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# Effects on Volunteer Peer Leaders Participating in a Health Promotion Program for U.s. Veterans

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EFFECTS ON VOLUNTEER PEER LEADERS PARTICIPATING IN A HEALTH  
PROMOTION PROGRAM FOR U.S. VETERANS

by

Leslie A. Patterson

A Dissertation Submitted in  
Partial Fulfillment of the  
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in Urban Education

at

The University of Wisconsin-Milwaukee

December 2013

ABSTRACT  
EFFECTS ON VOLUNTEER PEER LEADERS PARTICIPATING IN A HEALTH  
PROMOTION PROGRAM FOR U.S. VETERANS

by

Leslie A. Patterson

The University of Wisconsin-Milwaukee, 2013  
Under the Supervision of Professor Barbara Daley, PhD, RN

Health-focused peer-led interventions demonstrate success in reducing risk-related behaviors among participants with chronic illnesses, yet few researchers have explored the effects of such interventions on the health of volunteer peer leaders who participate in the interventions. Using data from the project entitled, *An RCT of a Peer Support Intervention to Improve Hypertension*, this study explored volunteer peer leaders' self-care behaviors that contribute to blood pressure control in two hypertension interventions for U.S. veterans. Inspection of the study's findings demonstrated that volunteer peer leaders improved their health habits and hypertension knowledge significantly more than the peer groups they served. Findings revealed no significant differences between the two types of peer leader interventions. The results of this study confirm previous research conducted in the field of volunteerism, peer support, group learning and health behavior change from the context of a veteran population. Future research is needed to extend the study's findings to additional groups, settings, geographic areas and with other disease conditions and illness.

## DEDICATION

This work is dedicated to the United States Armed Forces, its veterans and their families. I am grateful for my freedom and words cannot express my appreciation for your dedicated service and patriotic sacrifices. It has been an honor to work alongside many of you in our mutual commitment to improve the health and wellbeing of our U.S. veterans.

This work is also dedicated to my beloved parents, Jon and Mary, who endowed our family with an abundance of support and love necessary for an enduring foundation. Dad and Mom, your dedication and commitment to our family has taught me endless lessons about what it means to support and care for one another with a sincere and generous heart.

Next, I dedicate this work to my brother and sister, Daren and Samantha. One of my favorite roles in life is to be your sister and not because I like to boss you around! Truly, you are two of the best people I know and it gives me such comfort to know that we will always be there to support one another wherever life's journey takes us.

Last, this work is dedicated to the most important relationship in my life: my relationship with God. I may not know where life's road will take me, but I know that by keeping God first, I will arrive safely.

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Finally, I would like to thank all of the volunteer peer leaders in the POWER Program and beyond. I am continuously inspired by the dedicated work you do to enrich the quality of life of those you serve. The tireless work you provide is best embodied by the quote:

Do all the good you can. By all the means you can. In all the ways you can. At all the times you can. To all the people you can.

- John Wesley

## **Chapter 1: Introduction**

### **Background and Context of the Study**

Chronic diseases are serious, but often preventable, health problems affecting almost 50% of the U.S. population (CDC, 2012). This trend shows no sign of slowing and an estimated 150 million people will have a chronic illness by 2015 (Wu and Green, 2000). Specifically, hypertension affects over 30% of U.S. adults (CDC, 2012). Lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption are four health risk behaviors that largely contribute to illness and death related to chronic disease. Health care providers often provide self-care recommendations for patients to modify these health risk behaviors through lifestyle changes and self-management strategies.

Progress in clinical and behavioral interventions has created opportunities to improve the effectiveness of care of chronic illnesses such as hypertension, depression, diabetes and congestive heart failure (Wagner, Austin, Davis, Hindsmarsh, Schaefer et al., 2001). However, there is a vast line of research highlighting the complexities inherent to health behavior change (Champion and Skinner, 2008). Indeed, failure to commit to health behavior change through better self-management often includes more than the lack of motivation to do so. Ryan and Sawin (2009) state that “Personal efforts to engage in healthy behaviors is often derailed by social factors incongruent with health, such as neighborhoods unsafe for exercise, peer-group norms related to food choices and alcohol and expectations inherent in some family traditions” (p. 217). Further, many health care provider recommendations can include complex medication regimens, complicated self-monitoring tasks, and challenging diet and exercise programs (DiMatteo, Giordani, Lepper & Groghan, 2002). Multiple co-morbidities, physical limitations, lack of resources, and poor social supports are additional factors that can add another layer of

difficulty for patients to manage their chronic illnesses. Other factors influencing adherence to health care provider recommendations include the patient's:

- Health literacy level
- Socioeconomic status
- Cultural beliefs, values and behaviors
- Self-efficacy
- Social support from family members or friends
- Physical impairments

It is, therefore, not surprising that many persons with chronic diseases are non-adherent to their health care providers' recommendations. Unfortunately, poor adherence to self-management recommendations can have serious repercussions on the patient's health, as well as result in increased hospitalizations.

Research has demonstrated that managing chronic disease is best accomplished when health care extends from the health system to the patient's community. The Chronic Care Model (CCM) is a theoretical framework that encompasses this thought by focusing equally on the health system and environments outside of clinic walls. Glasgow, Funnel, Bonomi, Davis, and Beckham (2002) described the CCM as an evidence-based guide to improving chronic disease management.

The Chronic Care Model recommends evidence-based interventions within six areas known to improve processes of care and patients' outcomes: delivery system design, decision support, information systems, linkages to the community, self-management support, and organization of the health system. (Glasgow et al., 2002, p. 81).

The CCM stresses the importance of patient self-management of chronic disease and incorporates a community-patient interface (Bodenheimer, Wagner & Grumbach, 2002). The CCM underscores three key self-management practices linked to successful interventions. First, self-management education is critical as part of clinical care and extends to the community. The CCM challenges traditional views of the patient-provider relationship by emphasizing not only patient education, but also self-management education to teach the patient how to cope with his/her chronic disease through problem identification and action, greater self-efficacy, and pursuit of health education with peers; often in group settings (Bodenheimer, Lorig, Holman & Grumbach, 2002). Self-management is considered a central tenet of the CCM because of its significance in promoting an informed and activated patient that can lead to an improved patient-provider relationship. Second, standardized patient assessments are vital in identifying an appropriate regimen for the patient to self-manage his/her chronic disease. These assessments include measuring the patient's ability and skills to manage his/her condition, his/her level of self-efficacy, identifying barriers that may prohibit the patient's ability to self-manage, and recognizing assets and existing supports for the patient to utilize. The last key practice of successful self-management programs is the use of evidence-based interventions to provide the patient with ongoing support outside of medical care. Truly, one's health is not managed solely in a doctor's office, but rather in the community, social circles, and home where the patient resides. People living with chronic disease need more than medical treatment from their health care providers; they need support to initiate and maintain positive health behaviors throughout their daily lives. Studies show that sustained support will increase the likelihood for improved health

outcomes, lessen complications, and decrease hospitalizations (Rotter, Hall, Merisca, Nordstrom, Cretin, et al., 1998).

While the CCM works in theory, providing support to access resources outside the clinic can be challenging to implement and self-management of chronic disease is often an after-thought in disease management programs. Despite these deficits, research has shown that interventions that foster and mobilize peer support within a community are a promising way to improve self-management skills for patients with chronic illness (Lorig, Ritter, Villa, & Armas, 2009).

Health-focused peer support interventions can be effective largely in part because they provide peer support to individuals within communities that the peer supporter already belongs to. The fundamental benefit of peer support is best articulated in a white paper written by the Defense Centers of Excellence (2011):

Peer support is an intervention that leverages shared experience to foster trust, decrease stigma and create a sustainable forum for seeking help and sharing information about support resources and positive coping strategies. (p.4)

The Chronic Disease Self-Management Program (CDSMP) developed by Lorig and colleagues (1999) is one of the most notable peer support programs with demonstrated success for improving self-management and thereby controlling chronic disease through the use of trained peer leaders. In a randomized trial, CDSMP participants demonstrated improvement in several self-management skills, including exercise and communication with their physicians compared to a control group. Further, CDSMP participants also reported less fatigue and disability, as well as fewer hospital days (Lorig et al., 1999).

Other published studies have found that peer-led interventions improve health

knowledge, self-efficacy, health behaviors, and health-related quality of life among populations at risk for or living with various chronic health conditions (Auslander, Haire-Joshu, & Houston, 2002; Lorig et al., 2009; Parikh, Simon, & Fei, 2010; Philis-Tsimikas, Fortmann, & Lleva-Ocano, 2011; Webel, 2010). For example, improved hypertension self-efficacy within supportive communities (e.g., community walking clubs) has been useful in promoting behavior change (Heath, 2009; Lee, Han, Kim, Kim, et al., 2010). Peer support interventions have also been linked to a reduction in problematic health behaviors and depression (Joseph, Griffin, Hall & Sullivan, 2001; Malchodi, Oncken, Dornelas, Carananica, Gregonis, et al., 2003; Winzelberg, Classen, Alpers, Roberts, Koopman, et al., 2003). Similarly, peer support interventions are gaining popularity among those focused on decreasing HIV/STD transmission risk and improving HIV knowledge among active drug users or high risk teens (Webel 2010; Weeks, Li, & Dickson-Gomez, 2009). Peer-led interventions have contributed to reduced risk of substance use among adolescents; as well as improving knowledge, quality of life, and change in nutrition and exercise behavior change among low-income individuals (Becker, Bull, Fisher, & Miller, 2008; Chaudhary & Kreiger, 2007; Hudon, Fortin, & Soubhi, 2008; Ketola, Sipila, & Makela, 2000).

A popular characteristic of most peer support programs, like the CDSMP, is the use of trained laypeople, broadly recognized as community health workers (CHWs).

