to promote healthy eating and regular engagement in physical activity simultaneously, instead of separately. This will allow health promotion to appeal to a wider audience and account for people who may not be able to be physically active due to their disability.

Unfortunately, “being AF” often leads to late treatment of MS, this commonly happened among the present focus group participants. Rehabilitation counselors can apply a modified HAPA model for AF with MS to manage their health and further to maintain their daily functioning and role participation (e.g., working, parenting, and independent living).

The newfound themes could be effective for a culturally sensitive intervention design. The patients’ main concern is being able to continue their daily life roles and functioning while the physician is focused on medication treatment. Understanding this disparity can help health professionals learn what kind of language is best to help motivate people with disabilities to adopt healthy behaviors in order to pursue a better quality of life and well-being. It is important to study different cultures in order to gather more information about lifestyles, values, and beliefs to develop the best health promotion strategy for minorities with disabilities.

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Table 1

Instruments for 12 Measured Variables

Measured variables instruments	Numbers of items	Rating	Testing time
<i>Severity of Multiple Sclerosis</i>			
Minimal Record of Disability	23	0-4/5	3 min
<i>Action Self-Efficacy</i>			
Action Self-Efficacy Scale for Healthy Eating Habit and Exercise	8	1-4	<1 min
<i>Outcome Expectancy</i>			
Outcome Expectancy Scale for Healthy Eating and Exercise	12	1-4	1 min
<i>Risk Perception</i>			
Health/Safety Risk Perception Scale and the Health/Safety Expected Benefits Scale	12	1-5	2 min
<i>Resources</i>			
Barrier to Health Promoting Activities for Disable Persons Scale Berlin Social-Support Scales	18	1-4	2 min
<i>Maintenance Self-Efficacy</i>			
Maintenance Self-Efficacy Scale for Exercise Regularly and Change of Nutrition Habits	15	1-4	2 min

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Action Planning and Coping Planning

Action Planning and Coping Planning	25	1-4	2 min
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Scale for Exercise and Nutrition Habits

Intention

Health Behavior Intention Scale	10	1-7	1 min
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Recovery Self-Efficacy

Recovery Self-Efficacy Scale for	12	1-4	1 min
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Exercise Regularly and Healthy

Nutrition Habits

Health Promotion Behavior

Physical Activity and Healthy Dietary	16	yes/no	1 min
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Health-Related Quality of Life

MOS Short form Health Survey	12	1-3/5	2 min
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Subjective Well-Being

Satisfaction with Life Scale	5	1-7	<1 min
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Subjective Happiness Scale	4	1-7	<1 min
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Descriptive Information Regarding Participants

Variable	African American		Hispanic American	
	n	%	n	%
Gender				
Male	4	22.2	0	0
Female	14	77.8	3	100
Current past 12 months relationship status				
Never married	4	22.2	2	66.7
Married	9	50	0	0
Widowed	1	5.6	0	0
Divorced	2	11.1	1	33.3
Separated	1	5.6	0	0
Living with significant other	1	5.6	0	0
Religion				
Baptist	8	44.4	0	0
Methodist	4	22.2	0	0
Protestant	3	16.7	0	0
Christian	3	16.7	0	0
Catholic	0	0	1	33.3
High educational level				
High school graduate	4	22.2	1	33.3
Some college	7	38.9	1	33.3
College graduate	3	16.7	1	33.3
Graduate school	4	22.2	0	0
Current vocational status				
Unemployment	4	22.2	0	0
Retired due to MS	5	27.8	0	0
Employment full-time	7	38.9	3	100
Employment part-time	4	22.2	0	0
Student	0	0	0	0
Volunteer full-time	0	0	0	0
Volunteer part-time	0	0	0	0
Current occupation				
Student	1	5.6	0	0
Service worker	4	22.2	1	33.3

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Variable	African American		Hispanic American	
	n	%	n	%
Operator	2	11.1	0	0
Craftsman	0	0	0	0
Clerical or sales	5	27.8	1	33.3
Manager	1	5.6	1	33.3
Professional	3	16.7	1	33.3
No occupation	2	11.1	0	0
Source of income				
Own employment	8	44.4	3	100
Employment of family member	4	22.2	0	0
SSI	1	5.6	1	33.3
SSDI	4	22.2	0	0
Private disability	2	11.1	0	0
Health insurance				
Private insurance through employment	8	44.4	3	100
Private insurance through other means	1	5.6	1	33.3
Medicare	5	27.8	0	0
Medicaid	4	22.2	0	0
None	1	5.6	0	0
Other	3	16.7	0	0
Total household income past 12 months				
Under \$24,000	6	33.3	0	0
\$25,000 to \$34,999	4	22.2	1	33.3
\$35,000 to \$49,999	3	16.7	1	33.3
\$50,000 to \$74,999	2	11.1	0	0
Over \$75,000	3	16.7	1	33.3
Living area				
Large urban area	16	88.9	1	33.3
Medium urban area	1	5.6	1	33.3
Suburban or small town	1	5.6	1	33.3
Being treated for any other health problems				
Over weight	2	11.1	1	33.3
High blood pressure	4	22.2	0	0
High cholesterol	1	5.6	2	66.7
Diabetes	2	11.1	0	0
None of the above	6	33.3	0	0
Other	6	33.3	0	0

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Variable	African American		Hispanic American	
	n	%	n	%
Health practices related to “diet”				
Yes	8	44.4	1	33.3
No	10	55.6	2	66.7
Health practices related to “exercise”				
Yes	14	77.8	3	100
No	4	22.2	0	0
Health practices related to “sleep”				
Yes	11	61.1	2	66.7
No	7	38.9	1	33.3
Health practices related to “relaxation”				
Yes	7	38.9	3	100
No	11	61.1	0	0
Receiving health care and rehabilitation services				
Medical treatment (e.g., doctors nurses)	13	72.2	3	100
Physical therapy	4	22.2	1	33.3
Occupational therapy	2	11.1	0	0
Exercise therapy	1	5.6	0	0
Individual counseling	2	11.1	1	33.3
Group counseling	0	0	0	0
Psychological assessment	0	0	1	33.3
Vocational assessment	0	0	0	0
Vocational/employment training/placement	0	0	0	0
Places in a community for physical exercise				
At home with exercise equipment	12	66.7	1	33.3
Community recreational clubs	5	27.8	1	33.3
Community centers with exercise equipment	4	22.2	1	33.3
Neighborhood walking/bike paths	8	44.4	2	66.7
Private health club	3	16.7	2	66.7
Others	2	11.1	0	0
Frequency of eat outside the home per week				
0 times	4	22.2	0	0
3-5 times/week	10	55.6	2	66.7
One meal daily	3	16.7	0	0
Every meal	1	5.6	1	33.3

Table 3

Means, Standard Deviations, Ranges of Total Scores and Item Scores

Measures	Item score range (Manual)	Item score range (Sample)	Item score mean	Item score SD
		AF/H	AF/H	AF/H
MRD-ISS	0-4	0-3/0-2	1.07/1.23	.87/1.06
MRD-ESS	0-5	0-3/0-3	.98/1.43	.92/1.43
ASES-Healthy Eating Habit	1-4	1-4/1-3	3.14/2.33	.85/1.15
ASES-Exercise	1-4	1-4/1-2	2.75/1.67	.81/.58
OES-Healthy Eating Habit	1-4	1-4/3-4	2.93/3.44	.93/.51
OES-Exercise	1-4	2-4/3-4	3.22/3.22	.66/.19
HRPS	1-5	2-5/4-5	4.08/4.5	.90/0
HEBS	1-5	2-5/4-5	4.58/4.67	.69/.29
BHADP	1-4	1-3/1-3	1.79/2.24	.45/.72
BSSS	1-4	1-4/2-4	3.03/3.25	.60/.61
HBIS-Exercise	1-7	3-7/4-6	5.75/4.83	1.5/.58

Measures	Item score range (Manual)	Item score range (Sample) AF/H	Item score mean AF/H	Item score SD AF/H
HBIS-Nutrition	1-7	3-7/3-6	5.59/4.4	1.25/1.22
APS-Exercise	1-4	1-4/1-3	2.89/2.13	.87/1.03
CPS-Exercise	1-4	1-4/1-2	2.5/1.33	1.06/.58
APS-Nutrition	1-4	1-4/1-3	3/2.17	.97/.58
CPS-Nutrition	1-4	1-4/2-3	2.76/2.44	.91/.51
MSES-Exercise	1-4	1-4/1-3	2.89/1.75	.89/1.09
MSES-Nutrition	1-4	1-4/2-3	2.9/2.83	.90/.29
SPPHS-Stress Reduction	1-5	1-5/1-3	3.19/2	1.26/1
RSES-Exercise	1-4	1-4/1-3	2.78/2	.78/.88
RSES-Nutrition	1-4	1-4/2-3	2.57/2.89	.98/.19
PCS*	0-100	32-69/42-62	50/50	10/10
MCS*	0-100	29-64/39-60	50/50	10/10
SWLS	1-7	1-7/1-4	3.87/3	1.77/1.74

