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ACCESSING HEALTHFULNESS THROUGH INTRAPERSONAL
COMMUNICATION: THE CORRELATIONS BETWEEN HEALTH LOCUS OF
CONTROL AND HEALTH OUTCOMES, BEHAVIORS, AND PERCEPTIONS

by

Laura S. Gavin-Breier

Dissertation

Submitted to the Faculty of

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the Degree of

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COMMUNICATION: THE CORRELATIONS BETWEEN HEALTH LOCUS
OF CONTROL AND HEALTH OUTCOMES, BEHAVIORS,
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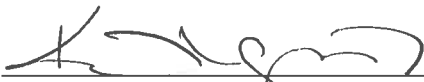
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Dissertation



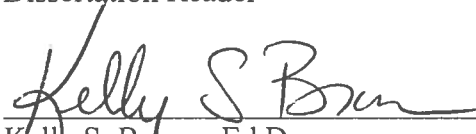
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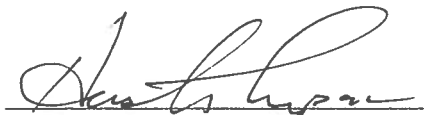
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DEDICATION

This dissertation, while only fully realized in these past three years, has been a lifetime in the making. Therefore, I dedicate this dissertation to those who have given their love, time, and support to me in an effort to lift me up as high as I can possibly go.

First, and foremost, this dissertation is dedicated to my mom and dad for their unwavering and unconditional love and support through the good and the bad times.

Every word you have ever said to me, every example you have ever set for me, and every ounce of love you have shown me has given me what it takes to make this possible.

Secondly, this dissertation is dedicated to my three daughters. I envision your futures to be as bright and beautiful as the person each of you are. You have so many adventures ahead of you. However, as your mom's dissertation sits unread and collecting dust on your bookcase, just know that my biggest hope is that this serves as a constant reminder to you that it is never too late to get out there and do whatever it is you want to do.

Finally, this dissertation is dedicated to my husband. You alone have weathered the bulk of this storm with me. This quest that I have been on has uprooted our lives and demanded more from you than you may have been willing to give at times. However, give is what you did. Your support, albeit a sometimes unique brand of support, has always been there for me and I have been and continue to be grateful in every moment for it...whether I show it or not.

Thank you to all of you. I love you.

ABSTRACT

The problem that the current study addressed was the absence of an intrapersonal health communication guide that profiled the different types of locus of control and the health outcomes, behaviors and perceptions that are associated with each type for individuals diagnosed with MS. Individuals suffering from MS and their healthcare providers do not understand the correlation between health beliefs and physical and emotional health. The research questions were designed to examine the relationship between these variables. Recruiting was completed through a social media based methodology that included online MS communities, Craigslist, Facebook, and Twitter. In total, 164 participants were recruited for the study. Participants completed an online survey that consisted of the Multidimensional Health Locus of Control Scale, the 36-Item Short Form Health Survey, the CAM usage questionnaire, and the Health Care Climate Questionnaire. Correlational analysis was used to determine that internal health locus of control was associated with improved general health, less pain, better physical, emotional, and social functioning, and more energy. Increased self-rated health was found to be correlated with increased acupuncture and yoga use, and less usage of general practitioners, hospitals, over-the-counter medications, and pharmaceutical medications. This study has implications for physicians who can utilize the health beliefs of patients in the clinical setting and for the design and implementation of participatory intervention programs to assist individuals diagnosed with MS in recognizing the potential power of their health beliefs.

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CHAPTER 1

INTRODUCTION

A young woman woke up to discover a bothersome spot of numbness had rooted itself on the bottom of her right foot. Maybe she had slept funny and that part of her foot had fallen asleep. Maybe she had pinched a nerve somewhere in her body and that was causing the numbness. The following morning was almost an instant replay of the day before. The difference was that when the woman awoke she found that the numbness had spread and that her whole foot, from the ankle down, had been engulfed by the numbness.

By the third morning, the numbness had crept up the calf of her right leg and had made an impressive jump over to her left foot. She found herself continually shaking both of her legs in an attempt to get the blood flowing. The creeping numbness continued until finally, on the sixth morning, the yet unnamed disease found the woman sitting on the side of her bed, exasperated with a numbness that now fully ensconced both of her legs from the waist down, deciding that the time had come to see a doctor.

Hours later, after explaining to the doctor about the growth of the numbness, the absence of any other illness symptoms, and after several tests were administered, the doctor returned to the woman. Before the exam room door could even be shut it was stated simply that the woman was to be diagnosed with Multiple Sclerosis (MS).

Within hours of that statement being made, a frantic and devastating phone call was made to the woman's husband, she was hospitalized, pumped full of steroids, and would

receive her first visit from a neurologist that would tell her immediately that this diagnosis was not a death sentence. Maybe that statement would have been comforting to the woman had she even understood that death was one of the many undesirable outcomes of MS.

This woman's story, my story, actually, is far from special. Four hundred thousand people in the United States have been diagnosed with MS. An estimated 2.5 million individuals worldwide live with MS. There are two hundred new cases of MS diagnosed each week (Pietrangelo, 2014) and 10,000 new cases diagnosed each year ("MS Overview," 2014).

MS is a disease of the central nervous system which is made up of the brain, optic nerves, and the spinal cord. When the central nervous system becomes inflamed the protective covering (myelin) that surrounds and insulates the nerves becomes damaged. Over time, the nerves themselves may become damaged. This damage causes delays in messages being sent from the brain and spinal cord to other parts of the body. It is this delay that causes the symptoms of MS ("MS Overview," 2014).

Symptoms of MS can include, but are not limited to, balance problems, bladder dysfunction, cognitive changes, dizziness, fatigue, numbness, speech difficulties, swallowing disorders, and visual impairments. The most common of the seven forms of MS is relapsing-remitting MS. This particular type of the disease is characterized by periods where symptoms are present for short periods of time and are then followed by longer symptom-free time periods. Symptoms of MS differ from person to person and can differ in the same person from relapse to relapse. ("MS Overview," 2014).

MS is a chronic illness. Chronic illnesses are defined as a non-communicable disease that develops over a long period of time, does not resolve itself immediately, and can be incurable. (Centers for Disease Control, 2009). The number of people suffering from chronic illness is nearly 133 million in the United States. This number is projected to grow to 157 million by the year 2020 and will continue to grow by one percent each year so by 2030, 171 million people will have been diagnosed with at least one chronic illness (Anderson & Horvath, 2004).

Individuals suffering from MS also fall prey to all of the complexities that come along with chronic illness. For example, the divorce rate of those with a chronic illness is over 75% (Centers for Disease Control, 2012). The chance of suffering from depression ranges from 23% to 41% depending on their chronic illness morbidity (Gunn, et al., 2010). Seventy percent of suicides stem from those who constantly live with physical illness or constant pain (Mackenzie & Popkin, 1987). Approximately 33 million chronic illness sufferers have their daily lives impacted by their illnesses and seven in 10 deaths are caused by chronic illness (Centers for Disease Control). These numbers are simply staggering.

Treating MS is done by long-term disease-modifying therapies. This is not a cure. Pharmaceutical drugs only act to reduce the number of relapses and the severity of symptoms. Typically, most MS medications were administered via self-injections. It has been only recently that oral medications have begun to be used in the treatment of MS (“MS Overview,” 2014). Medical treatments, however, are not the only option available to individuals diagnosed with MS.

Approximately 34% of adults in the United States are utilizing the benefits of complementary and alternative medical (CAM) treatments (Clarke, Black, Stussman, Barnes, & Nahin, 2015). Complementary and alternative medicine can be defined as non-standard health services or health practices and medicines that lie outside of the conventional medicine realm. Examples of CAM therapies can include, but are not limited to, homeopathic medicine, traditional Chinese medicine, meditation, prayer, herbal products, chiropractic care, massage and pulse, and magnetic field therapies (Chang, Wallis, & Tiralongo, 2011). In a seminal work examining why individuals choose to use CAM treatments, Astin (1998) found that the majority of CAM users were not turning to this type of treatment out of dissatisfaction with conventional methods but because individuals found “health care alternatives to be more congruent with their own values, beliefs, and philosophical orientations toward health and life” (p. 1548). It is this awareness of how values, beliefs, and philosophical orientations play a role in physical and mental health that directly relates CAM therapies with intrapersonal communication.

Intrapersonal communication is the soundless, inner speech that arises the instant we begin to think about something, attempt to make a plan, solve problems, clarify ideas, analyze situations, or to read a book (Jemmer, 2009). Intrapersonal communication helps individuals to create the external world that they experience. Aspects of intrapersonal communication that have a direct impact on health include health beliefs and perceptions. Sobel (1995), in one of the first pleas for the use of intrapersonal communication as a medical treatment, stated “What goes on in a person’s head-the thoughts, and emotions-can have a dramatic effect on the onset of some diseases, the course of many, and the management of nearly all” (p. 237). Sobel also mentioned that health beliefs are often

considered, by medical providers, to be determinants to health behaviors such as smoking, alcohol consumption, poor diet and fitness plans that then go on to impact health. However, beliefs such as sense of control, self-efficacy, and optimism have direct influences on the physiological systems in addition to and separately from their impacts on health behaviors. As an example, Idler and Kasl (1995) conducted a study that examined the power of health beliefs and found that the greatest predictor of health was determined simply by what individuals believe about their health. Because intrapersonal communication plays an important role in creating health, the current study focuses on evaluating health beliefs and perceptions.

But is it even possible to evaluate the nature of intrapersonal communication so that an understanding of different types of health beliefs and perceptions could be obtained? Could evaluating intrapersonal communication lead to understanding that there is a connection between how individuals diagnosed with MS talk to themselves about their illness and how they maintain, achieve, or regain good health, or in other words, implement their health behaviors? If so, could an in depth understanding of our health beliefs and the connection that those beliefs have with our health behaviors lead individuals to understand their health and healing better? Is there a possibility that the future of our health lies not in medicine bottles and hospital beds, but instead, in our minds? It is these questions that form the roots of this study.

This study focused on combining three separate but interconnected characteristics of assessing intrapersonal communication as a way to improve one's health. First, the definition of intrapersonal communication as it relates to health beliefs; second, the measurement of locus of control and the relationship that it maintains with our health

outcomes, behaviors; and lastly, the health communication perceptions that individuals hold and how those perceptions relate with locus of control. These three factors are discussed in the following paragraphs.

Intrapersonal communication is crucial to the healing process of individuals suffering from MS. Intrapersonal communication is the internal process of communication in which our reality is developed and conserved. It is the method by which we communicate to ourselves about ourselves and our world (Castaneda, 1999). Our intrapersonal communication arises from our conscious perceptions and emotional experiences. Individuals utilize intrapersonal communication to develop thoughts, build beliefs, understand emotions, internalize and make sense of the outside world, and to develop social skills (Sokolov, as cited in Jemmer, 2009). With inner dialogue, individuals renew and uphold their realities, they choose their paths and revitalize life. However, intrapersonal communication can also become redundant and repetitive, leading to a stagnant reality intent on oppressing transformation. Either way, intrapersonal communication helps us to create the world that we experience (Castaneda).

Therefore, intrapersonal communication also helps individuals to create the health that they experience. Physical health is embedded in intrapersonal communication. Perceptions and emotional interpretations of individuals' experiences with health and illness give rise to beliefs that individuals then attach to their health. These beliefs have a dramatic impact on our minds and physical bodies (Dossey, 2001).

Given the important role that intrapersonal communication plays in how individuals develop their health beliefs, finding a link between health beliefs and health outcomes, behaviors and perceptions may be helpful in two ways. First, establishing this link could

help individuals suffering from MS understand how to produce more desirable health outcomes (Debnam, et al., 2012; Deen, Lu, Rothstein, Santana, & Gold, 2011; Holmström & Röing, 2010). Secondly, a more effective and health producing method of communication between medical providers and patients could be developed (Lee & Lin, 2011; Street, Makoul, Arora, & Epstein, 2009; Wang, et al., 2013).

One way to begin the process of establishing a link between health beliefs and health behaviors is to measure individuals' health locus of control. Through their seminal work with locus of control, Wallston, Wallston, and DeVellis (1978) defined locus of control as the degree of control that individuals perceive themselves as having over their own health and includes three different categories. Internal health locus of control (IHLOC) is characterized by individuals believing that they exert power over their own health. Powerful others locus of control (POLOC) is characterized by individuals believing that powerful others such as doctors, nurses or family members exert power over their own health. Finally, chance health locus of control (CHLOC) is characterized by individuals believing that chance, luck or fate exert power over their health. Health locus of control is determined through the completion of the Multidimensional Health Locus of Control (MHLC) scale.

While this scale is primarily utilized as a research instrument, Wallston and Wallston (1981) noted that one of the most important usages of the MHLC scale was to help individualize patient healthcare through the understanding of an individual's health locus of control beliefs. The researchers advocated for the use of the MHLC scale as a clinical tool rather than just a research instrument by citing the example of a wellness center in Colorado that administers the scale as a part of new patient profiles. Additionally,

understanding the links that each type of health locus of control has with different types of health outcomes and behaviors may be a motivational tool that can be utilized by individuals to obtain optimal health.

In recent years, health communication has taken a turn away from detached and paternalistic care and has moved to patient-centered care (Cegala & Post, 2009). Patient-centered care is difficult to define because it is based on the perceptions of the patient. Each patient has different expectations of what patient-centered care should consist of and each patient has a unique perception of their experiences with patient-centered care. However, patient-centered care is typically judged on two characteristics of the physician-patient relationship. The first characteristic is perceived autonomy supportiveness (Cegala & Post; Lee & Lin, 2010; Street & Haidet, 2011). Individuals who seek autonomy are an active participant in health care. Individuals seeking autonomy would seek answers to questions, provide detailed information about their physical and mental health to their medical providers, and would express opinions, preferences, and concerns about their health and healthcare (Street & Haidet). Individuals that are active in their healthcare can lead a physician to a better understanding of their health beliefs (Street & Haidet), can experience more satisfaction with their healthcare (Lee & Lin, 2011), and can begin to view their health in a different light by improving their self-rated health (Lee & Lin, 2010). Lee and Lin (2011) discovered that individuals who actively participated in their healthcare by seeking information regarding their health enjoyed a better physical and mental quality of life than individuals who were less interested in seeking information about their healthcare.

When individuals perceive autonomy support from their physician, perceptions of trust, the second characteristic upon which patient-centered care is judged, are forged (Lee & Lin, 2010). When patients perceive that trust has been built with their physician, many benefits of that relationship begin to unfold. Patients who trust their physician will seek out medical care and will adhere more readily to treatment plans. More healthful lifestyle choices, such as less alcohol and tobacco consumption will be made (Bertakis & Azari, 2011). A sense of control over chronic illness and self-efficacy in regards to managing chronic illness can also improve. Improvement of self-rated health has also been discovered to be associated with trust (Lee & Lin, 2009). Physician-patient trust comes full circle by allowing patients to become more active in their healthcare and more open with their physician (Berrios-Rivera, et al., 2006), resulting in the need for fewer medical tests (Bertakis & Azari). Finally, quality of life and the patients' satisfaction with their physicians showed improvements in health outcomes, such as glycemic control in diabetics. Improved health outcomes are shown to lead to trust. (Lee & Lin, 2011).

Patient-centered care may have a direct connection to locus of control. Through their research on how locus of control influenced preferences for information and decision making, Hashimoto and Fukuhara (2004) found that there was a connection between information seekers and active decision makers and individuals with IHLOC. However, research specifically studying the correlation between health locus of control and patient-centered care components is limited and varied. Schneider, et al. (2006) found that patients between the ages of 18 and 44, with IHLOC, possessed a higher preference for involvement in their healthcare than patients 45 years and older. Wang, et al. (2010) found that HLOC had no bearing on information seeking or information retention when

they conducted their study on the influence of IHLOC on deaf women and cervical cancer education. While this study had many limitations including a small sample size that did not fully represent the deaf community and the lack of information regarding past experiences or perceptions with medical providers, it does serve to blur the connection between LOC and patient-centered care perceptions. It is this gap in the research that makes understanding how individuals with different types of locus of control perceive their healthcare communication an important step in building the profile of locus of control.

Statement of the Problem

The problem that the current study addressed was the absence of an intrapersonal health communication guide that profiled the different types of locus of control and the health outcomes, behaviors and perceptions that are associated with each type for individuals diagnosed with MS. Individuals suffering from MS and their healthcare providers do not understand the correlation between the different types of health locus of control and various health outcomes, behaviors and perceptions. It is suspected that this correlational void stems from a lack in the health locus of control research literature to develop an in-depth and concise health locus of control profile.

The purpose of this current study is to correlate the different types of health locus of control with the health outcomes, behaviors and perceptions of individuals diagnosed with MS in order to assist individuals suffering from MS with creating more desirable health outcomes for themselves and to potentially aid healthcare providers in communicating with their patients in a more health producing manner. This profile will

allow both patients and healthcare providers to understand the uniqueness of intrapersonal health beliefs.

Background

Intrapersonal communication has been of interest to researchers for over a century, although, in recent years intrapersonal communication as it relates to health beliefs and perceptions has grown into an important research topic in the area of health outcomes and behaviors. This section provides background information on intrapersonal communication including an historical review of intrapersonal communication, a look at the power of health beliefs through the examination of self-rated health and the placebo effect, an historical review of the development of the Multidimensional Health Locus of Control Scale, an intrapersonal communication measuring tool, through Rotter's social learning theory, an introduction to patient-centered care, and an overview of complementary and alternative medicine (CAM).

Intrapersonal communication, inner dialogue, or self-talk, as it may be known, found its way into the world of research in the early 1900's. Saint-Paul (1927) brought light to the conversations within our heads when he proposed that self-consciousness is the act of our intelligence communicating with our intelligence, as if looking in a mirror. This is self-talk. The research has steadily grown in the many years that have passed since 1927. Such topics as how inner dialogue mediates the relationship with one's self (Kaufman & Raphael, 1984), the understanding that self-talk allows individuals to re-evaluate themselves (Nurius & Majerus, 1988), how inner speech dominates a human's stream of consciousness (Carruthers, 1996), intrapersonal communication as a means of problem solving (Morin, 2005), and self-talk as an important day-to-day tool to help individuals

facilitate social assessments, self-criticism, self-reinforcement, and self-management (Brinthaupt, Hein, & Kramer, 2009) have all added to the understanding that talking within ourselves can be restrictive and destructive or empowering and life changing (Jemmer, 2009).

The importance of self-talk is especially true when it comes to intrapersonal communication and health. One of the simplest forms of health-related intrapersonal communication is self-rated health. Self-rated health is a self-assessment that asks individuals to answer one question: how do you rate your overall health? Individuals do this by describing their health as either excellent, very good, good, fair, or poor. This question originally appeared in sociological studies as a part of the socioeconomic status surveys that gathered such data as smoking and alcohol use, weight issues, disease history, current health status and social networking and support. However, asking individuals to rate their health now appears regularly in health studies and acts as a predictor of health outcomes (Idler & Benyamini, 1997). Researchers have found that low self-rated health is associated with chronic disease on-set, chronic disease morbidity (Latham & Peck, 2012), coronary artery disease, cancer, type 2 diabetes, and a general lack of good health behaviors (Ramkumar, et al., 2009).

In one of the landmark studies on self-rated health, Mossey and Shapiro (1982) conducted a quantitative study that investigated whether self-rated health was a predictor of mortality and if that predictor was independent of objective health status. Participants and data for the study were obtained from the Manitoba Longitudinal Study on Aging that was conducted between 1970 and 1977. From the Manitoba study, researchers were able to access self-rated health measurements that were taken from interviews in 1971

and the objective health status obtained from health records for the years of 1970 through 1977 for 3,128 participants. Mortality measurements were broken down into early mortality (1971-1973) and late mortality (1974-1977) and deaths were recorded by examining the Manitoba master registry and hospital claims forms.

Mossey and Shapiro (1982) found that the risk of death was greater for those individuals with low self-rated health and those with a low objective health status. In fact, results of the study suggested that participants who rated their health as poor were three times more likely to succumb to death than those who rated their health as good. Lastly, researchers found that while objective health status may change as physical health changes, self-rated health appears to be a stable perception. Idler and Kasl's (1995) study that was previously mentioned was conducted with a similar methodology. The results of their study showed that smokers were twice as likely to die as non-smokers, while individuals who rated their health as poor were seven times more likely to succumb to death than those individuals who rated their health as excellent.

Intrapersonal communication can sometimes lead to absurd health beliefs that, in turn, can have dramatic effects on the physical body. Placebo studies are probably one of the most fascinating areas of health belief research. A placebo is nothing. It is a sugar pill, a sham surgery, fake creams, or shots of saline. Placebos are used in drug trials to see if the drug being tested works better than no treatment at all (Erdmann, 2008). However, a placebo effect can show the amazing power of the mind over the body. It is individuals' extraordinary belief in something that allows it to work or not work (the nocebo effect) physically on our bodies (NHS Choices, 2010).

In one of the pre-eminent placebo effect studies, Moseley, et al. (2002) researched the effectiveness of knee arthroscopy surgeries. In this study, participants who suffered from osteoarthritis of the knee were separated into three groups depending on the seriousness of their osteoarthritis. Using a randomized process, the treatment assignments were chosen and sealed into an envelope. On the day of surgery, the envelope was handed to the surgeon once the patient was in the operating room. Through this process each participant was randomly selected for either an arthroscopic lavage, an arthroscopic debridement or the placebo surgery. All procedures were performed by one surgeon. The surgeon did not participate in any of the post operation procedures and all of the staff that did participate in the post operation procedures were unaware of any differences in surgical treatment.

It came as a surprise to Moseley, et al. (2002), who were under the impression that the placebo effect could not be present in a surgical environment as it is in the application of medication, that at no time during the 24-month follow-up measurement timeframe did the lavage or debridement groups have less knee pain than the placebo group. Nor did they have greater functional improvement than the placebo group. In fact, the debridement group showed poorer results than the placebo group in mobility following the surgery.

The power of the placebo becomes apparent when the effectiveness of one placebo is compared to the effectiveness of another placebo. Placebo versus placebo studies research which types of fake medicine or fake medical treatments are most helpful to individuals. Results of placebo versus placebo studies have shown that individuals believe that two placebo pills are more effective than one at reducing pain, two placebo

pills once a day are better than one placebo pill twice a day at reducing pain (Moerman, 2000), branded pills work better than plain pills (Branthwaite & Cooper, 1981), and blue placebo pills work well as downers and red placebo pills are most effective as uppers (Schapira, McClelland, Griffiths, & Newell, 1970). None of these findings have anything to do with actual medication or medical treatments. They are all shams. These studies are only showing how powerful health beliefs are, if not a little irrational.

As the idea that health beliefs are powerful enough to impact the physical body became more prevalent, having the ability to measure individuals' intrapersonal communication regarding their health beliefs, or health locus of control, became essential. Fortunately, the development of this capability had already begun in 1954 with Rotter's social learning theory (Wallston, Wallston, & DeVellis, 1978). Rotter (as cited by Mearns, 2015) developed the social learning theory based on the *empirical law of effect*. This law states that individuals purposefully seek out positive stimulation and reinforcement in an effort to avoid negative stimulation (Mearns). Therefore, according to the social learning theory, the potential of individuals exhibiting a particular behavior is formulated on the expectations individuals have regarding the development of a given outcome and the level of desirability the individual has for that outcome (Wallston & Wallston, 1981). The theory is based on the history of how individuals learn, the combination of their experiences, and on the environmental stimuli that individuals are cognizant of and respond to.

Rotter (as cited by Mearns, 2015) based his theory on four main components. The first component is behavior potential and describes the likelihood of individuals participating in a certain behavior. The second component, expectancy, is a subjective measurement

that defines how confident individuals are that a behavior will produce a particular outcome. The third component is reinforcement value and represents the desirability of an outcome. Outcomes that are appealing have a high reinforcement value, while outcomes that are not desired have a low reinforcement value. The predictive formula, as Rotter calls it, looks like “ $BP=f(E \text{ \& } RV)$ ” (Mearns, p. 4) and reads as the behavior potential equals the function of expectancy plus reinforcement value. The final component of social learning theory is the psychological situation which gives value to the unique experience that individuals have within an environment. While not a specific part of the theory’s formula, Rotter did feel that it was important to understand that no two people will experience the same stimuli in the same way. Individuals bring their own expectancies and reinforcement value to a given stimuli and will then interpret and give meaning to the environment in their own unique way which will then determine their own distinctive behavior (Mearns).

One of the applications of the social learning theory was in the area of locus of control. Rotter’s (as cited by Mearns, 2015) concept of locus of control describes a generalizable, cross-situational set of beliefs that individuals hold in regards to whether or not they will obtain the outcomes they are looking for in life (Mearns). Through his description of this concept, Rotter explained that there are two types of individuals: externals and internals. Externals believe that when behavioral outcomes occur they are mostly the result of outside forces such as luck, fate, powerful others or just general unpredictability. Internals, on the other hand, believe that outcomes are the result of their own behavior. Rotter developed the I-E scale so that internal and external locus of control could be measured. The scale consisted of 29 forced-choice test questions that

exclusively measured the “subjects’ belief about the nature of the world” (Rotter, 1966, p. 10). The concept of this scale was carried over to the health arena by Wallston, Maides, Wallston (1976) when they developed the original Health Locus of Control scale. The parameters of this scale followed that of Rotter’s I-E scale in that individuals were categorized as either health-externals or health-internals based on whether they believed that the factors controlling their health were left up to fate, luck, chance and powerful others or whether their health outcomes were a result of their own behavior.

Wallston, Wallston and DeVellis (1978) reconstructed the Health Locus of Control scale to develop the Multidimensional Health Locus of Control (MHLC) scale. This new scale separated individuals who believed that chance, luck or fate were responsible for their health from those individuals who believed that powerful others were responsible for their health. This division created a scale that measured internal, chance, and powerful others locus of control. The researchers explained that the new scale offered researchers “greater potential usefulness than the original unidimensional Health Locus of Control scale” (Wallston & Wallston, 1981, p. 196). The greater usefulness of the scale was defined as the offering of a broader and more differentiated data set to work with and the inclusion of multiple forms to allow for repeated administrations of the scale (Wallston & Wallston).

This tool is utilized primarily in research studies. Through the use of the MHLC scale, Roddenberry and Renk (2010) discovered that internal health locus of control (IHLOC) is very beneficial to the health of individuals. The researchers specifically found that IHLOC was associated with less occurrences of stress, anxiety, and depression. Less occurrences of breast cancer (Rowe, Montgomery, Duberstein & Bovbjerg, 2005) and

disease burden (Berglund, Lytsy, & Westerling, 2014) have also been exposed; while nutritional self-efficacy was found to be positively associated with IHLOC (Chen, Acton, & Shao, 2010). While HLOC has been considered to be a personal trait and thus unchangeable, more and more research has begun to show that it is possible to change HLOC if the right intervention or motivation is presented to an individual (Bastani, Hashemi, Bastani, & Haghani, 2010; Moshki, Beydokhti, & Cheravi, 2013).

Due to the individualistic uniqueness of health locus of control, Wallston and Wallston (1981) also discussed the use of the tool in the development and evaluation of health education and intervention programs for patients. Researchers have found that health education and intervention do not necessarily have to be administered in a classroom type setting, but can instead be effectively administered through patient-centered care (Bertakis & Azari, 2011; Hamdan-Mansour, Marmash, Alayyan, & Hyarat, 2014; Lee & Lin, 2010). The term patient-centered care, intended to draw attention to the need of healthcare providers to begin to look past diseases and to start focusing on patients (Barry & Edgman-Levitan, 2012), was coined in 1988 by the Picker Institute. However, the principles of patient-centered care can be traced back to the ancient Greek school of Cos. It was here where the main focus of medicine was on the intricacies of each patient (Crookshank, as cited by Stewart, et al., 2000). In more modern history, client-centered therapy (Rogers, 1951), the whole person approach to medicine (Neuman & Young, 1972), the basing of a medical practice on the patient versus on the disease (Byrne & Long, as cited by Stewart, et al.), and the application of patient-centered care within a hospital setting (Gerteis, Edgman-Levitan, Daley, & Delbanco, as cited by Stewart, et al.) have all been a part of the patient-centered care transformation.

Study after study is careful to explain that there is no one definition of patient-centered care (Bertakis, & Azari, 2011; Cegala & Post, 2009; Lee & Lin, 2010); however, Stewart, et al. (2000) have been regularly recognized as having the most complete account of the concept. The researchers explained that patient-centered care is developed through the interaction of six different components. The first component of patient-centered care consists of a physician exploring a patient's disease while also contemplating the patients' illness experience. The illness experience includes the patient's feelings about their illness, their perceptions about what is wrong with them, how their illness impacts their daily lives, and their expectations regarding what needs to be done to help them heal in the future. The second component of patient-centered care requires a physician to understand the patient as a whole person. This is followed up by the remaining components of patient-centered care that include the development of common ground between the physician and the patient, the incorporation of health prevention and promotion into office visits, the enrichment of the physician-patient relationship, and the desire for the patient-centered care to be built upon realistic expectations.

The Picker Institute delved deep into the patients' expectations of patient-centered care when they conducted a multiyear research project from which they were able to develop a list of necessary patient-centered care attributes from the direct perspective of patients. The list included respect for the values, preferences and expressed needs of the patient; coordination and integration of care; information, communication and education; physical comfort; emotional support; family and friend involvement; transition and continuity; and access to care ("Principles of Patient-Centered Care," n.d.). While the

usage of patient-centered care by medical providers is strong, the concept has gone through yet another type of modernization. Patient-centered care has been engulfed by integrative medicine.