Community health workers are lay members of communities who work either for pay or as volunteers in association with the local health care systems in both urban and rural environments and usually share ethnicity, language, socioeconomic status, and life experiences with the community members they serve. They have been

identified by many titles such as community health advisors, lay health advocates, Promotoras, outreach educators, community health representatives, peer health promoters, and peer health educators. Community health workers offer interpretation and translation services, provide culturally appropriate health education and information, assist people in receiving the care they need, give informal counseling and guidance on health behaviors, advocate for individual and community health needs, and provide some direct services such as first aid and blood pressure screening (HRSA Community Health Workers National Workforce Study, 2007).

Operationalized by this definition, the CHWs in this research are referred to as “peer leaders”. Peer leaders can be effective because people often learn better when they are taught by peers with whom they share common experiences (Broadhead, Heckathorn & Altice, 2002; Wilson & Pratt, 1987). Peer leaders are often respected and knowledgeable members of the peer group “recognized by their friends, families, and neighbors as reliable sources of advice, help, and referrals” (Hinton, Downey, Lisovicz, Mayfield-Johnson, & White-Johnson, 2004, p. 21). The peer leader model can create a reciprocal relationship that provides an opportunity for members of similar peer groups to share experiences and knowledge with one another. The more homogeneous the peers are, the more likely it is that the support will lead to understanding, empathy and mutual help. Shared life experiences and demographic characteristics are consistent with findings from research on group therapy and support groups as a means of improving outcomes for patients with substance abuse problems and other chronic conditions (Blais & Weber, 2006).

There are also benefits associated with social support programs that use peer leaders that have chronic conditions in common with their peers. Lack of social support is a noted risk factor for increased morbidity and mortality, as well as poor self-management behaviors (House, 2001; Kawachi, Kennedy, Lochner, Prothrow-Stith, 1997; Rozanski, Blumenthal & Kaplan, 1999; Umberson & Montez, 2010). Further, social support has been linked to higher life expectancy, greater self-efficacy, better medication adherence, and higher self-reported health status (West, Kellner, & Moore-West, 1986). Germane to the current investigation, high levels of social support are associated with better chronic disease self-management (Glasgow & Toobert, 1988; Lloyd, Wing, Orchard & Becker, 1993; Riggiero, Spirito, Bond, Coustan, McGarvey, 1990; Tillotson & Smith, 1996).

Likewise, there is also evidence that *providing* social support is advantageous to one's personal life, sometimes beyond the benefits of *receiving* support. Hinton et al. (2004) notes:

At the individual level, CHWs themselves grow in their personal knowledge and abilities to provide advice, assistance, and referrals. Through training and meeting with the local steering committee members, CHWs are linked with local service providers and community leaders. This should then lead to better use of local services and to better health and nutrition practices....this can lead to an increased awareness of and responsiveness to community health needs, as well as improved interagency coordination of services. As CHWs are supported in implementing community activities, the community is strengthened. All these changes should lead to progress toward the ultimate goal of improved health status. (p.21)



The benefits of providing social support are well documented and include improved health, increased levels of life satisfaction and self-esteem, greater social networks, less depression, and more altruistic behavior (as cited in Hainsworth & Barlow, 2001; Oman, Thoresen & McMahon, 1999). Given that many peer leaders act in a voluntary manner, this trend also aligns with an abundance of literature that links volunteerism and civic engagement to positive health and wellbeing outcomes. Specifically, there has been a great deal of research on the relationship between volunteering and physical and mental health among older-aged people (Lum & Lightfoot, 2005). Lum and Lightfoot (2005) state that:

Volunteering by older people is often seen as a cornerstone to productive aging, as volunteering helps provide a service that has an economic and/or social value.

Many public and private initiatives encourage older people to remain involved in productive activities such as volunteering. There are frequent claims by these initiatives, as well as by the popular press, that formal volunteering not only provides a valuable service to the community but also actually improves mental and physical health, and perhaps even affects longevity. (p. 31)

The research represented in this dissertation is grounded by the following evidence:

1) The use of peer leaders can be an effective approach to assist community members to self-manage chronic disease, and 2) Volunteerism can be advantageous to one's health.

Armed by these statements, this research investigated how peer-led health interventions affect the health and wellbeing of volunteer peer leaders.

## Statement of the Problem

There is undisputable evidence that America is at a critical crossroads in the fight against chronic disease. Compounding the problem is the fact that chronic conditions are difficult to control. Coping with symptoms, disabilities, complex medication treatments, challenging lifestyle changes, and accessing health care are factors that may present obstacles for patients. Patient self-management is an integral component of surviving chronic illness; a thought articulated by the following quote:

Each day, patients decide what they are going to eat, whether they will exercise, and to what extent they will consume prescribed medications. Patients are in control. No matter what we as health professionals do or say, patients are in control of these important self-management decisions (Bodenheimer, Lorig, Holman & Grumbach, 2002, p. 2470)

Previously mentioned, well-designed and executed peer support interventions have been used to address a variety of chronic health conditions, such as diabetes, heart disease, and HIV (Heisler, 2010; Parry & Watt-Watson, 2010; Weeks et al., 2009). These interventions often rely on the use of volunteer peer leaders who are well connected to the community and share similar characteristics with the peer group. Much of the literature on peer support interventions that use peer leaders has focused on the ways in which such programs affect the participants' health and health care behaviors. Most research that does discuss the role of the peer leader emphasizes: 1) The need to recruit and select peer leaders from the communities that they will serve and 2) The outcomes that the peer support intervention had on the intervention targets.

And while there is evidence that being a volunteer does increase health knowledge, skills, self-efficacy, and intention to improve health behaviors, information regarding the conditions of the volunteer activity is often very general and typically only offers details about participation during a specified time period, a broad explanation of the task, and for what type of organization (Morrow-Howell, 2010). Information about the nature of the volunteer work, the mechanisms by which the volunteer activity improves health, organizational supports and the quantity of volunteer work often remain unspecified. Without this information, it is unclear the type of volunteer activity and the quantity of volunteer activity that is associated with improved health outcomes. Simply stated, all volunteer activity may not be created equal and it is important that research on volunteerism become more nuanced and that the conditions that modify volunteer outcomes are specified. Therefore, this investigation sought to further the line of inquiry by examining health-related changes that veterans in a health promotion intervention may (or may not) experience through their role as volunteer peer leaders. Understanding these changes is an important component to evaluate the program from both a direct (i.e., program targets) and an indirect impact (i.e., volunteer peer leaders). Additionally, two types of volunteer peer support interventions were compared to examine if differences in the peer leader role affect peer leader health behavior change.

### **Purpose of the Study**

Hypertension is an important health issue that can be jointly addressed through standard clinical care and by increasing the independence and assertiveness of people to better manage chronic diseases. Community engagement and the use of trained volunteer peer leaders, in collaboration with academia and health professionals, may be an effective

and feasible way to assist older adults in self-managing chronic disease (Kaczorowski, Chambers, Dolovich, Paterson, Karwalajtys et al., 2011). Self-management interventions that emphasize the use of peer leaders have been shown to be beneficial in activating participants to become more empowered to manage their health and health care (Barlow, Turner, Wright, 2000; Lorig, Sobel, Stewart, Brown, Bandura, et al., 1999). However, the impact that self-management programs have on the health and wellbeing of volunteer peer leaders has received little attention in the literature. Research on peer support self-management programs have traditionally focused on the impact effectiveness of the program on the individuals that are receiving the intervention. Studies that have been published on older volunteer peer leaders generally focus on who volunteers, for what type of work, and with what outcomes, but do not address the potential physical and psychological benefits of volunteering as a peer leader. Information about the benefits that older volunteer peer leaders can experience through participation in self-management programs could guide efforts to better understand the relationship between a peer leader and participants in a self-management program geared toward chronic disease.

Guided by this thought, this study examined the physical and psychological health status of older volunteer peer leaders engaged in a hypertension self-management intervention that was delivered across Southeast Wisconsin to Veteran Service Organizations (VSOs).

### **Research Questions**

The purpose of this research was to explore how peer support health interventions affect the health and wellbeing of peer leaders participating in a program that emphasized support for veterans at risk for high blood pressure and other chronic diseases. This study

is a branch of the larger study, “A Randomized Control Trial of a Peer Support Intervention to Improve Hypertension” (POWER Program, Project #: IAB 06-086-2) that compared the following two peer support models: 1) a professional-led group visit intervention and 2) a peer-led self-management training intervention. Both interventions were led by peer leaders.

The following questions guided this research:

- How did peer leaders health statuses and health behaviors change over time as a result of participating in a health promotion program for U.S. veterans?
- How did changes in peer leaders participating in the professional-led group visit intervention compare to changes in peer leaders in the peer-led self-management training intervention?
- How did changes in peer leaders compare to the changes in the peers that were receiving the interventions?

The findings from this research contributed to an understanding about how participation in a health promotion program can affect peer leaders’ health status. Chiefly, the purpose of this effort was to inform an under-investigated body of literature on the range of impacts that older volunteer peer leaders can experience as part of their role in leading peer support interventions.

### **Need for the Study**

The Veterans Health Administration (VHA) is heralded as a leader in geriatric care programs that have improved the health of older veterans. Yet, elderly veterans represent a population of people with poor health status. Selim, Berlowitz, and Fincke (2004) report that nearly two thirds of veterans over the age of 65 suffer from

hypertension, roughly a third are not controlled. When compared to non-VA populations, Kazis and colleagues (1998) found that VA outpatients have significantly worse health status with major negative burdens across multiple dimensions on a quality of life measure. All of this contributes to greater patient needs that further stress the VHA. Piette, Holtz, Beard, and Blaum (2011) contend that caring for the rising number of ill veterans is challenging in the primary care setting and constrained health care budgets further tax the system. Innovative and effective models are needed to better serve our veterans with chronic illness.