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SHS	1-7	2-7/4-5	5.15/4.58	1.42/.14	
CESD-10	0-3	0-2/1-3	1.29/1.83	.65/.71	

(cutoff score = 10)

Note. *PCS and MCS are total scores. MRD = Minimal Record of Disability; ISS = Incapability Status Scale; ESS = Environment Status Scale; ASES – Healthy Eating Habit = Action Self-Efficacy Scale for Healthy Eating Habit; ASES – Exercise = Action Self-Efficacy Scale for Exercise; OES – Healthy Eating Habit = Outcome Expectancy for Healthy Eating Habit; OES – Exercise = Outcome Expectancy Scale for Exercise; HRPS – Health/Safety Risk Perceptions Scale; HEBS – Health/Safety Expected Benefits Scale; BHADP – Barriers to Health Promotion Activities for Disabled Persons Scale; BSSS – Berlin Social-Support Scales; HBIS – Health Behavior Intention Scale; APS – Exercise = Action Planning Scale for Exercise; CPS – Exercise = Coping Planning Scale for Exercise; APS – Nutrition = Action Planning Scale for Nutrition; CPS – Nutrition = Coping Planning Scale for Nutrition; MSES – Exercise = Maintenance Self-Efficacy Scale for Exercise; MSES – Nutrition = Maintenance Self-Efficacy for Nutrition; SPPHS – Strategies Used by People to Promote Health Scale; RSES – Exercise = Recovery Self-Efficacy Scale for Exercise Regularly; RSES – Nutrition = Recovery Self-Efficacy Scale for Healthy Nutrition Habits; PCS – Physical Composite Summary scale; MCS – Mental Composite Summary scale; SWLS – Satisfaction with Life Scale; SHS – Subjective Happiness Scale; CESD-10 = Center for Epidemiologic Studies Short Depression Scale – Short Form.

Table 4

Stages of Healthy Diet and Exercise

Stages	Healthy Diet		Exercise	
	AF/H/C170/C18			
	<i>N</i>	%	<i>N</i>	%
Precontemplation	0/0/1/0	0/0/2.4/0	0/1/33/1	0/33.3/19.4/5.6
Contemplation	0/0/4/0	0/0/2.4/0	1/0/9/0	5.6/0/5.3/0
Preparation	4/1/18/2	22.2/33.3/10.6/11.1	4/1/45/6	22.2/33.3/26.5/33.3
Action	4/0/17/1	22.2/0/10/5.6	4/0/18/0	22.2/0/10.6/0
Maintenance	10/2/126/15	55.6/66.7/74.1/83.3	9/1/63/11	50/33.3/37.1/61.1

Note. AF = African American, H = Hispanic, C170 = Caucasian (*N* = 170), C18 = (*n* = 18)

Table 5

Independent Samples Test Comparisons

Measures	<i>F</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>
AF compared to Caucasians (<i>N</i> = 170)					
MRD-ISS	3.36	.07	-1.16	186	.25
MRD-ESS	.69	.41	.42	186	.67
ASES-Healthy Eating Habit	.20	.66	-.73	186	.47
ASES-Exercise	.001	.98	-.48	186	.63
OES-Healthy Eating Habit	3.96	.05	.75	19.15	.46
OES-Exercise	.13	.72	.73	186	.46
HRPS	3.67	.06	.66	186	.50
HEBS	.12	.73	-1.00	186	.32
BHADP	.01	.93	.07	186	.95
BSSS	.62	.43	.05	186	.96
HBIS-Exercise	.01	.91	-1.38	186	.17
HBIS-Nutrition	.10	.75	-2.31	186	.02
APS-Exercise	.41	.52	.15	186	.88
CPS-Exercise	.05	.82	-.61	186	.54
APS-Nutrition	1.54	.22	-.95	186	.35
CPS-Nutrition	.16	.69	-.29	186	.77
MSES-Exercise	.23	.63	-.53	186	.60
MSES-Nutrition	.59	.45	.08	186	.94

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SPPHS-Stress Reduction	.47	.49	.57	186	.57
RSES-Exercise	.01	.95	.95	186	.35
RSES-Nutrition	3.23	.07	2.63	186	.01
PCS	1.11	.29	-.60	183	.55
MCS	.002	.97	-.47	181	.64
SWLS	.06	.81	-.03	186	.98
SHS	.16	.69	-.61	186	.55
CESD-10	5.11	.03	-1.30	19.15	-.20

AF compared to Caucasians ($n = 18$)

Measures	<i>F</i>	<i>p</i>	<i>t</i>	<i>df</i>	<i>p</i>
MRD-ISS	2.10	.16	-1.25	34	.22
MRD-ESS	.40	.53	-.81	34	.42
ASES-Healthy Eating Habit	.49	.49	-1.16	34	.25
ASES-Exercise	.78	.38	-.75	34	.46
OES-Healthy Eating Habit	3.60	.07	.55	34	.59
OES-Exercise	.68	.41	.25	34	.80
HRPS	3.33	.08	.43	34	.67
HEBS	.21	.65	-.57	34	.57
BHADP	.02	.90	-.25	34	.80
BSSS	.66	.42	-1.18	34	.25
HBIS-Exercise	.07	.79	-.88	34	.39
HBIS-Nutrition	1.04	.32	-3.29	34	.002
APS-Exercise	.20	.66	.49	34	.63

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CPS-Exercise	.26	.61	-.04	34	.97
APS-Nutrition	.96	.33	-1.93	34	.06
CPS-Nutrition	.81	.38	-1.48	34	.15
MSES-Exercise	.02	.90	-1.06	34	.30
MSES-Nutrition	.99	.33	-.45	34	.66
SPPHS-Stress Reduction	.74	.40	-.64	34	.53
RSES-Exercise	.01	.94	.74	34	.47
RSES-Nutrition	1.95	.17	1.55	34	.13
PCS	3.98	.05	.09	33	.93
MCS	.01	.92	-.67	34	.51
SWLS	1.23	.28	-.40	34	.70
SHS	.77	.39	-1.27	34	.21
CESD-10	2.40	.13	-.76	34	.46

Note. MRD = Minimal Record of Disability; ISS = Incapability Status Scale; ESS = Environment Status Scale; ASES – Healthy Eating Habit = Action Self-Efficacy Scale for Healthy Eating Habit; ASES – Exercise = Action Self-Efficacy Scale for Exercise; OES – Healthy Eating Habit = Outcome Expectancy for Healthy Eating Habit; OES – Exercise = Outcome Expectancy Scale for Exercise; HRPS – Health/Safety Risk Perceptions Scale; HEBS – Health/Safety Expected Benefits Scale; BHADP – Barriers to Health Promotion Activities for Disabled Persons Scale; BSSS – Berlin Social-Support Scales; HBIS – Health Behavior Intention Scale; APS – Exercise = Action Planning Scale for Exercise; CPS – Exercise = Coping Planning Scale for Exercise; APS – Nutrition = Action Planning Scale for Nutrition; CPS – Nutrition = Coping Planning Scale for Nutrition; MSES – Exercise = Maintenance Self-Efficacy Scale for Exercise; MSES – Nutrition = Maintenance Self-Efficacy for Nutrition; SPPHS – Strategies Used by People to Promote Health Scale; RSES – Exercise = Recovery Self-Efficacy Scale for Exercise Regularly; RSES – Nutrition = Recovery Self-Efficacy Scale for Healthy Nutrition Habits; PCS – Physical Composite Summary scale; MCS – Mental Composite Summary scale; SWLS – Satisfaction with Life Scale; SHS – Subjective Happiness Scale; CESD-10 = Center for Epidemiologic Studies Short Depression Scale – Short Form.

Appendix A

Cover Letter

Dear Participants:

Thank you for your participation in this health promotion project, “*Evaluating the Health Action Process Approach as a Culturally-Sensitive Health Promotion Model for People with Multiple Sclerosis from Racial and Ethnic Minority Backgrounds.*” The study is conducted by Dr. Chung-Yi Chiu, an assistant professor in the Department of Rehabilitation Counseling, University of Texas Southwestern Medical Center at Dallas. The purpose of this study is to understand the contributing factors that promote healthy lifestyle among people with multiple sclerosis from different races/ethnicities. Results of this study will be helpful for rehabilitation health professionals to design and provide effective interventions for people with multiple sclerosis from different cultures to improve their health and wellness.

Thus survey about your healthy lifestyle will take 30-40 minutes to complete. We do believe that there will be no risk for participating in this study. Because of your participation, you will help us develop a better understanding of factors that may lead to promoting health and wellness, therefore helping us to develop more effective and efficient treatment intervention.