Integrative medicine is a type of medical treatment that is attentive to the whole person, encourages lifestyle changes, incorporates patient-centered and healing oriented care, builds therapeutic relationships and utilizes therapeutic approaches all in an effort to integrate conventional and complementary therapies. Integrative medicine is currently perceived as a realistic strategy to help curtail the expansion of chronic illness in the United States (Maizes, Rakel, & Niemiec, 2009). While part of the integrative medicine equation includes the use of conventional medicine, it recognizes that medicine alone cannot treat the current chronic illness epidemic. That is why integrative medicine incorporates complementary and alternative medicine (CAM) treatments as the second part of its equation.

As previously mentioned, CAM is defined as non-standard health services or health practices and medicines that lie outside of the conventional medicine realm (Chang, et al., 2011). There are several CAM fields including, but not limited to, chiropractic, naturopathic, acupuncture, Chinese medicine, midwifery, homeopathy, and massage therapy. Within those fields there are several modalities including, but not limited to, massage, meditation, botanical medicine, reiki, and healing touch (Maizes, et al., 2009).

Gaining the support of the 34% of adults in the United States who currently use CAM treatments (Clarke, et al., 2015) has not been an easy journey. Complementary and alternative medicine was nearly wiped out during the early 1900's. In 1908, the Carnegie Foundation asked Abraham Flexner to appraise over 150 American and Canadian

medical schools. Upon completion of his appraisal, Flexner reported on the state of these medical schools by severely criticizing the majority of the schools for imparting inadequate medical knowledge upon their students (Flexner, 1910). Almost 60% of conventional medical schools closed their doors following the filing of what is now known simply as the Flexner Report, and schools that provided training in alternative medicine were almost entirely wiped out of existence. Despite this obstacle, alternative medicine never died out and has steadily returned to a viable medical treatment option today.

In an effort to respond to the demand for CAM treatments to be integrated into mainstream medicine, the Consortium of Academic Health Centers for Integrative Medicine, formed in 2000, and the Academic Consortium for Complementary and Alternative Healthcare, formed in 2004, were established. The purpose of the consortiums was to combine mind, body and spirit into medicine. Developing integrative curriculum for medical schools, ensuring CAM treatments were more readily accepted in mainstream medicine, developing CAM professions, and serving as a collective voice in the effort to reform healthcare were among the main goals of the consortiums (Maizes, et al., 2009).

The recent efforts to incorporate CAM usage into conventional medicine have supplied MS sufferers who utilize CAM treatments several benefits. The benefits of CAM usage include the alleviation of symptoms (Stake-Nilsson, Hultcrantz, Unge, & Wengström, 2011), increased levels of hope and optimism (Swisher, et al., 2002), and a sense of empowerment that stemmed from the ability to self-manage their illness (Chang, et al., 2011).

In summary, research evidence regarding self-rated health, the placebo effect and health locus of control have shown that intrapersonal communication in regards to health beliefs and perceptions can either help to improve or deteriorate individuals' health. Patient-centered care and CAM treatments are effective ways to focus patients on maintaining or acquiring internal health beliefs and to keep patients feeling empowered over their health. Once an understanding of what, how and why individuals believe about their health is obtained then correlating those beliefs with health outcomes, behaviors and perceptions becomes essential.

Research Questions

This study was conducted based on the following research questions and their corresponding null and research hypothesis:

1. What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference?

H₀1: There is no statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁1: There is a statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

2. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey?

H₀2: There is no statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁2: There is a statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

3. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers?

H₀3: There is no statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁3: There is a statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

Description of Terms

The following terms were instrumental in completing this study. An operational definition of how these terms were utilized in this study is provided.

Chronic disease. A non-communicable disease that develops over a long period of time, does not resolve itself immediately and is quite often incurable (Centers for Disease Control, 2009).

Complementary and Alternative Medicine (CAM). Health and wellness therapies that are not generally found in conventional Western medicine and that concentrate on the person as a whole, incorporating mind, body and spiritual health into treatments. Complementary medicine is used in conjunction with conventional medicine while alternative medicines are used as replacements for conventional medicine (Mayo Clinic Staff, 2014).

External locus of control. Characterized by an individual believing that powerful others, such as doctors, nurses or family members, exert power of their own health (Wallston, et al., 1978).

Health Behaviors. Activities individuals participate in, regardless of actual or perceived health status, for the purpose of promoting, protecting, or maintaining health, regardless of whether or not such behavior is effective towards supplying the desirable health outcomes (“Definition of health behavior,” 2013).

Health Outcomes. Changes in the health status of individuals due to a planned intervention, regardless of whether the intervention was intended to change health status (“Definition of health outcomes,” 2013)

Internal locus of control. Characterized by an individual believing that they exert power over their own health (Wallston, et al., 1978).

Intrapersonal communication. A form of concealed speech or inner dialogue where the communication triad of sender, transmitter and receiver are all located within the same individual (Jemmer, 2009).

Locus of control. The degree of control that each individual perceives themselves as having over their own health (Wallston, et al., 1978).

Multiple Sclerosis. An unpredictable disease of the central nervous system that causes damage to nerves and creates symptoms ranging from visual changes to numbness, and from fatigue to speech difficulties (“MS Overview,” 2014).

Patient autonomy. Patient care that is driven by individual differences in patient preferences (Lee & Lin, 2010).

Patient-centered communication/care. Physician communication that is based on being attentive to the physical needs and the emotional concerns of the patients, as well as, developing a sense of involvement and partnership with the patient by allowing the patient to be more involved in their health decisions (Lee & Lin, 2010).

Self-efficacy. The beliefs that an individual holds in regards to their ability to perform a specific health behavior (Castro, et al., 2014).

Self-rated health. The measurement of how an individual perceives their health by describing their health as excellent, very good, good, fair, or poor (Berglund, et al., 2014).

Symptoms. Any subjective evidence of disease or of a patient's condition, such as, evidence of change in a patient's condition, as perceived by the patient; that is indicative of some bodily or mental state ("Symptom," 2007).

Significance of the Study

This study was important for two groups of stakeholders. The first, and most important group consisted of those individuals who have been diagnosed with MS. A health locus of control profile was constructed by correlating the types of locus of control (internal, powerful others, chance) with the health outcomes, behaviors and perceptions associated with each type. Correlating intrapersonal health beliefs communication with health benefits and consequences potentially could provide individuals diagnosed with MS a new and innovative understanding of their role in creating health outcomes.

Secondly, this study was important to the healthcare providers that treat those individuals who suffer from MS. Awareness of patients' health locus of control on the part of healthcare providers and how that type of locus of control correlates with different health behaviors could potentially encourage healthcare providers to utilize a more unique method of healing alongside the more traditional methods. In addition, the data obtained in this study regarding the participants' perceptions of their communication with healthcare providers can offer insight as to patients' desire for patient-centered care, their individual expectations of patient-centered care and information on how to properly educate patients on their healthcare based on each individual's health locus of control.

Finally, much of the health locus of control literature has been focused on the relationship between health locus of control and self-rated health, or self-efficacy, or health outcomes, or co-morbidity, or mortality for individuals with various chronic

illnesses. A few successful studies have found that a health education intervention can change individuals' health locus of control. However, because the literature review uncovered little research on how the different types of locus of control correlated specifically with MS, there was opportunity for contributing to the existing body of knowledge on the subject. Similarly, research studies examining the impact of a health education intervention generally increase the knowledge and understanding of a particular disease in the participant but do not increase awareness regarding the participants' intrapersonal health belief communication (Bastani, et al., 2010; Broadbent, Ellis, Thomas, Gamble, & Petrie, 2009; Deen, et al., 2011; Wang, et al., 2013). In addition to the direct impact that this study could have on individuals diagnosed with MS and the healthcare providers that treat them, this study identified and consolidated information that has, up until now, been spread across many research studies. The current study provides future researchers and healthcare providers with important information regarding the development of healthcare programs and effective patient communication.

Process to Accomplish

The purpose of this current study was to build a profile of the health locus of control of individuals diagnosed with MS. The findings of this study will potentially provide healthcare providers with valuable information on how to healthfully communicate with individuals diagnosed with MS by giving them information about what the different types of health locus of control look like in regards to health outcomes, behaviors and perceptions. Understanding this information is the first step in building effective patient health interventions. Consequently, this study took the form of a quantitative methodology that utilized a correlational, cross-sectional survey design so that the

researcher could examine the relationships between one characteristic (locus of control) and several other characteristics (health outcomes, health behaviors, and health communication perceptions). The survey research for this study involved gathering information about one group of individuals by asking them questions and organizing their answers using statistical methods in order to build a profile of that population (Leedy & Ormrod, 2013).

This study took place during a three month time period from February through May, 2016. Individuals aged 18 or older who had been diagnosed with MS and who had access to a computer were surveyed. The convenience sample for this study was determined by the number of people responding to the online requests for participants. The online survey, consisting of approximately 85 questions obtained from a mix of several instruments, examined intrapersonal communication as it relates to the health beliefs of individuals diagnosed with MS and the health behaviors and perceptions associated with those individuals' beliefs. The number of questions contained in the survey did present a potential limitation for the study.

Recruitment for the current study was completed by utilizing four online methods. To begin the recruitment process, the researcher reached out to online communities such as blogs, forums, and message boards associated with MS. The importance of including these online communities in the recruitment process was due to the amount of interest associated with online gatherings such as these. Blogs, forums, and message boards are very often narrow in their subject focus so that individuals seeking out disease information, advice, support, or just a place to feel surrounded by others who are sharing a similar experience can easily find an online presence to meet their needs. More and

more, researchers are relying on these niche communities to locate study participants (Wesolowski, 2014).

The second method explored by the researcher was posting recruitment ads on Craigslist. Craigslist is an online network that provides individuals with, among other things, a place to post and view sale advertisements, personal ads, and job opportunity ads (“Craigslist,” n.d.). Additionally, Craigslist offers a volunteer section where individuals can post volunteer opportunities, including the opportunity to participate in research studies. The researcher strategically posted participation recruitment ads in every region of the United States and most major cities.

The third and fourth online method for study recruitment was to post participation requests on the social media websites Facebook and Twitter. Regardless of which method was utilized, each posting provided the potential participants with a link to an online survey hosting website where the research survey could be completed. Potential participants were also offered a chance to win one of two \$50.00 Target gift cards if they chose to submit their email address following the completion of the survey.

Once the potential participants clicked the survey link, individuals were directed to the survey webpage that consisted first of relevant study information that the potential participant would need to know in order to make an informed decision as to participate or not. Secondly, also included on this page was the researchers contact information. If the potential participant was interested in completing the survey they would be directed to step three, the informed consent form. Once informed consent had been granted, the participant would begin step four: the survey. Finally, once the participant completed the

survey, they would conclude the process by clicking a link to a separate website that provided debriefing information.

The survey began with participants responding to demographic questions. The demographic survey consisted of questions regarding the age, gender, and education level of each participant. The questionnaire also asked participants to confirm that they had been diagnosed with MS, how long ago they had been diagnosed and for information regarding additional chronic illness diagnoses. This information was located in Section I of the online research survey and a copy of the questionnaire is located in Appendix A. Descriptive statistics were used to examine demographic variables used to describe the population in addition to serving as both an independent and dependent variable in the current study.

As the main focus of this study, the researcher utilized the Multidimensional Health Locus of Control Scale (MHLC), developed and tested by Wallston et al. (1978). According to the developers of the scale, the MHLC scale is reported to be both reliable and valid, reporting Cronbach alphas of $\alpha=.673$ to $\alpha=.767$. Almost 40 years after this seminal work originated, the scale is still widely utilized and more recently reported Cronbach alphas of $\alpha=.75$ to $\alpha=.83$ (Fan, Kong, Shi, & Cheng, 2016). The researcher selected the MHLC as the scale for measuring personal health beliefs because of its ability to measure the intrapersonal communication of the participants in regards to how they communicate with themselves about their health. The scale was found in Section II of the online research study and a copy of this instrument can be found in Appendix A.

The scale consists of 18 questions and is set up in a six-point Likert scale format with answers ranging from “strongly disagree” (scored as one) to “strongly agree” (scored as

six). The scale measures for three different types of beliefs. The first is an internal health locus of control belief that is characterized by individuals believing that they exert power over their own health. The second is powerful others health locus of control that is characterized by individuals believing powerful others, such as doctors, nurses, or family members are in control of their health. Finally, there is chance locus of control which means individuals believe that their health is dependent upon luck. Type of locus of control (internal, powerful others, chance) served as the independent variable for the current study. This scale was available for use via public domain.

Once the health locus of control of the participants had been recorded, gathering data on health outcomes, behaviors and perceptions began. Research Question 1 read as follows: What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference? In addressing this question, participants were asked to complete a 36-Item Short Form Health Survey. Ware and Sherbourne (1992) developed and tested the survey and reported that the survey had Cronbach alphas of $\alpha=.76$ to $\alpha=.93$. Scores from the 36-item questionnaire were organized into eight health outcome categories that included physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. The scale was found in Section III of the online research survey and a copy of this instrument is found in Appendix A. Data gathered from the 36-Item Short Form Health Survey served as a dependent variable in the current study and was correlated through the use of the Pearson product moment

correlation to correlate the eight health outcome scores with each type of health locus of control to determine if a relationship existed between the variables and, if so, how strong the relationship was. This scale was available for use via public domain.

Research Question 2 read as follows: What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey? This question was used to examine more specific and unconventional health behaviors and their correlation to the different types of locus of control. In order to measure CAM usage, a basic information gathering, demographic type questionnaire was developed by the researcher. Past researchers such as Akyol, Yildirim, Toker, and Yavuz (2011), Chang, et al. (2011), Sasagawa, Martzen, Kelleher, and Wenner (2008), Stake-Nilsson, et al. (2011), Swisher, et al. (2002) developed similar original questionnaires to utilize in their CAM usage studies. The above researchers developed CAM questionnaires that they did not supply reliability or validity information for and did not supply citations to or letters of consent from past researchers who may have established CAM measurement tools.

In accordance with past researchers, the current CAM questionnaire was developed by a method of classifying CAM modalities through the adoption of the National Center for Complementary and Alternative Medicine's (NCCAM) CAM classification system. This questionnaire was structured in a basic ordinal scale format asking participants to state whether they do not use, occasionally use, routinely use or primarily use specific CAM treatments. For the current study, the researcher relied on the questioning format used by Sasagawa, et al. (2008). This format measured 10 types of CAM usage alongside four

types of more conventional medicine. The types of CAM usage included acupuncture, counseling, homeopathy, hypnosis, meditation, naturopathic medicine, nutritional interventions, other folk remedies, prayer, and yoga. The areas of conventional medicine usage included general practice, hospital, over-the-counter medications, and pharmaceuticals. This scale was found in Section IV of the online research survey and a copy of this instrument is found in Appendix A. A Spearman's Rho correlation was used to determine if there was a relationship between health locus of control and the different types of treatments and, if a relationship did exist, to also determine how strong that relationship was.

Research Question 3 added the final piece to the locus of control profile, and read as follows: What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers? In answering this question, the researcher was able to determine whether or not there is a relationship between the different types of health locus of control and how external health communications are perceived. In order to measure the perceptions of the experiences that participants have with healthcare providers, a scale developed by Williams, McGregor, King, Nelson and Glasgow (2005) called the Health Care Climate Questionnaire was used. The researchers reported that the questionnaire is both valid and reliable. Cronbach alpha has consistently been reported above $\alpha=.82$ for this instrument. This scale assesses the degree in which patients believe their physician is autonomy supportive. The scale consists of six questions and is measured using a seven-point Likert scale format with answers ranging from "strongly disagree" (scored as one) to "strongly

agree” (scored as seven). The Health Care Climate Questionnaire was found in Section V of the online research survey and a copy of this survey instrument is located in Appendix A. The questionnaire served as a dependent variable for the current study. Data gathered from this questionnaire was correlated with each type of health locus of control through the use of the Pearson product moment correlation to determine if a relationship existed between the variables and, if so, how strong that relationship was. Permission to use this scale for this dissertation was granted to the researcher after registering as a user on the Self-Determination Theory website.

As previously mentioned, this research study was conducted primarily online. Internet research has been on the rise in recent years. Two factors play into the increase in online research methods. The first is the intensive labor, higher rates of nonparticipation and high costs associated with face-to-face, random digit-dialing and direct mail recruitment (Fenner, et al., 2012). Add that to the near 90% of American adults who access the internet (Pew Research Center, 2014a) and the over 70% of adults who utilize social media, and the online environment seems right for recruiting research participants (Pew Research Center, 2014b). Benefits of online research study recruitment can include the development of a large, demographically representative sample and the ability to target large numbers of individuals who all share similar interests or characteristics (Birnbaum, 2004; Fenner, et al.; Mishra, et al., 2014; Wesolowski, 2014).

Results of studies examining the use of the internet environment as a recruitment tool have shown that the development of online social communities that are based around specific characteristics, interests or the need for support can be an effective means of gathering study participants. O’Connor, Jackson, Goldsmith, and Skirton (2013) utilized

Twitter to successfully conduct a health research study. The researchers suggested that their success was due to the ease with which accessing potential participants came because of real-time social networking. Real time social networking allows for snowball sampling to occur. O'Connor, et al. define snowball sampling as a technique that “uses social interaction between individuals, where a participant from within a target group will recruit other participants who share the same characteristics from their own network” (p. 602). While O'Connor, et al. utilized snowball sampling specifically on Twitter, the same concept can also be successfully applied to Facebook (Kapp, Peters, & Oliver, 2013).

Snowball sampling is also a recruitment tool when coupled with email. Email snowballing can include emails that are sent by researchers to personal contacts, colleagues, organization members and special interest populations. Emails sent out specifically for snowball sampling purposes are most beneficial if the researcher asks the recipients to forward the email on to people they know. Email sampling also has the added benefit of utilizing rapport, whether direct or derived, as a means to personally connect with potential participants which can then increase the level of interest on the part of those contemplating study completion (Temple & Brown, 2011).

As evidence to the power of recent successful online recruitment, Delgado (2014) recruited 85 volunteers through the utilization of email snowball sampling (email blasts) and web postings to participate in an online survey. Newman (2014) recruited 300 participants for an online study through two types of internet recruitment methods. The first method was through the process of having community groups of interest, such as synagogues and community charity organizations assist in email snowballing methods. The second method consisted of snowball sampling through online social media websites

such as Facebook and Twitter. In direct relation to the current study, Sasagawa, et al. (2008) recruited 123 participants for their health study that correlated health locus of control with CAM usage by email snowball sampling and online public bulletin boards.

Finally, Geissler (2015) recruited 281 teachers from across the United States through email and social media snowballing methods and teacher networking groups. Networking groups, internet forums, message boards, and chat rooms have been considered as helpful tools for individuals seeking new skills and knowledge about many topics. One additional use of these internet communities is for individuals who are seeking help to overcome personal adversities such as health issues. This type of focused community can be beneficial to researchers looking to target particular populations of potential participants (Wesolowski, 2014).

Summary

The idea that intrapersonal communication can be used as a method of treatment is a relatively unused concept in the healthcare community. While thinking positively or looking for the bright side of a medical situation might be common sentiments among doctors, nurses, and patients alike, the idea that our thoughts, emotions, perceptions, and beliefs can have a healing effect on our health does tend to lend itself to a more non-traditional type of medical treatment. However, with the cases of individuals diagnosed with MS growing by 10,000 new cases each year (“MS Overview,” 2014), the time is ripe for a new understanding of health, illness and healing. Is there any better place to start than inside ourselves?

Four dozen cancer survivors believed that looking inside themselves had saved them from their chronic illness. Hirshberg and Barasch (1999) reported that all of the survivors

had, at one time, suffered from a cancer that should have ended their lives. More than 30 of the survivors emphasized that they believed prayer, meditation, faith, and/or exercise would heal them. A handful of the survivors said that they believed guided imagery, walking, stress reduction, and playing music were what lead them to be cured. Over 40 of the 48 survivors credited believing that their journey would end in a positive outcome, the ability to maintain a fighting spirit, and the capacity to accept their disease as what helped them conquer their illness.

A growing body of research has built off of these remarkable stories of healing to find that what we do believe about our health matters. However, there are still connections to be made between our health beliefs and our physical and emotional health. This dissertation continues to add to the existing body of knowledge by profiling health behaviors in accordance with the different types of health locus of control. This is being done in an attempt to help individuals better understand the healing power of their personal health beliefs and to guide future researchers and healthcare providers in developing more effective health interventions based on each individual's personal health beliefs. In the following chapter, scholarly literature with regard to this dissertation are recognized, reviewed and examined.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

“The body doesn’t fuel how we live our lives. Instead, it is a mirror of how we live our lives. The body is a reflection of the sum of our life experiences.” (Rankin, 2013, p. 74)

This study examined the effects of intrapersonal communication on health behaviors and perceptions. The goal of this literature review was to investigate the progression of intrapersonal communication by way of perceptions, emotions, thoughts, and beliefs through to its potential impact on health and illness. This chapter identified previous scholarly research that (a) described components of intrapersonal communication and its impact on health, (b) investigated the role of health beliefs in maintaining health and illness (c) examined complementary and alternative forms of medicine, and (d) considered the physician-patient relationship.

Doctors maintain that eating a healthy diet, getting plenty of sleep and exercise, and seeing a doctor regularly are all important elements to maintaining good health. While this is true, it overlooks another key element of good health: positive intrapersonal communication (Rankin, 2013). The question is, do individuals have the power to heal their bodies just by changing how they think, feel, and perceive their health? While this topic continues to gain interest, it has yet to be entirely understood and its potential for personal healing fully realized. Reviewing documented case studies that exemplify the

power of mind over medicine offers an opportunity for more understanding on this topic to develop.

Case Studies

In 1951, a young man of 16 who was thought to be suffering from a serious case of warts underwent a last ditch effort to cure his condition. The warts presented themselves as a hard, smelly, black layer of skin that grew over the young man's entire body with the exception of his face, neck, and chest. The layer of skin was so hard that it was not elastic and would crack and ooze a blood-like serum when bent. As an infant, the child was taken to several hospitals for treatment. Treatment was halted during wartime but was again received following the war at two different London hospitals. All treatments, including two skin grafts that were performed in 1950, were unsuccessful at helping the young man (Mason, 1952).

Finally, the following year, the young man was hypnotized. Under hypnosis a suggestion was made that upon waking from the hypnosis the left arm would clear of the hard, black warts. It took 10 days for the arm to clear from the shoulder to the wrist. During this first hypnosis, a biopsy of the skin was taken and it was then that the treating physician, Dr. Mason, found out that he was not clearing the young man's skin of warts, but was instead treating a disease known as congenital ichthyosiform erythrodermia. This had been, up until Mason's (1952) hypnosis work with the young man, an incurable disease. However, the hypnosis continued and in the end the young man showed a 50% improvement of the skin lesions on his legs and feet, 70% on his thighs, 90% on his back, and 95% on his arms. Mason drew the conclusion that the disease itself was imbedded

with an unimagined psychic factor or the disease had been affected by a psychological process.

Masons (1952) work with the young man became known far and wide. Mason published a journal article emphasizing his success with the young man as unprecedented (Mason, 1952). He quickly became a sensation that drew in patients who suffered from ichthyosis and other fatal diseases that, at that time, had no cure. Unfortunately for Mason, hypnosis did not prove to be the cure-all he had hoped that it would be. He was never again able to produce the results that he had with the young man. Upon reflection, Mason concluded that his inability to recreate his success was due to his belief about the disease that he was attempting cure. When he first set out to help the young man he had been a cocky, young doctor who believed he was curing a bad case of warts. Even though he was successful at helping the young man after finding out that he did not have warts but, instead, an incurable disease, he was never able to reproduce the same results. Mason correlated his inability to reproduce his initial success with the young man with the fact that his mindset regarding what he was attempting to cure had changed (Discovery Health Channel, 2003).

Klopfer (1957) published a case study that told the story of Mr. Wright and his battle with a cancer called lymphosarcoma. Mr. Wright was on the verge of death. He had tumors the size of oranges in his neck, chest, armpits, abdomen, and groin. His spleen and liver were enlarged and his lungs were filling up with a milky fluid that had to be drained every day. All attempts at treating his cancer had failed. Mr. Wright, however, had not lost hope. Staying abreast of all new available treatments in the hope of finding his miracle, Mr. Wright became aware of a new drug called Krebiozen. The drug, available

only through clinical trials, was being offered to individuals diagnosed with cancer who were expected to live longer than three months. This ruled out Mr. Wright. He only had days, maybe a couple of weeks left to live.

Unfortunately, it was this drug that Mr. Wright had pinned all of his hopes on. He believed that this drug was going to save his life. So adamant was he in this belief that he proceeded to beg and hound his physician for the drug. Even though he knew that Mr. Wright only had a couple of days left to live, the physician gave in and administered the drug. Three days later it was discovered that Mr. Wright's tumors had melted away. Ten days after administering the first dose of Krebiozen, Mr. Wright was deemed cancer free (Klopfer, 1957).

Mr. Wright's progress came to a screeching halt two months later when the medical community began reporting that the drug Krebiozen was proving to not be as effective as they originally had thought. Klopfer (1957) reported that almost immediately, Mr. Wright's cancer returned. Thinking that he understood what was going on within his patient, Dr. West concocted a lie and told Mr. Wright that it was true, the first batch of Krebiozen had broken down during shipment and was indeed less effective than it should have been. However, Dr. West also informed his patient that he had managed to get his hands on a new, highly concentrated and extremely pure sample of the drug that was, again, administered to Mr. Wright. In truth, Mr. Wright had been injected the second time with nothing more than distilled water.

The response to the second injection was a repeat of the first. Tumors went away, lungs became clear and Mr. Wright felt great. That is, until a couple of months later when the medical community broke the story that the drug Krebiozen had been proven to be

completely worthless. No longer believing that he had found his miracle treatment, Mr. Wright's tumors came back immediately and he died two days following the announcement by the American Medical Association (Klopfer, 1957).

The literature is filled with these types of stories that illustrate the power beliefs have over health and illness. For example researchers studied 30,000 Chinese-Americans and 400,000 randomly selected Caucasian individuals. Results of the study showed that Chinese-Americans die significantly earlier than Caucasian individuals if they have been diagnosed with a disease and also were born in a year that Chinese Astrology and Chinese medicine deem ill-fated. After ruling out genetic factors, lifestyle choices, patient behavior, skill of the doctor and many other variables, the researchers concluded that the Chinese-Americans were not dying younger because of Chinese genes or even because of their disease. The conclusion was that they were dying younger because of their Chinese beliefs (Phillips, Ruth, & Wagner, 1993). Patients who participated in chemotherapy drug trials, who were assigned to control groups, were told that they may be receiving the real drug, were given a list of symptoms that they may experience and then actually did experience such side effects as fatigue, vomiting, memory lapses, weakness, and even in some extreme cases, hair loss (Siegel, 1986). Twenty-five percent of individuals who participated in control groups such as this have some form of side-effect reaction to sugar pills (Kradin, 2008). Additionally, there is the case study of a woman with a split personality. As one personality, the woman was healthy with no signs of having diabetes. However, the second personality firmly believed herself to have diabetes and the moment she took the identity of the second personality the woman's blood sugars rose and she physically showed signs of diabetes (Robbins, 1986).

Components of Intrapersonal Communication and its Impact on Health

The aforementioned case studies suggested that intrapersonal communication could potentially impact health and illness. The current study sought to investigate the suggestion made by the case studies by attempting to correlate individuals' intrapersonal communication with the health outcomes, behaviors and perceptions of individuals diagnosed with MS. However, this segment of the literature review will focus on introducing intrapersonal communication and its three most important components that aid in transforming internal dialogue into the physical reality that is health and illness. Specifically, the intrapersonal communication components that this segment of the literature review will consider are perceptions, emotions, and thoughts. As each component of intrapersonal communication is introduced, a description of its impact on health and illness will be considered.

Intrapersonal Communication

Through its most basic description, intrapersonal communication is an internal dialogue that individuals carry on with themselves (Jemmer, 2009). Intrapersonal communication is that nagging little voice taking up residence inside the head that makes suggestions of what to buy at the grocery store, suggests taking the car into the mechanic would be a good idea now that the engine light has been on for two weeks, and reinforces the knowledge that eating fast food every day is the leading cause of the need to buy larger pants.

However, intrapersonal communication is more complex than what this basic description proposes. Intrapersonal communication builds individuals' views of the world, their perceptions of reality, and their locus of meaning (Johnson & Proctor, 1995).

Self-awareness is developed through intrapersonal communication (Morin, 1995). As previously stated, the most important components of intrapersonal communication are individuals' conscious and unconscious perceptions (Roberts, Edwards, & Barker, 1987), emotional reactions, and thoughts (Jemmer, 2009). Intrapersonal communication is manifested through these key components; therefore is unique to each individual (Johnson & Proctor) and represents the foundation for those beliefs that physically impact health.

Perceptions

Perceptions are defined as an understanding or an awareness that has been reached through the use of the senses ("Perception," n.d.). Johnson and Proctor (1995) defined perception as "the result from sensory interactions with the real world" (p. 65).

Broadbent, et al. (2009) suggested that there are several cognitive domains that assist individuals in building perceptions of illness. The researchers stated that the way individuals identify with the name and symptoms of an illness can impact their perception of the illness. The perceived cause and timeline of the illness, the amount of control individuals perceive themselves as having over the illness, the perceived consequences, understanding, and treatment control of the illness all play a role in how the overall perception of an illness is acquired. Johnson and Proctor have suggested that perceptions can be categorized in one of two ways: negotiated perceptions and intrapersonal perceptions.

Negotiated perceptions

Negotiated perceptions are facts about reality that individuals do not need to perceive for themselves but just accept as common knowledge. Examples of negotiated

perceptions would include the fact that the Earth is round, gravity binds individuals to the ground, and there are 26 letters in the English alphabet. Negotiated perceptions are important in the building of intrapersonal perceptions. Through interpersonal communication, negotiated perceptions, symbol systems, and the meanings that have been applied to negotiated perceptions are shared. The shared understandings of society are conveyed to individuals from birth. It is through the sharing of negotiated perceptions that the groundwork is laid for the establishment of values, attitudes, self-concepts, and beliefs (Johnson & Proctor, 1995).