Self-management programs using peer support provide an option to lessen the burden on the VHA health care system with the ultimate goal of improving the health of U.S. veterans. Several peer support programs with applicability to the military environment previously or currently exist (DCOE, 2011). Several of these programs involve partnerships with Veteran Service Organizations (VSOs) (e.g. American Legion, Veterans of Foreign Wars, and Vietnam Veteran of American). VSOs and the military environment as a whole represent a culture in which veterans take care of each other. Shared military experiences create common ground and provide opportunities for peer support. Through my work with the veteran community, I have seen multiple ways in which veterans have provided emotional, information, and tangible support for one another. Providing formalized peer support programs for veterans is a natural extension of the informal social support that many veterans already provide to their comrades, tapping into the strong association already discussed regarding homogenous group linkages.

Along with being united through their military experience, many aging veterans can also be linked by similar chronic illness. Previously mentioned, taking care of one another is a natural tendency within military and veteran communities. This mentality easily lends itself to an environment where veterans can rely on the natural support of their peers to manage chronic disease. There is a body of literature that highlights desired traits, skills and competencies of effective peer leaders. First, researchers posit that the ability to be a positive role model is a desirable characteristic in effective peer leaders (Chinman Lucksted, Gresen, Davis, Losonczy, et al., 2008; Solomon, 2004). Peer leaders should be able to demonstrate positive health behaviors to inspire their peers to make similar changes. Second, experiential learning and knowledge from past experience with chronic disease provides the peer leader with firsthand answers and also offers additional credibility. Peer leaders who are open about their struggles and what they've learned along their journey are good ingredients to facilitate authentic communication among all participants and true social cohesion for the group. And, quite frankly, people want to be led by someone that is knowledgeable (i.e., knows their stuff). Having a peer leader that is both a role model and contributes to the experiential learning process sets the stage for trust to develop in the peer support group.

Equipped with the aforementioned traits, peer leaders working in veteran communities have been found to have a positive impact on individuals with shared diseases and conditions (Solomon, 2004). Unanswered by this evidence is the question: what individuals receive the "positive impact"? Much of the evidence of proven success for individuals in peer support programs focuses on the individuals on the *recipient* end of the relationship. Less attention has been paid to the ways in which individuals on the

*provider* end of peer support benefit from their role. It logically follows that peer leaders would themselves find peer support beneficial, but I could find little empirical research in the context of volunteer peer support programs to support this hypothesis. Further, there is limited knowledge of the nature and amount of volunteer activity necessary to produce positive benefits. Therefore, this investigation is important and significant for four reasons: 1) Quantifying the health benefits that peer leaders experience as part of their experience allows researchers an opportunity to assess the “true” impact of the program; one that includes not only the direct benefits (e.g., participant health change) but also indirect benefits (e.g., peer leader change), 2) Examining peer leader change may provide valuable insight on the type of veteran that volunteers to be a peer leader and the quality of the peer leader, 3) Comparing two interventions using peer leaders will yield information regarding the type and amount of volunteer activity needed to achieve health changes, and 4) Understanding the peer leader change component within peer support interventions will connect to the broader literature on peer support interventions in a meaningful way to reaffirm and offer strategies for improving the intervention.

### **Significance of the Study**

It is critically important to study support from volunteer peer leaders as a productive activity that provides tangible benefits to peer leaders, rather than as a necessary but unexamined component of peer-led health interventions. Investigating changes that peer leaders experience will uncover information about the most effective procedures for recruiting and monitoring peer leaders. The results of this study can also help to identify the optimal intensity and kinds of training that volunteer peer leaders need to be effective leaders, as well as provide information on the level and kind of



support, feedback, and oversight that peer leaders need to be successful. Further, the results of this study are intended to set the stage for future research that examines associations between peer leader change and participant change. Unveiling this information may ultimately lead to strategies for improving programs for all participants.

The results of this study will apply to public and community health practitioners and researchers who develop and implement peer support interventions. Given the increased pressure for researchers to report specific outcomes to funders, I expect that researchers may find value in testing and extending these findings to additional settings, illnesses, and interventions. Likewise, public and community health program funders may also use these findings to assess the full impact of peer support interventions on *all* individuals involved in the program; both the intervention targets and the peer leaders. Community agencies and organizations that use peer leaders, community health workers, health navigators (among other terms) may also use these findings to assist in recruiting and monitoring their volunteers and workers. Lastly, community members that are considering participating (or even leading) health-related volunteer activities in their communities may be interested in learning about the results of this study. Specifically, these findings may be of significance to leaders and members of Veteran Service Organizations (VSO) and the veteran community at large. The results may influence the selection of future programming among VSOs and inspire veterans to become involved in health-related volunteer activities at their VSO site and in their local community.

### **Background of the Researcher and Presence of Self in the Inquiry**

This investigation originated through my work as an Educational Specialist on the POWER Program (Posts Working for Veterans Health). The POWER Program was

funded by the Department of Veterans Affairs Health Services Research and Development (HSR&D) from 2008-2011. It was a collaborative venture involving VA physicians and researchers, members of various veterans' service organizations, and faculty and staff from the Medical College of Wisconsin. My role on the project called for me to: 1) be involved with designing, delivering and evaluating the peer support training curriculum, 2) conduct and analyze focus groups and interviews with peer leaders and program participants to qualitatively assess the impact of the program, and 3) assess the peer leaders' fidelity to the program through observational site visits.

Through my work, I witnessed many testimonies of how peer leaders were changed through their experience as a peer leader. Several peer leaders spoke of their personal gains in terms of improved health awareness, health knowledge and health outcomes. Others referenced how their role in the group changed to make them the "go-to" health person at their site or how they became motivated to share their knowledge with not just their veteran comrades, but also family, friends and co-workers. The results of our qualitative analysis of the POWER Program have been published (Mosak, Wendorf, Brouwer, Patterson, Ertl, et al., 2012). This first generation study left me with many unanswered questions such as: 1) Is there quantitative evidence to support positive peer leader change in regards to health status and health behaviors?, 2) How do these changes compare to the changes in the intervention targets?, 3) Does peer leader change affect the overall intervention, and 4) Does the type of peer support model used in the intervention impact peer leader change? My current research expands on our qualitative work by quantitatively evaluating the impact of the POWER Program on peer leaders' health and comparing it to the health of the intervention targets (i.e., their peers). In the

long term, I am on a quest to define a “model” peer leader to address the numerous physical and mental health problems in the veteran community. I intend to measure leadership traits and personality orientation in the third generation of the peer support intervention work with my VA/MCW colleagues and veterans. I believe that examining the personal changes that peer leaders experience is an important step towards a better understanding of the type of veterans that volunteer to be peer leaders and their ability to lead their peers to successful health behavior change. Furthermore, once we have developed meaningful ways of ensuring that the peer leaders are not already apt to experience improvements prior to their involvement as peer leaders, it will be important to understand if or why peer leaders fare better and how to maximize the benefits of the intervention for all participants.

### **Definition of Terms:**

**Community-based participatory research (CBPR):** Minkler and Wallerstein (2003) define CBPR as a new paradigm that represents critical education by offering “alternative orientations to inquiry that stress community partnership and action for social change and reductions in health inequalities as integral parts of the research enterprise.” (p. 3). CBPR, most frequently conducted through community-academic partnerships, has steadily gained international momentum since the Tuskegee Experiment in the 1930s, followed by Kurt Lewin’s work in action research (1940s), and Freire’s critical pedagogy work (1960s) (Minkler and Wallerstein, 2003). Today, CBPR is nationally recognized by the Institute of Medicine, National Institute of Health, Center for Disease Control, Agency for Health Care Research and Quality, among others.

**Experiential learning:** Dewey (1939, as cited in Merriam, 1995) maintains that experience is the starting point for all further learning; a premise that has been formalized by experiential learning theory which defines learning as “the process whereby knowledge is created through the transformation of experience.” (Kolb, 1984, p. 41, as cited in Sternberg and Zhang, 2000). Experiential learning offers a theory to explain how personal life experiences can convert to knowledge and lead to behavior change. A peer support intervention provides an environment in which all participants (i.e., learners) can engage in reflection by sharing their experiences with one another and potentially leading to experiential knowledge, positive health behavior change, and improved health status.

**Group learning:** process through which a group creates knowledge for its members and for itself as an entity (Kasl, Marsick & Dechant, 1997). The members of the group will be united in their purpose for participating in the group learning activity and have some overlap regarding their individual goals as a learner and the learning goals for the group as a whole. Group learning, as it relates to the POWER Program, positions participants in the group learning activities that occurred at their VSO site. Peer leaders in the peer-led intervention received an additional dose of group learning through their completion of the POWER peer leader training curriculum.

**Health Behavior:** is a chief concern of health education. According to Gochman (1997) health behavior refers to “personal attributes such as beliefs, expectation, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overall behavior patterns, action, and habits that relate to health maintenance, to health restoration, and to health improvement (as cited in Glanz, Rimer & Viswanath, p. 12). Operationalized for the current study, health behavior

refers to the variables for: fruit and vegetable consumption, sodium intake, social support, self-efficacy, hypertension knowledge, and pedometer use.

**Health Belief Model (HBM):** The HBM is one of two theories that apply to health behavior changes in this investigation; the other is Social Cognitive Theory. The HBM is recognized as one of the most popular theories to understand individual health behavior change. HBM identifies the following constructs as integral in predicating what prompts people to action to change their health behaviors: perceived susceptibility, perceived severity, cues to action, perceived benefits, perceived barriers, and self-efficacy (Champion & Skinner, 2008).