Finally, ***once you completed the survey, please bring it to the focus group. I will give you a \$40 thank-you card to express our gratitude to you.***

OTHER PERTINENT INFORMATION

Confidentiality: Any input provided by you for this study will be strictly confidential and anonymous. The participants will not be revealed in any report produced from this study. No individually identifiable information will be stored with the completed surveys since each survey will be stored with a number code rather than a name. The information extracted from the questionnaires will be treated confidentially.

Problem or Questions: After completing survey, if you have any question about your health problems or life concerns, please contact your health professional consultants. However, if any problems or questions arise with about this study, about your rights as a participant in this research, or with regard to the researcher, you can contact Dr. Chung-Yi Chiu at UT Southwestern Medical Center at 469-422-1677 or e-mail at Chung-Yi.Chiu@UTSouthwestern.edu

Thank you so much for participating in this study. We appreciate your time to complete the survey! If you have any questions about the focus group, please contact Desiree Griffith at 940-782-2672 or Desiree.Griffith@utsouthwestern.edu

Sincerely,

Chung-Yi Chiu, Ph.D., CRC
Assistant Professor
Department of Rehabilitation Counseling
University of Texas Southwestern Medical Center
6011 Harry Hines Blvd. Room V3.818
Dallas, TX 75390-9088

Appendix B

One-Page Flyer

UT Southwestern/Parkland
New Study in the MS Clinic

You are invited to participate in a study that is being conducted among patients diagnosed with Multiple Sclerosis (MS). The objective of this research is to understand the perspectives of individuals with MS on issues related to health activities. We are looking for people who:

1. Have a relapsing form of multiple sclerosis
2. Hispanic or African American
3. 18-70 years of age

You will participate in a focus group with other people who have MS for approximately one and a half hours to ask questions about how you maintain your general health.

If you are interested please contact:

Katherine Treadaway 214-645-0562
katherine.treadaway@utsouthwestern.edu

If you have any questions about the study, please contact Professor Chung-Yi Chiu at 469-422-1677 or by email
chung-yi.chiu@utsouthwestern.edu

Appendix C

Reliability and Validity of Codes

Focus Group Transcription	Griffith Coding 1	Agreed Coding	Chiu Coding 1	Reliability
AF Focus Group 1				
Raw Number of Codes	99	69	226	44%
Revision 1	185	139	226	82%
Revision 2	217	195	226	96%
Revision 3	223	223	228	98%
Validity		100%		
AF Focus Group 2				
Raw Number of Codes	251	186	244	97%
Revision 1	240	210	244	98%
Revision 2	230	212	246	95%
Validity		100%		
AF Focus Group 3				
Raw Number of Codes	91	74	148	65%
Revision 1	137	129	148	93%
Revision 2	135	129	148	91%
Validity		100%		

Reliability is derived from the raw number of codes found by each researcher.

Validity is derived from the number of agreed upon codes after revision by each researcher.

Note. Coding 1 is detailed coding and Coding 2 is theme coding.

Focus Group Transcription	Griffith Coding 1	Agreed Coding	Chiu Coding 1	Reliability
AF Focus Group 4				
Raw Number of Codes	84	30	84	100%
Revision 1	85	84	84	99%
Revision 2	85	85	85	100%
Validity		100%		
AF Focus Group 5				
Raw Number of Codes	235	203	245	96%
Revision 1	242	239	245	99%
Revision 2	242	240	246	98%
Validity		100%		
Hispanic Focus Group 6				
Raw Number of Codes	63	57	79	80%
Revision 1	69	65	79	87%
Validity		100%		

Reliability is derived from the raw number of codes found by each researcher.

Validity is derived from the number of agreed upon codes after revision by each researcher.

Note. Coding 1 is detailed coding and Coding 2 is theme coding.

Focus Group Transcription	Griffith Coding 2	Agreed Coding	Chiu Coding 2	Reliability
AF Focus Group 1				
Raw Number of Codes	27	7	23	85%
Revision 1	23	23	23	100%
Validity		100%		
AF Focus Group 2				
Raw Number of Codes	22	19	24	92%
Revision 1	24	24	24	100%
Validity		100%		
AF Focus Group 3				
Raw Number of Codes	20	16	21	95%
Revision 1	21	21	21	100%
Validity		100%		
AF Focus Group 4				
Raw Number of Codes	19	19	23	83%
Revision 1	23	23	23	100%
Validity		100%		
AF Focus Group 5				
Raw Number of Codes	23	19	25	92%
Revision 1	25	25	25	100%
Validity		100%		

Reliability is derived from the raw number of codes found by each researcher.

Validity is derived from the number of agreed upon codes after revision by each researcher.

Note. Coding 1 is detailed coding and Coding 2 is theme coding.

Focus Group Transcription	Griffith Coding 2	Agreed Coding	Chiu Coding 2	Reliability
Hispanic Focus Group 6				
Raw Number of Codes	22	16	21	95%
Revision 1	21	21	21	100%
Validity		100%		

Reliability is derived from the raw number of codes found by each researcher.

Validity is derived from the number of agreed upon codes after revision by each researcher.

Note. Coding 1 is detailed coding and Coding 2 is theme coding.

Appendix D

*Agreed Codes***Summary of Theme Coding from AF Focus Group 1****[Self defined exercise as any individualized functional daily physical activities (FDPA) being done at any time]**

- thinking about what is exercise
- self defined exercise
- compare and see difference between self and majority without MS
- MS causes limitations from what is considered conventional exercise
- understands exercise is important and daily basic walking takes energy
- exercise does not have to be traditional to be considered exercise (any physical movement)
- hopping (another small thing)
- interactive video games are considered exercise
- any position, just move body at any time
- all physical activity counts
- being sedentary
- any movement can help maintain mobility and increase QoL (mindfulness)
- exercise means mobility

[Convenient, accessible, comfortable, fun and safe environment to do FDPA]

- already is an exerciser at an accessible resource
- comfortable environment
- don't utilize community accessible gyms because self-conscious about slower exercise pace

- being able to self pace exercise is convenient
- without time constraints and affordable price exercise is more doable (leisure)
- no pressure of time and other people
- affordability of community resources would make exercise a more realistic goal
- if exercise was more convenient and accessible it would heighten motivation to initiate exercise
- self-consciousness and intimidation of gym because it was unfamiliar
- not confident in correct use of equipment
- fear of getting hurt is an obstacle
- comfort doing self-defined PA
- community is not helpful in doing exercise
- financial incentive
- obstacle (fear of getting hurt)

[Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy]

- thinking of peer who is close to her
- exercise is pleasurable when there is companionship (group support and group identity)
- energetic atmosphere promotes inspiration to exercise
- understanding personal limits increases positive energy
- exercising with people at a similar pace helps
- belonging to MS group provides support
- partner actively initiates an idea for keeping physically active (Wii)

- peer group doing same group activity is motivator
- a partner has engaged in healthy daily routine
- group setting allowed for discussion of problem solving techniques for MS symptoms amongst people with the same issues

[Acceptance of the lifelong prognosis of MS based on good understanding and insight]

- acceptance of MS
- hesitant to exercise because of adverse consequence (bothering symptom)
- conscious of symptoms
- know when symptoms are recurring
- community resource that provides secure, guided, and affordable exercise
- understanding personal symptom severity will help regulate when exercise is a viable option
- adapted mind/thinking (acceptance of current situation)
- understanding relapsing and remitting patterns
- self defined laziness
- it is important to learn personal limitations to maintain normal routine
- knowing MS is a life-long disease
- understand rhythm of life pace

[Coping with declined physical and mental conditions]

- impaired immediate communication function
- fear of exercise because of unexpected MS symptoms and repercussions of exercise
- work out in water to decrease heat sensitivity
- group talk provides solution

- need to pay more attention and energy to do physically functioning daily activities
- coping with low energy
- flexible for priority
- people do not know MS and its influences on physical function
- learn to cope with embarrassment
- motivation to remove limitations
- even do it slowly
- maintain daily physical activities
- declined cognitive function
- PwMS cannot do daily activities like regular people (PwMS need accommodation: timing for cool temperature, time to warm up)
- initiating a daily activity needs warm-up time

[Understanding the importance of PA for MS management and to maintaining daily functioning]

- understands exercise is important
- after acceptance PA is easier
- find the reason to move (be with friends; seeing people like me and telling me what I can do based on their MS experience)
- concerns and questions can be answered and understood
- can't find motivation but no contentment in current state of inactivity
- exercise is a solutions to maintain daily physical functioning activities

SELF-MANAGEMENT OF PHYSICAL ACTIVITY
[The effect of sedentary lifestyle on MS symptoms]

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- sitting for long periods of time increase symptom severity

[Energy regulation and heat management]