Intrapersonal perceptions

Intrapersonal perceptions are developed through contact between the five human senses and reality. Intrapersonal perceptions may begin with a foundation formed by a negotiated perception, however the use of individuals' "neuronal, sensory, and perceptual processes, as well as our life-experiences" (Johnson & Proctor, 1995, p. 65) allows individuals to develop unique perceptions that cannot be duplicated in anyone else. It is through this process and by the groundwork that was laid in the sharing of negotiated perceptions that individuals begin to actually establish or change values, attitudes, and beliefs (Johnson & Proctor).

Impact of Perceptions of Health

How individuals perceive health and illness can make a difference in the health they experience. Broadbent, et al. (2009) conducted a quantitative study that investigated whether an in-hospital intervention would change illness perceptions of participants with a myocardial infarction. Through being admitted for acute myocardial infarction at a hospital in Auckland City Hospital, 103 patients agreed to take part in the study.

Participants were randomly assigned to either the control or experimental group. The control group received standard hospital care. The experimental group received standard hospital care plus four in-hospital health intervention sessions.

The first in-hospital intervention session was focused on explaining what myocardial infarction was, the symptoms associated with the disease, an examination of what the patient thought caused the disease, and attempted to help the patient widen their perspective scope when thinking about causal factors of their illness. The second session focused on having the patient make a personal action plan that was aimed at helping patients correlate causes for their illness with personal health behaviors. The third session of the intervention was only administered if the participant had a spouse. In this session, the causal views of the spouse were explored, the recovery plan developed in session two was reviewed with the spouse, and the spouse's role in recovery was discussed. Finally, in session four, information, questions, and concerns about transitioning from the hospital to home were discussed. Additionally, a questionnaire, measuring health behavior, illness perceptions and causal perceptions, was completed at the start of the study, during hospital discharge and three and six months following discharge (Broadbent, et al., 2009).

Researchers found that participants in the experimental groups returned to work 69 days faster than those in the control group. The experimental participants had a better understanding of received illness information, were less anxious about returning to work, made fewer post-hospitalization calls to their general physician and increased positive health behaviors (Broadbent, et al., 2009).

Lorig, et al. (1989) conducted a mixed methods study that investigated whether or not the behavior change and pain reduction that resulted following a 6-week arthritis self-

management course was the result of increased knowledge. The researchers designed a course that would educate individuals who suffered from arthritis about pain, disability, fear, and depression coping strategies. The course highlighted such topics as effects of and treatments for arthritis, beneficial exercise regimens, relaxation techniques, joint protection, nutrition, stress, pain, and mental health instruction. Participants were broken down into an experimental group and a control group. The experimental group engaged in one 2-hour arthritis education session each week for 6 weeks. The control group did not attend the arthritis education course during the research study timeframe, but they were offered the course months after the completion of the study.

Lorig, et al. (1989) found the results to be impressive. Participants in the experimental group revealed a greater understanding of arthritis, exhibited increased amounts of self-management behavior and reported less arthritis pain. The assumption, on the part of the researchers, was that the increased knowledge was responsible for the increased amounts of self-management behavior and less pain. However, the data did not support this assumption. The individuals who reported improvement in their arthritis were not necessarily the same individuals who reported increased understanding of the disease nor were they the ones who had changed their behaviors.

In order to uncover the reasoning behind why some of the participants in the experimental group experienced improvements with their arthritis and others did not, Lorig, et al. (1989) conducted carefully designed, face-to-face interviews. Through the interviews, the researchers found that individuals who reported improvements with their arthritis were also the individuals who reported an improved outlook on their disease and an enhanced perception of control over their disease. Those individuals who did not show

improvement in their arthritis despite implementing different aspects of the arthritis course, such as pain management techniques and exercise and nutrition changes, into their daily lives, were the individuals who reported a sense of despair and a lack of control over their disease.

Ultimately, Lorig, et al. (1989) suggested that the key difference between the individuals who experienced change in their arthritis and those who did not was the changes in their perception of their ability to manage their disease. Individuals who perceived that they had the ability to influence their experience with arthritis were able to change their arthritic symptoms. Following the completion of this study, Lorig, et al. changed the format of their arthritis self-management course to help individuals maximize their sense of self-efficacy in regards to their arthritis.

Rowe, et al. (2005) investigated general health locus of control, breast cancer-specific control and family history by means of a quantitative study in an effort to understand a woman's perceived risk of breast cancer and how it might influence her decision to get screened for the disease. Sixty-six women were recruited to participate in this study through advertisements at a teaching hospital within a large metropolitan city. The ages of the participants ranged from 25 to 59 years of age. Twenty-three of the participants reported having a history of breast cancer in their families, while 43 had no history of breast cancer in their families.

In order to obtain a general health locus of control measurement for the participants, the researchers utilized the Multidimensional Health Locus of Control Scale that categorizes health locus of control as either internal, chance, or external (Wallston, et al., 1978). The measurement for breast cancer-specific control was gained by asking

participants three open-ended questions. One question asked how likely participants thought it was that they would develop breast cancer. Another question asked how certain participants were that they would remain breast cancer free throughout their life and the last question asked them how likely, compared to other women with the same family history, participants thought it was that they would develop breast cancer (Rowe, et al, 2005).

The researchers discovered that participants who possessed internal health locus of control and breast cancer-control perceived their risk of developing breast cancer as being very low. Both internal health locus of control and breast cancer-specific control were significantly correlated with remaining free of breast cancer. Researchers questioned if part of the reason behind this correlation was the fact that the questions used were phrased in a more positive manner and stayed away from darker, more negative words. Rowe, et al. (2005) connected this question to past research that had shown internal health locus of control to be positively correlated to optimism. Optimism draws those with internal health locus of control to seek out ideas that promote hope.

Emotions

The concept of emotion is defined as “a conscious mental reaction (as anger or fear) subjectively experienced as a strong feeling usually directed toward a specific object and typically accompanied by physiological and behavioral changes in the body” (“Emotion,” n.d.) When researchers measure the emotions of participants they typically breakdown emotions into two categories: trait affective style and state affective style. Trait affective style describes individuals’ typical emotional reaction over long periods of time, while state affective style describes momentary emotional responses to situations. Trait

affective style can be further broken down into positive and negative emotional style (Cohen, Alper, Doyle, Treanor, & Turner, 2006).

Positive emotional style

Hope and optimism are key components of positive emotional style, which is the second element of intrapersonal communication that goes into building a belief that physically impacts health. Cohen, et al. (2006) suggested that positive emotional style is associated with such traits as happiness, liveliness and calmness. Positive emotional style reflects how a person typically handles experiences over time. It is viewed as a personality trait and not as a momentary state of mind. Past research has shown that positive emotional style correlates with lower rates of subsequent hospital visits for individuals with coronary problems (Middleton & Byrd, 1996), improved pregnancy outcomes for women who undergo in-vitro fertilization (Klonoff-Cohen, Chu, Natarajan, & Sieber, 2001), better self-reported health among the elderly (Hirdes & Forbes, 1993), and less reported pain for individuals diagnosed with rheumatoid arthritis (Potter, Zautra, & Reich, 2000) and fibromyalgia (Zautra, Johnson, & Davis, 2005).

Cohen, et al. (2006) conducted a quantitative study that explored how positive emotional style affected a person exposed to illness. Participants for this study were obtained through advertisements. Ninety-five men and 98 women made up the final group for this study and they ranged in age from 21 to 55 years old. Every day, for two weeks, participants engaged in daily phone interviews to establish their emotional style. Participants also completed six questionnaires in an effort to control for cognitive and social disposition factors that included extraversion, self-esteem, personal control, purpose and optimism that have, in the past, been closely associated with positive

emotional style and are considered as independent predictors of health outcomes. Demographic information was also obtained. Once the phone interviews and questionnaires were completed, participants were exposed to either a rhinovirus or influenza virus and monitored in quarantine for signs of illness. Self-reported symptoms were also noted (Cohen, et al.).

Researchers found that positive emotional style resulted in participants reporting fewer symptoms after being exposed to illness and had a lower risk of illness development. Positive emotional style was also found to be effective in these areas independently of all measured cognitive and social factors and of self-rated health. While positive emotional style describes how individuals typically handle experiences over time, individuals are not always happy. The researchers suggested that when individuals look back over a month or a lifetime they will report moments of both happiness and sadness. The researchers found that during times of sadness a positive emotional style was shown to help negate some of the physical impacts of negative emotions (Cohen et al., 2006).

Happiness, one of the positive emotional style traits that Cohen, et al. (2006) mentioned in their study, has been found to be an important factor to living a longer, more active life. Koopmans, Geleijnse, Zitman and Giltay (2008) began a 15 year population-based cohort study in 1991 that explored whether self-rated happiness would equate to a longer life if mediated by physical activity. A random sample of elderly individuals who lived in the Netherlands was provided by the Municipal Register Office of Arnhem, from which researchers recruited 861 participants. Happiness, physical activity and sociodemographic measurements were obtained by having participant's

verbally complete three questionnaires during a face-to-face interview in the participant's home. Participants were then divided into three groups based on their happiness scores: happy, moderately happy and unhappy. Follow-up information on mortality was conducted at the nine and 15-year mark.

Koopmans, et al. (2008) found that longevity was representative of the level of the participant's happiness. Happy participants lived longer than unhappy participants. The amount of physical activity individuals participated in was found to be a mediator in the relationship between happiness and longevity. Happiness was also found to be associated with fewer chronic illnesses.

Finally, Kok, et al. (2013) conducted a quantitative study that investigated whether increased positive emotions could build better physical health if mediated by an increase in positive social connections. Sixty-five faculty members from the University of North Carolina at Chapel Hill were randomly assigned to either an intervention group or to a control group. Both groups underwent baseline cardiac vagal tone measures, known to be an indicator of physical health, and were given access to a website where they would log daily assessments of their emotions, social connections and meditation experiences. The intervention group would spend one hour per week for six weeks in a meditation class aimed at helping participants to formulate self-generated positive emotions. After nine weeks, both groups would again have their cardiac vagal tone measured.

Kok, et al. (2013) found that positive emotions correlated with physical health when a person's positive perceptions of their social connections lead to more positive emotions that then lead to better physical health. The researchers suggested that self-generated "positive emotions serve as nutrients for the human body" (p. 1131).

Negative emotional style

If a positive emotional style can lead to a lower risk of illness development, less chronic illness, more physical activity, better over-all health, and a longer life, then a negative emotional style would, logically, demonstrate the opposite. In the previously mentioned study, Cohen, et al. (2006) also accounted for negative emotional style, which is associated with anxiousness, hostility and depression. The researchers in this study found that the participants who displayed negative emotional style reported more illness symptoms than participants who were viewed as having a positive emotional style.

Negative emotional style was also explored by Karademas, Tsalikou and Tallarou (2011). These researchers conducted a quantitative study that investigated whether emotion regulation and coping strategies mediate the impact that negative emotions have on a cardiac patient's subjective health. Through a public hospital's outpatient cardiology department, 135 cardiac patients were recruited for this study. Participants completed three questionnaires measuring illness-related negative emotions and subjective health. Emotion regulation consisted of two strategies, emotion suppression and reappraisal, and was measured through the completion of one questionnaire per strategy. Data on illness-focused coping strategies was collected through the completion of one questionnaire that measured five different factors of coping strategies.

Karademas, et al. (2011) found that illness-related negative emotions were related to less reappraisal, lower physical functioning and emotional wellbeing and were positively correlated with emotion suppression and wishful thinking. However, emotional wellbeing was positively correlated with physical functioning and reappraisal but was negatively

associated with emotion suppression and wishful thinking. Poor subjective health was correlated with negative emotions, emotion suppression and wishful thinking.

One common cause of negative emotions is perceived stress (Cohen & Janicki-Deverts, 2012). Due to the degree and frequency that individuals experience change today, researchers have suggested that everyone has come into contact with stressful life events (Arslan, Dilmac, Hamarta, 2009; Cohen & Janicki-Deverts). It is the perception of these stressors that can lead to negative affective states such as anxiety, hostility, and depression which then directly impacts physical health (Cohen & Janicki-Deverts). Atkinson (2000) suggested that the major contributing factor for 75 to 90% of all primary-care visits is stress. In fact, stress has been linked to almost every major illness that individuals suffer from (Kopp & Réthelyi, 2004; McEwen & Seeman, 1999; Segerstrom & Miller, 2004). This discovery came from explorations into what is typically known as the fight or flight response. When an individual comes into contact with what is perceived to be an external threat, the body will shut down and focus all of its energy on responding to and surviving the threat. This hormonal process yields protective and adaptive effects onto the body, but can also produce damaging effects. A long-term existence within this protection mode will inhibit the growth of the body (McEwen & Seeman).

In an effort to better understand how stress impacts the body, McEwen and Seeman (1999) explained that the word *stress* has become ambiguous in today's society and does not do justice to the impact that daily life and life's extraordinary experiences have on the human body. Individuals have a perception of stress that has been influenced by their experiences, behavior, or genetics. When the brain perceives stressors, it produces

physiological and behavioral responses to the stressor in order to help the body maintain stability. Stress can be an important part of individuals' daily lives and can be necessary to function effectively. Positive stress can provide physical and mental stimulation and growth. The desire to be creative, to exert effort, and to seek out new experiences is stimulated by positive stress (Arslan, et al., 2009). As time goes on and the stressors continue to be perceived, the body can become overwhelmed and can become more susceptible to disease (McEwen & Seeman). Higher levels of stress can incapacitate individuals and can consume mental and physical proficiencies. The distinction between whether a stress-generating event or environment will lead to positive or negative stress is dependent upon how individuals perceive the potential stress and how they cope with it (Arslan, et al.).

How the body reacts to stress is different for different parts of the body and is different depending on how much stress is perceived. For example, in the cardiovascular system, a normal amount of stress could lead to an adjustment of the heart rate and blood pressure during different activities such as sleep or exercise (McEwen & Seeman, 1999). Constant exposure to those same stressors could lead to continual rises in blood pressure that can contribute to hypertension, abdominal obesity (Brindley & Rolland, 1989), can accelerate atherosclerosis, and can aid in the development of Type II diabetes (McEwen, 1998). In the brain, stress can enhance the ability to remember emotionally charged events but stress overload can lead to cognitive dysfunction (McEwen & Seeman). In the immune system, stress helps the body to move immune cells to parts of the body that may be fighting infection but an overwhelming amount of stress can suppress the immune system (McEwen & Seeman).

Thoughts

Stress is a product of how individuals perceive their lifestyles, daily experiences, and their behavior or the behaviors of those that make up their reality (McEwen & Seeman, 1999). Because perceptions are one of the key elements of intrapersonal communication, it is safe to say that stress can be a product of intrapersonal communication and can be influenced by individuals' thoughts. Taylor, Lerner, Sherman, Sage, and McDowell (2003) conducted a quantitative study to determine if positive, self-enhancing thoughts of healthy adults might be associated with how well those individuals manage their stress.

Volunteers for the study were recruited through a posted advertisement on the University of California, Los Angeles campus. Forty-five men and 47 women, 18 to 29 years old, participated in the study. The participants completed over a dozen questionnaires, including a measurement of self-enhancement, an assessment of the participants earliest childhood memories, measurements of psychological health and distress and numerous other questionnaires that assessed characteristics such as happiness, optimism, coping strategies, personality, and community involvement. Participants also underwent stress challenge tests, salivary cortisol assessments, and had their mental health rated by an experienced clinician (Taylor, et al., 2003).

The results of the study showed that positive, self-enhancing thoughts were correlated with lower autonomic reactivity to stress, or lower involuntary reactions to stress. This was also the case in situations where the positive thoughts were more illusory, or did not represent the truth of the participants' situation. The researchers suggested that positive, self-enhancing thoughts were a protective resource against autonomic reactions to stress. If this study were to be viewed through the lens of McEwen and Seeman's

(1999) discussion on stress, it could be said that positive thoughts are a mediator of low stress levels and keeps individuals from experiencing stress overload.

In summary, intrapersonal communication is an internal form of self-talk that is unique to each individual. By considering the impact of each component of intrapersonal communication, researchers have shown that conscious and unconscious perceptions, emotional reactions, and thoughts have the ability to potentially influence health and illness. The foundation of the current study is to consider how individuals utilize their intrapersonal communication when building and understanding their health beliefs.

Role of Health Beliefs in Health and Illness

But what is the importance of understanding health beliefs? What role do health beliefs play in maintaining health and illness? This section of the literature review intends to examine possible answers to these questions. The first concept that will be introduced is the placebo effect. The placebo effect is an illustrative explanation of how powerful health beliefs can be. The second concept, self-rated health, and the third concept, health locus of control, are both measurements used by researchers to examine what individuals believe about their health and how those beliefs correlate with health outcomes.

Placebo Effect

An examination of the placebo effect serves as an example of how individuals' health beliefs impact their health. The following discussion on the placebo effect will be broken down into three segments. The first segment will consist of information regarding the history of the placebo. The second segment consists of an introduction to the placebo effect and its capabilities. Finally, the third segment breaks down how the placebo effect works by describing conscious expectations and unconscious conditioning.

History of the placebo

The placebo effect begins with a placebo. Placebos are inert agents, procedures, (Price, Finniss, & Benedetti, 2008) or treatments that look similar to active health care measures (Hróbjartsson & Gøtzsche, 2001). Placebos are medical treatments that are believed to have no specific effect on the condition or illness that it is being prescribed for (Benson & Friedman, 1996). The use of placebos for healing began as an accepted practice almost from the time healing professionals got their start (Niemi, 2009).

The history of placebo usage is proving to be on quite a circular path. In the 18th century, physicians would regularly prescribe placebos to patients when no active drug existed as an option for treatment. Using placebos as a normal part of health care continued until the mid-to-late 19th century when Louis Pasteur and Robert Koch found that certain bacteria could cause certain diseases (Benson & Friedman, 1996; Niemi, 2009). This led to healthcare being viewed in a very physical and chemical way (Niemi). The practice of medicine became focused on specific causes that were paired up with specific diseases that were then paired up with specific treatments. Pharmaceutical and surgical interventions became the new normal way of practicing medicine and by the 20th century the placebo was all but forgotten (Benson & Friedman). By 1930, the *Index Medicus*, a well-known scientific medical journal, had completely turned away from the notion that the mind could in any way affect the body. However, by the 1950's, the placebo started to make a comeback and slowly started to be recognized again. Unfortunately, it was only recognized as a nuisance, something that needed to be eliminated from pharmaceutical and surgical interventions, rather than an important element of healthcare (Benson & Friedman; Niemi).

Introducing the placebo effect and its capabilities

The need for placebos to be eliminated from pharmaceutical and surgical interventions was due to what is known as the placebo effect. A “placebo effect is a physiological and/or psychological reaction to an inactive substance or procedure” (Geers, Wellman, Fowler, Helfer, & France, 2010, p.1165). Beedie and Foad (2009) stated that the placebo effect is “a positive outcome resulting from the belief that a beneficial treatment has been received” (p. 39). Price, et al. (2008) described the placebo effect as procedures aimed at bringing pleasure to a patient instead of eliciting a specific effect. Benson and Friedman (1996) suggested that the placebo effect is a combination of patients’ positive beliefs and expectations, the positive beliefs and expectations of the physicians, and the development of a good relationship between patients and physicians. Niemi (2009) explained the placebo effect as what happens when individuals consciously believe that a treatment is therapeutic, and this faith has a physiological impact that reduces pain and illness symptoms.

Individual placebo reactions are called placebo responses. However, when the individual placebo responses are evaluated within a population, the outcome of the placebo is called the placebo effect (Price, et al., 2008). It was in the 1950’s that placebos began to be used to control for nonspecific effects in randomized drug trials (Benson & Friedman, 1996). It has since become known within the research community that the scientifically sound way of executing clinical investigations of new drugs is to perform placebo-controlled clinical trials. By blindly and randomly distributing patients to a control group that receives a placebo and to an experimental group that receives an active

treatment, investigators can screen out or eliminate any possible placebo effects that may skew the final analysis (Chiodo, Tolle, & Bevan, 2000; Hróbjartsson & Gøtzsche, 2001).

It was Beecher (1955) who was credited with bringing the utilization of the placebo effect full circle. In describing the many possible uses of the placebo effect, Beecher suggested it could be applied:

as a psychological instrument in the therapy of certain ailments arising out of mental illness, as a resource of the harassed doctor in dealing with the neurotic patient, to determine the true effect of drugs apart from suggestion in experimental work, as a device for eliminating bias not only on the part of the patient but also, when used as an unknown, of the observer, and, finally as a tool of importance in the study of the mechanisms of drug addiction. (p. 1602)

Through this statement, Beecher suggested that the placebo effect could be used as a tool in clinical drug trials, as was starting to be the norm in the 1950's, and that it could be used directly on patients to produce beneficial therapy for ailments. He goes on to state that placebos have "an average high effectiveness of 35%" (p. 1605) on several conditions including pain, headaches, seasickness, coughs, and the common cold.

Even though Beecher made these claims in 1955, it has only been in more recent history that a rejuvenation of interest in the direct power of the placebo effect has been investigated by psychologists, biologists, and behavioral and social scientists alike (Niemi, 2009). Within the health industry, the placebo effect is getting the attention of Parkinson's disease researchers. McRae, et al. (2004) conducted a double-blind study that investigated whether the quality of life for individuals diagnosed with Parkinson's disease would be better for those individuals who received a transplantation of human

embryonic dopamine neurons into their brain than those who received a sham surgery. The researchers discovered that 12 months following the surgeries there were significant physical improvements in both the transplantation group and the sham surgery group. Better quality of life was also associated with those individuals who believed they had received the neuron transplant. These findings lead the researchers to suggest that optimism, hope and expectancy may have been leading contributors to the results of this study. They also made a call for more placebo controlled studies to be conducted as the placebo effect does appear to be very strong, especially in regards to Parkinson's disease.

Irritable Bowel Syndrome is another area of research interested in the placebo effect. Kaptchuk, et al. (2008) conducted a study of 262 individuals diagnosed with irritable bowel syndrome that investigated whether placebo acupuncture would improve overall health, adequate relief, symptom severity, and quality of life of the participants. Participants were randomized into one of three groups. The first was a waitlist group ($n=87$) that received no placebo treatment and had no interactions with a healthcare provider but were assessed, like the other two groups, at baseline, three weeks, and six weeks. The second was a limited interaction group ($n=88$) that did receive the placebo acupuncture treatment but had limited interaction with a healthcare provider. The third group was the augmented group ($n=87$) that received placebo acupuncture and interacted with healthcare providers that were trained to exude warmth, concern, confidence and encouragement.

The researchers found that at the three week assessment, overall improvement and quality of life measurements were the highest for those in the augmented group. Adequate relief measurements showed 24 participants in the waitlist group found relief

while 38 participants in the limited group and 54 participants in the augmented group found relief. The results were similar at the 6 week assessment. Finally, those participants in the augmented group showed the greatest change in symptom severity. In fact, 53 augmented group participants dropped their symptom severity score by 50 points at the third week assessment while 51 of those augmented group participants maintained that score through the six week assessment. As a reminder, all three groups received the same therapeutic treatment: nothing. The acupuncture was a sham treatment for all three groups. The only difference between the groups was the amount of support and encouragement that each group received (Kaptchuk, et al., 2008).

Conscious Expectations

Conscious expectations are a type of placebo response that is based on meanings and beliefs. This type of placebo effect is referred to by different names including psychosocial context, response expectancies, and meaning responses (Benedetti, Mayberg, Wager, Stohler, & Zubieta, 2005; Benedetti, et al., 2003; Colloca & Miller, 2011; Kirsch, 1985; Moerman & Jonas, 2002; Niemi, 2009; Price, et al., 2008). Price, et al. stated the “expectancy is the experienced likelihood of an outcome or an expected effect” (p. 571). Similarly, Kirsch suggested that placebos produce effects simply because the recipient expects or believes that the inert substance will produce a specific outcome. The effect of the placebo is mediated by the beliefs or the meaning that individuals apply to elements of medicine. For example, the common mental model of a physician is an individual wearing a white lab coat with a stethoscope hanging around their neck. The meaning that has been applied to this costume is that the information given by the individual wearing it will be credible and reliable and should be taken seriously

(Moerman & Jonas). The language, attitudes and behaviors that healthcare professionals use also have beliefs and meanings attached to them that can, in turn, produce placebo effects.

Researchers have found that verbal suggestions stating that a placebo will reduce pain alters the expectations of individuals receiving the placebo and, therefore, will reduce pain. Verbal suggestions stating that a placebo will increase pain will increase pain (Benedetti, et al., 2003; Kaptchuk, et al., 2008; Kaptchuk, et al., 2010). Positive verbal suggestions prior to the administration of a placebo in Parkinson's patients has been found to improve motor performance, while negative verbal suggestions have been shown to decrease motor performance (Benedetti, et al., 2003).

Similarly, beliefs and meanings have also been tied to the type of placebos that are used. Placebo pills taken four times a day are more effective at treating ulcers than placebo pills taken twice a day (De Craen, et al. 1999). Two placebo pills are more effective than one at reducing pain while two placebo pills taken once a day are better than one placebo pill taken twice a day at reducing pain (Moerman, 2000). Branded pills work better than plain pills at reducing headaches (Branthwaite & Cooper, 1981), and blue placebo pills work well as downers while red placebo pills are most effective as uppers (Schapira, et al., 1970). Finally, elaborate procedures such as injections (De Craen, Tijssen, de Gans, & Kleijnen, 2000) or big medical devices (Kaptchuk, Goldman, Stone, & Stason, 2000) work better at reducing pain than pills.

Unconscious Conditioning

Another way to manufacture a placebo effect is through unconsciousness conditioning (Benedetti, et al., 2003). Unconsciousness conditioning occurs when individuals correlate

a stimuli to a physical, mental, or emotional outcome. For example, Olness and Ader (1992) performed a case study on a child who had been diagnosed with lupus. The child was administered cyclophosphamide, a toxic drug used to treat autoimmune disorders, along with taste and smell stimuli. Over the course of one year, researchers found that they were able to successfully replace half of the lupus treatments with the taste and smell stimuli and greatly reduce the child's exposure to the toxic pharmaceutical. Giang, et al. (1996) conducted a study that examined how pairing a treatment of cyclophosphamide with an anise-flavored drink may produce a placebo effect in 10 individuals diagnosed with Multiple Sclerosis (MS). Following four treatment applications of the pairings, researchers replaced the cyclophosphamide with the anise-flavored syrup. Eight out of the 10 participants experienced lower peripheral leukocyte counts, an effect that mimics cyclophosphamide. The researchers stated that this was presumably a result of the unconscious conditioning.

Regardless of whether placebos come as pills or injections or whether the placebo effect is based on expectations and beliefs or unconscious conditioning, studies have shown that when it comes to treating some illnesses, it does not matter if procedures are authentic or shams, but only that individuals believe that the treatment will work. Angina pectoris (Benson & McCallie, 1979), asthma (Butler & Steptoe, 1986), congestive heart failure (Archer & Leier, 1992), obesity, hypertension, insomnia, and anxiety (Hróbjartsson & Gøtzsche, 2001) have all responded well to a placebo effect being used as a powerful treatment. This is in addition to Parkinson's disease, irritable bowel syndrome and general pain management that have been previously mentioned. Benedetti, et al. (2005) summed up the power of the placebo effect well when it was stated that "the

study of the placebo effect also has immediate clinical and ethical implications” and that “placebo effects may represent points of either strength or vulnerability for the expression and maintenance of various pathological states and their inherent therapeutic interventions” (p. 10390).

Self-rated Health

Self-rated health is the simplest form of measuring individuals’ beliefs regarding their health. Self-rated health is a self-assessment that asks individuals to answer one question: how do you rate your overall health? Individuals do this by describing their health as either excellent, very good, good, fair, or poor. The answer to this one question is viewed as such an important predictor of future health and mortality (Chen, Cohen, & Kasen, 2007) that this data is collected in many national and international health surveys. The World Value Survey, the European Value Survey, and the National Health and Nutrition Examination Survey in the United States and Europe all collect data on self-rated health (Jylhä, 2009). The World Health Organization, the European Commission, and the Centers for Disease Control and Prevention suggest the use of self-rated health for both research and clinical use as a measure of health status (Chen, et al.; Farkas, Nabb, Zaletel-Kragelj, Cleland, & Lainscak, 2009). Many health survey instruments also include a self-rated health measurement (Jylhä), including the 36-Item Short Form Health Survey that was used in the current research.

The predictive power of the self-rated health measurement has received a great deal of attention from the research community. For example, Ramkumar, et al. (2009) conducted a cross-sectional quantitative study that investigated the connection between disease and poor self-rated health in adults over the age of 40 within a single Singaporean

community. Four hundred and nine participants were selected through a two-step process in which households were randomly selected from a 26 block housing development and then one eligible participant was randomly selected from each of those households to participate in this study. Each participant participated in a face-to-face interview where demographic, physiological, socio-economic, lifestyle practices, diseases and self-rated health were measured.

Researchers found that coronary artery disease, cancer, type 2 diabetes and depression were all correlated with poor self-rated health. Ramkumar, et al. (2009) also found that there was a negative correlation between self-rated health and participants with previously known diseases, comorbidity, lack of exercise, and those who had been hospitalized within 6 months of the initial study interview. A positive correlation was found between positive self-rated health and beneficial health behaviors.

Chen, et al. (2007) conducted a quantitative study based on a pre-existing data base from a 1975 study that spanned three decades. The authors compared the self-rated health of 314 women born between 1935 and 1944 (pre-boomers) with 304 women born between 1945 and 1954 (baby-boomers). The participants were randomly selected from the pre-existing data base. Participants were initially assessed in 1975. Assessments were again performed in 1983, 1986, 1993 and 2003. At each assessment, a self-rated health measurement was received by having participants rate their overall health on a scale from poor to excellent. Other measurements taken at each assessment included demographic, personality, depression, chronic illness, smoking and alcohol consumption and weight gain information.