**Health Education:** education that is aimed at “brining about behavioral changes in individuals, groups, and larger populations from behaviors that are presumed to be detrimental to health, to behaviors that are conducive to present and future health” (as cited in Glanz, Rimer & Viswanath, p. 10).

**Health Status (operational):** operational phrase to encompass the variables of: weight, systolic blood pressure and diastolic blood pressure.

**Middle-aged to older adult:** operational phrase used to label adults over the age of 35 in the POWER Program.

**Peer Support:** represents the social ways in which members of a peer group—meaning the individuals within the group have similar conditions or come from similar circumstances— provide informational, emotional and tangible support to one another.

**Peer support interventions:** refers to the formalized use of peer support models to mobilize and build on peer support using a structured program of education and

assistance (Dennis, 2003). A peer support intervention is led by a trained layperson in peer group denoted as the **peer leader**.

**Peer leader in professional group intervention (operational):** a peer leader that was randomized to the professional group intervention and did not receive formal training to prepare them for their role as a peer leader. The peer leader was responsible for making program equipment available to VSO members at monthly meetings and to announce the details of quarterly seminars led by health professionals.

**Peer leader in peer-led self-management training intervention (operational):** a peer leader that was randomized to the peer-led self-management training intervention and received initial and ongoing training through the duration of the project. The peer leader was responsible for making program equipment available to VSO members and to present on a health-related topic during monthly post meetings.

**Self-Management:** Many people improve their health by engaging in healthy behaviors and practices on a regular basis independent of the traditional health care system. This process of consistently engaging in specific behaviors to accomplish a health goal or outcome is **self-managing** one's health. Ryan and Sawin (2009) articulate self-management as a process that involves a person's "knowledge and beliefs, self-regulation skills and abilities, and social facilitation to manage chronic conditions or engage in healthy behaviors" (p. 218).

**Social Cognitive Theory:** Social Cognitive Theory (SCT) emphasizes the ways in which personal, behavioral, and environmental influences determine individual and group behavior (Bandura, 1986). SCT has been effectively applied as a model to explain health behavior changes associated with the prevention and management of chronic disease. In

the context of the present study, SCT will provide a conceptual framework for understanding the processes through which learning occurs and can lead to health behavior change.

**Veteran Service Organization:** Veterans service organizations (VSO), such as the American Legion and the Veterans of Foreign Wars, are non-profit veteran advocacy groups that meet regularly at local units called **posts**. In 1879 Congress chartered the first organization to represent veterans in applying for benefits—the Navy Mutual Aid Association. Today there are 44 congressionally-chartered VSO ranging in size from fewer than 100 members (Congressional Medal of Honor Society) to more than 2 million (American Legion). In addition to representing veterans in benefits claims, VSOs are potent political advocates for improved veterans benefits and support for active duty military. Locally, VSOs support youth activities, assist veterans in need, make charitable donations, and participate in patriotic events, such as parades and military funerals. Many VSO members volunteer regularly at schools and hospitals. Members who attend meetings tend to be older white men with one or more chronic health conditions.

This chapter has demonstrated the need and significance to strive towards a better understanding of interventions that address chronic disease in ageing communities through the use of volunteer peer leaders. Individuals may experience several obstacles on their journey to self-manage their health and efforts that investigate the viability and effectiveness of self-management interventions is timely. In moving forward, the next two chapters will include a literature review and the research design for this study, followed by a report of the data findings (Chapter Four) and a discussion of the study findings (Chapter Five).

## **Chapter Two: Literature Review**

### **Methodology of the Literature Review**

A review of the literature was conducted by utilizing the following databases: PubMed, Ovid, EBSCOhost, and ERIC. The literature review is organized into the following thematic sections (Figure One):

- i. Characteristics of older-aged adult volunteers
- ii. The benefits of volunteerism among older adults
- iii. Community-based participatory research & community health
- iv. Recruiting, training, and monitoring peer leaders in health education interventions
- v. Learning theory in health education interventions
- vi. Theoretical perspectives on health behavior change
- vii. Gaps in the literature

The literature review opens with an examination of the characteristics and health of older-aged volunteer peer leaders. Next, I provide an exploration of scholarly work on community-based participatory research (CBPR) in public and community health interventions. The study setting (the POWER Program) was grounded in CBPR principles that emphasized collaboration between the study team and the volunteer peer leaders. It is, therefore, important to understand the CBPR process in order to consider how this process may contribute to change among older-aged adult volunteer leaders providing peer support. Further, it is my belief that an essential component of CBPR is the ability to identify the origin of a health problem within a specific population of people (e.g., veterans) in order to mobilize people and communities to effectively address the



health problem. The remainder of the literature review focuses on the recruitment, training, and monitoring of older volunteer peer leaders. The review concludes with a discussion of theories of learning and health behavior change that can be applied to health education programming. Having a foundational understanding of the characteristics of older-aged adult volunteers, peer support elements, and group learning theory will be critical in understanding if, how, and why peer leaders experience health and health behavior changes throughout the duration of the study. Ultimately, this literature review seeks to unite the relationships between volunteering, peer support, health, and group learning and health behavior change.

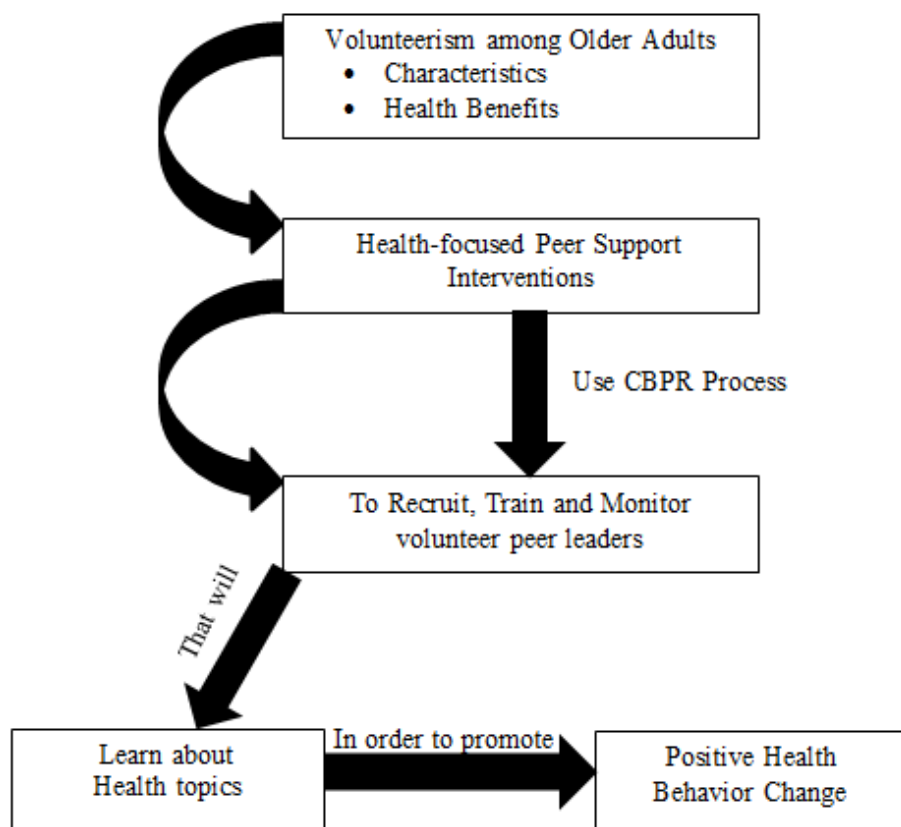


Figure 1. Connections among thematic components of the literature review.

### **Characteristics of Older-Aged Adult Volunteers**

The POWER Program sought middle-aged to older adult veterans to serve as peer leaders in a voluntary capacity. Volunteer work can be defined as unpaid activity that benefits the wider community. This review will focus on formal volunteer work that is organized as a public activity and is motivated by moral ideals, as opposed to informally helping family and friends (Wilson & Musick, 1997). Further, this review will concentrate on public activities in which providing social and peer support is a component of the volunteer role.

Volunteerism among older adults in the U.S. is on the rise. The U.S. Census Bureau (2010) reported that 41.4% of all Americans aged 65-74 volunteered in the twelve months before the survey was issued with an average of 3.3 weekly hours per volunteer. The rate of volunteering increases with age with a plateau when individuals reach their late 60s, followed by a tapering effect in their 70s (Janoski & Wilson, 1995; Kim & Hong, 1998). Further, older-aged adult volunteers are found to be more generous with their time and a study conducted in Canada found that people aged 60 years and above provided, on average, slightly over 250 volunteer hours a year (Statistics Canada, 2001). Older volunteers are also more likely to be in a higher socioeconomic stratum that includes higher education levels, higher incomes, and better health (Chambre, 1993; Morrow-Howell, Hong, McCrary, & Blinne, 2012; Tang 2006; Wilson & Musick, 1997; Zedlewski & Schane, 2006). Older-aged adults with high levels of social integration are also more apt to volunteer (Tang 2006; Zedlewski & Schane, 2006). Other demographic studies have found that volunteer rates differ between genders and across ethnic groups with women volunteering more than men and older White adults volunteering at higher

rates than older adults of color (Gottlieb & Gillespie, 2008; McBride, 2007). Also, there is some evidence that part-time workers have the highest volunteer rates (among job categories), employed adults volunteer at higher rates than unemployed, and retired adults log the most volunteer hours among job categories (Choi, Burr, Mutchler, & Caro, 2007; Musick & Wilson, 2003). Religious involvement has also been shown to increase volunteer rates among older adults (Oman, Thoresen, & McMahon, 1999; Tang 2006; Zedlewski & Schane, 2006). Putnam (2000) contends that there is a generational phenomenon at play regarding the demographic profile of individuals that volunteer at high rates and cautions that volunteerism rates may shift among future generations.