- exercise is more difficult with MS (can't do previous PA)
- not doing right cause discomfort reluctance
- not overdo
- understanding and accepting physical limitations
- protect self from getting hurt or overheated
- understand professionals' suggestion and intention
- MS causes exercise to feel more laborious
- understand self-energy regulation
- having a professional providing prescription of exercise
- overexertion can be a drawback to exercising if unaware of personal limits
- knowing what temperatures are ok for doing what activities
- heat sensitivity causes a change in acceptable/tolerable activities

[Finding appropriate/suitable FDPA tailored to individual needs]

- negative experience from too much exercise (fall)
- conscious of self tolerance
- understanding what can and cannot
- biking considered acceptable exercise
- stretching is a challenging task
- it is difficult to understand new parameters of exercise with MS (compare previous exercise)

- understand personal limits
- extended confidence in other activities
- walk in pool for exercise
- adapt previous exercise
- physical therapy is exercise
- when thing is easy and comfortable, want to do more
- class fixed schedule
- do alternative and affordable exercise (squats/lunges/stretching)
- self-evaluation effects
- tutorials online are helpful in learning exercises in private
- doable demo instructions
- free weights
- equipment that is MS user friendly promotes exercise (self paced)
- quality of exercise matters over quantity
- exercise is fun when it does not feel like a task
- easy to handle
- knowledge how to use equipment
- having someone to challenge you
- adjust time to make up exercise (5 mns.)
- even 5 minutes uses a lot of energy
- small dose; repeated bouts
- fatigue is frustrating because cannot participate in regular group health promotion activity

- goal-setting through trial and error (challenge self)
- need volition to persevere during exercise
- confident to exercise via walking
- do a doable and convenient physical activity (walking)
- (dancing with wife is exercise) any movement is exercise
- fun

[Pray (believe in God)/repeated self-encouragement to strengthen motivation]

- self talk and prayer used to overcome negative symptoms
- prayer helps keep focus on strength and endurance
- understanding frustration

[Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS]

- long term doable plan
- unexpected
- feel better when MS is not as bad as it could be; compare symptoms to others
- know self malfunction
- coping strategies
- physically functional daily activity is bothered by MS
- fear of exercise because of unexpected MS symptoms and repercussions of exercise
- physically functioning daily activities is challenging after MS
- desire to keep daily basic and important physical functioning
- frustration because not able to meet self expectations with a regular group

- ADL's affected by MS
- do any daily physical activity
- MS will not easily slow down functioning
- lose daily function
- understanding of what having MS entails increases motivation to persevere
- fear of losing life role and daily functioning
- understanding and accepting the possible bad consequences of MS

[Professionals coaching and encouragement that is individualized]

- would feel safer if someone available to help
- an informed instructor provides guidance and security during exercise
- support from professional provided encouragement and motivation to exercise
- support from professional strengthened self-efficacy
- a skilled professional would help PwMS to feel safe and confident doing exercise
- shown exercises hands-on
- a skilled professional would help keep maintenance of PA
- professionals monitoring and prescribing instructions
- when learning about MS (new patient), prefer working with professions and can get answers from professionals they trust

[Norm expectations/societal attitude towards MS patients]

- people think I can
- norm attitude on MS physical performance (fall)

- other people think doing exercise is time to care for your health
- show society I am still normal

[Delay in MS diagnosis and treatment due to rarity in AF population]

- misconception of MS in AA (disregarded because of race)
- physician not experienced
- increased universality because it is apparent MS affects not only me but many
- AA (group identity)
- physician disregarded early signs of MS resulting in late MS treatment
- insufficient medical knowledge and capability
- hear about something (vitamin D) but doesn't fit with me
- people in community do not know how to work with PWD

[More severe MS in AF population]

- worse symptoms in minorities
- more aggressive symptoms

[Recognized immediate-positive effects (aka short-term benefits) of FDPA]

- try exercise done before MS and recognize effects
- measurable progress increases personal confidence
- recognizing effects of a kind of exercise (stretching)
- perceived positive effects
- exercise yields positive results

[Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA]

SELF-MANAGEMENT OF PHYSICAL ACTIVITY

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- try exercise done before MS and self-measured progress
- recognizable personal progression (encouraging)
- self defined progress
- encouragement from efforts
- understanding physical limitations is important for personal health
- need to guess professional language
- a regular group health promotion activity
- stick with daily routines
- working again will increase QoL (motivation)
- wonder how to recover quickly
- wait and see late effects
- remind self of positive effects of resuming exercise
- maintain and reserve quality of life later on (a long term plan)
- want to live long and healthily
- want to play with kids/grandchild (daily physically functioning activity)
- being able to spread fun (maintain participation and health)
- not want to be a partner's burden (maintain participation and health)
- being worried about the long-term consequences of MS (fears of cannot move any more)
- show society I am still normal
- playing and doing parenting (participate in child's life)
- playing and doing parenting
- maintain physical activity

- be an active family member
- maintain to participate in community activities constantly
- doing more meaningful life activities
- seeing others and envisioning a healthier lifestyle
- thinking of what I would like to look like
- committed to exercise and healthy eating
- employment condition is key for daily life pattern
- exercise means maintaining mobility and longevity
- exercise means freedom from constraints of MS
- exercise means optimized QoL
- exercise means being able regain prior functioning (wearing heels)

[Managing and scheduling time for FDPA that fits individual schedule]

- owning your own exercise equipment makes for no excuses not to exercise
- make time for your self-defined exercise
- class fixed schedule
- do alternative and affordable exercise (squats/lunges/stretching)
- self-evaluation effects
- find out workable plan for needs in individual daily schedule (daily duties, work, kids)
- change life habits with close partners to keep daily functioning
- knowing when it's laziness
- exercise has to be a priority
- sense something distracts exercise intention

- it is important to take time for yourself (relax)
- plan to exercise to take action
- it will be easier to exercise if it is a part of daily routine

[Make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning]

- need to make family members understand for further support
- afraid to disclose disease to coworkers
- accommodate work tasks
- people around me do not help patient exercise
- marital support is present and important

[Need MS AT (cooling guard) and other specific cultural needs (a swimming cap) to participate in PA]

- health insurance does not understand what accommodations are essential
- need health insurance to support expensive exercise equipment
- modifications to overcome heat sensitivity and maintain daily physical functioning
- accommodate walking, even with a cane
- be prepared to exercise and have necessary supplies (water, towel, cooling stuff)
- cooling stuff for neck is helpful
- assistive material for maintain daily physically functioning
- cooling stuff will be helpful

[Increased self-efficacy through participating successfully in FDPA]

- being able to do an exercise builds confidence
- proving what I still can do
- overcome challenges
- feel accomplishment

[Self-initiation of self-duty on FDPA is more reliable than relying on social network support]

- prefer to exercise independently
- friends are sedentary

[Eating healthy as a health-promoting behavior parallel with PA]

- think about planning for a healthy diet because it is considered important for health
- has idea of what is healthy and what is not
- an unhealthy diet is recognized and cook in house affects members' healthy eating style
- they have sense of where is healthy restaurant

Summary of Theme Coding from AF Focus Group 2

[Self defined exercise as any individualized functional daily physical activities (FDPA) being done at any time]

- interesting walking program (Wii)
- lifting weights and walking are typical gym exercises
- exercise at home
- exercise with weights and via physical therapy
- walking is defined as an exercise by people with MS (PwMS)
- walking is doable to every PwMS

- walking is acceptable to PwMS
 - knowing the concrete, accomplished goal
 - a professional did not know such a walking program which is affordable
 - walking as an exercise
 - weight training as an exercise
 - work out at home
 - weight training-dumbbells
 - a disability can stop a previous exercise habit
 - start from an easy thing
 - a little has been seen as an exercise for PwMS
 - knowing less time to do exercise if working
- knowing how to adjust exercise in a sedentary work style
- walking
 - lifting anything on hand
 - anybody movement costing physical energy is seen as an exercise alternative
 - anybody movement costing physical energy can be a habit
 - any house work is kind of small exercise
 - little and short bouts are helpful and very affordable
 - chores is exercise as well
 - a diabetes educator agreed any physical activity, including chores, as long as burn calories works
 - just moving your body is seen as exercise

- reducing sitting time
- perceived self duty of body movement
- chores is seen as exercise
- use of work time to have exercise
- when seeing exercise as any body movement, it can be done at any time, so not need to plan
- PwMS know that they are different from the social media models
- these healthy social media makes no sense, because PwMS are different from the models
- take such social media as a commercial only, no any educational effects
- such healthy social media is for the sake of selling
- neglect such social media
- daily activities can be an exercise
- dancing
- going to a gym is not affordable to everyone
- walking around is an easy, affordable exercise

[Self-quantify FDPA amount, frequency, duration, and burned calories]

- know how much to do when exercising (30 mns)
- 15 min (a short bout)
- brief bouts
- count how long missing from doing exercise
- being mindful of previous, regular exercise
- count how long missing from doing exercise

- missing doing exercise causes guilty (strong self duty)

- record how much I walk

[Convenient, accessible, comfortable, fun and safe environment to do FDPA]