Chen, et al. (2007) found that self-rated health was significantly related to several chronic illnesses as well as other health outcomes. Specifically, for preboomer women, as lower measurements of self-rated health were reported, the number of chronic illnesses increased. Depression and maladaptation also increased. Baby-boomer women presented similar results. Lower self-rated health correlated to increases in chronic illness, depression, weight gain, maladaptation and smoking.

Additionally, Latham and Peck (2012) conducted a longitudinal quantitative study examining the ability of self-rated health to independently predict the onset of chronic morbidity while controlling for sociodemographic characteristics and behavioral risk factors. Using data gathered between 1992 and 2008 from an ongoing health and retirement longitudinal survey study on late mid-life individuals, researchers obtained 4,770 participants based on risk group selection criteria. The original study gathered information about physical and mental health, finances, retirement and family structure through face-to-face interviews beginning in 1992. This information served as baseline data. Telephone interviews have since been conducted every two years. The researchers also opted to form a risk group that consisted of individuals who were still at risk of developing a chronic disease. The risk group selection criteria required individuals to have reported no chronic diseases and no physical impairments to daily life activities at the time of the baseline interviews in order to participate in the risk group. Once a participant was diagnosed with a chronic disease they were no longer viewed as a part of the risk group.

In addition to disclosing whether the participants had been diagnosed with a chronic disease, they were also asked to rate their own health based on a Likert scale with a score

for excellent being five and a score for poor being one. Data was also gathered on sociodemographic characteristics, health care access and utilization and behavioral risk factors. On-set of chronic disease, self-rated health, health care access and utilization and lifestyle choice risk factors were re-measured every two years following the initial baseline measurements (Latham & Peck, 2012).

The first objective of this study was to explore how self-rated health impacted the on-set of chronic disease. Latham and Peck (2012) discovered that for every unit of increase in self-rated health, participants were less likely to experience the on-set of chronic disease. For those individuals who reported a diagnosis of chronic disease, the results showed that they were less likely to be diagnosed with additional chronic illnesses. Results also indicated those who had visited a doctor or were hospitalized during the 2 years prior to the beginning of the study were more likely to report an on-set of chronic disease.

The second objective of this study was to determine if self-rated health was associated with the on-set of specific chronic diseases, specifically, CHD, diabetes, stroke, lung disease, arthritis and cancer. For all of the chronic diseases, excluding cancer, higher health self-ratings were associated with a decreased likelihood of disease diagnosis. Latham and Peck (2012), suggested that self-rated health is significantly correlated with chronic disease on-set and comorbidity. There is an undeniable link between what individuals believe about their health and what type of physical health manifests in their lives. Table 1 identifies additional studies that reference research concerned with self-rated health and health outcomes.

Table 1

Additional Studies that Exhibit the Correlation between Measurements of Self-Rated

Health and Physical/Emotional Health

Author	Title	Results
Christian, Glaser, Porter, Malarkey, Beversdorf, and Kiecolt-Glaser (2011)	Poorer self-rated health is associated with elevated inflammatory markers among older adults	Poor self-rated health was correlated with elevated serum inflammatory markers in generally healthy older adults.
Molarius and Janson (2002)	Self-rated health, chronic disease, and symptoms among middle-aged and elderly men and women	Overall: Poor self-rated health was correlated with neurological disease, rheumatoid arthritis, and tiredness and weakness. Ages 65-79: Poor self-rated health was correlated with neurological disease and cancer. Ages 35-64: poor self-rated health is correlated with depression and tiredness and weakness.
Jylhä, Guralnik, Balfour, and Fried (2001)	Walking difficulty, walking speed, and age as predictors of self-rated health: the women's health and aging study	Walking difficulty and walking speed are correlated with self-rated health.
Jylhä, Volpato, and Guralnik (2006)	Self-rated health showed a graded association with frequently used biomarkers in a large population sample	Poor self-rated health was correlated with lower levels of albumin concentration, lower hemoglobin, higher white blood cell count, lower HDL cholesterol, higher creatine concentration, coronary heart disease, stroke, diabetes, cancer, chronic illness, and mortality.
Lekander, Elofsson, Neve, Hansson, and Unden (2004)	Self-rated health is related to levels of circulating cytokines	Poor self-rated health is correlated with higher levels of inflammatory cytokines (help to move cells toward inflammation and infection).
Manor, Matthews, and Power (2001)	Self-rated health and limiting longstanding illness: inter-relationships with morbidity in early adulthood	Poor self-rated health at age 23 is correlated with an increased risk of poor health 10 years later, serious illnesses such as epilepsy, cancer, diabetes, and less serious illnesses such as eczema and hay fever, and correlated with smoking and unhealthy diet
Mäntyselkä, Tutunen, Ahonen, and Kumpusalo (2003)	Chronic pain and poor self-rated health	Chronic pain is independently correlated with low/poor self-rated health

Molarius and Janson (2002)	Self-rated health, chronic disease, and symptoms among middle-aged and elderly men and women	Poor self-rated health was correlated with neurological disease, rheumatoid arthritis, and tiredness and weakness. Ages 65-79: Poor self-rated health was correlated with neurological disease and cancer. Ages 35-64: poor self-rated health is correlated with depression and tiredness and weakness.
Okosun, Choi, Matamoros, and Dever (2001)	Obesity is associated with reduced self-rated general health status: Evidence from a representative sample of white, black, and Hispanic Americans	Obesity is correlated with poor self-rated health among adults
Shi, Starfield, Politzer, and Regan (2002)	Primary care, self-rated health, and reductions in social disparities in health	Higher self-rated health is correlated with positive primary care experiences
Subramanian, Kim, and Kawachi (2005)	Covariation in the socioeconomic determinants of self-rated health and happiness: a multivariate, multilevel analysis of individual and community in the USA	Poor self-rated health was correlated with unhappiness.
Zunzunegui, Béland, and Otero (2001)	Support from children, living arrangements, self-rated health and depressive symptoms of older people in Spain	Higher self-rated health is correlated with a lower prevalence of depressive symptoms and acceptance of emotional support from others

Health Locus of Control

Generalized locus of control was developed through Rotter's social learning theory (Wallston, et al., 1978). Social learning theory is based on the *empirical law of effect* that states individuals purposefully seek out positive stimulation and reinforcement in an effort to avoid negative stimulation (Mearns, 2015). Social learning theory describes four aspects of individuals' behavior. Specifically, it describes the likelihood of individuals participating in a certain behavior, how confident individuals are that a behavior will produce a particular outcome, the desirability individuals have for a specific outcome,

and, finally, it describes the psychological situation that gives value to the unique experience that individuals have within an environment (Mearns).

Through the application of social learning theory in the area of locus of control, Rotter (as cited by Merans, 2015) described a generalizable, cross-situational set of beliefs that individuals hold in regards to whether or not they will obtain the outcomes they are looking for in life (Mearns). Rotter explained that there are two types of individuals: externals and internals. Externals believe that when behavioral outcomes occur they are mostly the result of outside forces such as luck, fate, powerful others or just general unpredictability. Internals, on the other hand, believe that outcomes are the result of their own behavior (Rotter, 1966). In one of the first studies to utilize Rotter's early version of the locus of control scale, Seeman and Evans (1962) found that hospitalized tuberculosis patients who possessed internal locus of control were more involved in their healthcare and asked more questions of their healthcare providers. It was this study that suggested to Wallston, et al. (1978), the developers of the Multidimensional Health Locus of Control scale, that Rotter's construct could be useful in healthcare (Wallston & Wallston, 1981).

Wallston, et al. (1978) utilized quantitative measurements obtained via a written survey to develop new health locus of control scales that gave health researchers new tools that allowed them to better understand and predict health behaviors of individuals. The written surveys were a mix of new questions and questions that had been pulled from past scales that had worked well. Research assistants handed out surveys, pencils and postage-paid envelopes to a diverse group of individuals all 16 years of age or older who were waiting on flights at a large metropolitan airport. Responses from 125 individuals were included in the study. These responses were analyzed through intercorrelation

matrix and developed into the new Multidimensional Health Locus of Control Scales (MHLOC).

The MHLOC scale defined health locus of control (HLOC) as the degree of control that individuals perceive themselves as having over their own health and includes three different categories. Internal health locus of control (IHLOC) is characterized by individuals believing that they exert power over their own health. Powerful others locus of control (POLOC) is characterized by individuals believing that powerful others such as doctors, nurses or family members exert power over their own health. Finally, chance health locus of control (CHLOC) is characterized by individuals believing that chance, luck or fate exert power over their health (Wallston, et al., 1978).

Since the development of the MHLOC scale, several researchers have connected the dots between who individuals believe have power over their health and health behaviors and outcomes. Berglund, et al. (2014) conducted a quantitative study that explored the connection between locus of control, disease burden and self-rated health. Six hundred and ninety-seven Swedish statin users were asked to take part in this study. The statin users were handed a questionnaire at their pharmacy when they picked up their statin prescription and were asked to fill it out and to return it via a prepaid envelope. Four hundred and fourteen statin users returned their questionnaires within the three month allotted time period and, therefore, participated in the study.

Results of this study showed that internal locus of control was positively correlated with self-rated health and that internal locus of control was negatively correlated with disease burden. This means that people who believe themselves to be in control of their health rated their health as good and were less likely to change their perception of their

health even while struggling with chronic illness. Additionally, 32 participants rated themselves as having poor or very poor health while exactly the same number of participants reported having five or more diseases suggesting that there is a correlation between a person's physical health and the beliefs they maintain about their health. Berglund, et al. (2014) suggested that if a person could be taught to accept internal locus of control, or, in other words, to accept responsibility for their health, then positive changes in a person's health could be a reasonable expectation. However, researchers were quick to mention that locus of control is viewed as a personality trait and therefore could be difficult to change.

Moshki, et al. (2013) conducted a quantitative study that assessed the effectiveness of applying locus of control on pregnant women from Gonabad, Iran in an effort to prevent postpartum depression. Participants for this study included 230 pregnant women attending health service centers. Participants were randomly assigned into experimental and control groups. Both groups completed a demographics questionnaire, the multidimensional health locus of control scale and the Edinburgh postnatal depression scale prior to the start of the study. The experimental group then completed a participatory educational program that included general pregnancy and postpartum health information. The MHLOC scale was completed immediately following the conclusion of the educational program and the postnatal depression scale was completed 4 weeks after the women gave birth. The researchers discovered chance locus of control was a strong predictor of postpartum depression while those with internal locus of control were less likely to suffer from postpartum depression. Additionally, and in contrast to the

previously mentioned study by Berglund, et al. (2014), the researchers found that HLOC measurements are easily changeable.

Rowe, et al. (2005) investigated general health locus of control, breast cancer-specific control and family history by means of a quantitative study in an effort to understand a woman's perceived risk of breast cancer and how it might influence her decision to get screened for the disease. Sixty-six women were recruited to participate in this study through advertisements at a teaching hospital within a large metropolitan city. The ages of the participants ranged from 25 to 59 years of age. Twenty-three of the participants reported having a history of breast cancer in their families, while 43 had no history of breast cancer in their families.

The MHLOC scale was used to collect data to measure the locus of control within the three categories. The measurement for breast cancer-specific control was gained by asking participants three open-ended questions. One question asked how likely the participant thought it was that they would develop breast cancer. Another question asked how certain the participant was that they would remain breast cancer free throughout their life and the last question asked them how likely, compared to other women with the same family history, the participant thought it was that they would develop breast cancer. Participants also met for a face-to-face interview with researchers to discuss the mental and physical effects of exposure to breast cancer-specific cues (Rowe, et al., 2005).

The researchers discovered that participants who possessed internal health locus of control and breast cancer-control perceived their risk of developing breast cancer as being very low. Both internal health locus of control and breast cancer-specific control were significantly associated with remaining free of breast cancer. Researchers questioned if

part of the reason behind this association was the fact that the questions used were phrased in a more positive manner and stayed away from darker, more negative words. Rowe, et al. (2005) connected this question to past research that had shown internal health locus of control to be positively linked to optimism. Optimism draws those with internal health locus of control to seek out ideas that promote hope.

Skidmore, Dyson, Kupper and Calabrese (2014) conducted a cross-sectional quantitative study that examined the impact of health locus of control on health anxiety and illness behaviors. Researchers also investigated the relationship between health anxiety and illness behaviors. Participants included 202 undergraduate college women, recruited through announcements made in undergraduate classrooms, who received extra course credit when possible as incentive for their participation. Participants completed the Assessment of Illness Behavior Scale, the Health Anxiety questionnaire, the MHLOC scale and a demographic questionnaire.

Results of this study showed that health anxiety was positively associated with illness behaviors and that chance locus of control and powerful others locus of control were also positively associated with health anxiety and illness behaviors. In other words, those who have health anxiety tend to have more health issues and those who believe something or someone external of themselves has control over their health also tend to have more health issues. Additionally, powerful others locus of control was found to be a mediator between health anxiety and illness behaviors (Skidmore, et al., 2014).

Finally, Roddenberry and Renk (2010) conducted a quantitative study that investigated whether locus of control and self-efficacy mediated the relationship between real world academic stress, illness and the use of health facilities. By making in-class

announcements, the researchers recruited 159 undergraduate students who were preparing for their final exams. Questionnaires measuring stress, locus of control, self-efficacy, illness and health service usage were completed by the participants. Demographic questionnaires were also completed. In order to measure real world academic stress, the researchers gathered their data one week prior to final exams that also coincided with the last week of class. The researchers found external locus of control was associated with higher levels of academic stress, anxiety, depression and physical illness. Internal locus of control was found to be associated with lower levels of stress, anxiety, depression and physical illness.

Complementary and Alternative Medicine

Thus far this literature review has examined how perceptions, emotions, and thoughts form intrapersonal communication. The progressive flow of intrapersonal communication then establishes health beliefs. The power of health beliefs can be observed through the placebo effect, while personal health beliefs can be measured by self-rated health and health locus of control. As this literature review has illustrated, all three concepts of intrapersonal communication that relates to health beliefs, placebo effect, self-rated health, and health locus of control, can potentially have impacts on health and illness. Additionally, what a person thinks about their health could also impact their health behavior choices. One of the current study's aims is to correlate the health beliefs of individuals diagnosed with MS with different types of health behaviors. In order to this, the current study explored the types of health care that individuals with MS utilized such as traditional medicine and complementary and alternative medicine (CAM) treatments. This section of the literature review focused on (a) reviewing the parameters of Multiple

Sclerosis, (b) describing the historical background of CAM treatments, (c) analyzing the current worldwide CAM usage scenario, (d) examining why individuals are drawn to CAM usage, (e) and will discuss the benefits of CAM usage and review past academic research studies that have investigated the beneficial properties of CAM treatments.

Multiple Sclerosis

MS is a disease of the central nervous system which is made up of the brain, optic nerves, and the spinal cord. When the central nervous system becomes inflamed the protective covering (myelin) that surrounds and insulates the nerves becomes damaged. Over time, the nerves themselves may become damaged. This damage causes delays in messages being sent from the brain and spinal cord to other parts of the body. It is this delay that causes the symptoms of MS (“MS Overview,” 2014).

Symptoms of MS can include, but are not limited to, balance problems, bladder dysfunction, cognitive changes, dizziness, fatigue, numbness, speech difficulties, swallowing disorders, and visual impairments. The most common of the seven forms of MS is relapsing-remitting MS. This particular type of the disease is characterized by periods where symptoms are present for short periods of time and are then followed by longer symptom-free time periods. Symptoms of MS differ from person to person and can differ in the same person from relapse to relapse. (“MS Overview,” 2014). It is estimated that four hundred thousand people in the United States have been diagnosed with MS. An estimated 2.5 million individuals worldwide live with MS. There are two hundred new cases of MS diagnosed each week (Pietrangelo, 2014) and 10,000 new cases diagnosed each year (“MS Overview”).

Treating MS is done by long-term disease-modifying therapies. This is not a cure. These pharmaceutical drugs only act to reduce the number of relapses and the severity of symptoms. Typically, most MS medications were administered via self-injections. It has been only recently that oral medications have begun to be used in the treatment of MS (“MS Overview,” 2014).

An Historical Glimpse at Complementary and Alternative Medicine Usage

The use of pharmaceutical drugs represents the allopathic way of treating illness. Allopathy is defined as “the system of medical practice which treats disease by the use of remedies which produce effects different from those produced by the disease under treatment. MD’s practice allopathy” (Medterms Dictionary, 2012). Hahnemann was the first person to use the term allopathy. Hahnemann was the founder of homeopathic medicine. He became convinced that harsh medical treatments, such as bloodletting, was more harmful than beneficial to patients. In order to find a gentler way to treat patients, Hahnemann joined the ranks of many physicians in the 1700’s who set out to test the effects of medical drugs. It was through his process of testing medical drugs on healthy individuals that Hahnemann discovered that medical drugs tended to produce the same disease effects in the human body as the disease itself. For example, through his self-experimentation with the antimalarial drug Quinine, Hahnemann found that ingesting a dose of Quinine caused a fever. This became the basis Hahnemann’s principle of like cures like or law of similarity and the basis for what is now known as homeopathy (Science museum, n.d.).

The popularity of homeopathic treatments spread quickly through Europe during the early 1800’s. In 1832, Hahnemann opened the first homeopathic hospital. Unfortunately

for Hahnemann and other homeopathic practitioners, the allopathic community became hostile towards the homeopathic community and began expressing their reservations and disbelief about the efficacy of the treatments (Science museum, n.d.). Today in the United States, allopathic medicine is the main form of medicine practiced, while homeopathy has been categorized as a complementary and alternative medicine (CAM). There remains today reservations and disbelief about the efficacy of not only homeopathy but all CAM treatments on the part of the allopathic community (World Health Organization, 2002).

Regardless of the reservations expressed by the allopathic community, CAM treatments are continuing to grow in popularity. The World Health Organizations (WHO) reports that while CAM treatments are found in almost every country in the world and that the demand for CAM treatments is continually on the rise, the important role of CAM treatments in healthcare is greatly underestimated (World Health Organization, 2013).

How Complementary and Alternative Medicine is Utilized around the World

For more than a decade the WHO has been monitoring the global use of what they call traditional medicine. Traditional medicine is defined as the “knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in prevention, diagnosis, improvement, or treatment of physical and mental illness” (World Health Organization, 2013, p. 15). In the 2002 version of WHO’s Traditional Medicine Strategy, the terms *traditional medicine* and *complementary and alternative medicine* were used interchangeably. The 2013 version of the strategy breaks the two types of practices apart

by defining CAM treatments as “healthcare practices that are not part of that country’s own tradition or conventional medicine and are not fully integrated into the dominant health-care system” (World Health Organization, p.15). Despite the separate definitions, the WHO analyzes the two systems as if they were one, primarily because the spread of traditional medicine from its original culture and region has created CAM treatments in new segments of populations around the world. For example, acupuncture was originally a component of traditional Chinese medicine, however, today it is used worldwide. In fact, of the 129 countries that participated in WHO’s 2013 traditional medicine survey, 103 of those countries acknowledge their use of acupuncture (World Health Organization). To ensure clarity in this discussion, the researcher will also combine traditional medicine and CAM treatments with the label of CAM.

The use of CAM worldwide continues to expand. Over 800 million Africans utilize CAM as a part of their healthcare while, in China, over 500 million individuals use CAM as a part of their regular healthcare (World Health Organization, 2002). There are also over 100 million users of CAM in Europe (World Health Organization, 2013) and the United States (Clarke, et al., 2015). The WHO distinguishes between three types of CAM usage systems: integrative, inclusive, and tolerant. Integrative systems have officially recognized and have implemented CAM treatments into all areas of healthcare including drug policies, provider licensures, hospital and clinical treatments, insurance reimbursement, medical research, and higher educational opportunities. As of 2002, only four countries had reached this status: China, the Democratic People’s Republic of Korea, the Republic of Korea, and Viet Nam. Inclusive systems acknowledge CAM treatments but have not implemented them into every aspect of healthcare. For example, CAM

treatments may not be covered by health insurance or may not be available in hospital settings or may not be available as higher learning opportunities. Countries operating under an inclusive system include both developing countries such as Nigeria and Ghana and developed countries such as Canada and the United States. Countries practicing working within an inclusive system have the most potential to expand into a true integrative system. Finally, a tolerant system is based completely on allopathic medicine but does tolerate some CAM to be practiced (World Health Organization, 2002).

One of the main reasons why CAM therapies face complications gaining access to mainstream medicine globally is because of difficulties regarding regulatory processes. For example, there is a general lack of mechanisms in place to control CAM therapy advertising claims, monitor, educate, and regulate CAM therapy providers and safety practices, and to regulate the production and safety of goods such as herbal products. Additionally, not only is there a general lack of research regarding CAM therapies but there is lack of financial support for CAM therapy research. While not all of these examples are true for all countries, most countries are categorized as operating within an inclusive system and therefore are falling short when it comes to initiating these regulatory processes. Finally, national authorities lack necessary expertise and have failed to set up proper communication channels so that vital CAM therapy information can be shared (World Health Organization, 2013).

Why Complementary and Alternative Medicine is Utilized

Despite these difficulties, CAM therapy has many characteristics that make it appealing to individuals. For starters, CAM therapy is based on the belief that health results from a state of balance within the body. Disease occurs when the individual falls

out of balance either physically or mentally. Causes of an imbalance could be as simple as the change in weather or imbalance could be a result of food intake, social issues, or mental stimulation. CAM therapies restore balance to the individual. Another characteristic of CAM therapy is that it is based on the needs of individuals. CAM therapy is “based on a belief that each individual has his or her own constitution and social circumstances which result in different reactions to ‘causes of disease’ and treatment” (World Health Organization, 1998, p. 6). Additionally, CAM therapy utilizes a holistic approach, it has been tested by millions of people for thousands of years given that it was developed before modern Western medicine, and covers a wide variety of disease with many different kinds of practices (World Health Organization).

The characteristics of CAM therapies reinforce the reasoning behind the expanded growth in CAM usage. It has been noted that individuals are choosing CAM therapies for various reasons including a general increase in demand for all types of healthcare services, an increase in awareness of more healthcare options, a revitalized interest in treating the whole person (World Health Organization, 2013), growing concern about the ill-effects of pharmaceutical drugs, weariness of the approaches and assumptions made by allopathic practitioners, and an overall change in values of individuals seeking healthcare treatments (World Health Organization, 2002). Additionally, the cost of CAM therapies is considerably less than allopathic treatments. In developing countries such as Ghana, Kenya, and Mali pharmaceutical drugs aimed at treating malaria can cost several dollars per treatment, however, herbal remedies are much cheaper, may be paid *in kind*, or will be priced according to the income of the patient. In developing countries, CAM therapies are a double bonus because they are the most affordable medical treatments and

they are the most preferred treatments because they align with the belief systems within the culture (World Health Organization, 2002).

Korthals-de Bos. Et al. (2003) conducted a study that investigated the cost effectiveness of physiotherapy, manual therapy, and general practitioner care on 168 individuals with neck pain. Participants were randomly assigned to one of the three different care groups. Participants assigned to the physiotherapy group received a treatment consisting mostly of exercise. Participants placed in the manual therapy groups were treated through spinal mobilization by licensed chiropractors, osteopaths, and physiotherapists. Finally, participants assigned to the general practitioner groups were given advice concerning prognosis, activities that could lead to aggravation, and self-care such as heat application and home exercise, and ergonomic considerations. Patients were also informed about spontaneous remission and given pharmaceutical drugs if necessary. The cost effectiveness of the treatments was also monitored by breaking down the costs into direct costs (the cost of treatments, drugs, home-care help, and travel expenses) and indirect costs (costs associated with loss of work from paid or unpaid work). Results of the study showed that at the 26 week follow up those participants that had received manual therapy showed faster recovery. At the 52 week follow up the recovery gap between all three groups had closed considerably, however the manual therapy group continued to show that it was the most effective treatment out of the three. Additionally, participants in the manual groups took fewer prescription drugs, fewer over-the-counter drugs, and missed fewer days of work than those participants in the physiotherapy group or general practitioner group. Finally, manual therapy was shown to be the most cost

effective of the three treatments costing approximately one-third of what the physiotherapy and general practitioner therapies cost.

Kooreman and Baars (2012) conducted a study that explored the cost effectiveness of utilizing a general practitioner who had also been trained in CAM therapies in comparison with a general practitioner that only utilized allopathic medicine. The researchers, working with records provided by a health insurance company, were able to analyze the demographic and health information for 151,952 insurees. Specifically, the researchers were able to break down healthcare services into four different groups: care by general practitioner, hospital care, pharmaceutical care, and paramedic care. From that information, researchers were able to further breakdown general practitioner care into two groups: conventional general practitioners (GPs) who utilized only allopathic medicine and general practitioners who had additional training in CAM therapies such as homeopathy and acupuncture (GP-CAMs). The results of the study showed that individuals treated by GP-CAMs had between 7% and 30% lower healthcare costs than those individuals treated by GPs. This was primarily due to fewer hospital stays and the need for fewer prescription drugs. Due to the fact that dates of death were included in the demographic data collected by the researchers, it was also discovered that those individuals who preferred GP-CAMs lived longer than those who preferred GPs.

There is one final issue that is directly related to the current study that makes CAM therapies more appealing and necessary in today's society. With life expectancies expanding there is an increased risk throughout society of the growth of chronic illnesses (World Health Organization, 2013). Chronic illnesses are defined as a non-communicable disease that develops over a long period of time, does not resolve itself immediately, and

can be incurable. (Centers for Disease Control, 2009). The number of people suffering from chronic illness is nearly 133 million in the United States. This number is projected to grow to 157 million by the year 2020 and will continue to grow by one percent each year so that by the time the year 2030 rolls around 171 million people will have been diagnosed with at least one chronic illness (Anderson & Horvath, 2004). In fact, it is this predicted burden on society that leads the World Health Organization to state that it is urgent that a collaboration between conventional medicine and CAM therapy by developed and strengthened.

The Benefits of Complementary and Alternative Medicine Usage

Across the globe CAM therapies are being used to treat many different diseases. In China, cerebrovascular accident, intervertebral disk displacement, hemorrhoids, heart disease, and hypertension are the top five diseases treated at CAM hospitals (Zhang, Liming, Van der Lerberghe, 2011). In the United States and France, individuals suffering from musculoskeletal ailments are making up a large percentage of CAM therapy patients (Chao, Desai, Pucci, & Jew, 2004; Rossignol, et al., 2011). In the Republic of Korea, bone, joint, and muscle disorders, dyspepsia, osteoarthritis and facial nerve disorders are among the top diseases being treated through CAM therapies (World Health Organization, 2013). Of particular interest to the current study are the statistics stating that in Spain, 41% of individuals diagnosed with MS utilize CAM therapies while that number grows to 70% in Canada and 82% in Australia (Skovgaard, et al., 2012).

Individuals who have been diagnosed with chronic illnesses and use CAM therapies are hoping to tap into the benefits that CAM therapies provide. The first main benefit of CAM therapies is symptom alleviation. Stake-Nilsson, et al. (2011) conducted a study

that investigated the CAM treatment usage of 137 individuals who had been diagnosed with gastrointestinal disorders. Researchers had the participants' complete questionnaires regarding CAM treatment usage and perceived effects of the usage. Results of the study showed that all participants had tried at least one type of CAM therapy. The participants turned to CAM therapies because they positively valued complementary treatment, conventional medicine was ineffective, there was concern regarding side effects of conventional medicine and communication with physicians, and because of the availability of CAM therapies. Twenty-eight different types of CAM therapies had been used by the participants and were categorized by the researchers as either nutritional, drug/biological, a psychological activity, or physical activity. The main reason why the participants reported utilizing CAM therapies was to alleviate their symptoms and nearly all of the treatments used by the participants did indeed alleviate their symptoms.

The second benefit users of CAM therapies may be trying to tap into is the desire for CAM treatments to cure diseases. Akyol, et al. (2011) explored CAM therapy usage among 206 individuals diagnosed with chronic renal failure. Through a similar methodology as the previously mentioned study, the researchers found that although 25% of the participants had used CAM therapy at least once since their diagnosis, most participants were interested in mind-body interventions such as relaxation, imagery, prayer, meditation, and yoga, and were seeking to treat their illness through CAM therapies.

Finally, the majority of the positive benefits of CAM therapies come in the form of self-empowerment, positive outlooks on disease, positive perceptions of quality of life, increased levels of hope and optimism, and increased levels of perceived wellness. These

are important intrapersonal characteristics that are needed for individuals to maintain IHLOC or for individuals to obtain IHLOC. Kinney, Rodgers, Nash and Bray (2003) conducted a mixed methods study that examined whether the Mind, Body, and Spirit Self-Empowerment Program would help women with breast cancer find a mental, emotional, spiritual and physical balance in an effort to experience more perceived wellness. Fifty-one participants were recruited for the study through breast cancer service organizations and physician referrals within three urban southwestern communities. Participants completed a 12-week intervention program focusing on mind, body and spirit education, relaxation techniques, stress reduction and coping skills, meditation, dream interpretation and guided imagery. Participants met once a week for 3 hours. Prior to the start of the intervention, participants completed four questionnaires designed to measure depression, quality of life related to breast cancer, spirituality and perceived wellness. Questionnaires were completed again following the 12-week intervention. Following the intervention, the participants were also asked to write about their experience in the program and any benefits that they received from the program. Kinney, et al. found that, following the intervention program, participants showed statistically significant improvements in all four of the measured self-assessments.