An assumption underlying much research on volunteering is that older adults have more time to volunteer and that an upswing in volunteer rates may be a product of the current times. Gottlieb and Gillespie (2008) propose two explanations for the greater number of volunteer opportunities among older-aged adults on par with the current American climate: 1) Additional free time related to early and normative retirement, and 2) improvement in the health, finances, and longevity of older adults. Yet a shortcoming of this rationale is that it fails to explain common motives for older adults to volunteer. There is no evidence that more free time translates to higher volunteerism rates; indeed, the old adage “if you need a volunteer, ask a busy person” comes to mind. It is, therefore, important to examine the reasons why older adults volunteer.

The motivation to volunteer can arise from both extrinsic and intrinsic motives. Several studies have cited extrinsic motives such as the desire to socialize, develop and enrich social ties, gain social support, boost feelings of self-worth, and to learn (Clary & Snyder, 1999; Okun & Schultz, 2003). Staying active and keeping busy are also

commonly referenced reasons that older adults are motivated to volunteer (Black & Kavas, 1999; Okun & Schultz, 2003; Omoto, Synder, & Martino, 2000). Older people volunteer to expand their opportunities to increase social ties, gain power and prestige, and for emotional gratification (Lum & Lightfoot, 2004; Moen, Dempster-McLain, & Williams, 1992). Older adults (over the age of 55) can be motivated to volunteer by incentives such as discounts on prescription drugs or monetary stipends. In fact, offering such an incentive would increase the older adult volunteer workforce by an additional 21 percent according to a study conducted by Civic Ventures in 2002 (<http://www.encore.org/find/resources/fact-sheet-older>). Intrinsically, altruism and the value of serving others inundate literature that recognizes older adults' volunteer motives. Oman, Thoreson, and McMahon (1999) found that religious or spiritual convictions also motivate individuals to volunteer. Another compelling motive for older adults to volunteer is simply for health improvement purposes. There is evidence that being a volunteer increases health knowledge, skills, self-efficacy, and intention to improve health behaviors (Becker, Bull, Smith & Ciao, 2008; Goto, Peltó, Pelletier, & Tiffany, 2010; Taylor, & Serrano, 2000). Advertising the health benefits of volunteering is considered an attractive strategy for recruiting older adult volunteers.

### **The Benefits of Volunteerism Among Older Adults**

Given that improvement in health and longevity can be a driving force for volunteering among older adults, it is worthwhile to highlight the effects of volunteering on older-aged volunteers—starting with improvements in physical health status.

Many studies have documented lower morbidity and greater longevity among older volunteers (Oman, Thoresen, & McMahon, 1999; Luoh & Herzog, 2002; Musick &

Wilson, 2003; Lum & Lightfoot, 2005). On par with this evidence, volunteers can also experience improved physical health and cognitive functioning (Caplan & Harper, 2007; Coull, Taylor, Elton, Murdoch, et al., 2007; Edgar, Remmer, Rosberger, & Rapkin, 2003). Additionally, volunteers often report improved self-rated health as a component of their volunteering experiences (Lum & Lightfoot, 2005; Luoh & Herzog, 2002; Morrow-Howell, Hinterlong, Rozario, & Tang, 2003; Tang 2006; Wu, Tang, & Yan, 2005; Yuen, Burlik, & Krause, 2004). In relation to particular disorders/ailments, Koenen, Stellman, Stellman, and Sommer (2003) found that Vietnam veterans that took part in community service activities were less likely to suffer from post-traumatic stress disorder symptoms than those who had not engaged in such activities. Hainsworth and Barlow's (2001) work on examining lay leaders in an arthritis peer program found that lay leaders experienced significant increases in arthritis self-efficacy for pain, as well as cognitive symptom management. Fengler (1984) found that volunteers serving in the Retired Senior Volunteer Program greatly increased the volunteers' life satisfaction; findings that were echoed by several other studies (Black & Living, 2004; Coppa & Boyle, 2003; Thoits & Hewitt, 2001; Van Willigen, 2000; Wu, Tang, & Yan, 2005; Yuen, et al., 2004).

The adoption of healthy lifestyles and practices (i.e. health behavior change) is also associated with volunteerism among older adults. Often these studies will examine exercise, eating habits, sleeping habits, alcohol consumption, body mass index, and the presence of a primary care practitioner. Librett, Yore, Buchner, and Schmid (2005) found that volunteers increased their level of physical activity; while Weitzman and Kawachi (2000) found that their volunteers were able to achieve healthier levels of alcohol

consumption. Hainsworth and Barlow (2001) found that lay leaders in an arthritis program discussed their arthritis more frequently with their primary care practitioner.

There is also good evidence in the literature that volunteering has a salubrious effect on one's psychological health. Less depression among volunteers is commonly cited in the literature as a positive health benefit associated with volunteerism (Li & Ferraro, 2005; Lum & Lightfoot, 2005; Morrow-Howell, et al., 2003; Musick, Herzog et al., 1999; Nagel, Cimboric, & Newlin, 1988; Thoits & Hewitt, 2001; Yuen, et al., 2004). Furthermore, a meta-analysis found an increased sense of wellbeing among older volunteers across thirty-seven independent studies (Wheeler, Gorey, & Greenblatt, 1998).

Finally, volunteerism among older adults can positively impact several non-health related aspects of life such as social functioning and support. Hainsworth and Barlow (2001) found that volunteer activity was shown to increase self-esteem and confidence. Thoits and Hewitt (2001) also found that volunteering increased self-esteem and overall happiness.

### **Community-based Participatory Research & Community Health**

The POWER Program recruited, trained and evaluated volunteer peer leaders using principles grounded in community-based participatory research (CBPR). CBPR, most frequently conducted through community-academic partnerships, has emerged as a frequent vehicle used to implement and sustain community health interventions (Griffith et al., 2010). The CBPR process has steadily gained international momentum since the Tuskegee Experiment in the 1930s, followed by Kurt Lewin's work in action research (1940s), and Freire's critical pedagogy work (1960s) (Minkler and Wallerstein, 2003). Today, CBPR is nationally recognized by the Institute of Medicine, National Institute of

Health, Center for Disease Control, Agency for Health Care Research and Quality, among others. The collaborative efforts between community-based organizations and academic institutions underscored by CBPR can provide a strong and viable strategy to combat health problems within a specific community.

CBPR requires the continuous exchange of knowledge, skills and resources between academia and communities, and a long-term commitment to sustaining an impact in the community where the research is conducted (Cheadle et al., 2002).

Evidence indicates that involvement of community members in the research decision-making and planning processes is more likely to enhance the investment of all parties involved and, as a result, the success of the research undertaken (Grady et al., 2006; Green, 1986; Stratford et al., 2003).

In the realm of health research, Minkler and Wallerstein (2003) define CBPR as a new paradigm that represents “alternative orientations to inquiry that stress community partnership and action for social change and reductions in health inequalities as integral parts of the research enterprise.” (p. 3). CBPR has often been proposed as an integral model to use in health interventions that ascribe to a social-ecological framework (Israel et al, 2003 as cited in Kelger & Glanz, 2008). The social-ecological framework (resembling the structural constructivist model) emphasizes the interrelated influence of the individual, relationships, community, and society as affecting factors in one’s decision-making processes (Oetzel, Ting-Toomey, & Rinderle, 2006). The social-ecological model is consistent with CBPR principles that call for active roles for community members in identifying their own health needs, as well as those of their community. Figure Two represents the social-ecological model (CDC, 2009).

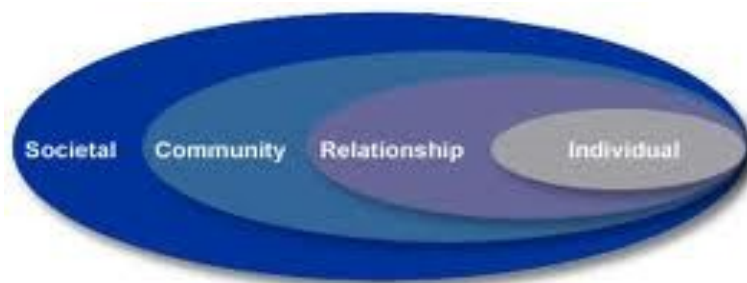


Figure 2. Social Ecological Model (CDC, 2009)

CBPR stems from growing expectations by funders, community leaders and policy makers that research must lead to healthier communities. They require that “research show greater sensitivity to communities’ perceptions, needs, and unique circumstances” (Green & Mercer, 2001, p. 1926). The major underlying premise for the collaborative approach emphasized by CBPR is that “partnerships can mobilize complementary and diverse material and human resources; the resulting synergy will lead to more effective solutions than could be achieved by an individual or organization alone (Kegler & Glanz, 2008, p. 394). The popularity and credibility of CBPR is the result of many federal agencies’ and foundations’ interest in promoting CBPR as a valid process (McAllister et al., 2003). There are five conventional principles used for conducting CBPR in public health. They include:

- The CBPR process is participatory. This principle contends that partners will work collaboratively from defining a problem, to collecting data, to interpreting results, to applying the results to the targeted community.
- The CBPR process endorses co-learning. It is the co-learning process that facilitates the reciprocal transfer of knowledge, skills, capacity, and power.
- The CBPR process empowers participants to increase control over their lives.

CBPR projects involve a power sharing process that provides a platform for



marginalized communities to have the power to recognize and name their experiences and begin to advocate for their health-related needs.