- prefer to exercise in a gym
- an easy, doable at home work out
- know how much to do when exercising (30 mns)
- the exercise program can be used in a visible and accessible place
- an easy, not much work-out at home
- know what to do with an equipment at home
- know where and when is usable exercise resource (MS Society)
- easily to access a resource
- know how to use a training equipment
- being in a exercise group
- affordable resources worth time and money
- community environment is not helpful
- a yoga video at home
- exercise indoor is good for PwMS
- make home accessible to do exercise with a affordable equipment/DVD
- community provides avenues for exercise but not adequate

[Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy]

- supportive exercise group mentor why and how to exercise
- seeing a MS peer doing exercise motives to do it with the person (peer model)
- people doing the same thing together help maintain volition to maintain exercise
- being with your exercise peers

[Acceptance of the lifelong prognosis of MS based on good understanding and insight]

- accept on-off cycles but overall still maintain exercise
- perceive control the progress of MS
- dizzy
- resilience of being ups and downs in MS
- volition
- knowing and accepting can and cannot
- accept MS
- doing meaningful things to cope with MS
- think positively
- accept MS and move forward
- acceptance; MS is a part of a person not the whole person

[Coping with declined physical and mental conditions]

- being depressed (emotion regulation)
- manage stress from MS
- stress management
- emotion regulation
- think MS positively

- know MS influence on self
- change attitude to be positive

[Stress and emotion management promotes adherence to PA and eating healthy]

- emotion regulation
- losing sense of control stop exercise
- self cheer-up
- inspiring self to exercise because it's necessary for positive change

[Understanding the importance of PA for MS management and to maintaining daily functioning]

- know expected goals (long-term benefit) will be achieved
- knowing exercise can help maintain life role and daily function for a long run
- meaningful daily activities (e.g., work) helps maintain being physically active

[The effect of sedentary lifestyle on MS symptoms]

- committing unhealthy behaviors
- knowing sedentary work
- expecting a negative outcome if not keep walking

[Energy regulation and heat management]

- fatigue
- accept fatigue and still work
- energy regulation
- accept self energy limitation

- understand and accept MS heat symptoms
- understands coping techniques to overcome sx

[Finding appropriate/suitable FDPA tailored to individual needs]

- challenge self/push self
- have a just-right challenge goal maintain self efficacy
- knowing when and where is best to do exercise on your own
- little things help
- start from easy and simple things
- make exercise progress gradually
- follow your pace with your way
- keep reminding self do just a small thing/a simple move
- start from 5 min and gradually progress to 45 minutes
- typical exercise recommendation 30 min., 1 hour may be too much for PwMS
- dance
- play

[Pray (believe in God)/repeated self-encouragement to strengthen motivation]

- my belief
- repeating self-talking about daily accomplishment/functioning
- repeating self-talking about daily accomplishment/functioning
- repeated a belief of keeping doing daily functioning

[Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS]

- some MS symptoms remind doing exercise
- some MS symptoms remind moving your body
- MS is a strong stress
- realize MS is a long term fight

[Professionals coaching and encouragement that is individualized]

- PT as an exercise
- PT as a regular exercise resource
- hospital can be an exercise place. (PT, equipment, weight scales)
- a health promotion focus group has provided resources and has shared information with actual experience in exercise
- PT
- a professional companies
- a professional's evaluation and prescriptions
- an individualized prescription
- no push, not aggressive
- even in a group format, a professional still provides an individual exercise plan
- a health promotion focus group stimulates more deeper and detailed useful information
- at home or a gym to meet with a personal trainer
- PT then starting exercise
- a professional's accompany help maintained
- a profession can build an exercise habit

- a professional's comments

- a personal trainer helps

[A physician checking patients' exercise consistently during regular appointments]

- a doctor talked about exercise with MS patients
- a doctor checks in on exercise conditions frequently
- to accomplish/meet a good patient's impression on who cares them
- follow up a doctor's opinion
- listen to advice from doctor about exercise

[A physician focused on medicine and epidemiology]

- some doctors neglect to remind exercise effects on MS

[Norm expectations/societal attitude towards MS patients]

- a doctor provide norm believe
- social support expect me to do exercise
- social support constantly checks in my exercise condition
- people knowing you see exercise as your responsibility
- people knowing you see exercise as your responsibility

[Recognized immediate-positive effects (aka short-term benefits) of FDPA]

- knowing exercise can maintain strength of body parts (back) (motivation)
- perceive its effects (motivation)
- remember exercise effects (motivation)
- keeping moving brings good sleep][feel body mechanism desires to move
- know how long to maintain exercise would build that movement desire

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- try to maintain the period long enough for inner desire
- inner desire maintain exercise
- recognize even a short bout can help productivity
- be mindful of such reciprocal benefits
- expected benefits of to do so
- experience how exercise control MS symptoms
- know how exercise burns off endorphins

[Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA]

- being aware gaining too much weight
- aware gaining too much weight
- awareness of too high weights is motivation (motivation)
- understand other chronic diseases (diabetics) would need exercise (motivation)
- understand other chronic diseases (blood pressure) would need exercise (motivation)
- MS medication may cause weight gain
- recognizing weight gain (motivation)
- aware of losing strength (motivation)
- to get better (motivation)
- know need-to(motivation)
- recognize the exercise effects
- Knowing MS progress well
- knowing the long-term benefit of doing exercise

- set up a reward goal
- be mindful of a long term benefit of controlling MS
- want to overcome a disease
- maintaining a daily function and life role is long term motivation
- maintaining a daily function and life role is long term motivation

[Managing and scheduling time for FDPA that fits individual schedule]

- fine time to do any little things/exercise
- accumulating every even little move in daily schedule works (being mindful of doing little frequently)
- knowing self routine by weather/seasons
- being flexible to adjust exercise schedule
- not plan to do exercise
- see exercise as part of daily routine
- PT is already on daily schedule
- when seeing exercise as any body movement, it can be done at any time, so not need to plan
- build exercise as part of daily routine/daily activities
- being flexible and mindful to keep exercise at other time
- a short bout is easy to make-up
- since exercise has been seen as daily routine, just do it next day (there is no "make-up" needed)

[Make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning]

- family-partner support by buying an exercise program at home
- job/work has supportive attitude

[Increased self-efficacy through participating successfully in FDPA]

- daily routine/functioning cultivate self-efficacy
- as long as body can move, you can exercise (recognize being able to so very simple body movement, that cultivates self-efficacy)
- keeping doing daily function strengthens self efficacy
- doing maintain self efficacy
- knowing detailed process of how I can do it based on experience maintain self efficacy
- when PwMS do exercise, they can feel surpassing a normal person
- relying on self strengthens self efficacy
- every cycle to resist to do it 21 days for building desire to do it
- having confidence and following through and seeing progression as a result

[Self-initiation of self-duty on FDPA is more reliable than relying on social network support]

- commit when to do exercise
- it raises group's interest
- people would like to know what a resource supplies
- know 'should'
- acceptance of the current body and MS conditions (motivation)
- being mindful of getting back but with accepted understanding
- regard exercise as a personal duty

- regard exercise as a personal duty
- self cheer-up
- when there is no social support to help exercise, self consciousness stands out
- social support is not reliable for long term exercise
- perceived self duty is most reliable in a long run
- perceived self duty is most reliable in a long run
- affordable time
- accept being ups and downs in MS
- self cheer-up with self duty
- be mindful of such reciprocal benefits
- self determination

[Eating healthy as a health-promoting behavior parallel with PA]

- food intake influences on physical conditions
- eat right
- knowing medicine effects on eating
- healthy cooking TV shows help

[Pride that comes through achievement of FDPA]

- when PwMS do exercise, they can feel surpassing normal people (feel modeling normal group members)
- feel modeling normal group members
- seeing self can be others' model

Summary of Theme Coding from AF Focus Group 3

[Self defined exercise as any individualized functional daily physical activities (FDPA)

being done at any time]

- crunches, situps are exercise
- maintaining to perform daily activities and being able to move around outdoors are health
- walking regularly
- brisk walk
- keeping body moving is seen as an exercise
- physical daily activities are seen as exercise
- playing Wii is exercise
- even just moving upper body is seen as an exercise
- walking indoors
- sporty recreation is seen as exercise
- PT is seen as exercise
- PT also apply Wii
- doing physical chores is a way to be healthy (it is exercise too)
- keeping doing all daily activities
- typical exercise ways won't work for PwMS
- doing physically daily activities/doing physical recreation (shopping)
- have alternative/optional activities as exercise under some conditions
- walking can be done at anytime
- playing with as kid/physical daily functioning is an exercise

- regular people have thought exercise as going to a gym, jogging outside, play tennis in a court, etc
- see body movement is exercise

[Self-quantify FDPA amount, frequency, duration, and burned calories]