Targ and Levine (2002) conducted a quantitative study that investigated whether a complementary and alternative medicine (CAM) program would be a more therapeutic intervention for women diagnosed with breast cancer. Participants included 181 women who were recruited through flyers and public service announcements. They were randomized into either a standard support group or a CAM support group. All women completed questionnaires prior to support group intervention that measured

sociodemographic information, previous CAM practices, quality of life, mood and spiritual well-being. The CAM support group then met twice a week for 12 weeks. Each 2.5-hour meeting focused on coping with health concerns, dance and movement, meditation, and guided imagery. The standard support group met once a week for 12 weeks. Their 1.5-hour sessions focused on real-life coping issues and emotions. Following intervention, the women were asked about changes in their use of yoga, meditation, imagery, prayer, diet and were asked about their satisfaction with the program. Results of this study showed that participants in either group were able to significantly change their overall quality of life. However, those participants who initially scored lower in spirituality and fighting spirit did gain more quality of life from CAM intervention.

Chang, et al. (2011) conducted a qualitative study that examined what factors lead people with type 2 diabetes to use complementary and alternative medicine (CAM). Random sampling of appointment numbers at three regional hospitals in Taiwan led to the recruitment of 326 participants for this study. Participants engaged in a face-to-face interview where they answered questions based on the Health Belief Model, which describes why people turn to health-seeking behaviors. In addition, sociodemographic, diabetic history, self-efficacy and CAM usage information was obtained during the face-to-face interview.

The researchers found that 74 participants used some type of CAM therapy prior to their diabetes diagnosis. After diabetes diagnosis, 199 participants used some form of CAM therapy in an effort to control their disease alongside their regular diabetic treatments. Participants who sought out CAM therapy were those with strong health

beliefs, positive health behaviors, longer length of diagnosis and those with a positive attitude towards the benefits of CAM therapy. Chang, et al. (2011) mentioned that participants view CAM therapy as empowering and offered them autonomy and a way to participate in their healthcare decisions.

The Physician-Patient Relationship

The current research has focused thus far on how internal processes such as conscious and unconscious perceptions, emotional reactions, and thoughts influence the construction of health beliefs that go on to impact health and health behaviors. One area still left to investigate that may also have an impact on individuals' health and health behaviors is how the key components of intrapersonal communication impact the physician-patient relationship. This final section of the literature review will focus on two aspects of the physician-patient relationship: patient-centered care and physician-patient communication.

Patient-Centered Care

Patient-centered care, a term that was coined in 1988 by the Pickler Institute, is a concept of health care that has moved away from detached, paternalistic care that focuses on ailments and diseases (Barry & Edgman-Levitan, 2012; Cegala & Post, 2009) and toward a system of health care that focuses on the whole patient (Barry & Edgman-Levitan). Patient-centered care is based on the expectations of each individual patient and is evaluated through the unique perspective of each individual patient. Because of the highly subjective nature of patient-centered care, it can be difficult to define. However, Stewart, et al. (2000) have established criteria for patient-centered care that encompasses six different components. Included on the list of patient-centered care criteria is (a) the

need for physicians to explore patients' diseases while at the same time considering patients' illness experiences, (b) the need for physicians to treat patients as a whole person rather than just a disease, (c) the establishment of common ground between physicians and patients, (d) the inclusion of health prevention and promotion practices into office visits, (e) continued development of the physician-patient relationship, and (f) a necessity to build realistic expectations.

When these components of patient-centered care are put into motion, patients could potentially experience improved health outcomes. Bertakis and Azari (2011) conducted a longitudinal, quantitative study that examined patient-centered care in order to identify its health outcomes. The participants in the study included 509 new outpatient medical clinic patients who were recruited when they called to set up an initial appointment having no physician preference. These participants were randomly assigned to either the family care clinic or the general medical clinic. There were 26 family care physicians and 79 general internal medicine residents that participated in the study. Prior to physician visits, data was collected through questionnaires that included sociodemographic, self-reported health, pain, and alcohol and tobacco use information. Height and weight measurements were also obtained so that body mass indexes could be calculated. Initial and all subsequent physician visits for the course of the year-long study were video recorded. At the end of the year, participants again completed the initial questionnaires. Regression models were used to analyze the questionnaire data. The video recorded physician visits were analyzed using the Davis Observation Code. This system quantified the physician's behavioral style. Patient's medical center usage was analyzed by reviewing participant's medical claims and bills for the year. Researchers found that patient-centered care was

positively associated with higher self-rated health, healthier lifestyle choices and decreased medical resource usage.

The quality of patient-centered care is typically judged on two characteristics of the physician-patient relationship (Cegala & Post, 2009; Lee & Lin, 2010; Street & Haidet, 2011). The first characteristic of the physician-patient relationship that is used to judge the quality of the relationship is the patients' perceived autonomy support. The second characteristic of the physician-patient relationship is the patients' perception of the level of trust that has developed between the pair.

Perceived autonomy support

In the healthcare realm, autonomy is achieved when a patient feels as though they are self-directing or have achieved a state of independence when managing their healthcare (Autonomy, n.d.). Individuals who seek autonomy are an active participant in their health care. Individuals who seek autonomy pursue answers to their healthcare questions, provide detailed information about their physical and mental health to their medical providers, and express opinions, preferences, and concerns about their health and healthcare (Street & Haidet, 2011).

Lee and Lin (2010) suggested that physician autonomy support requires physicians to elicit and acknowledge patients perspectives, to support patients initiatives, and to avoid acting in a controlling manner toward patients. Offering autonomy support to patients also requires physicians to engage patients in health care discussions and to avoid being judgmental of patients actions and suggestions. Additionally, patients report higher levels of health care satisfaction, a greater adherence to medical treatments, and improved perceived health outcomes when the autonomy support offered by physicians matches the

desired level of autonomy by patients (Street, Richardson, Cox, & Suarez-Almazor, 2009).

The degree to which patients desire autonomy varies from patient to patient (Lee & Lin, 2010). Factors such as age, gender, educational background, illness experiences, and severity of disease can impact the degree of autonomy that patients may want (Ryan & Sysko, 2007; Say, Murtagh, & Thompson, 2006). Some patients may prefer to be actively involved in gathering health care information and making health care decisions while other patients may prefer to let doctors make health care decisions for them.

Active patient participation during medical consultations is an important factor in physician-patient communication. Researchers have found that higher levels of patient participation during medical consultations, lead to a better understanding of patients health beliefs and perceptions and more involvement in healthcare management on the part of the physician (Lee & Lin, 2010; Street & Haidet, 2011; Street, et al., 2009). Street and Haidet (2011) conducted a quantitative study that examined the differences between how a doctor perceives his patients health beliefs and how the patients reported their own health beliefs. Participants in this study included 29 primary care physicians and a convenience sample of 207 of their patients. Prior to the appointment, patients completed a questionnaire that focused on demographic information, reason for visit and the number of prior visits to that physician. The appointment was audio-recorded and transcribed for active patient participation. Following the appointment, the patients completed the CONNECT instrument, which is a 19-item questionnaire gathering data on how a patient perceives a particular health condition. The physician completed two CONNECT

instruments. One described what the physician believed about the patients' health and the other described what he thought the patients' health beliefs were.

Street and Haidet (2011) found that physicians lacked understanding of patients' health beliefs and regularly underestimated the degree of their patients' health beliefs. However, active patient participation, or patient autonomy, was found to correlate with physician understanding and awareness of patients' health beliefs. This is important because physicians' understanding of patients' health beliefs is a core feature of patient-centered care (Epstein & Peters, 2009). Health beliefs often correlate with health behaviors, therefore, understanding patients' health beliefs could aid physicians in predicting how well patients will adhere to treatment regimes, healthy lifestyle choices, and health care service utilization (Godin & Kok, 1996). A better understanding of patients' health beliefs could aid physicians in finding gaps between what physicians understand about a patients' health situation and what patients believe about that same situation. Identifying these gaps could lead to more tailored treatment decisions that meet the expectations and needs of both physician and patient (Elwyn, Edwards, Kinnersley, & Grol, 2000).

Cegala and Post (2009) conducted a quantitative study to investigate whether active communication participation on the part of a patient would lead to more patient-centered communication on the part of a physician. Participants included 25 physicians and 150 of their patients. Patient participants completed a current health survey prior to their appointment with the physician. Demographic information was also collected. Appointments were audio-taped and later transcribed. Patients and physicians then

completed post appointment questionnaires regarding their perceptions of the appointment.

The transcripts were coded to determine whether patient participation was high or low and to determine the level of the physician's patient-centered communication. This data was then analyzed using nested ANOVA's. Results of this study showed that physician communication was influenced by the level of patient participation and that a physician was more inclined to explore a patient's disease and illness if the patient participated at a high level. Cegala and Post (2009) suggested that patients "have within their power the ability to shape how physicians think and communicate about their illness" (p. 207).

Additionally, patients who perceived autonomy support from physicians rated their health care experiences as high quality interactions and found that communication between physicians and patients was viewed as more effective (Epstein et al., 2007). In an effort to better understand how patient autonomy relates to patient satisfaction, Lee and Lin (2010) conducted a longitudinal quantitative study, investigating whether perceived autonomy support would lead to satisfaction with physicians. Researchers also sought to determine whether perceived autonomy would lead to higher levels of patient self-rated health. Three hundred and ninety-six participants were selected from a population of patients with type 2 diabetes from three different hospitals in Taiwan. These three hospitals were located in different communities and serviced individuals of different social and economic backgrounds. Baseline measurements, gathered from participants prior to the start of the study, were taken from completed questionnaires that assessed demographic information, perceived autonomy support, autonomy preferences,

physician satisfaction, and self-rated health. The questionnaires were completed at the beginning of the study and after 12 months.

Based on the questionnaires, Lee and Lin (2010) found that participants who perceived greater autonomy support from their physicians experienced greater increases in physician satisfaction and mental health. Researchers pointed out that participants who deferred decision making to a powerful other were still demonstrating their autonomy choice. Results of the study showed that individuals who deferred the decision making power still experienced increased patient satisfaction and mental health if their autonomy choice was supported, just not at such an increased level as those participants who wanted to be actively involved in their health care management. In addition, self-rated health and mental health quality of life were also increased among participants who actively sought out health information. Participants who sought out active health management participation also viewed the physician-patient relationship in a positive light.

Trust

In the previously mentioned study by Lee and Linn (2010), the researchers also investigated whether perceived autonomy support would correlate with physician trust. Three hundred and ninety-six participants were selected from a population of individuals who had been diagnosed with type 2 diabetes. Patients' trust in the physician was measured by an 11 question survey. In addition to the previously discussed results, Lee and Lin found that perceived autonomy support was positively correlated with physician trust. Trust between physicians and patients is established when patients believe that their physicians have made an effort to understand their illness experiences and health beliefs,

are supportive of patients' self-determination, and communicate effectively while sharing decision making responsibilities (Bertakis & Azari, 2011; Lee & Lin).

Trust acts as the foundation of the physician-patient relationship. This is especially true when physicians are working with patients who have been diagnosed with chronic illnesses that benefit from treatment adherence. Chronic illness patients who have developed a trusting relationship with their physician tend to perceive themselves as having more illness control and an improved sense of self-efficacy (Lee & Lin, 2009). Strengthening of self-efficacy leads to patients being more resilient to illness and to being more likely to report themselves as being healthier. Physician-patient communication built on trust allows patients to feel more comfortable disclosing health information which then leads to a better understanding of the patients' experiences, health beliefs, and decision making preferences. Additionally, more success is found when developing treatment plans that patients are willing to adhere to (Berrios-Rivera, et al., 2006).

When patients perceive that trust has been built with their physician, many benefits of that relationship begin to unfold. Lee and Lin (2011) conducted a quantitative study that investigated how patients' trust in their physician impacted patients' outcomes in regards to chronic illness and if patient decision-making preferences mediated the relationship between trust and health outcomes. Three hundred and ninety-six participants were selected from a sample of patients with type 2 diabetes from three different hospitals in Taiwan. Participants were assessed prior to the start of the study that provided baseline measurements and were again assessed at four month and 12 month visits. Demographic, trust in physician, decision-making preferences, satisfaction, and self-rated health questionnaires were completed at the initial visit and again at the 12 month visit.

Glycosylated hemoglobin was evaluated at all three visits and was used as the objective health measure.

Researchers found that trust in physicians was positively associated with glycemic control, physical quality of life and physician satisfaction. Those participants with high decision-making preferences also ranked high in satisfaction, especially if high decision-making preferences were coupled with high levels of trust (Lee & Lin, 2011). In addition to that study, Bertakis & Azari (2011) found that patients who trust their physician will seek out medical care and will adhere more readily to treatment plans. More healthful lifestyle choices, such as less alcohol and tobacco consumption might also be made.

Physician-Patient Communication

The physician-patient relationship is a very complex interpersonal relationship. Traditionally, the relationship is viewed as an interaction between individuals of unequal stations. On the one side of the desk sits a physician in a white coat, with a stethoscope around the neck and medical degrees hanging on the wall, while on the other side of the desk there is a patient who might feel as if they are at the mercy of the almighty physician. This encounter may be non-voluntary or only occurring out of necessity, may be of vital importance and, therefore, may be a highly emotional experience (Chaitchik, Kreitler, Shaked, Schwartz, & Rosin, 1992). Despite these obstacles, the relationship is typically viewed as requiring close cooperation between the physician and the patient (Chaitchik, et al.). However, three concepts impact the ability of the physician and the patient to build a relationship built on close cooperation: time, communication training, and active patient participation.

Time

There is the common criticism that plagues the ability of physicians and patients to develop effective communication. It is viewed by some that physicians just do not have the time necessary to really be invested in their patients' health. As it turns out, this criticism is representative of the truth, especially when general practitioners are responsible for treating patients diagnosed with chronic illnesses. Østbye, et al. (2005) examined how much of a general practitioners time was needed to treat patients with chronic illnesses. The catalyst for this study was the understanding that despite clinical guidelines set in place to provide consistent and effective medical treatments and to improve health outcomes, Americans diagnosed with chronic illnesses are only receiving approximately half of the services available to them (McGlynn, et al., 2003). This may be due in part to the amount of time physicians have available to provide patient care.

For example, Østbye, et al. (2005) found that doctors, on average, have 1949 work hours per year available to treat their patients. By reviewing the minimum recommended guideline criteria for just the top 10 chronic illnesses, the researchers were able to determine that for individuals whose chronic illnesses were stable or under good control, physicians would need 828 hours per year to treat an average patient panel size of 2,500 patients. Due to the fact that individuals diagnosed with chronic illnesses are only receiving half of the services they should receive, many are living with an uncontrolled or unstable illness. For individuals whose chronic illnesses are uncontrolled, the time increases to 2,484 hours per year, or 10.6 hours a day. These figures do not account for comorbidity among patients. It is estimated that general practitioners handle approximately 3.05 health issues per visit. This number grows to 3.88 for individuals 65

and older and to 4.6 for individuals diagnosed with diabetes (Beasley, et al., 2004). Based on these statistics it is easy to see that physicians' time is not only valuable but in short supply. There is a genuine need to find more efficient ways for physicians to communicate with and treat their patients.

Communication training of physicians and patients

For physicians, communication training begins in medical school. Communication courses are typically lecture based with periodic practical training opportunities mixed in so that medical students can practice their patient communication skills. Medical students also receive feedback on their communication skills from their peers and from residents. This type of training usually takes place in the first two years of medical school. In the third and fourth years of medical school, students have more interaction with patients and have more opportunity to learn communication skills through practical experiences, however, the emphasis during this time in students' education is on diagnostic skills and patient management. Once physicians leave medical school, feedback on communication skills and further communication training are not usually encountered. Physicians are left to build communication skills on their own (Levinson, Lesser, & Epstein, 2010).

Today it is well understood that good communication between physicians and patients is a prerequisite for optimal care and treatment (Nørgaard, Ammentorp, Kyvik & Kofoed, 2012). However, research does show that a gap exists between the need for good physician-patient communication and the execution of this type of communication (Street & Haidet, 2011). Lumma-Sellenthin (2009) conducted a qualitative study that investigated why medical students have difficulties learning patient-centered communication skills. Fourteen medical students consented to participation in this study

through a patient-centered communications skills training course offered at their university. Through training classes, participants had the opportunity to interview at least two real patients while being video recorded. Each video recording, 23 in all due to some cancelled sessions, was watched and discussed by the participants. The participants' discussions were video recorded, analyzed and transcribed for common mentioned difficulties. Content analysis of the video recordings led the researcher to focus on what difficulties the participants perceived, how the participants felt about difficult issues, and what skills the participants could apply to difficult situations.

Participants reported difficulties in gaining their patients trust, assessing their patients' medical history, discussing a patient's personal issues and providing empathy to their patients. Difficulties stemmed from concerns that participants would appear too intrusive, be unable to properly respond to a patient's concerns and not be respected as a professional. As a follow-up to the research study, participants were offered a professional language intervention with the intent that it would help them develop professional identities and to cope with difficult communication situations.

Lack of proper communication training could also impose the problem of physicians believing their communication skills are better than the really are highlighting yet another gap in physician-patient communication. Kenny, et al. (2010) conducted a cross-sectional quantitative study that investigated whether physicians and patients agreed on the doctor's communication skills and whether patients of the same physician would agree on the communication skills of that physician. Ninety-one physicians and 1749 of their patients completed the Matched Paid Instrument (MPI) questionnaire following each medical appointment. Physicians used the MPI to measure their self-perception of their

communication skills and the patients used the MPI to measure their perception of the physician's communication skills.

Researchers found that physicians' self-perception of their communication skills was not equal to what the patients' perceived their skills to be. Physicians perceived their communication skills more consistently from one patient to the next than patients did. Physicians also viewed themselves as different from other physicians, while patients perceive them all the same and patients of the same physician did not agree on the communication skills of that physician (Kenney, et al., 2010).

Communicating is a skill that requires practice and feedback. With more emphasis being put on patient-centered care, communications skills training courses are becoming more popular for physicians. Medical and communication societies, large medical groups, and researchers have been taking more of an interest in the role communication plays in the physician-patient relationship (Levinson, et al., 2010). Nørgaard, et al. (2012) conducted a quantitative study that investigated whether a communication skills training course would increase the self-efficacy of medical staff in regards to patient-centered communication with patients. Through a required 3-day communication skills training course, 148 orthopedic surgery department employees were recruited for this study. The communication skills training course material was based on the communication process skills of the Calgary-Cambridge Observation Guide focusing on such topics as attentive listening, empathy and information gathering. A self-efficacy questionnaire was completed by participants prior to the communication skills training course. Participants were then asked to complete the same questionnaire immediately following the training course and again 6 months later. Researchers found that a communication skills training

course can significantly increase communication self- efficacy in relation to patient-centered communication in medical staff.

However, physicians are only half of the physician-patient equation. Researchers have also found that there are benefits to patients undergoing communication skills training. Deen, et al. (2011) conducted a quantitative study that investigated whether a brief intervention, focused on formulating question building skills, would empower patients to become more active in managing their health. While waiting to see physicians at one of five community health centers in New York City, 252 patients with scheduled clinical appointments, were recruited for the study. Participants completed two questionnaires that measured their active participation and their desired level of health management control. Researchers then guided participants through an intervention designed to help individuals advocate for themselves by asking better questions. Once the intervention was completed, patients immediately met with their physicians and then returned to complete the two previous measurement questionnaires.

Researchers discovered that participants who preferred an active or collaborated role in health management but rated themselves as low in active participation significantly improved their participation during their physician visit. Those rating themselves as active participants or preferring to be passive participants did not significantly improve their active participation (Deen, et al., 2011). Cegala, McClure, Marinelli, and Post (2000) conducted a similar study and found that patients who had reviewed a physician-patient training booklet prior to a medical consultation were more effective and efficient when gathering information from their physicians, were able to better provided

physicians with a greater amount of clear detail regarding their medical conditions, and were able absorb and understand information that they received from their physicians.

As previously stated, the physician-patient relationship is complex. The relationship is built upon a foundation of support and trust. Through the development of support and trust an open and honest relationship can be established. A study conducted by Berrios-Rivera, et al. (2006) adequately sums up the physician-patient relationship. The researchers assessed 102 patients who had been diagnosed with systematic lupus and rheumatoid arthritis to identify determinants of the physician-patient relationship that were associated with trust. The participants filled out a self-reporting survey that examined the participants' perceptions of medical encounters with physicians.

Determinants of trust that were important to the physician-patient relationship included information sharing, sensitivity to concerns, reassurance, and support. However, the most significant finding in regards to determinants of trust was that communication between physicians and patients could be improved if physicians were to utilize a patient-centered approach in their practice.

Maguire and Pitceathly (2003) and Lee and Lin (2010) suggested that teaching communication skills should be about the experience and not about particular communication methods. Their reasoning behind this is that by-the-book communication methods rarely end up providing the desired results and are difficult to transfer from the training environment to real life situations. Instead of abiding by an inflexible communication style, physicians need to adapt their communication style to the uniqueness of the patient.

Summary

This literature review has focused on intrapersonal communication and how its' components impact health, the role of health beliefs in maintaining health and illness, the use and benefits of CAM treatments, and, finally, the physician-patient relationship. Despite the complexities of the physician-patient relationship, it is the communication process between the pair that focuses all of the concepts discussed within this literature review toward improved health. Street, et al., 2009 suggested that "Clinicians and patients should maximize the therapeutic effects of communication by explicitly orienting communication to achieve intermediate outcomes (e.g., trust, mutual understanding, adherence, social support, self-efficacy) associated with improved health" (p. 295). This type of communication can be aided through the use of health belief questionnaires prior to medical consultations. Street and Haidet (2011) understood this to be an important factor of the physician-patient relationship. The researchers suggested that future research should involve ways to help physicians understand patients' health beliefs by making health belief questionnaires a part of the pre-consultation assessment.

This summarizes the purpose of this research; to correlate individuals health beliefs, specifically health locus of control, with the health outcomes, behaviors and perceptions of individuals diagnosed with MS in order to assist individuals suffering from MS with creating more desirable health outcomes for themselves and to potentially aid healthcare providers in communicating with their patients in a more health producing manner. The following chapter provides a detailed review of the quantitative methodology used in the current research and will show how the methodology was used to answer the three research questions proposed in Chapter 1. This will be followed by the final chapter

where the results of the research study, study limitations, and proposals for future use of the information gathered from the research will be discussed.

CHAPTER III

METHODOLOGY

Introduction

As established in Chapter II, intrapersonal communication plays a vital role in health and illness. Thoughts, perceptions, and emotions can have an impact on the onset of diseases in the body, on the path of progression the diseases follow, and, finally, on how individuals personally manage their diseases (Sobel, 1995). These thoughts, perceptions, and emotions give rise to beliefs that individuals attach to their health. These health beliefs then go on to have a dramatic effect on mental and physical well-being (Dossey, 2001). Understanding how physical and mental expectations could be associated with different types of health beliefs is an important aspect of intrapersonal communication's influence on how health and illness develops within the body.

Health locus of control has been shown to be an effective measurement of health beliefs (Wallston, et al., 1978), however, past research has focused most of its attention on highlighting the relationship between the types of health locus of control and concepts such as self-rated health, or self-efficacy, or specific health outcomes, or comorbidity, or mortality for individuals diagnosed with various chronic illnesses. An expanding overview of how health locus of control correlates with general health outcomes, health behaviors, and perceptions is missing from the literature.

This dissertation was developed for the purpose of building a profile that concentrated on general health outcomes, behaviors, and perceptions for the different types of health locus of control of individuals diagnosed with MS. This study was undertaken to potentially provide individuals diagnosed with MS and their healthcare providers with information about what the different types of health locus of control look like in regards to health outcomes, behaviors, and perceptions so that more healthful intrapersonal communication could become a focus of health management. This chapter provides a comprehensive step-by-step explanation of the research methodology developed for the current research, including a description of the research design, population, data collection, analytical methods, and study limitations.

This research study was developed to answer the following research questions that are accompanied by their research and null hypothesis:

1. What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference?

H₀1: There is no statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁1: There is a statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

2. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey?

H₀2: There is no statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁2: There is a statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

3. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers?

H₀3: There is no statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁3: There is a statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

Research Design

This section defines the methods and procedures used to answer the research questions and provides the theoretical foundation for the methodology applied. The current study was carried out in an attempt to build a profile of the health locus of control of individuals diagnosed with MS. The study results will potentially offer healthcare providers with valuable information on what individuals diagnosed with MS believe about their illness and the relationship between those beliefs and their health outcomes (Research Question 1), health behaviors (Research Question 2) and perceptions of health care providers (Research Question 3). The current study was designed to be of minimal risk to participants. Participants were asked to state their beliefs regarding their health, health behaviors and healthcare perceptions. It is possible that through this self-evaluation troubling thoughts or concerns about the health status of the individual may have occurred. However, the degree of discomfort or harm that the current study could potentially have caused was anticipated to be no greater than ordinarily experienced in carrying out the tasks of daily life.

In order to address the research questions delineated in this study, the researcher utilized a quantitative research methodology. This methodology was used in an effort to establish whether a relationship existed between the independent variable—health locus of control—and the dependent variables—self-reported health outcomes, health behaviors, and perceptions of healthcare providers. Quantitative research methods were chosen for their ability to “establish, confirm, or validate relationships” (Leedy & Ormrod, 2013, p. 96) and to develop generalizations about the data that contribute to existing literature (Leedy & Ormrod).

More specifically, the use of the quantitative methodology allowed the researchers to utilize a correlational, cross-sectional design. The use of a correlational, cross-sectional research design permitted the researcher to collect data in an attempt to discover if a relationship existed between two or more quantifiable variables. In the case of the current study, the purpose was to collect data from the MS population so that the researcher could examine the correlation between one characteristic (locus of control) and several other characteristics (health behaviors, CAM usage, and health communication perceptions). The correlational aspect of this research design was used to discover if a relationship existed between these variables and, if so, how strong that relationship was (Gay, Mills, & Airasian, 2012). The cross-sectional research design was employed for the current research because of its known effectiveness at “providing a snapshot of the current behaviors, attitudes, and beliefs in a population” (Gay et al., p. 185). This type of design was also chosen because of its known effectiveness when collecting data within a short period of time (Robson, 2011).

Cross-sectional research is often associated, as it was with the current study, with the utilization of a sample survey. Sample surveys often feature the collection of small amounts of data, they utilize a standardized form for data collection, and seek to gather information from a large number of individuals. Additionally, sample surveys seek a sample of a larger population so that results can lead to an understanding about the population (Robson, 2011). In the current research, the researcher was able to infer information about the MS population based on the data collected from the representative sample of that population (Gay et al., 2012).

In sum, the quantitative methodology chosen for the current study that was comprised of a single correlational, cross-sectional, sample survey design involved gathering information from individuals diagnosed with MS by asking them questions regarding their health beliefs, outcomes, behaviors, and perceptions. This data was organized and analyzed using statistical methods in order to build a profile of the relationships that existed between the independent and dependent variables (Leedy & Ormrod, 2013).

This study took place during a four month time period from February through May 2016. Individuals aged 18 or older who had been diagnosed with MS and who had access to a computer were surveyed. This research study was conducted online. The convenience sample for this study was determined by the number of individuals responding to the online requests for participants. The online recruitment methods were extensive and systematic.

To begin the recruitment process, the researcher reached out to online communities such as blogs, forums, and message boards associated with MS. The importance of including these online communities in the recruitment process was due to the amount of interest associated with online gatherings such as these. Blogs, forums, and message boards are very often narrow in their subject focus so that individuals seeking out disease information, advice, support, or just a place to feel surrounded by others who are sharing a similar experience can easily find an online presence to meet their needs. More and more, researchers are relying on these niche communities to locate study participants (Wesolowski, 2014).

However, there exists a set of rules that must be applied when recruiting participants from this section of the internet. First, blogs are typically written by one individual and

those writings are followed by many other individuals who share similar experiences. The current study sought out blogs that focused on individuals living with MS. Reader comments are not usually encouraged or allowed on blogs, however contact information for the authors is generally provided. Forums and message boards are places for the general public to go to get in touch with others who share similar experiences and to interact with them. Typically, there are volunteer administrators who monitor the topic postings on the forum and message board sites and participants may need to go through a registration process prior to being allowed to post comments or start new conversations (threads). Generally there are strict rules and guidelines associated with participation on most of these sites and usually those rules and guidelines do not allow for the solicitation of study participants. Therefore, accessing potential participants through blogs, forums and message boards required the researcher to first contact blog authors to request that they share the research study details with their readers and to contact forum and message board administrators for permission to post new threads detailing the current study (Wesolowski, 2014). In both cases, a full review of the study, IRB approval information, school information, the study link, and all contact information were relayed to the appropriate parties. In the end, very few responses to the recruitment requests were received and the number of participants recruited through this process, approximately eight, was extremely low especially when compared to the amount of time spent contacting authors and administrators.

The second avenue explored by the researcher was posting recruitment ads on Craigslist. Craigslist is an online network that provides individuals with, among other things, a place to post and view sale advertisements, personal ads, and job opportunity

ads (“Craigslist,” n.d.). Additionally, Craigslist offers a volunteer section where individuals can post volunteer opportunities, including the opportunity to participate in research studies. Craigslist is designed so that individuals placing ads have to choose what city they would like their ad to be seen in. Larger cities are typically broken down into sections such as the north, northeast, east, southeast, south side of the city. Individuals are not limited to their home cities; ads can be posted in many cities throughout the United States. The researcher canvased the United States by strategically posting recruitment ads in every region of the United States. Originally, 51 ads were posted on Craigslist. Each ad was reposted two additional times after the allowed posting time had expired. Approximately 14 participants were recruited from Craigslist; however, the process of posting recruitment ads was more time efficient than the process of recruiting individuals through blogs, forums, and message boards. An example of the advertisement can be found in Appendix F.