- CBPR achieves a balance between research and action. CBPR projects will produce and disseminate research findings to community members in ways that will be beneficial in developing future plans. CBPR projects will also serve as a stepping-stone for policy change and action.
- CBPR projects are designed in ways that enhance the capacity of the partners involved in the process. The strengths, resources, and beneficial relationships of both the researcher and community partner should be acknowledged to best meet the communal health needs of the targeted community.

The power behind the CBPR orientation is that it opposes educators, researchers and academicians professing to know the relevant health needs of a community and implement a health initiative that they believe is a good fit in the community. In fact, there is “ample evidence that disseminating the results of studies and telling people how they should incorporate this (health) information into their lives produces minimal behavior changes” (Green & Mercer, 2001, p. 1927). It is through the CBPR process that all members of the partnership recognize their ability to promote social action.

In essence, CBPR is both different from, and similar to, conventional academic research. CBPR draws on conventional methodologies and insists on rigorous inquiry that exemplifies research at its best. At the same time, CBPR demands new ways of thinking about all aspects of the research process. With CBPR, seeking the best possible balance between research methodology and community collaboration is critical to move the field of health research forward.

However, combining researchers with community-based stakeholders and study subjects in health interventions can be difficult to maintain. While researchers focus on protocols, methodology, evaluation, and dissemination, this mindset can be more difficult for the community side to comprehend. In this setting, such research staples as informed consent, Institutional Review Board (IRB) approval, randomized control, and blinding provide special challenges. CBPR creates a complex situation in which academic researchers and community constituents must weigh the importance of involving communities to develop and implement an intervention that will benefit the community to the greatest degree while understanding that theoretical rigor may potentially be diminished and thus decrease acceptance of the research to a broader scientific community.

The collaboration between researchers and community-based organizations can lead to novel situations that challenge traditional views of how research-focused interventions should be conducted. The academic community is slowly realizing that even “best practices” are difficult to implement in any given community and recognize that successful implementation of research projects requires authentic participation of the community in the development of the project. Including the community as partner not only communicates respect for community knowledge, but also increases the capacity of researchers to identify, understand, and effectively address key public health issues (McAllister et al., 2003).

Additionally, communities are skeptical about the relevance of any research project implemented in their particular communities. Given the history of some research-related “abuse,” especially in minority groups, many communities are suspicious of

projects that researchers define as “beneficial” to the community (Grady et al., 2006).

The ramifications of this distrust can lead to poor relationships and cooperation from community groups. Community collaboration and research that stresses a participatory process can be an effective strategy to diminish community distrust and achieve valid and reliable research outcomes that fit the community.

## **Recruiting, Training, and Monitoring Peer Leaders in Health Education**

### **Interventions**

The National Governors Association for Best Practices calls for the need to create connections between older adults, volunteer opportunities, and education programs that will assist them in developing skills that will match their interests and experiences (2010). Fried, Carlson, Freedman, Frick, Glass, Hill, et al. (2004) suggest that volunteering is a feasible health promotion strategy for older-aged adults. Health-focused peer support programs that provide training for volunteers represent one possibility to meet this need. Moreover, peer support programs that give volunteer peer leaders a “voice” in designing and implementing the program have also been proven to be successful (Heath, 2009; Lee, Han, Kim, Kim, et al., 2010). Within the literature, several peer support models have been applied with varying degrees of success across different populations and behaviors to assist people in self-managing their chronic illness. The most prevalent models noted in a review of the literature include:

- Professional-led group visits with peer exchange;
- Peer-led face-to-face self-management programs;
- Peer coaches;
- Community health workers;

- Support groups;
- Telephone-based peer support; and
- Web-and email-based programs

My current investigation focuses on the professional-led group visit model and peer-led self-management training model. There has been a proliferation of research that addresses recruitment and training of peer leaders that use these two models; less has been published on evaluating program results on volunteer peer leaders.

**Peer leader recruitment.** The reviewed literature reflected a mix of sources and recruitment strategies to attract peer leaders. Community settings such as churches, senior centers, neighborhood centers, and community-based membership organizations are the most prevalent settings in which peer support interventions are implemented and therefore represent the “access point” to recruit peer leaders. Peer leaders were also recruited from chronic disease care centers, primary care practices, and physician referrals (Baksi, Al-Mrayat, Hogan, Whittingstall, et al, 2008; Dale, Caramlau, Sturt, Friede, & Walker, 2009; Thompson, Horton, & Flores, 2007). Peer leader recruitment is conducted both formally and informally. The most common formal recruitment strategies include advertising through the use of flyers or posters on community information boards, in community-based newsletters, and through direct contact with potential peer leaders through letters or phone calls. Informally, word of mouth is commonly cited as a recruitment strategy, along with recruitment of peer leaders from a clinical practice (Comellas, Walker, Movsas, Merkin, & Zonszein, 2010; Heisler, Vijan, Makki, & Piette, 2010). Peer support interventions will often employ multiple recruitment strategies that

are interconnected. For example, people who heard about the project through formal channels will in turn spread the word informally to interested parties.

Most studies stress that comprehensive selection criteria and a robust screening process are critical to the peer leader recruitment and selection process. Chief among all selection criteria is the practice of selecting peer leaders that are actively engaged within the local community with whom they will interface (Batik, Phelan, Walwick, Wang, & LoGerfo, 2008; Broadhead, Hechathorn, & Altice, 2002; Wilson & Pratt, 1987). The literature also highlights the need to recruit peer leaders that are in good standing and well respected in the community, are proficient in the targeted community's primary language and share life experiences and demographic characteristics with community members (DCOE, 2011; Hinton, Downey, Lisovicz, Mayfield-Johnson, White-Johnson, 2004; Klug, Toobert, & Fogerty, 2008). From a competency and credibility standpoint, previous education and training, experience facilitating groups and the willingness to participate in initial and ongoing training are also deemed as necessary qualities in potential peer leaders (Cade, Kirk, Nelson, Hollins, Deakin, Greenwood, & Harvey, 2009; Comellas, et al., 2010; DCOE, 2011; Klug, Toobert, & Fogerty, 2008). Desirable interpersonal qualities include good listening skills, maturity, sensitivity, persuasive without being overbearing, and the ability to motivate others (DCOE, 2011; Klug, Toobert, & Fogerty, 2008; Mosak, et al, 2012). Mosak et al. (2012) also found that demonstrating enthusiasm and buy-in for the program, as well as personally modeling healthy behaviors is an advantageous quality in a peer leader. Finally, from a CBPR approach, involving community members through a participatory selection process is

considered ideal in developing and implementing a peer-led intervention (World Health Organization, 2007).

**Peer leader training.** A large number of scholarly articles discuss peer support training and it is, therefore, not surprising that the length, content, and training modalities vary dramatically across peer support programs. Length of training can range from a few hours of informal education to formalized training courses that last one or more days. In their review of volunteer-based peer support interventions, Tang, Ayala, Cherrington, and Rana (2011) categorize peer support training into three categories: low, moderate, and high based on the number of hour or days for the training (i.e., length of training). Design features for low intensity training programs included programs that ranged from a three hour learning session to workshops that take fewer than three days to complete. Batik, Phelan, Walwick, Wang, and LoGerfo's (2008) program consisted of a five-hour workshop, while Tudor-Locke, Lauzon, Myers, Bell, Chan, McCargar, et al. (2009) required peer leaders to complete a 2.5 day workshop.

Most notable in the moderate intensity category is the Chronic Disease Self-Management Program (CDSMP) developed by Lorig and colleagues (Lorig, Ritter, Stewart, Sobel, Brown, & Bandura, 2001; Lorig, Sobel, Ritter, Laurent, Hobbs, 2011). In this model, pairs of peer leaders undergo a four-day workshop that teaches them to deliver scripted material to program participants. Comellas, Walker, Movsas, Merkin, Zonszein's (2010) peer support intervention is another example of a moderately intense training, calling for the completion of five 7-hour sessions conducted over a five-week period.

Lastly, training programs that exceed four days in one “dose” are considered to be high intensity programs. Cade, Kirk, Nelson, Hollins, Deakin, Greenwood and Harvey worked to encourage healthy eating habits among diabetics and trained their peer leaders through a four-day residential training course, along with ongoing training through the duration of the intervention (2009). Another example of high intensity peer support training involved attendance at ten general session trainings, followed by 30 hours of follow-up training (Thompson, Horton, & Flores, 2007).

Length and intensity of training aside, specific training protocols often emerge from the defined role of the peer supporter in accordance with the objectives of the peer support intervention (Campbell & Leaver 2003). Training themes highlighted in the literature point to the need for the peer leader to have initial training on the program’s goals and objectives, identify ground rules, expectations, and available supports, program content, and an orientation to the roles and responsibilities of the peer leader. Other attractive training topics include: education on the content area (e.g., hypertension, diabetes, health behavior change), group facilitation skills and managing group dynamics, development of active listening and communication skills, and instructional methods to assist the peer leader in delivering the intervention (Baksi, Al-Mrayat, Hogan, Whittingstall et al, 2008; Heisler & Piette, 2005; Heisler, Vijan, Makki, & Piette, 2010; Lorig, Ritter, Villa, & Piette, 2008; Lorig, Ritter, Villa, & Armas; 2009; Thompson, Horton, & Flores; 2007). And while the literature reflects diversity of length and approaches to training, there is agreement that ongoing training is as important as initial training. Ashwell and Freeman (1995) found that if regular, continued training is not available, peer leaders’ skills and knowledge will diminish. Further, opportunity for

continued learning is considered an essential aspect of ensuring consistency and confidence in peer leaders (DCOE, 2011; Mosak et al., 2012). Instructional methods employed by peer support training programs run the gambit from in-person didactic sessions to role playing to conducting practice sessions in which a trainer observes the peer leader's performance (Dale, Caramlau, Sturt, Friede, & Walker, 2009; Lorig, Ritter, Villa, & Piette, 2008; Lorig, Ritter, Villa, & Armas; 2009). Topics for continued learning often focus on troubleshooting, preparing peer leaders to deliver new health topics, brainstorming ideas, and discussing strategies for maximizing the benefits to both passive and active participants (Morzinski, Patterson, Ertl, Wilke, Fletcher, Wurm, et al., 2012).