- have concrete goals of how long I walk
- commit not exercise sometimes
- knowing how much calories I burned helps keeping playing it
- know how much is done as exercise
- knowing self exercise goal
- maintain regular exercise
- writing down exercise records
- be clear when and how long to do what exercise

[Appreciation of residual mobility and functioning]

- being appreciative of still able to exercise
- appreciate accomplishment

[Convenient, accessible, comfortable, fun and safe environment to do FDPA]

- a affordable walking DVD
- affordable walking time
- using a tape to help keeping walking for 45 min
- know what is safe to do exercise
- having fun can help keeping doing exercise
- gym is not accessible to everyone

- going to a gym takes time
- just do exercise by self
- using gym costs money
- do not know how to use equipment in a gym
- like being self
- knowing how to cope with cold and heat to maintain exercise
- have a accessible equipment
- do exercise with fun
- a community is not safe to do exercise outside
- using a tape to help keeping walking for 45 min

[Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy]

- social support cheers up to resume exercise
- if social support is supportive, that is a gift/bones
- social support is checking in on my exercise constantly when they understand it is good to control MS
- when they do what they say, I would incline to follow
- having social support checking constantly is helpful
- physically active MS peers can be a good role model
- physically active MS peers can raise self-efficacy

[Acceptance of the lifelong prognosis of MS based on good understanding and insight]

- be resilient to ups and downs
- accept to live with MS
- practical expectation of daily life patterns (resilient to ups and downs)
- expect and accept such MS relapsing and remitting

[Coping with declined physical and mental conditions]

- understanding how to cope with MS dysfunction
- understanding there will be some challenges but be mentally ready to face them
- being ready to cope with MS
- being humorous toward bad situation
- too sick to move around
- expect and accept such MS relapsing and remitting
- too sick to move around
- treatment reactions may stop exercise routine
- knowing how to cope with some treatment reactions
- be ready to cope with uncomfortable feeling during exercise

[Stress and emotion management promotes adherence to PA and eating healthy]

- life stressful event may stop an exercise routine
- expected resumption over sometime

[Understanding the importance of PA for MS management and to maintaining daily functioning]

- knowing exercise helps maintain doing chores (daily activities/daily functioning)
- hoping to maintain daily functioning motivates to do exercise

- want to maintain daily routines
- daily physical routine helps continuity of being physically active
- want to maintain social network as doing regular things as others

[The effect of sedentary lifestyle on MS symptoms]

- being aware of being sedentary
- recognizing negative feeling when being just sitting around
- being sedentary worsens MS symptoms

[Energy regulation and heat management]

- energy regulation
- balance training (exercise)
- know when is best to do exercise

[Finding appropriate/suitable FDPA tailored to individual needs]

- making walking progress gradually
- just right challenge

[Pray (believe in God)/repeated self-encouragement to strengthen motivation]

- pray is a way to accept MS
- [repeatedly self talk to self what I can do
- believe in God
- self repeated self-talking about expected long-term outcome
- think challenges are from God as life lessons to learn
- believe in God's bless
- have a reasonable pray

- self conscious with a need to do exercise
- repeat reminding self to exercise
- prayer functions as self talking for repeatedly reminding self-goals
- believe God going to help (self-mental support)
- religious belief
- repeatedly self talking about daily goals

[Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS]

- acknowledge losing daily function
- want to maintain daily functioning and life role (e.g., worker)
- want to maintain the capability of participating a community (hanging out with people)

[A physician checking patients' exercise consistently during regular appointments]

- it is important to PwMS to have a supportive doctor
- keeping self asking what is best to treat MS
- working with a doctor

[Norm expectations/societal attitude towards MS patients]

- people assume exercise is your own duty (be responsible to your MS)
- people assume PwMS have responsibility to do exercise while they do not need because they do not have MS
- PwMS have modified a typical exercise into any format of just-right bode movement]
- PwMS are different from regular people

[Recognized immediate-positive effects (aka short-term benefits) of FDPA]

- feel walking effects on body
- feel good about it
- push self
- feel walking effects on body
- feel good about it
- push self
- being mindful of feeling better when move
- keeping physically active make people feel good
- know what exercise effects feels like
- being mindful of feeling better after doing exercise
- exercise helps sleep][exercise helps with pain
- every short bout makes you feel good
- expect immediate positive outcomes after exercise
- pain coping (exercise) can reduce the perception of pain intensity

[Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA]

- seeing maintain healthy as a self duty
- remember such feeling helps keeping doing it
- know what body size changes after change life style (being more physically active)
- expected MS outcomes are motivation to keep doing exercise
- want to control MS progress
- expected long term outcomes

- be aware of weight gains
- perceive controlling over MS

[Managing and scheduling time for FDPA that fits individual schedule]

- dismiss excuses of not do exercise
- make time for yourself
- plan daily schedule by hours
- put exercise on the daily schedule
- go to a gym on a regular time

[Self-initiation of self-duty on FDPA is more reliable than relying on social network support]

- sometime social support does not help PwMS doing exercises
- self is most reliable
- believe self efficacy of self duty
- social support is not always helpful to be healthy (e.g., social eating)
- self initiation
- see exercise as self duty
- being self conscientious
- self is most reliable
- social support is not reliable
- act what you want to do

[Eating healthy as a health-promoting behavior parallel with PA]

- eating right
- when having correct judgment about what is good/bad for health, PwMS believing in it can immune from unhealthy temptation

Summary of Theme Coding from AF Focus Group 4

[Self defined exercise as any individualized functional daily physical activities (FDPA)

doing at any time]

- see "exercise in a typical way, going to a gym"
- her own definition of exercise, which are daily functional activities (walking a dog, physical labor work tasks)
- small task counts (using stairs)
- parking farther away to have a walk
- walking
- using work environment to have walking
- as long as body movement get heart rate up, it is exercise to MS patients
- walking is the most common and acceptable exercise of MS patients
- the frequency of going to a gym and using it is obviously lower than doing small easy task around home and work places
- even in a wheelchair, moving with rhythm is exercise
- even just move body, when it lasts for a while, so long as to feel getting tired, MS patients see it as exercise
- even watching TV, using a small equipment to have a physical activity

- body movement and self-muscle training
- MS patients' see PT as exercise
- move body (legs, arms) no matter sitting or standing
- playing with a kid exerts
- it is easier to just move body parts than going to a gym, than doing a typical exercise

challenging MS patients

- physically active lifestyle

[Self-quantify FDPA amount, frequency, duration, and burned calories]

- self quantify FDPA amount, frequency, and burned calories

[Appreciation of residual mobility and functioning]

- appreciate what we have
- appreciation makes patients persistent and positive with MS
- appreciation
- religion is a way of appreciation

[Convenient, accessible, comfortable, fun and safe environment to do FDPA]

- even the gym is accessible, but the ability to use various gym equipment is limited

[Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy]

- a partner doing the same physical activity can be a motivator
- friends do the same thing together

[Acceptance of the lifelong prognosis of MS based on good understanding and insight]

- unexpected MS symptoms restrict their chances to exercise, compared with healthy population

- being very acceptable to MS

[Coping with declined physical and mental conditions]

- coping with pain (reframing thinking about pain) but still doing daily activities
- mental health as well
- knowing MS also affect our brains

[Understanding the importance of PA for MS management and to maintaining daily functioning]

- because of unexpected MS symptoms, it is important to move body parts at any chance

[Energy regulation and heat management]

- energy management

[Pray (believe in God)/repeated self-encouragement to strengthen motivation]

- self-reinforced encouragement
- thinking of God build strength
- attending church activities
- self-talk/self-remind what a person is doing regularly to remind goals to be achieved
- know how to cheer up by self

[Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS]

- MS means a significant life event
- MS patient feel her daily function will be ceased.
- lose walking function
- MS cause worries about the long term life outcome

- MS its self can be a motivator
- unexpected MS symptoms per se are motivators
- MS unexpected symptoms are a reminder to keep body move
- want to maintain normal daily functioning (work)
- worries about health insurance to be canceled because of MS
- MS would cease daily functioning (work)
- medicine is not everything

[Professionals coaching and encouragement that is individualized]

- PT treatment protocol can be learned and applied into daily life

[A physician focused on medicine and epidemiology]

- doctor provided epidemiology info of MS
- medicine treatment
- doctor still focuses on medicine treatment (Betaceron)

[Recognized immediate-positive effects (aka short-term benefits) of FDPA]

- expected feeling good after physical activities is very important
- walking decrease MS symptoms
- recognize the good feeling after body movement
- recognize positive effects of exercise

[Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA]

- using lifestyle and work as MS outcomes evaluations
- knowing body weight is the basic monitor tool

- weight is a good self-monitor tool
- weight is the most easy to know personal health
- using accessible community resources
- expected long-term MS outcomes

[Managing and scheduling time for FDPA that fits individual schedule]

- be flexible with daily schedule and make up a chance to have physical activities
- understand daily schedule and daily activities well, that will be flexible to have physical activities