The third endeavor into recruiting study participants focused on Facebook. Facebook is a popular social networking site which allows friends and family to stay connected. Individuals can post messages and pictures, share links, and exchange information on their personal Facebook pages (Beal, n.d.). The social network platform is the most popular social network worldwide (“Number of monthly,” n.d.). Facebook reported an average of 1.09 billion active daily users in March 2016 and 1.65 billion active monthly users as of March 31, 2016. Over 900 million of the daily active users are outside of the United States and Canada (Stats, n.d.). Due to the easy accessibility to a world of people, Facebook was an obvious choice for online study participant recruitment. To begin recruiting participants via Facebook, the researcher posted a two part plea for participants

on her personal Facebook page. The first part of the Facebook post was the actual plea for help coupled with a brief description of the study. The second part of the plea was a request for any Facebook users who may see the post to like and/or share the post.

An additional step to recruiting participants via Facebook was to search out Facebook pages associated with MS. The majority of these Facebook pages represented MS foundations from around the world, while the remainder of the MS related pages were developed for the personal expression of those living with MS. A similar message to the one posted on the researchers personal Facebook page was posted to the MS pages.

There existed a subtle difference between the Facebook message posted on the researcher's personal page versus the message posted on the various MS Facebook pages. The personal message began by addressing the researchers Friends—FB friends—while the message posted specifically for individuals diagnosed with MS was addressed differently—Fellow MSers. While addressing Facebook friends on the researcher's personal page, the objective was to persuade friends and family members to share the post in the hopes of randomly contacting someone who might qualify for the research study. However, the second post, was addressed specifically to the MS population. By initiating the post with the words Fellow MSers, anyone reading the post would know immediately that the individual seeking participants was not a random researcher, but was, instead, a member of their community. This allows the researcher to make an immediate connection or to build rapport with the reader. Temple and Brown (2011) suggested that there is a benefit of utilizing rapport as a means to personally connect with potential participants. Building rapport can increase the level of interest on the part of those contemplating study completion.

Both Facebook messages, whether designed to have family and friends share or designed to build a connection with fellow members of the population, were also designed to ask viewers to share the message with others. As individuals viewed the Facebook post, they would adhere to the request to like or share the post on their own pages thus allowing more individuals to view the post. The request to have Facebook users to like and/or share the researchers post was placed on the Facebook message intentionally in order to encourage snowball sampling. O'Connor, (2013) define snowball sampling as a technique that "uses social interaction between individuals, where a participant from within a target group will recruit other participants who share the same characteristics from their own network" (p. 602). The use of these strategic methods helped to secure 85 participants from Facebook. Examples of the Facebook recruitment postings can be found in Appendix G.

The final attempt to recruit study participants via the internet was completed through the use of Twitter. Twitter is another commonly used social media site intended to help friends and family stay in contact through the exchange of short, frequent messages. Twitter posts, known as Tweets, could contain photos, website links, videos, and written messages containing up to 140 characters. Individuals who have Twitter accounts can follow other individuals on Twitter, can retweet messages from other Twitter users, and can comment on messages that other Twitter users post (New user, 2017).

In an effort to utilize this type of social media to recruit participants, the researcher registered a new Twitter account under the name of @breiermsstudy. Tweets were posted to the account and tweets were sent directly to individuals or groups that were associated with MS. The short messages utilized two concepts previously discussed. First, the

message referenced the fact that the researcher had been diagnosed with MS. This was done in an attempt to build immediate rapport with the reader. Secondly, the message was also posted on a type of social media designed to share information. The end of the post specifically asks viewers to retweet the message. This was done, again, with the intention of utilizing the snowball sampling method of participant recruitment. Twenty-eight participants were obtained through the use of Twitter.

The rationale for utilizing this research design was based upon the desire to meet two specific needs. The first need was to provide individuals diagnosed with MS a new paradigm for understanding their role in creating and maintaining health outcomes. Building a health locus of control profile for individuals diagnosed with MS by correlating the types of locus of control (internal, powerful others, chance) with health outcomes, health behavior, and perceptions of their healthcare providers could provide this new perspective on how individuals impact their own health. The second need was to provide healthcare providers with an understanding of patients' health locus of control and how that type of locus of control correlates with different health outcomes, behaviors, and perceptions. Understanding patients' health locus of control could potentially encourage healthcare providers to utilize more tailored healthcare treatments that are based upon the beliefs that patients hold about their personal health.

Population

In this section of the chapter, a description of all study participants is provided, including the size of the population and the characteristics of the sample (Table 2). The population for this study was comprised of individuals who had been diagnosed with Multiple Sclerosis (MS). It is estimated that 400,000 individuals have been diagnosed

with MS in the United States, while 2.5 million people have been diagnosed world-wide (Pietrangelo, 2014). While a MS diagnosis may be made at any age, the most common age of diagnosis is between the ages of 20 and 40. Women are two times more likely than men to be diagnosed with a relapsing form of MS (Pietrangelo & Higuera, 2015). However, the rates of diagnosis for men and women are more equal among the progressive forms of MS (“Primary progressive,” n.d.).

Table 2

Demographic Statistics

Characteristic	Frequency	Percent
Gender		
Male	37	18.0
Female	157	76.2
Missing Data	12	5.8
Age		
18-20	2	1.0
21-29	10	4.9
30-39	46	22.3
40-49	74	35.9
50-59	43	20.9
>60	19	22.2
Missing Data	12	5.8
Education		
<High school	4	1.9
High School	17	8.3
Some College	46	22.3
Associate's Degree	19	9.2
Bachelor's Degree	60	29.1
Graduate Degree	48	23.3
Missing Data	12	5.8
Number of Years with MS		
<5	78	37.9
5-10	41	19.9
10-20	50	24.3
20-30	16	7.8
>30	1	.5
Missing Data	20	9.7

Number of Chronic Illnesses		
1	110	53.4
2	40	19.4
3	19	9.2
4	6	2.9
5 or More	9	4.4
Missing Data	22	10.7

Note. $N = 206$. Forty-two participants represented in the demographic statistics failed to complete the survey. This data was only used for correlational analysis when applicable.

For members of this population to be eligible to participate in this study, individuals must have been diagnosed with MS, be 18 years of age or older, and needed access to a computer. From the population, a convenience sample of 206 individuals was recruited. As previously stated, this convenience sample was determined by the number of individuals responding to the online requests for participants (Table 3). Of these 206 participants, 42 individuals failed to complete the survey instrument. Their data was only used for correlational analysis when applicable. This left a remaining sample size of $n = 164$.

Table 3

Online Recruitment Disbursement

Data Collection Method	Number of Participants Recruited
Online Communities	8
Craigslist	14
Facebook	85
Twitter	28
Other	29

Note. $N = 164$. Participants recruited via other methods represented snowball sampling results. Study information was forwarded either verbally or through electronic communication to specific individuals diagnosed with MS by individuals who had viewed study information via the discussed methods.

Data Collection

This section provides a description of the variables that were investigated, how each was measured, as well as the rationale behind the selection of the measurement instruments. This research study was conducted online, with recruitment being completed primarily through social media and surveys being completed through the online survey development website Survey Monkey. Nearly 90% of American adults access the internet (Pew Research Center, 2014a) and over 70% of adults utilize social media making the online environment an effective place for recruiting research participants (Pew Research Center, 2014b). Benefits of online research study recruitment can include the development of a large, demographically representative sample and the ability to target large numbers of individuals who all share similar interests or characteristics (Birnbaum, 2004; Fenner et al., 2012; Mishra et al., 2014; Wesolowski, 2014). In fact, results of a study examining the use of the internet environment as a recruitment tool have shown that the development of online social communities that are based around specific characteristics, interests or the need for support can be an effective means of gathering study participants (O'Connor et al., 2013).

Demographic Data

Once individuals had made the decision to become a study participant, they were directed to the survey webpage that consisted of relevant information regarding the study, the researchers contact information, and the link to the informed consent page.

Participants started the survey once they completed the informed consent page.

The survey began with participants responding to demographic questions. The demographic survey consisted of questions regarding the age, gender, and education level

of each participant. The questionnaire also asked participants to confirm that they had been diagnosed with MS, how long ago they had been diagnosed and for information regarding additional chronic illness diagnoses. Each individual's answer was aggregated with the others, and this was used to describe the population. Additionally, demographic information served as dependent variables in the current study.

Locus of Control Data

The researcher utilized the Multidimensional Health Locus of Control Scale (MHLC), developed and tested by Wallston et al. (1978). According to the developers of the scale, the MHLC scale is reported to be both reliable and valid, reporting Cronbach alphas of $\alpha=.673$ to $\alpha=.767$. Almost 40 years after this seminal work originated, the scale is still widely utilized and more recently reported Cronbach alphas of $\alpha=.75$ to $\alpha=.83$ (Fan, et al., 2016). A copy of this instrument can be found in Appendix A. The researcher selected the MHLC as the scale for measuring personal health beliefs because of its ability to measure the intrapersonal communication of the participants in regards to how they communicate with themselves about their health. The scale has also been shown to be both a valid and reliable measurement of individuals' beliefs about who has the power over their health.

The scale consists of 18 questions and is set up in a six-point Likert scale format with answers ranging from "strongly disagree" (scored as one) to "strongly agree" (scored as six). The scale measures for three different types of beliefs. The first is an internal health locus of control belief that is characterized by individuals believing that they exert power over their own health. The second is powerful others health locus of control that is characterized by individuals believing powerful others, such as doctors, nurses, or family

members are in control of their health. Finally, there is chance locus of control which means individuals believe that their health is dependent upon luck. Type of locus of control (internal, powerful others, chance) served as the independent variable for the current study.

Health Outcomes

To answer Research Question 1—What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference?—and to test the associated null hypothesis, the researcher asked participants to complete the 36-Item Short Form Health Survey. Ware and Sherbourne (1992) developed and tested the survey and reported that the survey was both a reliable and valid measure of health outcomes, reporting Cronbach alphas of $\alpha=.76$ to $\alpha=.93$. A copy of the questionnaire can be found in Appendix A.

MS is a chronic illness that impacts the lives of nearly 133 million people in the United States. Symptoms of MS can include, but are not limited to, balance problems, bladder dysfunction, general pain, cognitive changes, dizziness, fatigue, numbness, speech difficulties, swallowing disorder, visual impairments, and depression (“MS Overview,” 2014). The researcher selected the 36-Item Short Form Health Survey because of its ability to measure health outcomes similar to those outcomes experienced by individuals diagnosed with MS and because it has been shown to be a valid and reliable measure of chronic health conditions, pain, and health issues (Ware & Sherbourne, 1992). Scores from the 36-item questionnaire were organized into eight health outcome categories that included physical functioning, role limitations due to

physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. Data gathered from the 36-Item Short Form Health Survey served as a dependent variable in the current study. The eight health outcome scores were correlated with each type of health locus of control to determine if a relationship existed between the variables and, if so, how strong the relationship was.

Health Behaviors

To answer the second research question—What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey?—and to test the associated null hypothesis, the researcher asked participants to self-report how often they utilized specific types of complementary and alternative medicine (CAM) and conventional medicine. A basic information gathering, demographic type questionnaire was developed by the researcher.

In accordance with past researchers, the current CAM questionnaire was developed by a method of classifying CAM modalities through the adoption of the National Center for Complementary and Alternative Medicine's (NCCAM) CAM classification system. Akyol, et al. (2011), Chang, et al. (2011), Sasagawa, et al. (2008), Stake-Nilsson, et al. (2011), Swisher, et al. (2002) developed similar original questionnaires to utilize in their CAM usage studies. The above researchers developed CAM questionnaires that they did not supply reliability or validity information for and did not supply citations to or letters of consent from past researchers who may have established CAM measurement tools.

For the current study, the researcher relied on the questioning format used by Sasagawa et al. (2008). The questionnaire was structured in a basic ordinal scale format asking participants to state whether they do not use, occasionally use, routinely use or primarily use 10 different types of CAM treatments and four types of conventional medicine. The types of CAM usage included acupuncture, counseling, homeopathy, hypnosis, meditation, naturopathic medicine, nutritional interventions, other folk remedies, prayer, and yoga. The areas of conventional medicine usage included general practice, hospital, over-the-counter medications, and pharmaceuticals. The purpose of the questions regarding CAM usage was to correlate different types of locus of control with specific health behaviors. Therefore, this data served as a dependent variable.

Perceptions of Patient Autonomy

To answer the third research question—What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers?—and the associated null hypothesis, the researcher employed the Health Care Climate Questionnaire that was developed by Williams, et al. (2005). The questionnaire's developers reported that the questionnaire is both valid and reliable. Cronbach alpha has consistently been reported above $\alpha=.82$ for this instrument. The researcher selected the Health Care Climate Questionnaire because of its ability to effectively assess the degree in which patients believe their physician is autonomy supportive (Williams, et al.). The scale consists of 6 questions and is measured using a seven-point Likert scale format with answers ranging from “strongly disagree” (scored as one) to “strongly agree” (scored as seven). The Health Care Climate Questionnaire serves

as a dependent variable for the current study. Data gathered from this questionnaire was correlated with each type of health locus of control to determine if a relationship existed between the variables and, if so, how strong that relationship was.

Analytical Methods

Descriptive and inferential statistics were used to determine if there was a relationship between the independent variable—health locus of control—and the dependent variables—health outcomes, health behaviors, and perceived autonomy support.

Descriptive statistics were used to examine demographic variables that included the age, gender, and education level of the participants and information regarding how long ago the participants had been diagnosed with MS and how many other chronic illnesses the participants had been diagnosed with up to the time of survey completion. Additionally, descriptive statistics was used to analyze the three types of locus of control. The following section identifies the statistical methods, graphical devices, and rationale for selecting the procedures used for each research question.

Research Questions

To test Research Question 1 and its accompanying null hypothesis, the independent variable—health locus of control—was correlated with the dependent variables—physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. Given that the measurement tool utilized to determine the referenced health outcomes was a continuous scale, the Pearson product moment correlation was used to determine whether a significant relationship existed and, if so, the strength of the relationship between health locus of control and the dependent variables. In total, 24

correlations were performed against the independent variable. Due to this high number of correlations, a Hochberg correction was performed to avoid a type I error. A Hochberg correction is used when determining the p -value of the relationships between variables when a high number of correlations are performed. As the number of correlations increase, the probability of identifying at least one significant relationship due to chance also continues to increase. Therefore, it was necessary to perform a correction to adjust the p -value so that chances of committing a type I error was reduced.

To test Research Question 2 and its accompanying null hypothesis, the independent variable—health locus of control—was correlated with each of the dependent variables—the uses of acupuncture, counseling, homeopathy, hypnosis, meditation, naturopathic medicine, nutritional interventions, other folk remedies, prayer, yoga, general practice, hospital, over-the-counter medications, and pharmaceuticals. Because the measurement tool utilized to measure the dependent variable was a nominal scale, a Spearman's Rho correlation was used to determine if there was a relationship between the independent and dependent variables and, if a relationship existed, to also determine how strong that relationship was. In total, 42 correlations were performed against the independent variable. Again, a Hochberg correction to adjust the p -value was performed to avoid a type I error.

To test Research Question 3 and its accompanying null hypothesis, the independent variable—health locus of control—was correlated with the dependent variable—perceived patient autonomy. Because the measurement tool utilized to measure the dependent variable was a continuous scale, the Pearson product moment correlation was again used to determine if there was a relationship between the independent and

dependent variables and, if a relationship existed, to also determine how strong that relationship was. Unlike the previous two research questions, only three correlations were performed for each participant in Research Question 3. Therefore, in order to accept or reject the hypothesis that there was a significant correlation between health locus of control and perceived autonomy, the researcher utilized the generally accepted significance level of $p < .05$.

Limitations

While the current study provided valuable information regarding the profile of health locus of control in individuals who have been diagnosed with MS, as with all studies, it was subject to its limitations. In this section, those limitations that had the greatest impact on the study and suggestions regarding how those limitations may be addressed in future studies are discussed.

The first of these limitations was the reliance upon social media as the method of data collection. While utilizing this type of vehicle for data collection offered positive opportunities such as the potential for an increased sample size, great participant diversity, low cost, and convenience and ease at accessing the desired population, it also had its limitations (Robson, 2011). The first limitation that is a characteristic of using the internet to collect data is finding an honest sample that is representative of the population being studied (Leedy & Ormrod, 2013). Two specific issues were identified with this topic: reliance upon the assumption that participants (a) truly fit within the inclusion criteria (O'Connor et al., 2013) and (b) have only completed the survey one time (Birnbaum, 2004). Robson refers to this as the “cheaters and repeaters problem” (p. 382) common to internet research. Additionally, while offering the chance for a financial

incentive in exchange for participation in a study can entice more individuals to participate in the study, it can also exasperate the potential for contamination of the study by individuals who do not meet the inclusion criteria (Gu, 2014).

Several steps were taken to reduce the occurrence of this limitation. Survey Monkey was chosen in part because of its ability to provide the researcher with the internet protocol (IP) addresses of the computers used to complete the survey. This allowed the researcher to verify that no duplicate attempts at completing the survey were considered in the final results. In regards to the potential financial incentive offered to individuals who completed the survey, only 22 participants ($n = 164$) sent emails asking to be registered in the drawing. This low participation rate in the drawing would suggest that the chance to win one of two \$50.00 gift cards was not an important factor for individuals when deciding whether or not to complete this survey. Upon completion of the study, participants were encouraged to reach out to the researcher with any questions or comments regarding the study. The researcher received 86 initial emails from study participants who expressed well-wishes, the desire to be informed of the results once the study was completed, and who wanted to share their MS story. The researcher responded to all emails, began regular email communications with several study participants and had several phone conversations with other participants. These communications suggested that study participants did meet study inclusion criteria. Finally, as previously mentioned, recruitment for study participants was done in several places online. However, with the exception of Craigslist and the researcher's personal Facebook page, all recruitment announcements were sent directly to the MS community in the hopes that this would result in a more uncontaminated study sample.

The second limitation that is characteristic to internet based data collection is the need for participants to be familiar with computers, have knowledge on how to use the internet, and possess the physical ability to use a computer (Gu, 2014; Robson, 2011). Of particular interest to the current study was the latter suggestion that physical ability may present a problem when attempting to complete an online survey. MS is a debilitating disease that can affect physical abilities such as mobility and eyesight and cognitive ability such as comprehension, speech and the ability to express thoughts and ideas. Some of these disabilities may have limited participation in the current study. This particular situation was an issue for the current study. Two respondents reported that they themselves had not been diagnosed with MS, but were caretakers for individuals who had been diagnosed. Because it was unknown whether the caretakers were answering for those in their care or were giving their perception of what they saw their patients going through, their data was purged. Future studies involving online surveys and individuals diagnosed with MS may want to include the option of allowing caregivers to complete surveys for individuals who are physically unable to participate.

Additionally, there were three possible limitations that stemmed from the utilization of the measurement instruments. The first limitation was in regards to the 36-Item Short Form Survey. As previously mentioned, this survey measured health outcomes that are very similar to those experienced by individuals who have been diagnosed with MS. However, the health outcomes experienced by individuals diagnosed with MS can be much more varied and expansive than what the current research measurement tool focused on. Even though the research tool did cover basic health outcomes such as physical functioning, energy/fatigue issues, emotional well-being, social functioning,

pain, and general health, it was not MS specific and this could have posed as a potential limitation for the current study and an opportunity for future research studies to expand upon.

The second possible limitation was in regards to the Health Care Climate Questionnaire that measured individuals perceived autonomy support from physicians. Individuals diagnosed with MS tend to have more than one physician. While this survey can measure the perceived autonomy support received from one physician, it is also designed so that participants can utilize the questionnaire to rate their perceived autonomy support from their team of physicians. The specifications of how to progress with this questionnaire were left unclear and up to the participants' discretion. However, this may have caused some confusion. Future researchers may want to consider providing a more structured instructional set when utilizing this questionnaire.

Finally, the third limitation was in regards to the complete survey. The current research survey was designed to measure the overall health beliefs, outcomes, behaviors and perceptions of the participants. However, current physical and mental health conditions could have made it difficult for participants to focus on their overall experiences. For example, if a participant was having a particularly challenging day due to excessive pain, or had just experienced a less than satisfying appointment with their physician, or had been symptom free and feeling good for several weeks, their survey responses may have been more representative of the current situation rather than their overall experiences; therefore, posing an additional limitation to the current research.

Summary

This chapter provided a detailed description of the research methodology applied, specifically outlining the methods and procedures utilized to answer each research question and explained the rationale for the methodology employed. The following fourth, and final, chapter will review the results of the data collection and analysis, the conclusions drawn from the study, and the suggested recommendations.

CHAPTER IV

FINDINGS AND CONCLUSIONS

Introduction

The current study examined the relationship between the locus of control of individuals diagnosed with MS and their health outcomes, behaviors and perceptions. Intrapersonal communication is simply defined as an internal dialogue that individuals carry on with themselves (Jemmer, 2009). Aspects of intrapersonal communication that have a direct impact on health include health beliefs and perceptions. One way to understand individuals' intrapersonal communication in regards to health beliefs and perceptions is to measure individuals' health locus of control. Through their seminal work with locus of control, Wallston, et al. (1978) defined locus of control as the degree of control that individuals perceive themselves as having over their own health and includes three different categories: internal health locus of control (IHLOC), powerful others health locus of control (POHLOC), and chance health locus of control (CHLOC).

The current research was built upon previous research that suggested individuals who possessed a higher degree of IHLOC participated in more beneficial health behaviors, experienced more beneficial health outcomes, and perceived their relationships with their healthcare providers as more positive and trusting relationships. For example, in regards to beneficial health behaviors, nutritional self-efficacy was found to be positively associated with IHLOC (Chen, et al., 2010). Additionally, the positive outcomes of

beneficial health behaviors such as complementary and alternative medicine (CAM) usage included self-empowerment, positive outlooks on disease, positive perceptions of quality of life, increased levels of hope and optimism, and increased levels of perceived wellness. These are important intrapersonal communication characteristics associated with IHLOC (Chang, et al., 2001; Kinney, et al., 2003; Targ & Levine, 2002). Beneficial health outcomes associated with IHLOC included less occurrences of stress, anxiety, depression, physical illness (Roddenberry & Renk, 2010), post-partum depression (Moshki, et al., 2013), breast cancer (Rowe, et al., 2005) and disease burden (Berglund, et al., 2014). Finally, patient autonomy was found to be an important aspect of IHLOC. In the healthcare realm, autonomy is achieved when patients feel as though they are self-directing or have achieved a state of independence when managing their healthcare (Autonomy, n.d.). When the autonomy support offered by physicians matches the desired level of autonomy by patients, higher levels of health care satisfaction, increased involvement in healthcare decisions, a greater adherence to medical treatments, and improved perceived health outcomes are reported by patients ((Lee & Lin, 2010; Street & Haidet, 2011; Street, et al., 2009; Street, et al., 2009).

This research study was conducted online, with recruitment being completed primarily through participation requests posted to social media applications such as Facebook, Twitter, Craigslist, MS blogs and chatrooms. Included in each online post was a link that directed potential participants to the research survey located at the online survey development website Survey Monkey. Once individuals had given their consent to participate in the study, the survey began by asking participants to answer demographic questions that gathered data regarding their age, gender, and education level. The

questionnaire also asked participants to confirm that they had been diagnosed with MS, how long ago they had been diagnosed and for information regarding additional chronic illness diagnoses. Completion of these questions lead participants to the research study questions that were designed and implemented to answer specific research questions.

The purpose of this current study was to correlate the different types of health locus of control with the health outcomes, behaviors and perceptions of individuals diagnosed with MS in order to assist individuals suffering from MS to create more desirable health outcomes for themselves and to potentially aid healthcare providers in communicating with their patients in a more health producing manner. The results of this study could help both patients and healthcare providers to understand the uniqueness of intrapersonal health beliefs. With that in mind, this study was conducted based on the following research questions and their corresponding null and research hypothesis:

1. What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference?

H₀1: There is no statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁1: There is a statistically significant correlation between physical and emotional health outcomes, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

2. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey?

H₀2: There is no statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁2: There is a statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

3. What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers?

H₀3: There is no statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

H₁3: There is a statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS.

Based on the preceding research questions, the current study has explored the concept of intrapersonal communication as it relates to the health beliefs, behaviors, outcomes, and perceptions of individuals diagnosed with MS. In this, the final chapter of the dissertation, the researcher first delineates the findings for the current research by reporting the results of the data collection and data analysis for each research question. In the second section of this chapter, conclusions that have been drawn from the reported findings are expounded upon, in detail, for each research question. Finally, the implications of the current research and recommendations for future research are discussed.

Findings

This section of the fourth chapter of the dissertation sets out the results of the current study. Initially, it is important to summarize the results and explain the importance of the Multidimensional Health Locus of Control Scale (MHLOC) prior to addressing the findings for the three research questions. This is due to the fact that the different types of locus of control are used as the main independent variables for each of the research questions. Descriptive statistics in the form of the mean and standard deviation will be reported for locus of control. Following this brief discussion on health locus of control, the researcher will provide results for each of the three research questions sequentially. Discussions of each research question will include a description of the survey instrument, information regarding the statistical method used in SPSS to analyze the gathered data, a note about *p*-value corrections, a table displaying the findings, and a summary of the findings.

Wallston, et al. (1978) developed health locus of control scales that gave health researchers and, in some cases, healthcare providers (Wallston & Wallston, 1981) new tools that allowed them to better understand and predict health behaviors of individuals. Through the use of the MHLC scale, researchers have begun to understand that there is a connection between individuals who believe they have power over their health and their health behaviors and outcomes (Berglund, et al., 2014; Moshki, et al., 2013; Roddenberry & Renk, 2010; Rowe, et al., 2005). Past research has specifically highlighted the connection between IHLOC and positive health outcomes and behaviors (Berglund, et al.; Chen, et al., 2010; Roddenberry & Renk; Rowe, et al.).

The MHLOC scale consists of 18 questions and is set up in a six-point Likert scale format with answers ranging from “strongly disagree” (scored as one) to “strongly agree” (scored as six). The scale measures for three different types of beliefs. Internal health locus of control is characterized by individuals believing that they exert power over their own health. Powerful others locus of control is characterized by individuals believing that powerful others such as doctors, nurses or family members exert power over their own health. Finally, CHLOC is characterized by individuals believing that chance, luck or fate exert power over their health (Wallston, et al., 1978). These three types of locus of control (internal, powerful others, chance) served as the independent variable for the current study.

In order to determine the health locus of control scores, the MHLOC scale was developed through the combination of one subscale for each of the three categories. The MHLOC scale was not designed to assign individuals to a specific category. It is typical for individuals to fall into all three categories at the same time; however, individuals may

score higher in one category over the other two suggesting that they may possess the characteristics of that one category more so than the others (Wallston, 1993). Because of this inability to assign individual participants to one category of health locus of control, the current study was designed to compile the scores for each subscale of health locus of control and to potentially correlate internal, powerful others, and chance locus of control with specific health outcomes, behaviors, and perceived autonomy. The researcher selected the MHLOC as a scale for the current research because of its ability to measure the intrapersonal communication of the participants in regards to how they communicate with themselves regarding one specific area of their personal health beliefs.

Descriptive statistics in the form of the mean and standard deviation were used to analyze the MHLOC measurements. The mean is the most common measurement of central tendency and is calculated by adding together all of the scores and dividing by the total number of scores. This is more commonly known as finding the average. While the mean is a measurement of central tendency, the standard deviation is a measurement of variability. The standard deviation shows how close together or far apart a specific group of scores are. If the standard deviation of a set of scores is low then there is very little variability among the scores; however, if the standard deviation is high then the indication is that the scores are spread apart (Salkind, 2012). Table 4 reviews the means and standard deviations for each health locus of control category.

Table 4

Means and Standard Deviations for Internal, Powerful Others, and Chance Locus of Control

	<i>N</i>	<i>M</i>	<i>SD</i>
IHLOC	164	23.26	5.740
POHLOC	164	17.39	5.424
CHLOC	164	16.18	5.210

The first research question in the current study was, “What is the correlation between the type of health locus of control (internal, powerful others, chance) in individuals suffering from MS and such health outcomes as self-rated health, activity and work limitations, physical and emotional health interference, and pain interference?” This research question sought to gain information from participants regarding self-rated health and other specific health outcomes related to health and illness. Participants completed the 36-Item Short Form Health Survey that served as a dependent variable in the current study. The researcher selected the 36-Item Short Form Health Survey because of its ability to measure health outcomes similar to those outcomes experienced by individuals diagnosed with MS (Ware & Sherbourne, 1992). This survey generated a self-rated health measurement along with eight health outcome scores that included limitations in physical functioning, role limitations due to physical health and emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health.

To begin answering the first research question, frequencies for self-rated health were analyzed. Frequencies were analyzed because they report the number of times a specific score was recorded for each variable (Robson, 2011). Self-rated health was measured as a

component of the 36-Item Short Form Health Survey and asked participants to rate their health a 1 if they perceived their health to be excellent, a 2 if they felt their health to be very good, a 3 if they believed their health to be good, 4 represented fair health, and a score of 5 signified poor health. Of the 164 participants who answered this question, participants' health was rated "excellent" 8 times (3.9%), rated "very good" 28 times (13.6%), rated "good" 64 times (31.1%), rated "fair" 43 times (20.9%), and was rated "poor" 21 times (10.2%). Additionally, descriptive statistics in the form of the mean and standard deviation were used to analyze the MHLOC measurements even though these types of statistics tend to have limited application in respect to ordinal data. Descriptive statistical analysis found that self-rated health had a mean score of 3.25 with a standard deviation of 1.041.

To complete the statistical analysis of the self-rated health portion of research question 1, a Spearman rho (r_s) correlation was used to determine whether (a) a significant relationship existed between health locus of control and self-rated health and (b) the strength of the relationship between the variables. The standard for interpreting the correlational coefficient that was used was .2 to .34 represented a weak relationship, .35 to .64 was considered a moderate relationship, and .65 to 1.00 was found to be a strong relationship between the variables (Gay, et al., 2012). Additionally, the standard p -value of $< .05$ was used to determine significance for the findings. The statistical analysis representing the relationship between the three types of health locus of control and self-rated health is reported in Table 5.