**Monitoring peer leaders.** Peer support monitoring and evaluation is often a forgone practice in peer support interventions. However, its importance cannot be overstated. Monitoring can be thought of as an opportunity to provide guidance, mentoring and constructive feedback on performance. Developing a monitoring process in which a peer leader can be assessed on the areas that they perform well and how they can improve is critical to overall effectiveness of the peer leader. Charleston, Johnson and Tam (1994) found that continuous monitoring of peer leaders helps to sustain their interest and motivation to do their assigned tasks. Further, evidence suggests that key features of successful peer mentoring programs are continuous monitoring and regular opportunities for peer leaders to share experiences and receive recognition for their efforts (Heisler, 2008).

An important element to provide ongoing monitoring and support is the need to evaluate peer support training programs to ensure that the training is meeting the needs of both the peer leaders and the intervention objectives. Several education program



evaluation models are well suited to meet this demand. Popham (1993) presents five common educational evaluation models.

***Judgmental Models Emphasizing Inputs.*** Judgmental models highlight the evaluator's ability to determine the success of the evaluation. Within the sector of measuring inputs (or process criteria), a formative evaluation will occur that allows the evaluator an opportunity to analyze specific elements of the evaluation prior to program implementation. Popham (1993) suggests that although judgmental models emphasizing inputs often lack an association with outcomes, they still provide some clarity regarding the operative variables within the program.

***Judgmental Models Emphasizing Outputs.*** Judgmental models can also emphasize outputs for which evaluators will attempt to isolate the effects of the program intervention. Scriven and Stake are viewed as two key contributors to this model. Scriven's work outlines insights and recommendations for effective educational evaluation. The list includes a formative-summative distinction, attention to the quality of goals, payoff evaluation, emphasis on comparative evaluation, and goal-free evaluation. The totality of Scriven's work is an output philosophy approach to evaluation that places the evaluator in the role of determining the overall outcomes of the program. Stake added to the dialogue by introducing his Countenance Approach which necessitates attention for description and judgment of educational programs. Stake argues that the three phases of educational programs (antecedent, transaction, and outcome) will differentiate descriptive processes from judgmental ones. Stake's approach, like Scriven's, is deeply embedded in the belief that the evaluator is the ultimate authority in measuring the effectiveness of an educational program.

***Decision-Facilitation Models.*** Decision-Facilitation models combine evaluation paradigms by including both a judgment and goal-attainment component. The underlying criterion for this model resides in the evaluator's measurement of goal attainment and the decision maker's ability to determine programmatic success. The CIPP Model and the Discrepancy Model are two of the most widely recognized forms of decision-facilitation approaches. The Discrepancy Model spotlights the comparison between performance and standards. Provus is credited as the founder of this model and his foundation rests in the differences between projected outcomes and actual achievement of those outcomes. The CIPP Model is another common model to evaluate health training programs (Stufflebeam, 1989). CIPP is an acronym representing four types of evaluation components: context, input, process, and product. Context evaluation involves the identification of the educational problem, includes general and/or local assessment, identifies institutional or leadership support and resources needed to conduct the training program. Input evaluation includes stakeholder input into the program development, program goals and objectives, as well as planned educational strategies. Process evaluation is closely tied to program strategies and involves assessment of the learning activities and participation. It also includes the identification of barriers and program revisions. Product evaluation is concerned with assessing the outcomes of the program and is aligned with the achievement of program objectives. Under the CIPP mode, program evaluators do not assess the worth of the program they are evaluating, but instead they "delineate, obtain, and provide useful information for judging decision alternatives" (Popham, 1993, p. 34).

There are four settings in which decisions are made under the CIPP Model: decisions involving maintenance of the program such as determining staff and peer supporter assignments (homeostatic); decisions involving developmental activities aimed at continuous improvement of a program (incremental); decisions that involve large innovative efforts to solve significant problems such as efforts to modify instructional materials that are not successful (neomobilistic); and decisions designed to produce complete and ideal changes in an educational enterprise (metamorphic).

***Naturalistic Models.*** Naturalistic models capture a qualitative approach to evaluation. Guba and Lincoln champion the use of qualitative program evaluation approaches by contending that it is more useful to hear from the trainees/learners regarding what is wrong with the program and to strategize solutions to fix problem directly with learners. Guba and Lincoln (1981) highlight the following naturalistic design features: learners generate ideas about what is valued and measured, learners' concern and issues on the training topics organize the design of the training program, methods are interactive and qualitative, and feedback is continuous and suited to the learners' needs.

***Goal-Attainment Models.*** The determining factor of goal-attainment models is the level to which programmatic goals were achieved. Tyler is noted as the pioneer of goal-attainment models and his Tylerian approach is still widely used today. The Tylerian approach is broken down into three steps: 1.) Determine goals, 2.) Formulate measurable objectives, and 3.) Measure the degree to which goals have been achieved. Hammond's Model and Metfessel and Michael's work are two models that expanded Tyler's work by including a more detailed approach to defining programmatic details (Popham, 1993).

Notably, Metfessel and Michael also included a step in their model that called for the involvement of community members (to be targeted by the program) in identifying the goals and objectives of the training program.

Kirkpatrick's evaluation model is one of the most popular goal-attainment models and is used extensively in health education programs (Kirkpatrick & Kirkpatrick, 2006). This model guides the collection of data through the following four areas of anticipated outcomes: 1.) Reaction, which refers to training satisfaction and involvement, 2.) Learning, consisting of new or improved knowledge attitudes, or skills gained from the training program, 3.) Behavior Changes, which are observable performance changes that are transferred to settings away from the training program, and 4.) Impact, which refers to the results of the training program on the targeted population.

When applied to the current research, Kirkpatrick's Model is useful in evaluating learning outcomes and health behavior change. Kirkpatrick's Model is best suited to evaluate the effectiveness of not only the POWER Program's peer leader training curriculum, but also the health education programming provided to VSO members. A discussion of theoretical perspective on learning and health behavior change in health interventions follows.

### **Learning Theory in Health Education Interventions**

Guided by Kirkpatrick's Model, learning (Level Two) is the precursor to health behavior change (Level Three). In the context of the proposed study, peer leaders were learners on two levels: 1) As individuals that completed a training program to prepare them for their peer leader role and 2) As members of the VSO groups that the intervention targeted. Both levels represent formal group learning environments. Eduard

Lindeman's work in the 1920s is thought by many to have produced the philosophical foundations for adult education. According to Imel (1999), Lindeman was influenced by Dewey's work on experiential learning and believed that "the group was the primary method for connecting experience and social action" (p. 55). Lindeman's support of group learning laid the groundwork for a proliferation of research into the learning that occurs when learners work together in groups (Imel, 1996; Rose, 1996). Cranton (1996), Dechant, Marsick, and Kasl (1993) and Imel (1999) are popular researchers that focus on group learning (where the group is the entity) as the purpose of group learning over individual members (in the group). Aligned with Habermas's domains of knowledge (e.g., instrumental, communicative and emancipatory), Cranton (1996) proposed three categories for group learning: cooperative (i.e., learning based on instrumental knowledge), collaborative (i.e., learning based on communicative knowledge), and transformative (i.e., learning based on emancipatory knowledge). Cooperative and collaborative learning provide natural settings to facilitate opportunities for experiential learning. Experiential learning closely links with constructivist learning in that both give meaning to experience. Experiential learning is the process of making meaning from direct experiences through reflection in action (Itin, 1999). Specifically, experiential learning refers to "the organizing and construction of learning from observations that have been made in some practical situation, with the implication that the learning can lead to action (or improved action)" (Moon, 1999, p. 20). Kolb (1984, as cited in Moon, 1999) believes that knowledge is continuously gained through both personal and environmental experiences and that in order for one to gain genuine knowledge from an experience the learner must:

- Be willing to be actively involved in the experience (concrete experience),
- Be able to reflect on the experience (reflection),
- Possess and use analytical skills to conceptualize the experience (abstraction),
- Possess decision making and problem solving skills in order to use the new ideas gained from the experience (experimentation).

These four points represent Kolb's experiential learning cycle; a model that is broadly used in educational literature and professional development programs.

Despite the fact that experiences don't always equate with learning, they can provide a strong foundation for future learning (Jarvis, 1987). Indeed, as learners work together, develop a group identity, and share experiences, the group itself can evolve over time and become a critical part of the learning process. Hearing the experiences of co-learners in a group learning setting can help others to learn by introducing new perspectives on an issue, connecting new ideas and concepts to a personal knowledge base that is limited, and by supporting mutual inquiry to prompt the development of co-created knowledge. Experiential ways of learning are also powerful because they can assist group members to attach meaning and understanding to their experiences. Everyone learns from past experiences, but many people are unaware that their experiences have value. Ultimately, experiential learning (as it applies to group learning) provides a rich environment for learners to share meaningful experiences that can lead to a deeper understanding of each other and improved learning outcomes.

Dechant, Marsick, and Kasl (1993) bring additional understanding to group learning and the differentiation between individual learning groups versus authentic group learning by offering four modes to represent team learning: fragmented mode (i.e.,

individuals learn separately), pooled mode (i.e., individuals begin to share information, but no shared group knowledge has developed), synergistic mode (i.e., both individual learning and shared group learning occurs), continuous mode (i.e., adoption of synergistic learning).