[Make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning]

- friends knowing MS encourage to do exercise for controlling MS (disease-oriented)
- partners/family members understand how important for MS patients to keep body move

[Need for MS AT (cooling guard) and other specific cultural needs (a swimming cap) to participate in PA]

- AF MS patients need something to engage an exercise (a swimming cap)

[Increased self-efficacy through participating successfully in FDPA]

- understanding the difficulties in the beginning and prepare to be persistent

[Self-initiation of self-duty on FDPA is more reliable than relying on social network support]

- knowing need to take responsibility to manage MS and health
- manage MS actively and maintain daily functioning as much as you can

- knowing is not enough to change behavior
- change action/behavior little by little

[Eating healthy as a health-promoting behavior parallel with PA]

- eating and moderate workout have been regarded together
- knowing basic way to choose healthy food
- know what food eaten is a basic way to eat healthy
- some social activities (eating unhealthy food) may not good for health
- cultural eating habits

Summary of Theme Coding from AF Focus Group 5

[Self defined exercise as any individualized functional daily physical activities (FDPA) being done at any time]

- PT is exercise
- stretch reduces MS symptoms (spasticity, stiff)
- walk is an exercise
- find any chance in daily activities
- knowing typical exercise is not right for MS anymore
- MS identity make them be independent from the social media about exercise
- MS makes patients re-think about how to do exercise like regular others
- walking/stretching
- short bouts
- body movement
- what is exercise has been changed by MS

- the content of exercise needs to be changed over time by body situations
- physical activities are exercise for patients
- even walking, it has challenged MS patients energy
- MS affects the ability of doing typical exercise
- climbing stairs
- MS requires carefulness to do physical activities
- MS makes patients to define their exercise
- adjust typical exercise
- short bouts
- other patients accept the ideas of doing small exercise in the home environment, when making daily tasks as minor exercise
- stair step is an exercise
- yoga/stretching is a good exercise
- understand water aerobic can control MS related heat when doing exercise
- water aerobics
- typical exercise won't work for MS patients
- doing any body movement in a short time is regards as MS patients' exercise
- exercise forms are various

[Self-quantify FDPA amount, frequency, duration, and burned calories]

- have physical activities records how much has been done and body feeling (tired)
- regular physically active is good
- plans and records help regulate physically active habits

SELF-MANAGEMENT OF PHYSICAL ACTIVITY

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- focused intentional movement (know when and how to it where and how long)
- knowing when and how to it where and how long
- visualize where and how you will do a physical activity
- plan when, where to do what activities

[Appreciation of residual mobility and functioning]

- being able to work is another motivation of exercise
- appreciate the current ability
- appreciate the current residual function
- appreciate still being able to function

[Convenient, accessible, comfortable, fun and safe environment to do FDPA]

- if patients still can do gym equipment, they will do it (stairmaster, elliptical, weight training)
- regularly use gym equipment
- exercise safety is a concern
- do something you can enjoy as exercise
- find out what you like to do (writing, going to church)]
- being flexible to enjoy a thing you like (find out alternative ways to do it)
- being a member of a gym
- know an institute pays for some physical activities
- living close to a gym is not critical for self-doing physical activities
- just paying gym membership would not work
- gym membership is not affordable

- walking is affordable
- find a safe place for doing physical activities

[Receiving support from peers/partner/family/friends who have healthy lifestyle and attitude for participating in PA/eating healthy]

- encouraging partner is motivation
- MS peer groups from a professional organization help cope with MS
- feel belonging to a peer group fighting for the same thing-MS
- stay with a positive peer group
- having a partner going to the same exercise place (a gym)

[Acceptance of the lifelong prognosis of MS based on good understanding and insight]

- want to know more about MS (self-help)
- MS is a lifelong issue
- accepting and knowing MS over time
- MS is a lifelong issue
- worries to lose more health and functioning
- over time, getting to know how MS influence on daily activities
- recognize MS influences on muscle, physical functioning
- self insight of being a self-responsible MS patients
- understand MS is a lifelong chronic situation
- accept MS maturely
- understanding how I get MS correctly
- being able to cope with MS

- not catastrophize MS influences
- MS is a lifelong chronic disease
- expected lifelong outcomes
- maintain what I can do as I used to, even doing it slowly
- be resilient to ups and downs
- understand the long term MS outcomes

[Coping with declined physical and mental conditions]

- learning about MS
- understanding what MS would be but cope with it by slowing down doing physical activities
- want to move body parts where they are affected by MS
- volition against MS
- participating a community activity is hard because of MS influence
- MS symptoms experience
- lose physical functioning
- falling worsens physical functioning and influence on health
- MS patients also pay attention on the biological health
- feel stress to change different medications and their diverse side-effects
- some MS patients have good knowledge about medications' effects
- MS patients evaluate the medicine effects depending on the medicine function work for improving daily function
- expected long-term MS outcomes
- cope with tiredness

- positive thinking about MS
- understanding how I get MS correctly
- being able to cope with MS
- accept MS maturely
- being able to cope with MS
- reframing thinking to cope with MS (self-CBT)
- cope with downtime
- when MS heat affects a patient frequently and obviously, doing physical activities outdoors is not possible.

[Stress and emotion management promotes adherence to PA and eating healthy]

- feel depressed
- hard to perform social and physical functioning when depressed
- dislike dysfunction
- understand one's mood can be up and down
- survival instinct
- not catastrophize MS influences
- stress management would be helpful to cope with MS
- prevent being depressed
- cope with depressed affect

[Understanding the importance of PA for MS management and to maintaining daily functioning]

SELF-MANAGEMENT OF PHYSICAL ACTIVITY

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- self search what good to manage MS
- need to self remind, being mindful, to start exercise
- want to maintain independent in daily functioning
- MS causes healthy behaviors changed
- move more and eat healthy
- keeping basic daily functions is critical (walking)
- knowing doing physical activities good for self
- falling worsens physical functioning and influence on health
- MS patients have clear long-term expected outcomes of MS on how they want to do physical functional daily activities
- volition is form the expected long-term expected outcomes of MS
- being life roles for self and others
- knowing what is a good healthy choice
- resist to temptation
- maintaining life roles and functioning is motivation
- reducing dysfunction becomes a volition of keeping exercise
- pursuing ultimately happiness and well-being motivates MS patients to do exercise

[Energy regulation and heat management]

- energy management is critical for MS patients
- just do right amounts of exercises (energy management)
- adjust physical activity intensity

[Finding appropriate/suitable FDPA tailored to individual needs]

- cannot just do regular people's walking
- modified walking
- self-force/self-challenge
- doing it little by little]adjust previous exercise dose/adjust typical exercise dose for regular people
- knowing when and how to it where and how long
- walking a distance on the streets gradually
- self-thinking about self-doable activities to maintain the current mobility of any body movement even just toes or fingers)
- brief bouts works for physical health (keep mobility), mental health (feel good to be responsible to self and family) and social health (being independent to perform daily roles and functioning in a community (work environment, home)
- challenging self believed capability
- find out what you like to do (writing, going to church)
- being flexible to enjoy a thing you like. (find out alternative ways to do it)
- doing any body movement in a short time is regards as MS patients' exercise

[Pray (believe in God)/repeated self-encouragement to strengthen motivation]

- religious belief help cope with MS
- God is a higher power overlooking how we deal with it
- believing in God bring us strength
- walking and meditating and God help release stress
- self-talking releases stress

- doing things make you feel good

- being volitional to cheer self up

[Fears of gradual, unexpected decline in daily functioning and increased limitations caused by MS]

- worries to lose body function, walking
- MS implications (falling)
- worries about exercise security
- MS symptoms are signs reminding to move the body
- patients concern how well medication improve physical function
- concerns MS and MS medication affect on daily functioning
- be sensitive of losing functioning and doing self-monitor medication effects
- thinking of the peer group losing self-mobility is a inside motivator
- want to be self-independent on doing daily activities
- wanting to perform life roles as parenting and care givers is an inside motivation
- maintain life roles and daily functioning is an inside motivation
- not want to be others' burdens
- performing daily function and life roles are fundamental motivation to live healthily with MS
- fear of doing is obstacle; while fear of losing is motivation
- want to maintain daily functioning

[Professionals coaching and encouragement that in individualized]

- what PT taught is exercise
- PT knows regular exercise is not right, and it needs to be modifies, and take it little by little

[A physician checking patients' exercise consistently during regular appointments]

- doctors need to motivate patients to do physical activities

[A physician focused on medicine and epidemiology]

- doctors do not tell you about health promotion for MS management
- doctors do not tell you about health promotion for MS management
- doctors focus on epidemiology (diagnosis)
- in the beginning, the treatment is medication, not with health promotion
- without doctors' health education of MS, patients need years to learn about MS management

[Norm expectations/societal attitude towards MS patients]

- dysfunctions cause by MS make them different from the regular people
- expected to perform life roles and function