Table 5

Spearman Rho Correlations for Self-Rated Health with IHLOC, POHLOC, and CHLOC

	Self-Rated Health	
	r_s	Sig. (2-tailed)
IHLOC	-.483	.000*
POHLOC	.247	.001*
CHLOC	.389	.000*

To summarize the significant findings displayed in Table 5, IHLOC presented a moderately strong negative relationship with self-rated health, $r_s(164) = -.483, p < .001$. This relationship suggested that as individuals utilized greater scores to represent higher levels of IHLOC, they also utilized lower scores to represent better perceived health. As a reminder, based on the self-rated health measurement tool used for the current study, lower self-rated health scores indicated better perceived health. The opposite is true for the significant findings related to POHLOC and CHLOC. Both types of locus of control exhibited a negative relationship with self-rated health; however, POHLOC presented a weak relationship while CHLOC presented a moderate relationship, $r_s(164) = .247, p = .001$ and $r_s(164) = .389, p < .001$, respectively. This data suggests that as POHLOC and CHLOC scores increased, individuals also had higher scores for self-rated health indicating that they perceived their health to be fair or poor. Accordingly, for the first part of Research Question 1, the researcher was able to accept the research hypothesis (H_1 : There is a statistically significant correlation between physical and emotional health outcomes, and health locus of control in individuals suffering from MS) and reject the null hypothesis (H_01 : There is no statistically significant correlation between physical and

emotional health outcomes, and health locus of control in individuals suffering from MS) in regards to self-rated health for all types of health locus of control.

In order to analyze the remainder of the dependent variables for Research Question 1, type of health locus of control was correlated with physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, and general health. Given that the measurement tool utilized to determine the referenced health outcomes was a continuous scale, a Pearson product moment correlation was used to determine whether (a) a significant relationship existed between HLOC and the measured health outcomes and (b) the strength of the relationship between the variables.

For the second portion of Research Question 1 and for Research Question 2, a Hochberg correction was utilized when determining the p -value of the relationships between variables. In order to answer both of these research questions adequately, a high number of correlations were performed. As the number of correlations increased, the probability of identifying at least one significant relationship due to chance also continued to increase. Therefore, it was necessary to perform a correction to adjust the p -value so that chances of committing a type I error was reduced.

For the remainder of Research Question 1, a total of 24 correlations were performed against the independent variable. This required the use of a Hochberg correction to avoid a type I error. Table 6 displays the Pearson r coefficient, the unadjusted p -values, the Hochberg corrected p -values, and information regarding the significance of each correlation.

Table 6

Pearson r Correlations for Health Outcomes with Unadjusted p -Values, Hochberg Corrected p -Values, Hochberg Threshold for Significant p -Values, and Significance

Variable Correlation	r	Unadjusted p -Value	Hochberg Correction	Hochberg Threshold	Sig.
IHLOC Energy/Fatigue	.300	.000	.05/24	.002083333	*
IHLOC Emotional Well-Being	.369	.000	.05/23	.002173913	*
IHLOC Social Functioning	.311	.000	.05/22	.002272727	*
IHLOC Pain	.353	.000	.05/21	.002380952	*
IHLOC General Health	.489	.000	.05/20	.0025	*
POHLOC General Health	-.292	.000	.05/19	.002631579	*
CHLOC Energy/Fatigue	-.295	.000	.05/18	.002777778	*
CHLOC Emotional Well-Being	-.339	.000	.05/17	.002941176	*
CHLOC General Health	-.410	.000	.05/16	.003125	**
IHLOC Physical Functioning	.248	.001	.05/15	.003333333	**
POHLOC Emotional Well-Being	-.257	.001	.05/14	.003571429	**
CHLOC Social Functioning	-.254	.001	.05/13	.003846154	**
IHLOC Emotional Health Limits	.244	.002	.05/12	.004166667	***
CHLOC Emotional Health Limits	-.218	.005	.05/11	.004545455	****
CHLOC Pain	-.217	.005	.05/10	.005	****
POHLOC Pain	-.192	.014	.05/9	.005555556	
CHLOC Physical Functioning	-.190	.015	.05/8	.00625	
IHLOC Physical Health Limits	.181	.020	.05/7	.007142857	
POHLOC Physical Functioning	-.176	.024	.05/6	.008333333	
POHLOC Social Functioning	-.124	.115	.05/5	.01	
CHLOC Physical Health Limits	-.107	.171	.05/4	.0125	

POHLOC Energy/Fatigue	-.097	.218	.05/3	.016666667
POHLOC Emotional Health Limits	-.088	.261	.05/2	.025
POHLOC Physical Health Limits	-.079	.317	.05/1	.05

* $p < .002$, ** $p < .003$, *** $p < .004$, **** $p < .005$

To summarize the significant findings displayed in Table 6, IHLOC held a moderately strong, positive correlation with the health outcomes of emotional well-being, pain, and general health, $r(164) = .369, p < .000$, $r(164) = .353, p < .000$, and $r(164) = .489, p < .000$, respectively. Internal health locus of control also held a weak, positive correlation with the health outcome categories of energy/fatigue, social functioning, physical functioning, and emotional health limitations, $r(164) = .300, p < .000$, $r(164) = .311, p < .000$, $r(164) = .248, p = .001$, and $r(164) = .244, p = .002$, respectively. These relationships suggested that as participants rated themselves higher in IHLOC, they also reported better emotional well-being, general health, social functioning, physical functioning, and more energy along with less fatigue, pain, and emotional health limitations. Additionally, POHLOC held a weak, negative correlation with general health, $r(164) = -.292, p < .000$, and emotional well-being $r(164) = -.257, p < .001$. Therefore, as individuals rated themselves higher in POHLOC, they also reported reduced general health and emotional well-being. Lastly, a moderately strong, negative correlation was found between CHLOC and general health, $r(164) = -.410, p < .000$; while a weak, negative correlation was found to exist between CHLOC and energy/fatigue, emotional well-being, social functioning, emotional health limitations, and pain, $r(164) = -.295, p < .000$, $r(164) = -.339, p < .000$, $r(164) = -.254, p = .001$, $r(164) = -.218, p = .005$, and $r(164) = -.217, p = .005$, respectively. These results suggested that as CHLOC ratings went higher, participants also reported reduced general health, emotional well-being,

social functioning, and energy. Additionally, the results suggested that CHLOC was associated with more fatigue, emotional health limitations, and pain.

Accordingly, for the second part of Research Question 1, the researcher was able to accept the research hypothesis (H_1 : There is a statistically significant correlation between physical and emotional health outcomes, and health locus of control in individuals suffering from MS) and reject the null hypothesis (H_0 : There is no statistically significant correlation between physical and emotional health outcomes, and health locus of control in individuals suffering from MS) for seven out of the eight health outcomes for IHLOC. Because no significant correlation could be found between IHLOC and physical health limitations, the null hypothesis was accepted for this one health outcome. For POHLOC, the research hypothesis was accepted for only two of the health outcomes, general health and emotional well-being; while the null hypothesis was accepted for the remainder of the health outcomes. Lastly, the researcher accepted the research hypothesis for general health, energy/fatigue, emotional well-being, social functioning, emotional health limitations, and pain in regards to CHLOC, and accepted the null hypothesis due to the lack of a relationship between CHLOC and physical functioning and physical health limitations.

The second research question in the current study was, “What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their usage of specific types of complementary and alternative medicine methods as measured by the complementary and alternative medicine usage survey?” This research question sought to gather information regarding what type of health behaviors individuals diagnosed with MS used as part of their healing

process. To gather data for the second research question, the researcher asked participants to self-report how often they utilized specific types of complementary and alternative medicine (CAM) and traditional medicine using a basic information gathering, demographic type questionnaire developed by the researcher. The questionnaire was structured in a basic ordinal scale format asking participants to state whether they do not use, occasionally use, routinely use, or primarily use, 10 different types of CAM treatments (acupuncture, counseling, homeopathy, hypnosis, meditation, naturopathic medicine, nutritional interventions, other folk remedies, prayer, and yoga) and four different types of conventional treatments (general practice, hospital, over-the-counter medications, and pharmaceuticals).

Because the measurement tool utilized was an ordinal scale, a Spearman's Rho correlation was used to determine whether (a) a significant relationship existed between HLOC and the measured treatment usage and (b) the strength of the relationship between the variables. In total, 42 correlations were performed against the independent variable. Therefore, a Hochberg's correction was performed to avoid a type I error. Table 7 displays the Spearman Rho coefficient, the unadjusted *p*-values, the Hochberg's corrected *p*-values, and information regarding the significance of each correlation.

Table 7

Spearman rho Correlations for Health Behaviors with Unadjusted p-Value, Hochberg Corrected p-Value, Hochberg Threshold for Significant p-Values, and Significance

Behavior Category	r_s	Unadjusted <i>p</i> -value	Hochberg Correction	Hochberg Threshold	Sig
IHLOC OTC Medicine	-.293	.000	.05/42	.001190476	*
IHLOC Pharmaceutical	-.236	.002	.05/41	.001219512	
CHLOC Meditation	-.235	.002	.05/40	.00125	

IHLOC Prayer	-.229	.003	.05/39	.001282051
CHLOC Pharmaceutical	.232	.003	.05/38	.001315789
POHLOC Nutritionist	-.222	.004	.05/37	.001351351
CHLOC Nutritionist	-.216	.005	.05/36	.001388889
IHLOC General Practitioner	-.214	.005	.05/35	.001428571
POHLOC Hospital	.212	.007	.05/34	.001470588
IHLOC Nutritionist	.207	.008	.05/33	.001515152
POHLOC Pharmaceutical	.204	.009	.05/32	.0015625
POHLOC Meditation	-.191	.014	.05/31	.001612903
POHLOC Prayer	.187	.017	.05/30	.001666667
CHLOC OTC Medicine	.183	.019	.05/29	.001724138
IHLOC Homeopathy	.178	.023	.05/28	.001785714
POHLOC Acupuncture	-.175	.025	.05/27	.001851852
POHLOC General Practitioner	.171	.029	.05/26	.001923077
IHLOC Meditation	.158	.044	.05/25	.002
CHLOC Homeopathy	-.153	.051	.05/24	.002083333
POHLOC OTC Medicine	.150	.056	.05/23	.002173913
IHLOC Yoga	.149	.057	.05/22	.002272727
IHLOC Acupuncture	.145	.064	.05/21	.002380952
IHLOC Hospital	-.142	.070	.05/20	.0025
POHLOC Homeopathy	-.125	.110	.05/19	.002631579
CHLOC Naturopathic	-.119	.128	.05/18	.002777778
CHLOC Acupuncture	-.115	.142	.05/17	.002941176
CHLOC Hypnosis	-.114	.146	.05/16	.003125
POHLOC Hypnosis	-.111	.159	.05/15	.003333333
CHLOC Folk Medicine	-.094	.230	.05/14	.003571429
CHLOC Hospital	.094	.232	.05/13	.003846154
CHLOC Yoga	-.091	.244	.05/12	.004166667
IHLOC Hypnosis	.086	.274	.05/11	.004545455
CHLOC General Practitioner	.085	.280	.05/10	.005
IHLOC Naturopathic	.067	.315	.05/9	.005555556

POHLOC Counseling	.078	.320	.05/8	.00625
POHLOC Naturopathic	-.065	.407	.05/7	.007142857
CHLOC Counseling	.053	.498	.05/6	.008333333
POHLOC Folk Medicine	-.042	.591	.05/5	.01
CHLOC Prayer	.040	.609	.05/4	.0125
POHLOC Yoga	-.040	.615	.05/3	.016666667
IHLOC Counseling	-.024	.757	.05/2	.025
IHLOC Folk Medicine	-.003	.972	.05/1	.05

Note. * $p < .001$

To summarize the findings displayed in Table 7, the results showed that despite low p -values for several of the variables, only one out of the 42 health behaviors was found to present a significant relationship. While IHLOC showed a negative relationship with over-the-counter medicine usage, $r(164) = -.293, p < .000$, suggesting that as IHLOC scores were raised the usage of over-the-counter medicine was reduced, the relationship was weak.

Based on the overall lack of significant correlations for Research Question 2, the null hypothesis, H_{02} (There is no statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control in individuals suffering from MS), was accepted and the research hypothesis, H_{12} (There is a statistically significant correlation between the usage of complementary and alternative medicine methods, and health locus of control in individuals suffering from MS) was rejected. The only exception to the finding is for the correlation between IHLOC and over-the-counter medicine usage. For this one relationship, the null hypothesis was rejected while the research hypothesis was accepted.

The third research question in the current study was, “What is the correlation between the type of health locus of control (internal, powerful others, chance) of individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers?” This research question sought to gather information about how individuals diagnosed with MS perceive autonomy support on the part of their healthcare providers and how this perception might be related to health locus of control. To answer the final research question, the participants completed the Health Care Climate Questionnaire that was developed by Williams, et al. (2005). The researcher selected the Health Care Climate Questionnaire because of its ability to effectively assess the degree that patients believe their physician to be autonomy supportive (Williams, et al.). The scale consisted of six questions and is measured using a seven-point Likert scale format with answers ranging from “strongly disagree” (scored as one) to “strongly agree” (scored as seven). Answers from the six questions were averaged in order to find the perceived autonomy score for each participant.

Because the measurement tool utilized to measure was a continuous scale, a Pearson product moment correlation was again used to determine whether (a) a significant relationship existed between HLOC and measured physician autonomy support and (b) the strength of the relationship between the variables. Unlike the previous two research questions, only three correlations were performed for each participant. Therefore, in order to accept or reject the hypothesis that there was a significant correlation between health locus of control and perceived autonomy, the researcher utilized the generally accepted significance level of $p < .05$. Table 8 displays the data analysis information regarding the correlation between the type of health locus of control and perceived autonomy support.

Table 8

The Mean, Standard Deviation, Pearson r Correlation and p -Value Information for Perceived Autonomy Support

	<i>M</i>	<i>SD</i>	IHLOC	POHLOC	CHLOC
Perceived Autonomy	2.5306	1.37431			
<i>r</i>			.019	-.155	-.117
Sig. (2-tailed)			.810	.052	.140

Note. Data based on $N = 159$.

Based on results displayed in Table 8, for each of the three types of health locus of control there was no significant relationship between the perceived autonomy support on the part of the participants ($M = 2.5306$, $SD = 1.37431$) from their healthcare providers, $r(159) = .019$, $p = .810$ for IHLOC, $r(159) = -.155$, $p = .052$ for POHLOC, and $r(159) = -.117$, $p = .140$ for CHLOC. Therefore, the null hypothesis for Research Question 3, (H_{03} : There is no statistically significant correlation between perceptions of autonomy support during health communication experiences with healthcare providers, and health locus of control in individuals suffering from MS) is accepted.

In summary, the purpose of this current study was to correlate the different types of health locus of control with the health outcomes, behaviors and perceptions of individuals diagnosed with MS. This was done, in part, to assist individuals suffering from MS with creating more desirable health outcomes for themselves and, in part, to potentially aid healthcare providers in communicating with their patients in a more health producing manner. The profile established through the results of the current study suggested that IHLOC was associated with better reported self-rated health, perceived general health,

emotional well-being, physical functioning, and social functioning; while also experiencing less pain, more energy, less fatigue, fewer emotional health limitations, and less use of over-the-counter medication. Powerful others health locus of control was associated with lower self-rated health, perceptions of reduced general health and emotional well-being. Chance health locus of control was also associated with lower self-rated health, perceptions of reduced general health and emotional well-being, but was also associated with more pain, less energy, more fatigue, less ability to function socially, and increased emotional health limitations.

Conclusions

The health locus of control profile established through the findings of the current study may potentially assist both patients and healthcare providers with understanding the uniqueness of intrapersonal communication as it relates to health beliefs and perceptions. The previous section supplied the findings encountered through the data collection and data analysis associated with each of the three research questions. The current section, transforms the findings into five specific impactful and meaningful conclusions designed to assist individuals suffering from MS with understanding how their intrapersonal communication may impact their health. The conclusions that will be discussed in this section are 1. self-rated health is connected to health locus of control 2. self-rated health is linked to specific health outcomes 3. poor self-rated health maintains a relationship with comorbidity 4. IHLOC is associated with beneficial health outcomes 5. IHLOC and increased self-rated health are associated with specific health behaviors and 6. no correlation exists between participants' perception of autonomy support and their health locus of control.

The first conclusion is self-rated health is connected to health locus of control. Specifically, the current study found that IHLOC presented a moderately strong negative relationship with self-rated health, $r_s(164) = -.483, p < .001$, suggesting that IHLOC was associated with better self-rated health. Additionally, POHLOC presented a weak relationship while CHLOC presented a moderate relationship, $r_s(164) = .247, p = .001$ and $r_s(164) = .389, p < .001$, respectively. These findings suggest that POHLOC and CHLOC were associated with reduced self-rated health. While this finding was expected, it is important to highlight the connection between health locus of control and self-rated health because repeated studies have shown that IHLOC is associated with beneficial health outcomes while POHLOC and CHLOC tend to be associated with poor health outcomes (Berglund, et al. 2014; Roddenberry & Renk, 2010; Skidmore, et al., 2014).

The second conclusion is self-rated health is linked to specific health outcomes. Table 9 displays the Pearson product moment correlation information regarding the relationship between self-rated health and health outcomes. This table is followed by a detailed summarization of the relationship.

Table 9

The Spearman rho Correlation and p-Value Information for the Correlation between Self-Rated Health and Health Outcomes

	Self-Rated Health	
	r_s	Sig. (2-tailed)
Energy/Fatigue	-.504	.000*
Emotional Health Limitations	-.343	.000*
Emotional Well-Being	-.469	.000*
General Health	-.819	.000*
Pain	-.553	.000*
Physical Functioning	-.655	.000*
Physical Health Limitations	-.464	.000*
Social Functioning	-.565	.000*

Note. Data based on $N = 159$. * $p < .001$

To summarize the findings displayed in Table 9, self-rated health was found to be significantly and negatively correlated with each of the eight measured health outcomes. The current study's measurement tool for self-rated health asked participants to rate their health a "1" if they perceived their health to be excellent, a "2" if they felt their health to be very good, a "3" if they believed their health to be good, "4" represented fair health, and a score of "5" signified poor health. When this rating information was applied to the data detailed on Table 9, it was discovered that the strongest of the eight relationships existed between self-rated health and the general health measurement. Therefore, as participants rated their health better (represented by lower numerical scores) their general

health scores grew higher indicating better perceived general health. This finding is not surprising considering the general health measurement is really an extension of the self-rated health measurement. Additionally, as participants rated their health better they also reported better physical functioning, social functioning, and emotional well-being. Fewer physical and emotional health limitations were reported by participants as better self-rated health was reported. Higher energy and less fatigue were also associated with better self-rated health. Finally, based on the scoring methods associated with the pain scale, higher numerical pain scores are equivalent to less pain experienced by the participant so that better self-rated health was associated with less pain.

While this relationship was not specifically reviewed through one of the research questions in the current study, additional data analysis regarding how the self-rated health of individuals diagnosed with MS correlated with health outcomes, was warranted by past research. The need to examine participants' self-rated health was initiated by Idler and Kasl (1995) when they discovered that individuals who smoked cigarettes were two times more likely to die than those individuals who did not smoke; while individuals who believed their health to be poor were seven times more likely to die than those who believed their health to be excellent. This study led to the consensus that the greatest predictor of future health and mortality is determined by what individuals believe about their health (Chen, et al., 2007; Idler & Kasl). Since Idler and Kasl, a great deal of research has been conducted regarding self-rated health and health outcomes. Table 1, located in the first chapter of this dissertation, shows how impactful self-rated health can be on individuals' health.

The third conclusion is that poor self-rated health maintains a relationship with comorbidity. A Spearman rho correlation performed between the variables of self-rated health and the number of diagnosed chronic illnesses found a significant and positive relationship between the two variables, $r_s(164) = -.373, p < .001$, suggesting that as self-rated health ratings improved (lower numerical ratings) the number of diagnosed chronic illnesses also remained low. Even though this conclusion is again unrelated to the current study's research questions, it exists as an important conclusion due to its potential direct impact on individuals diagnosed with MS. Past research has shown individuals diagnosed with MS tend to have a higher frequency toward comorbidity (Horton, Rudick, Hara-Cleaver, Marrie, 2010). The magnitude of this past finding regarding comorbidity and MS persuaded the researcher to complete further data analysis in the current study to determine the number of diagnosed chronic illnesses each participant possessed. The researcher found that out of the 184 participants that answered this survey question, 110 (59.8%) participants had only been diagnosed with one chronic illness, 40 (21.7%) had been diagnosed with two chronic illnesses, 19 (10.3%) had been diagnosed with three chronic illnesses, while six (3.3%) participants had been diagnosed with four, and, finally, nine (4.9%) participants had been diagnosed with five or more chronic illnesses. Stated another way, 40.2% of the 184 participants who completed this section of the survey reported they had been diagnosed with more than one chronic illness. By comparison, out of the 164 participants who completed the self-rated health question in the current study, 31.1% rated their health as either fair or poor.

These findings support past research that has repeatedly shown that individuals who perceive themselves as having poor health tend to be diagnosed with more than one

chronic illness (Chen, et al., 2007; Latham & Peck, 2012; Ramkumar, et al., 2009)

Latham and Peck discovered that for every unit of increase in self-rated health, participants were less likely to experience the on-set of chronic disease. For those individuals who reported a diagnosis of chronic disease at the start of their study and reported having high self-rated health, results showed that they were less likely to be diagnosed with additional chronic illnesses. Additionally, the researchers found that higher self-rated health ratings were associated with a decreased likelihood of disease diagnosis for coronary heart disease, diabetes, stroke, lung disease, and arthritis.

However, neurological disease, rheumatoid arthritis, cancer, depression (Molarius & Janson, 2002), chronic pain (Mäntyselkä, et al., 2003), epilepsy, diabetes (Manor, et al., 2001), coronary heart disease, and stroke (Jylhä, et al., 2006) are all common chronic illnesses found to be associated with poor self-rated health. Unfortunately, several of these chronic illnesses such as rheumatoid arthritis, chronic pain, depression, coronary heart disease, and diabetes are common comorbidities for individuals diagnosed with MS (Marrie, et al., 2015).

The fourth conclusion is IHLOC is associated with beneficial health outcomes. The current study sought to determine if a relationship existed between IHLOC and eight specific health outcomes commonly associated with MS. Table 10 displays the data analysis information regarding the significant correlations between IHLOC and health outcomes.

Table 10

Results Indicating the Significant Correlation between IHLOC and Health Outcomes

	<i>r</i>	Sig. (2-tailed)
IHLOC General Health	.489	.000*
IHLOC Pain	.353	.000*
IHLOC Energy/Fatigue	.300	.000*
IHLOC Physical Functioning	.248	.001*
IHLOC Emotional Well-Being	.369	.001*
IHLOC Emotional Health Limits	.244	.002**
IHLOC Social Functioning	.311	.000*

Note. See Table 6 for acceptable *p*-Values for the correlation between IHLOC and health outcomes based on the Hochberg Correction. *N* = 164. **p* < .001, ***p* = .002

To summarize Table 10, seven out of the eight measured health outcomes were found to have a significant and positive relationship with IHLOC. Table 10 begins by illustrating the physical health outcomes that were found to be significantly correlated with IHLOC. The correlation between IHLOC and general health was found to be the strongest correlation. Data suggested that as participants rated themselves higher in IHLOC, they also rated their general health better. A positive correlation existed between IHLOC and pain. Based on the scoring methods associated with the pain scale, higher numerical pain scores are equivalent to less pain experienced by the participant. Therefore, in the current study, higher IHLOC ratings were associated with less pain. Higher IHLOC ratings were also associated with higher levels of energy and less fatigue. Finally, in the category of physical health, higher ratings of IHLOC were found to be associated with better physical functioning.

So what do these findings regarding physical health outcomes mean for individuals who have been diagnosed with MS? Even though the measurement tool utilized for the current study was not designed to measure health outcomes associated specifically with MS, many, if not all, of its measured outcomes could potentially impact those individuals who have been diagnosed with MS. Two specific impacts are focused on here. The first impact is that the correlation between IHLOC and general health is really an extension of the conclusion that IHLOC is associated with better self-rated health. This is due to the fact that incorporated into the general health portion of the questionnaire is the self-rated health question. Many positive health outcomes and behaviors, such as a decreased likelihood of disease diagnosis for coronary heart disease, diabetes, stroke, lung disease, arthritis, and a less probability of comorbidity (Latham & Peck, 2012) are associated with better perceived health along with positive primary care experiences (Shi, et al., 2002), less obesity (Okosun, et al., 2001), and better diets (Manor, et al., 2001). Additionally, as discussed in the previous conclusion, the current study found significant relationships between how individuals perceive their health and their health outcomes. Therefore, it is possible that if individuals perceive themselves as experiencing good health they may also experience better health outcomes.

The second impact is how the relationship between IHLOC and health outcomes influence how individuals diagnosed with MS experience common symptoms such as spasticity, numbness, weakness, dizziness, tremors, and seizures (“MS Symptoms,” n.d.). The current study’s findings, illustrated in Table 10, shows the correlation between IHLOC and improved health outcomes such as less pain, more energy, and better physical functioning. Past research (Berglund, et al. 2014; Roddenberry & Renk, 2010;

Skidmore, et al, 2014) has also concluded that there is a relationship between individuals perceiving that they are in control of their own health and the type of physical health outcomes; therefore, it may be possible for individuals to gain relief from symptoms of MS by gaining more understanding about their health locus of control.

As Table 10 illustrates, two components of emotional health were also found to be significantly associated with IHLOC. Individuals who rated themselves higher in IHLOC also rated themselves as possessing more emotional well-being. Along with that, individuals who rated themselves higher in IHLOC also reported fewer emotional health limitations. Symptoms of MS are not strictly physical. Individuals who have been diagnosed with MS may experience cognitive changes that include the inability to learn and remember information, difficulty focusing attention, trouble organizing and problem solving, and issues with noticing or identifying with their environment. Additionally, individuals diagnosed with MS face a greater chance than the general population or individuals who have been diagnosed with other chronic conditions at suffering from depression. Finally, individuals diagnosed with MS also may contend with basic emotional changes such as mood swings, irritability, and uncontrollable laughing and crying (“MS symptoms,” n.d.). However, the current study along with past studies, have given hope to individuals diagnosed with MS through study results that suggest emotional health may improve by believing in internal personal power over health (Moshki, et al., 2013; Rowe, et al., 2005; Skidmore, et al.).

Finally, the current study found that IHLOC was positively correlated with social functioning. As individuals rated themselves higher in IHLOC they also rated themselves higher in their ability to function well within their social environments. It is

understandable that when individuals are suffering from such MS symptoms as fatigue, pain, loss of bladder control, vision loss, spasticity, tremors, numbness, weakness, mood changes, and/or depression, managing a healthy social life may be difficult (“MS Symptoms,” n.d.). However, as difficult as being able to function socially may be, past research has found that individuals who perceive themselves as having positive social connections also have more positive emotions which then leads to better physical and mental health (Hill, Rand, Nowak and Christakis, 2010; Kok, et al., 2013; Zhang and Ta, 2009). In summary, individuals in the current study who rated themselves higher in IHLOC also rated themselves as having overall better health, less pain, more energy with less fatigue, better physical health with fewer limitations, better emotional health with fewer limitations, and now individuals who rated themselves higher in IHLOC have also rated themselves as having a better ability to function socially.

The fifth conclusion is IHLOC and increased self-rated health are associated with specific health behaviors. Data analysis for Research Question 2 that examined the relationship between the type of health locus of control of individuals suffering from MS and their usage of 10 specific types of CAM treatments alongside four types of more traditional medical treatments revealed a significant negative correlation between individuals with higher IHLOC ratings and over-the-counter medication usage, $r(164) = -.293, p < .000$. When the researcher extended the analysis to include self-rated health, several more significant correlations with health behaviors were discovered. Table 11 displays the Spearman’s rho correlation information regarding the relationship between self-rated health and health behaviors. This table is followed by a detailed summarization of those relationships.

The types of CAM usage measured in the current study included acupuncture, counseling, homeopathy, hypnosis, meditation, naturopathic medicine, nutritional interventions, other folk remedies, prayer, and yoga. The areas of traditional medicine usage included general practice, hospital, over-the-counter medications, and pharmaceuticals. Table 7 displays the different correlations that each of the treatment options maintained with the different types of locus of control. While several of the correlations exhibited low p -values that normally would have been accepted as significant findings, the fact that 42 correlations were performed required the use of a Hochberg Correction in order to avoid a type I error, thus the p -value was lowered to a point where only one significant correlation could be found.

Past studies may shed light on why individuals diagnosed with MS who possess higher IHLOC ratings might choose to use less over-the-counter medicine. Individuals with higher ratings of IHLOC believe that health outcomes are the result of their own behavior (Rotter, 1966) and tend to seek out different ways to be in control of their health (Wallston, et al., 1978). A decreased use of over-the-counter medication could indicate that individuals with higher ratings of IHLOC are maximizing their sense of self-efficacy in regards to coping with their MS by finding treatment alternatives (Lorig, et al., 1989). Additionally, as previously stated, IHLOC is associated with hope and optimism (Rowe, et al., 2005). Hope and optimism are elements of a positive emotional style (Cohen, et al., 2006) that has been shown in the past to reduce reported pain for individuals diagnosed with other chronic illnesses (Potter, et al., 2005); therefore, potentially reducing the need for over-the counter medication.