[Recognized immediate-positive effects (aka short-term benefits) of FDPA]

- when feel pain, doing arm movement
- knowing later benefits of body movement (help circulation and sleep)
- short bouts of physical movement make patients feel good
- when feel no motivation, push self to move even 5 min, and your body will feel good immediately
- recognize good feeling after exercise
- even very minor exercise makes body feel good physically and mentally
- being mindful to remind self the good feeling right after minor and brief exercise
- agree exercise can reduce stress raised by MS
- walking releasing stress

- doing short bouts of body movement, which will make you feel better
- know short-term benefits (feel good), long-term benefits (MS progress control)
- know short-term benefits (feel good, feel well on a daily basis), long-term benefits (MS progress control, physical and mental health)
- keep a physically active lifestyle

[Self monitor health, daily functioning, and role participation progress and maintenance due to FDPA]

- expected long-term outcomes
- want to prevent the worse MS long-term outcomes
- self evaluation on social functioning
- maintaining daily functioning and life roles (being a good actor)
- maintaining social functioning (a good employee)
- be very conscious about anybody part's mobility
- as long as I can maintain my daily function, routine
- understanding what we are dealing with, rather than MS
- living for yourself
- strong will to maintain daily function and life roles
- know self strength/physical function, nurture/maintain it
- perceive perception of control over behavioral environmental changes
- [family history of chronic diseases can be a minor motivation
- wear smaller size dress and pants/in a good body shape (maintain fit figure)
- know short-term benefits (feel good),

[Managing and scheduling time for FDPA that fits individual schedule]

- if need to miss the planned walking, know how to make it up (doing alternatives)
- find any chance to make some walking
- doing physical activities at work (walking around)
- make daily activities plan
- put physical activities in daily routine
- make a plan of activities in daily routine ahead
- find the chance and time to resume physical activities

[Make family/friends/colleagues/PA personal trainer understand MS and its influences on daily life and functioning]

- encouraging family and friends helps, but not reliable

[Need MS AT (cooling guard) and other specific cultural needs (a swimming cap) to participate in PA]

- water in a pool is not good for African American's hair texture

[Increased self-efficacy through participating successfully in FDPA]

- remember such negative MS symptoms affect a person's life
- the more you believe, the more you do so, the more self-efficacy you have
- performing daily function pull a person together
- doing more interested things make you feel better physically and mentally
- daily function and life roles motivate patients to keep moving
- physical daily tasks are keeping you move
- perceive perception of control over behavioral environmental changes

[Self-initiation of self-duty on FDPA is more reliable than relying on social network

support]

- exercise is self-responsibility
- self insight
- volition
- self-duty
- motivate themselves, rather than motivated by others
- taking care of self well is one of self-duty
- keeping self-mobility determines a patient to exercise
- caring self well is a self duty, so others can be with you
- self-motivated because of being mindful about MS long-term outcomes and influences on daily functioning and life roles
- being self-conscious and responsible to MS management
- self is most reliable than family and friends encouragement

[Pride that comes through achievement of FDPA]

- see self to be a good model to people (norm attitude)
- hard to perform social and physical functioning when depressed

Summary of Theme Coding from Hispanic Focus Group 6

(- means not help)

[Reliance on other people for motivation to engage in PA (not necessarily together)]

- commit not exercise because of not being disciplined
- a person physically accompanying and requesting at a specific time would help make her to

- Physical company make her committed
- daily functional physical activities tire her
- being sedentary
- she feels she owe her/him a favor to do so
- physical contact will make her action
- know what works for her (physical contact)
- physical company for exercise would help very much
- lack physical actual exercise company to witness accomplishment
- a physical company attending will maintain doing PT assignment
- doubt how much a family call would work
- a family physically comes at her available time to do exercise together
- having a company doing exercise together would work

[Understanding that exercise/diet is good for health in general]

- understand exercise helps health
- defining exercise as heart rated up
- understand herself needs to exercise
- wanting to feel better is her motivation to do exercise
- experience that diet and exercise are good for health in general, but not for MS prognosis

[Recognition that FDPA benefits overall well-being]

- recognizing improved well-being due to exercise will help increase confidence and motivation
- seeing progress will help to motivate to maintain exercise regimen

- walking at home is good to her
- thinking some physical activities as her exercise
- not her regular exercise habit
- knowing what is doable to her situation
- setting a achievable goal

[Defining exercise for regular people](-)

- interpreting common exercise (going to a gym and using equipment) for the majority as the way to exercises
- the Hispanic did not do her defined exercise
- she prefers to do typical exercise like the majority without disabilities doing

[Family does not help maintain PA reliably]

- family members are not helpful to make her exercise
- family member does not help all the time
- family does not help

[Need an affordable place to do PA]

- a gym/club is not affordable
- cost of a gym/club is a barrier
- gym environment with younger counter part makes her feel difficulty to join in a gym
- local accessible MS community raises her intention

[Attend a peer group (i.e. other people diagnosed with MS) that engage in PA together]

- MS peer group may help
- meeting with a peer group doing exercise helps
- attending a peer group camp and doing things together would help
- similar crowd and pace

[PT is training, not exercise](-)

- she disagreed PT as her exercise
- therapy is therapy for MS symptoms
- not consider PT's stretching as exercise for adults
- following PT assignment sometimes
- only do the PT assignment few days after PT visiting until next appointment comes

[Focusing on MS symptoms](-)

- describe her MS symptoms
- MS-symptom thinking and focus make her frustrated
- focusing on MS symptoms][focusing on all musculoskeletal symptoms
- improving gait and muscle strength builds her confidence to do exercise
- MS symptoms discourage her intention
- any hurt will stop doing exercise practice by herself

[Fears of losing daily functioning and life roles]

- difficulties in free movement depress her
- fears of losing daily functions reduce her confidence in physical activities
- realizing gradually degraded daily function

- wanting to maintain daily function and life roles
- [understanding the long-term MS progress

[Functional daily physical activities (FDPA) drain MS patient's energy]

- daily function physical activities drain her energy
- maintaining daily physical functional activities is hard for her
- coping with low energy

[FDPA is the prerequisite for typical exercise]

- capability of doing ADL (Activities of Daily Living) is regarded as a checking in point for exercise
- it is her priority to maintain ability to complete daily functional physical activities

[Perceived quantified progress increases self-efficacy]

- recognizing every small progress is increasing self -efficacy
- recognizing a progress is achievable
- seeing progress will help motivate to exercise

[Perceived quantified progress promotes adherence to PA and eating healthy]

- self monitor and quantify the progress

[Eating healthily is important for health management]

- traditional Spanish and Mexican dishes seem not healthy
- eating healthy has been applied in daily life

[Public health education of general population doing PA does work for the Hispanic MS patients]

- just suggesting doing exercise is not enough and not understanding MS patients' difficulties
- healthy people do not sympathize MS patients difficulties
- public health about exercise does not affect MS patients

[Ethnic communities each have their own lifestyle, especially in regards to eating]

- thinking of a family unit living in different places
- different community divided by races
- cultural lifestyle relates to diet and cooking
- choosing to eat healthily
- traditional Spanish and Mexican dishes have high fat and carbohydrates
- Hispanic diet differs from Caucasian

[Appreciation of residual mobility]

- appreciate residual mobility

[Norm expectations/societal attitude towards MS patients]

- people expected that MS patients have responsibility of doing health behavior

[Energy and fatigue management]

- not overdo because over tiredness caused damage

BIOGRAPHICAL SKETCH

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EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
The University of Texas at Austin	B.A.	2010	Psychology
The University of Texas Southwestern Medical Center at Dallas	MRC	2013	Rehabilitation Counseling

Positions and Employment

2012-present Baylor Neuroscience Center
2012-present Coaching for Academic Success
2009-2010 Crisis Respite of Austin: Next Step

Clinical Experience

2012 University of Texas Southwestern Neuropsychology Service - Intern
2011-2012 University Rehabilitation Services: Personal and Social Adjustment - Intern
2011-2012 Individual Counseling Intern at The University of Texas Southwestern Medical Center at Dallas

Presentations and Publications

2012 "Self-Management of Health Promotion in African Americans with Multiple Sclerosis: Mixed Methods." Submitted presentation for Rehabilitation Psychology 2013 Conference
2012 "Self-Management of Health Promotion in African Americans with Multiple Sclerosis: Mixed Methods." Accepted presentation for Spring 2013 National Rehabilitation Education Conference
2007 "Perceived Attractiveness and its Effects on Self-Esteem." Oral presentation for Statistical Research and Design course at The University of Texas at Austin
2007 "The Success of Long Distance Relationships versus Geographically Close Relationships." Oral presentation for Statistical Research and Design course at The University of Texas at Austin

Professional Memberships

2012-present American Psychological Association: Rehabilitation Psychology Div. 22
2012-present National Association of Psychometrists
2008-present Association of Black Psychologists