Table 11

Spearman's rho Correlation Information for Self-Rated Health and Health Behaviors

	Self-Rated Health	
	r_s	Sig. (2-tailed)
Acupuncture Usage	-.172	.028***
General Practitioners Usage	.256	.001*
Hospital Usage	.207	.008**
OTC Medicine Usage	.156	.046***
Pharmaceutical Usage	.306	.000*
Yoga Usage	-.162	.038***

Note. $N = 164$. * $p < .001$, ** $p < .01$, *** $p < .05$

To summarize Table 11, self-rated health was negatively correlated with acupuncture and yoga usage, suggesting that there is a relationship between individuals who rated their health better (lower numerical ratings) and the tendency to use both acupuncture and yoga more. Alternatively, individuals who rated their health better also reported less usage of general practitioners, hospitals, over-the-counter medication, and pharmaceutical medication, as highlighted by the positive correlation between the variables. The current study's findings support past research that has found increased self-rated health to be correlated with positive health behaviors that were inclusive of CAM treatments (Chang, et al., 2011; Chen, et al., 2007; Ramkumar, et al., 2009

The sixth conclusion is no correlation exists between participants' perception of autonomy support and their health locus of control. Based on the findings, the three types of health locus of control showed no significant relationship between the perceived

autonomy support on the part of the participants from their healthcare providers, $r(159) = .019, p = .810$ for IHLOC, $r(159) = -.155, p = .052$ for POHLOC, and $r(159) = -.117, p = .140$ for CHLOC. Research Question 3 was developed to establish a connection between individuals suffering from MS and their perceptions of autonomy support during health communication experiences with healthcare providers. Perceived autonomy is achieved when patients feel as though they are self-directing or have achieved a state of independence when managing their healthcare (Autonomy, n.d.). Individuals who seek autonomy are active participants in their health care, pursue answers to their healthcare questions, provide detailed information about their physical and mental health to their medical providers, and express opinions, preferences, and concerns about their health and healthcare (Street & Haidet, 2011).

According to the alternative hypothesis associated with Research Question 3, the researcher expected to find a statistically significant correlation between patients' perceptions of autonomy support during health care communication experiences with healthcare providers, and health locus of control (internal, powerful others, or chance) in individuals suffering from MS. Despite past research suggesting that individuals who rate themselves higher in IHLOC also reported higher levels of health care satisfaction, a greater adherence to medical treatments, and improved perceived health outcomes when the autonomy support offered by physicians matches the desired level of autonomy by patients (Street, et al., 2009), the current study found no significant correlations between individuals diagnosed with MS and their perceived autonomy support from their health care providers.

In summary, the current study aimed at developing a profile of health locus of control that could potentially assist both patients and healthcare providers with understanding the uniqueness of intrapersonal communication as it relates to health beliefs and perceptions. Through the process of analyzing the findings related to the three research questions and through analyzing additional data gathered in relation to the overriding dissertation topic of intrapersonal communication and its correlation to health, six specific and impactful conclusions designed to assist individuals suffering from MS with understanding how their intrapersonal communication may be related to their health have been established. These six conclusions include 1. self-rated health is connected to health locus of control 2. self-rated health is linked to specific health outcomes 3. poor self-rated health maintains a relationship with comorbidity 4. IHLOC is associated with beneficial health outcomes 5. IHLOC and increased self-rated health are associated with specific health behaviors and 6. no correlation exists between participants' perception of autonomy support and their health locus of control. Each conclusion supports the findings of past research, while adding new knowledge that is specifically focused on individuals who have been diagnosed with MS.

Implications and Recommendations

The previous two sections of this chapter explained the findings and the conclusions of the study. The current section develops implications and recommendations of the current study based on those findings and conclusions. This section first contains a discussion of the two theoretical implications that include 1. the addition to the body of knowledge regarding the relationship between self-rated health and health outcomes through findings that show participants who rated their health better, experienced better

general health, physical functioning, social functioning, and emotional well-being and 2. the addition to the body of knowledge through findings that show IHLOC to be associated with better emotional well-being, general health, social functioning, and physical functioning, along with more energy, less fatigue and pain, and fewer emotional health limitations. Secondly, this section discusses the two practical implications that include 1. to have patients complete the self-rated health question and MHLOC scale as part of their clinical patient profile so that physicians could gain more insight into patients' health beliefs, and, by extension, their future health and 2. to utilize the findings that suggest health locus of control may have an impact on physical and mental health to design and implement participatory educational intervention programs. These implications are discussed below and will be followed by a discussion of the current studies recommendations.

The first theoretical implication of the current study is the addition to the body of knowledge regarding the relationship between self-rated health and health outcomes through findings that show participants who rated their health better, experienced better general health, physical functioning, social functioning, and emotional well-being. They also experienced fewer physical and emotional health limitations along with higher energy, less fatigue, and less pain. The self-rated health measurement consists of one question asking individuals to rate their health from a "1" representing excellent perceived health to a "5" signifying poor perceived health. Previous research has shown that the answer to this one question is an important predictor of future health, comorbidities, and mortality (Chen, et al., 2007; Idler & Kasl, 1995; Latham & Peck, 2012).

The second theoretical implication of the current study is the addition to the body of knowledge through findings that show IHLOC to be associated with better emotional well-being, general health, social functioning, and physical functioning, along with more energy, less fatigue and pain, and fewer emotional health limitations. Additionally, POHLOC was correlated with poor perceptions of general health and emotional well-being; while CHLOC was negatively associated with general health, energy/fatigue, emotional well-being, social functioning, emotional health limitations, and pain. The health locus of control measurement consists of 18 questions and is set up in a six-point Likert scale format with answers ranging from “strongly disagree” (scored as one) to “strongly agree” (scored as six). The scale measures for three different types of health locus of control: IHLOC, POHLOC, and CHLOC (Wallston, et al., 1978). Research has shown that IHLOC is the most beneficial type of health locus of control due to its relationship with several beneficial health outcomes such as less occurrences of stress, anxiety, depression, physical illness (Roddenberry & Renk, 2010), post-partum depression (Moshki, et al., 2013), breast cancer (Rowe, et al., 2005) and disease burden (Berglund, et al., 2014).

The first practical implication of the current study is to have patients complete the self-rated health question and MHLOC scale as part of their clinical patient profile so that physicians could gain more insight into patients’ health beliefs, and, by extension, their future health. Both the self-rated health measurement and the health locus of control measurement potentially give information regarding what individuals believe about their health and how those beliefs may impact future health. This information becomes especially valuable when physicians can utilize it to customize patient care. This may be

beneficial to physicians who currently spend 828 hours per year treating patients who have one controlled chronic illness versus 2484 hours per year treating individuals who suffer from comorbidity or uncontrolled chronic illness (Beasley, et al., 2004). It has already been established in this chapter that individuals diagnosed with MS tend to have a higher frequency of comorbidity (Horton, et al. 2010, & Marrie, et al., 2010); therefore, with one-on-one time being a rare commodity for physicians who treat individuals diagnosed with MS and comorbidity a realistic probability, gaining valuable insight into patients just by reviewing a couple of health belief measurement scores in their chart could be a beneficial and efficient addition to the way physicians treat their patients.

The implication of utilizing the self-rated health and health locus of control measurements in clinical practice served as support for similar past suggestions. The World Health Organization, the European Commission, and the Centers for Disease Control and Prevention suggest the use of self-rated health for both research and clinical use as a measure of health status (Chen, et al., 2007; Farkas, Nabb, Zaletel-Kragelj, Cleland, & Lainscak, 2009). Additionally, while the Multidimensional Health Locus of Control scale measurement is primarily utilized as a research instrument, Wallston and Wallston (1981) noted that one of the most important usages of the MHLC scale was to help individualize patient healthcare through the understanding of an individual's health locus of control beliefs. The researchers advocated for the use of the MHLC scale as a clinical tool rather than just a research instrument by citing the example of a wellness center in Colorado that administers the scale as a part of new patient profiles.

The second practical implication of the current study is to utilize the findings that suggest health locus of control may have an impact on physical and mental health to

design and implement participatory educational intervention programs. As a reminder, MS is a disease of the central nervous system which is made up of the brain, optic nerves, and the spinal cord. Symptoms of MS become present when the outer covering of the nerves and the nerves themselves become damaged causing delays in messages being sent from the brain and spinal cord to the other parts of the body. Four hundred thousand people in the United States have been diagnosed with MS. An estimated 2.5 million individuals worldwide live with MS. While symptoms vary from individual to individual, some of the more common symptoms include, but are not limited to, balance problems, bladder dysfunction, cognitive changes, dizziness, fatigue, numbness, speech difficulties, swallowing disorders, and visual impairments (“MS Overview,” 2014).

The current study has shown that there is a relationship between individuals who perceive that someone or something other than themselves has power over their health and an overall sense of poor health, a lack of emotional well-being, and sense of daily limitations brought on by poor emotional health. While not specifically addressed in the current study, it is not difficult to understand that contending, sometimes on a daily basis, with the previously listed symptoms of MS could lead individuals to the perception of having a loss of control over their health along with experiencing the breakdown of their emotional well-being.

If further proof of the difficulties associated with coping with MS is needed, MS is classified as a chronic illness. Chronic illness is defined as a non-communicable disease that develops over a long period of time, does not resolve itself immediately, and can be incurable. (Centers for Disease Control, 2009). Individuals who suffer the symptoms of MS also fall prey to the unique set of complexities that are attributed to chronic illness

sufferers. For individuals diagnosed with a chronic illness, the chance of suffering from depression ranges from 23% to 41% depending on their chronic illness morbidity (Gunn, et al., 2010). Seventy percent of suicides stem from those who constantly live with physical illness or constant pain (Mackenzie & Popkin, 1987). Approximately 33 million chronic illness sufferers have their daily lives impacted by their illnesses and seven in 10 deaths are caused by chronic illness (Centers for Disease Control, 2012). These staggering statistics lend additional evidence to the understanding that individuals diagnosed with MS may perceive themselves as having a lack of control over their health and they certainly help to highlight the lack of emotional well-being that can go along with that perceived lack of control.

With all of that being said, there is hope for more positive health outcomes to emerge. As discussed, the current study found that participants who had the perception that they were in control of their own health and health decisions reported more energy and less fatigue, less overall pain, better general health, an overall better ability to function physically, a sense of emotional well-being with fewer emotional health limitations, and higher levels of social functioning. However, in the face of coping on a daily basis with MS symptoms and the staggering chronic illness statistics, how do individuals possess IHLOC and, by extension, the beneficial health outcomes that may go with it?

The design and implement of participatory educational intervention programs may be the answer. Wallston and Wallston (1981) discussed, as part of the development of the MHLOC scale, that the tool could be utilized in the development and evaluation of health education and intervention programs for patients. Research has shown that these educational intervention programs can be successful at changing the HLOC associations

of individuals (Bastani, et al., 2010; Moshki, et al., 2013). Berglund, et al. (2014) suggested that if a person could be taught to accept internal locus of control then positive changes in a person's health could be a reasonable expectation. The researchers were quick to mention that locus of control is viewed as a personality trait and therefore could be difficult to change. However, understanding that each type of health locus of control has different types of health outcomes, behaviors, and perceptions associated with them may be a motivational tool that can be utilized by individuals to obtain optimal health.

The current study was designed to investigate whether there was a relationship between the health beliefs of individuals who had been diagnosed with MS and their health outcomes, behaviors, and perceptions of autonomy support. While the current study was able to produce significant findings in relation to the research questions and beyond, the study was subject to its limitations. However, through these limitations came several recommendations that may benefit future studies focusing on health beliefs, MS, and chronic illness. These recommendations include

- utilizing Facebook, Twitter, and snowball sampling when designing an online recruitment strategy
- use survey instruments that are more clearly representative of and understood by individuals who have been diagnosed with MS
- limit the number of correlations performed for each research question
- take the disabilities of the participants into consideration when designing an online methodology and

- future research should focus on the current researcher's finding that there is a relationship between individuals who have been diagnosed with MS who reported their health to be either fair or poor and comorbidity
- the findings and conclusions of this study be carried forward to other chronic illnesses or to chronic illness in general through future research.

These recommendations are discussed below.

The first recommendation was to utilize Facebook, Twitter, and snowball sampling when designing an online recruitment strategy. The lack of a readily accessible MS population on the part of the researcher made proceeding with the current study an initial challenge. The plan to utilize technology as a way to recruit participants and to conduct a survey began to take shape once the researcher discovered that nearly 90% of American adults currently access the internet (Pew Research Center, 2014a) and over 70% of adults utilize social media, making the online environment an effective place for recruiting research participants (Pew Research Center, 2014b). Additionally, the results of a study examining the use of the internet environment as a recruitment tool has shown that the development of online social communities that are based around specific characteristics, interests or the need for support can be an effective means of gathering study participants (O'Connor et al., 2013).

Based on that information, the researcher developed a unique methodology aimed at using a completely online, social media approach to contacting a population of individuals who had been diagnosed with MS. Multiple Sclerosis blogs were sought out and contacted, Craigslist postings were entered onto the volunteer section of the website, Facebook participation requests were posted to the researchers personal Facebook page

along with many Facebook pages devoted specifically to MS and chronic illness, and, finally, tweets were posted on a Twitter page designed solely for the current study and tweets were sent out to several hashtags relating to MS and chronic illness.

The final results of pursuing participants via social media was successful. In total, 164 participants were recruited through social media for the current study. However, the breakdown of where the participants were recruited from and the amount of effort exerted when compared to the number of successful participants recruited was not equal. Specifically, blogs garnered eight participants, Craigslist brought in 14 participants, Facebook brought in the most with 85 participants, Twitter accumulated 28 participants, and an additional 29 participants were brought in through snowball sampling. However, in order to find participants through MS blogs, the researcher had to contact blog authors or the blog administrators, educate them about the study, and then hope that they would either post the survey link for their readers to use or give permission for the researcher to post study information for the readers to connect with. Craigslist required the researcher to post one participant request in numerous cities throughout the United States and then to continually follow up with those posts and reactivate them once they were deemed as no longer active on the website. For both methods, labor was very intensive and produced few results. Facebook and Twitter, on the other hand, were much less complicated and less labor intensive to use and produced more results. Additionally, actively seeking a snowball sample, created when individuals like, share, retweet, or forward on in some other way the original participation request so that other individuals may review it, was just as productive at recruiting participants as Twitter making it also a viable option for an online methodology.

The second recommendation was to use survey instruments that are more clearly representative of and understood by individuals who have been diagnosed with MS. The current study utilized the 36-Item Short Form Health Survey that measured health outcomes that are very similar to those experienced by individuals who have been diagnosed with MS. However, the health outcomes experienced by individuals diagnosed with MS can be much more varied and expansive than what the current research measurement tool focused on. Future research studies may want to consider utilizing or developing a measurement tool specifically designed for the various nuances of MS.

Similarly, the Health Care Climate Questionnaire was used in the current study to measure individuals perceived autonomy support from their physicians. No correlation was found in the current study between any type of health locus of control and participants' perceived autonomy support from their physician. Potential confusion associated with the measurement instrument may have hindered the ability to find a correlation between the variables. Individuals diagnosed with MS tend to have more than one physician. While this survey can measure the perceived autonomy support received from one physician, it is also designed so that participants can utilize the questionnaire to rate their perceived autonomy support from their team of physicians. The specifications of how to proceed with this questionnaire were left unclear and up to the participant's discretion. This lack of clarity in how the participants were to address the Health Care Climate Questionnaire may have left some unsure of which doctor they were to be considering while completing this section of the survey. Future researchers may want to consider providing a more structured instructional set if utilizing this questionnaire.

The third recommendation was to limit the number of correlations performed for each research question. For Research Question 2 in the current study, a total of 42 correlations were completed, resulting in the need for a Hochberg Correction to be performed in an effort to avoid making a type I error. This process reduced the acceptable *p*-value considerably so that finding significant relationships between the variables became nearly impossible. Future researchers may consider altering the methodology when examining the relationship between the types of health locus of control and the different traditional and CAM treatments. For example, researchers could focus their study solely on one type of health locus of control or researchers could reduce the number of conventional and CAM treatments used as a dependent variable. Future research could benefit from tightening the focus on how health locus of control relates to health behaviors.

The fourth recommendation was to take the disabilities of the participants into consideration when designing an online methodology. Multiple Sclerosis is a debilitating disease that can affect physical abilities such as mobility, eyesight, and cognitive ability such as comprehension, speech and the ability to express thoughts and ideas (“MS symptoms,” n.d.). Some of these disabilities may have limited participation in the current study. This particular situation was an issue for the current study. Two respondents reported that they themselves had not been diagnosed with MS, but were caretakers for individuals who had been diagnosed. Because it was unknown whether the caretakers were answering for those in their care or were giving their perception of what they witnessed their patients going through, their data was purged. Future studies involving online surveys and individuals diagnosed with MS may want to include the option of

allowing caregivers to complete surveys for individuals who are physically unable to participate.

The fifth recommendation was that future research should focus on the current researcher's finding that there is a relationship between individuals who have been diagnosed with MS who reported their health to be either fair or poor and comorbidity. The assumption is that individuals who have been diagnosed with multiple chronic illnesses simply are not as healthy as individuals who have only been diagnosed with one chronic illness. However, it is unclear if comorbidity impacts perceptions of health locus of control and self-rated health. Therefore, the researcher recommends that future research evaluate the health locus of control and self-rated health of individuals diagnosed with only MS and those individuals who have been diagnosed with MS and additional chronic illnesses in effort to determine if a relationship exists between comorbidity and health beliefs and perceptions, and, if so, how that relationship correlates with the physical and emotional health status of those individuals.

Finally, it was recommended that the findings and conclusions of this study be carried forward to other chronic illnesses or to chronic illness in general through future research. The current study focused on one little niche in the world of chronic illness with the hopes of having the ability to generalize the results to other individuals who may suffer from different chronic illnesses. Therefore, it is the recommendation of the researcher that the current study be replicated in relation to how health locus of control relates to any and all chronic illness so that a broader understanding of how health beliefs interact with health outcomes, health behaviors, and health perceptions can begin to be constructed.

Summary

“What goes on in a person’s head-the thoughts and emotions-can have a dramatic effect on the onset of some diseases, the course of many, and the management of nearly all.” (Sobel, 1995, p. 237)

This dissertation began with a spot of numbness on the bottom of the author’s foot and continued on a journey of discovery, inquiries, methodologies, and conclusions. Based on the author’s diagnosis of MS, the dissertation became focused on the four hundred thousand people in the United States who have been diagnosed with MS and the estimated 2.5 million individuals worldwide who live with MS. With two hundred new cases of MS diagnosed each week (Pietrangelo, 2014) and 10,000 new cases diagnosed each year (“MS Overview,” 2014) there is a need to obtain a new understanding of how health is acquired and maintained. In the first chapter of this dissertation the question was asked if there was a possibility that the future of our health lies not in medicine bottles and hospital beds, but instead, in our minds. It was from this question that this study was constructed.

To begin, intrapersonal communication was defined as the soundless, inner speech (Jemmer, 2009) that individuals use to communicate to themselves about themselves and their world (Castaneda, 1999). Intrapersonal communication arises from conscious perceptions and emotional experiences. Individuals utilize intrapersonal communication to develop thoughts, build beliefs, understand emotions, internalize and make sense of the outside world, to develop social skills (Sokolov, as cited in Jemmer) and to construct personal health beliefs that individuals use to create the health that they experience (Dossey, 2001).

With questions arising about whether intrapersonal communication could indeed impact the physical and emotional health of individuals diagnosed with MS, it became the purpose of the current study to first measure participants health beliefs by utilizing the MHLOC survey and then to correlate the different types of health locus of control with the health outcomes, behaviors and perceptions of individuals diagnosed with MS in order to assist these individuals with creating more desirable health outcomes for themselves and to potentially aid healthcare providers in communicating with their patients in a more health producing manner. This methodology utilized social media and online communities to seek out participants and gathered data using an online survey website to administer the three surveys, the 36-Item Short Form Health Survey, the self-report Complementary and Alternative Medicine (CAM) and Traditional Medicine Usage Survey, and the Health Care Climate Survey, used to determine health outcomes, behaviors, and perceptions of autonomy support.

In the final step of this journey, statistically significant answers to the research questions were found. These findings suggested that IHLOC was associated with better reported self-rated health, perceived general health, emotional well-being, physical functioning, and social functioning; while also experiencing less pain, more energy, less fatigue, fewer emotional health limitations, and less use of over-the-counter medication. Powerful others health locus of control was associated with lower self-rated health, perceptions of reduced general health and emotional well-being. Chance health locus of control was also associated with lower self-rated health, perceptions of reduced general health and emotional well-being, but was also associated with more pain, less energy, more fatigue, less ability to function socially, and increased emotional health limitations.

Additional significant findings, unrelated to the research questions, regarding how self-rated health impacted the health outcomes and behaviors of participants was discovered and reported also.

Part of the purpose of the current study was to correlate the different types of health locus of control with the health outcomes, behaviors and perceptions of individuals diagnosed with MS. As the results indicate, this was accomplished successfully. For the second part of the research study's purpose, assisting individuals with creating more desirable health outcomes for themselves and to potentially aid healthcare providers in communicating with their patients in a more health producing manner, the task is just beginning. Implications of the current study suggested that the MHLOC scale and self-rated health scale be used in the clinical setting to help health care providers with understanding patients' health beliefs better and that participatory educational intervention programs be designed and introduced so that patients could learn more about the impact their intrapersonal communication has on their health. That is just a start, though. It would appear that thoughts, perceptions, emotions, and beliefs do impact health, however, more research aimed at providing intrapersonal communication help and support for those individuals diagnosed with MS and other chronic illnesses is needed so that the beneficial outcomes found in the current research continue to extend far beyond the pages of this dissertation.

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APPENDIX A

Demographics Survey

Demographic Information

To begin the survey, please tell us a little bit about yourself by answering the following background information questions.

1. What is your age?

18-25

26-40

41-55

55 or older

2. What is your gender?

Male

Female

3. What is the highest level of education completed?

Grammar School

High School or Equivalent

Some College

Bachelor's Degree

Graduate/Professional Degree

Other

4. How many chronic illnesses have you been diagnosed with?

1

2

3

4

5 or more

5. How long have you lived with a chronic illnesses?

0-12 months

1-2 years

2-4 years

5-10 years

10-20 years

20 or more years

6. How did you hear about this study?

MS Blog

Craigslist

Facebook

Twitter

APPENDIX B

Multidimensional Health Locus of Control Scale

Multidimensional Health Locus of Control Scale

Form A

Instructions: Each item below is a belief statement about your medical condition with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item we would like you to circle the number that represents the extent to which you agree or disagree with that statement. The more you agree with a statement, the higher will be the number you circle. The more you disagree with a statement, the lower will be the number you circle. Please make sure that you answer **EVERY ITEM** and that you circle **ONLY ONE** number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

1=STRONGLY DISAGREE (SD)

2=MODERATELY DISAGREE (MD)

3=SLIGHTLY DISAGREE (D)

4=SLIGHTLY AGREE (A)

5=MODERATELY AGREE (MA)

6=STRONGLY AGREE (SA)

1. If I get sick, it is my own behavior which determines how soon I get well again.
2. No matter what I do, if I am going to get sick, I will get sick.
3. Having regular contact with my physician is the best way for me to avoid illness.
4. Most things that affect my health happen to me by accident.
5. Whenever I don't feel well, I should consult a medically trained professional.

6. I am in control of my health.
7. My family has a lot to do with my becoming sick or staying healthy.
8. When I get sick, I am to blame.
9. Luck plays a big part in determining how soon I will recover from an illness.
10. Health professionals control my health.
11. My good health is largely a matter of good fortune.
12. The main thing which affects my health is what I myself do.
13. If I take care of myself, I can avoid illness.
14. Whenever I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.
15. No matter what I do, I 'm likely to get sick.
16. If it's meant to be, I will stay healthy.
17. If I take the right actions, I can stay healthy.
18. Regarding my health, I can only do what my doctor tells me to do.

APPENDIX C

36-Item Short Form Health Survey

36-Item Short Form Health Survey

1. In general, would you say your health is:

Excellent

Very Good

Good

Fair

Poor

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago

Somewhat better now than one year ago

About the same

Somewhat worse now than one year ago

Much worse now than one year ago

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

1=YES, LIMITED A LOT

2=YES. LIMITED A LITTLE

3=NO, NOT LIMITED AT ALL

3. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports

4. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

5. Lifting or carrying groceries

6. Climbing several flights of stairs

7. Climbing one flight of stairs

8. Bending, kneeling, or stooping

9. Walking more than one mile

10. Walking several blocks

11. Walking one block

12. Bathing or dressing yourself

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

1=YES

2=NO

13. Cut down the amount of time spent on work or other activities

14. Accomplished less than you would like

15. Were limited in the kind of work or other activities

16. Had difficulty performing the work or other activities (for example, it took extra effort to complete work)

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

1=YES

2=NO

17. Cut down the amount of time you spent on work or other activities

18. Accomplished less than you would like

19. Didn't do work or other activities as carefully as usual

20. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with you normal social activities with family, friends, neighbors or groups?

1=NOT AT ALL

2=SLIGHTLY

3= MODERATELY

4= QUITE A BIT

5= EXTREMELY

21. How much bodily pain have you had during the past 4 weeks?

1=NONE

2=VERY MILD

3=MILD

4=MODERATE

5=SEVERE

6=VERY SEVERE

22. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

1=NOT AT ALL

2=A LITTLE BIT

3=MODERATELY

4=QUITE A BIT

5=EXTREMELY

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

1=ALL OF THE TIME

2=MOST OF THE TIME

3=A GOOD BIT OF THE TIME

4=SOME OF THE TIME

5=A LITTLE BIT OF THE TIME

6=NONE OF THE TIME

23. Did you feel full of pep?

24. Have you been a very nervous person?

25. Have you felt so down in the dumps that nothing could cheer you up?

26. Have you felt calm and peaceful?

27. Did you have a lot of energy?

28. Have you felt downhearted?

29. Did you feel worn out?

30. Have you been a happy person?

31. Did you feel tired?

32. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

1=ALL OF THE TIME

2=MOST OF THE TIME

3=SOME OF THE TIME

4=A LITTLE BIT OF THE TIME

5=NONE OF THE TIME

How true or false is each of the following statements for you?

1=DEFINITELY TRUE

2=MOSTLY TRUE

3=DON'T KNOW

4=MOSTLY FALSE

5=DEFINITELY FALSE

33. I seem to get sick a little easier than other people.

34. I am as health as anybody I know.

35. I expect my health to get worse.

36. My health is excellent.

APPENDIX D

CAM and Conventional Medicine Usage Questionnaire

CAM and Conventional Medicine Usage Questionnaire

During the past three months, how many times have you utilized the below medical modalities?

1=NOT USED

2=OCCASIONAL USAGE

3=ROUTINE USAGE

4=PRIMARY USAGE

1. Acupuncture

2. Counseling

3. General Practitioners

4. Homeopathy

5. Hospital

6. Hypnosis

7. Meditation

8. Naturopathic Medicine

9. Nutritional Medicine

10. Other Folk Medicine

11. Over the Counter

12. Medications

13. Pharmaceuticals

14. Prayer

15. Yoga

APPENDIX E

The Health Care Climate Questionnaire

The Health Care Climate Questionnaire

This questionnaire contains items that are related to your visits with your doctor.

Physicians have different styles in dealing with patients, and we would like to know more about how you have felt about your encounters with your physician. Please rate the following statements:

1=STRONGLY AGREE

2=SLIGHTLY AGREE

3=AGREE

4=NEUTRAL

5=DISAGREE

6=SLIGHTLY DISAGREE

7=STRONGLY DISAGREE

1. I feel that my physician has provided me choices and options.
2. I feel understood by my physician.
3. I am able to be open with my physician at our meeting.
4. My physician conveys confidence in my ability to make changes.
5. I feel that my physician accepts me.
6. My physician has made sure I really understand about my condition and what I need to do.
7. My physician encourages me to ask questions.
8. I feel a lot of trust in my physician.
9. My physician answers my questions fully and carefully.
10. My physician listens to how I would like to do things.

11. My physician handles people's emotions very well.
12. I feel that my physician cares about me as a person.
13. I don't feel very good about the way my physician talks to me.
14. My physician tries to understand how I see things before suggesting a new way to do things.
15. I feel able to share my feelings with my physician.

APPENDIX F

Craigslist Recruitment Advertisement

Title of Craigslist recruitment advertisement:

Do you have Multiple Sclerosis? Take a brief survey and \$WIN, Multiple Sclerosis Research Survey, and Need individuals diagnosed with Multiple Sclerosis for online survey.

Text of Craigslist recruitment advertisement:

Do you have Multiple Sclerosis and are 18 or older? I am looking for volunteers to take a survey that is examining whether there is a connection between what we think, feel, and believe and the physical health that we experience. This survey...found at <http://www.surveymonkey.com/s/lbreiermsstudy...> is a part of a dissertation. Ten minutes is the average time it takes to complete the survey, although many will complete it faster while others may take a little longer. Upon completion of the survey, participants will have the opportunity to register to win one of two \$50.00 Target gift cards. Thank you in advance for your help!

APPENDIX G

Facebook Recruitment Postings

FB friends...I need your help! I am currently in the process of recruiting participants for my doctoral dissertation research. This research explores how thoughts, emotions, and beliefs impact our health. Having been diagnosed with Multiple Sclerosis (MS) over 3 years ago, I couldn't think of a better group of people to focus my research on than those with MS. So here is what I am looking for...individuals 18+, who have been diagnosed with MS, and are willing to take a brief (10 minute) online survey.

If you do not fit this description that is ok...YOU CAN STILL HELP! Please like and/or share this post and encourage your FB friends to do the same. The more people who see this the better!

Link to the website (you can click on the monkey below):

<https://www.surveymonkey.com/s/lbreiermsstudy>

Participants who complete the survey can register to win one of two \$50.00 gift cards.

Thank you in advance for your help. It is very much appreciated.

Fellow MSers...I need your help! I am currently in the process of recruiting participants for my doctoral dissertation research. This research explores how thoughts, emotions, and beliefs impact our health. Having been diagnosed with Multiple Sclerosis (MS) over 3 years ago, I couldn't think of a better group of people to focus my research on than those with MS. So here is what I am looking for..... individuals 18+, who have been diagnosed with MS, and are willing to take a brief (10 minute) online survey.

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