Slavin (1996) is one scholar to propose an integrative theoretical framework that combines multiple theories in the field of group learning. Slavin's model (Figure Three) incorporates six theoretical dimensions to represent group learning and underscores the importance of motivation in the learning process.

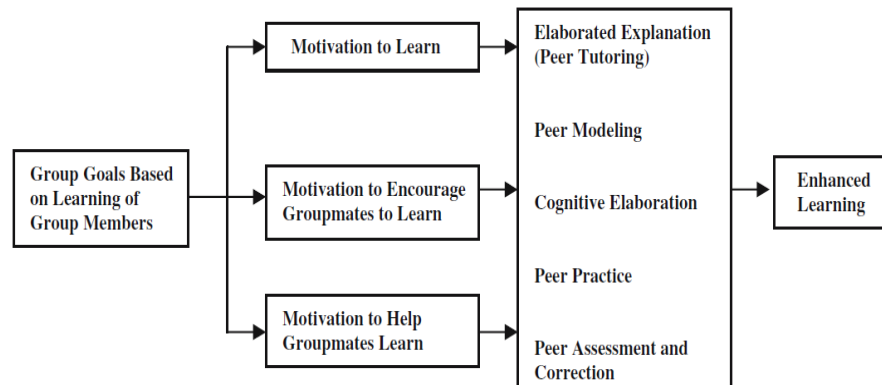


Figure 3. Slavin's Model of Group Learning (Sweet & Michaelsen, 2007, p. 33)

In this model, Slavin notes that group members may experience motivation on three levels: one as an individual learner, one as an encourager to promote learning in others and one as an aide to help others learn (1996). The model emphasizes that motivation at these levels can lead to more effective peer modeling and cognitive discourse and elaboration that prompts enhanced learning. Slavin's levels of motivation to learn represent a deviation from research that highlights motives behind learning that focus on a specific dimension of motivation, rather than examining the multitude of factors that influence one's propensity to learn (Vansteenkiste, Sierens, Soenens, Luyckx,

& Lens, 2009). According to Sorbral (2004), “Motivation is a multifaceted construct that encompasses a variety of meaningful connotations pertaining to learning and educational development (p. 950). Further, Magnusson (1998) urges motivational inquiry to incorporate a “person-centered” approach that will consider the vast range and the diversity of factors that motivate a specific individual to learn. Deci and Ryan’s self-determination theory provides the most comprehensive conception of motivation as it relates to group learning (Beachboard, Beachboard, Li, and Adkison, 2011; Deci & Ryan, 1985). The theory proposes a continuum of motivation comprised of: intrinsic motivation (higher end of the continuum), extrinsic motivation, and amotivation (lower end of the continuum) and posit that intrinsic motivation is associated with “increased interest, engagement, effort, learning, and satisfaction with education” (as cited in Beachboard, Beachboard, Li, and Adkison, 2011, p. 856). Beachboard, Beachboard, Li, and Adkison (2011) contend that cohort learning (a form of group learning) can provide an environment to facilitate social relatedness. Social relatedness, in turn, improves individual intrinsic motivation to learn. The cumulative impact is a higher likelihood that positive learning outcomes can be achieved for individual members of the group and the group as a whole. Topping and Ehly (2001) also include the benefit of social relatedness by proposing an integrative model for small group learning that positions peer interaction as an essential component in the overall learning process. Their research stresses that the conscious decision to assist others to learn creates an enriched opportunity for all group members to learn.

To be an adult learner in a peer-to-peer situation truly requires the learner to engage in thoughtful dialogue and reflect on their experiences. Adult learning in a group



is best advanced by attending to individual learning needs and nurtured by all group members as they work toward a collaborative understanding of the topics addressed in the educational program.

### **Theoretical Perspectives on Health Behavior Change**

The desirable outcome for a health education intervention is to stimulate learning that will create knowledge and eventually lead to health behavior change. The purpose of health education is to bring “about behavioral changes in individuals, groups, and larger populations from behaviors that are presumed to be detrimental to health, to behaviors that are conducive to present and future health” (as cited in Glanz, Rimer & Viswanath, p. 10). Most health interventions cited in the literature derive their components from applications of the health belief model, the theory of reasoned action/theory of planned behavior, transtheoretical model, and social cognitive theory (Coleman & Pasternak, 2012). In the present investigation, the Health Belief Model (HBM) and Social Cognitive Theory (SCT) served as the conceptual frameworks to understand health behavior change. Both theories have been widely used explain health behavior changes associated with the prevention and management of chronic disease.

The Health Belief Model (HBM) has a history of guiding community-based interventions (Champion & Skinner, 2008). Strecher and Rosenstock (1997) contend that the HBM is well suited to society-based interventions (such as the POWER Program) and aligns with “public health origins and a focus on population-based preventive health care measures” (as cited in Finfgeld, Wongvatunya, Conn, Grando, & Russel, 2003, p. 294). According to Roden (2003), the HBM has been used in research to develop educational programs, guidance tools, cost-benefit analysis programs (regarding adherence to

treatment plans), and health promotion campaigns. Roden (2003) states, “The HBM has been thoroughly evaluated, has received empirical support, and is considered to be one of the most influential models in health promotion” (p. 2). Daddario (2007) posits that the HBM is a comprehensive framework to assist health professionals to better understand psychosocial factors associated with health behavior change. Linking with Daddario’s (2007) thoughts, Becker, Drachman, and Kirscht (1974) suggest that the HBM can be used as a predictive model that parallels expectancy-value theory to forecast potential health behaviors based on the degree of threat, perceived effectiveness, and cost-effectiveness of the action.

The HBM includes a host of factors that can affect health behavior change. Determinants such as knowledge, attitudes and beliefs, and sociodemographic factors can impact an individual’s ability to engage in health behavior change. According to Coates, “Raising levels of knowledge and correcting misconceptions will be necessary as a first strategy by which individuals can begin to protect themselves” (1988, p. 240). Yet, increasing knowledge alone is not sufficient to change health behavior and equal attention must be paid to factors such as attitudinal behaviors, social adaptation skills, and psychological disposition (e.g., self-efficacy).

Designing health education programming to address these factors may influence an individual’s perception of the susceptibility, severity, barriers, and benefits associated with a specific health concern (i.e., HBM’s four main constructs). Perceived susceptibility refers to one’s belief about the risk of developing a disease or illness that can be addressed through education that personalizes an individual’s risk factors for developing a disease. Education on the perceived severity of an illness or disease focuses

on specifying the consequences of having the disease or illness. Individuals can be made aware of the perceived benefits (if they change their health habits) in a health education program by challenging individuals to identify an action plan that they believe will reduce their risk for developing a disease or illness. Finally, education can provide training and guidance to assist individuals to identify the barriers in their lives that prohibit them from making positive health behavior changes. The four HBM constructs depend on “cues to action” that activate an individual’s readiness to change. Cues to actions can include: advice and support from family, friends, peers, and teachers, and group discussions and training that help the individual increase self-efficacy to perform the recommended action.

Despite its long standing history and documented effectiveness in health research, a few criticisms have been aimed at the HBM. Most notable is the absence of an emotional component of behavior and lack of social psychology connections (Champion & Skinner, 2008; Roden, 2003). HBM critics believe that the model does not adequately consider the difficulty in modifying beliefs or the multitude of socio-environmental factors that will limit one’s ability to commit to positive health behavior changes. Given this criticism, it is important to consider other health behavior change models that account for the ways in which environmental factors may influence health behavior change. Social Cognitive Theory is one such theory.

Social Cognitive Theory (SCT) finds its roots in Bandura’s work on social learning theory which centers on the ways in which people learn from each other through observation, imitation and modeling (McAlister, Perry & Parcel, 2008). SCT takes social learning theory a step further by including concepts from cognitive psychology,

sociology and humanistic psychology (Bandura, 1986). SCT is a noted model designed to guide behavioral interventions and proposes that personal and environmental factors influence behavior. Bandura's work (1986) refers mainly to social environments, but social cognitive theories often extend to include the role of physical, community, and organizational environments. Key concepts of SCT are grouped into the following six categories (Table One): 1) reciprocal determinism, 2) psychological determinants of behavior, 3) observational learning, 4) environmental determinants of behavior, 5) self-regulation, and 6) moral disengagement.

Table 1. <i>Social Cognitive Theory Categories, Concept and Definitions</i>	
<b>Category</b>	<b>Definition</b>
Reciprocal Determinism	Environmental factors influence individuals and groups, but individuals and groups can also influence their environments and regulate their own behavior
Psychological Determinants of Behavior: <ul style="list-style-type: none"> <li>▪ Outcome Expectations</li> <li>▪ Self-efficacy</li> <li>▪ Collective efficacy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Beliefs about the likelihood and value of the consequences of behavioral choices</li> <li>▪ Beliefs about personal ability to perform behaviors that bring desired outcomes</li> <li>▪ Beliefs about the ability of a group to perform concerted actions that bring desired outcomes</li> </ul>
Observational Learning	Learning to perform new behaviors by exposure to interpersonal or media displays of them, particularly through peer modeling
Environmental Determinants of Behavior: <ul style="list-style-type: none"> <li>▪ Incentive Motivation</li> <li>▪ Facilitation</li> </ul>	<ul style="list-style-type: none"> <li>▪ The use and misuse of rewards and punishments to modify behavior</li> <li>▪ Providing tools, resources, or environmental changes that make new behaviors easier to perform</li> </ul>
Self-Regulation	Controlling oneself through self-monitoring, goal-setting, feedback, self-reward, self-instruction, and enlistment of social support
Moral disengagement	Ways of thinking about harmful behaviors and the people who are harmed that make infliction of suffering acceptable by disengaging self-regulatory moral standards

Reciprocal determinism captures the bi-directional interplay between people and their environments. The concept not only emphasizes how environmental factors influence individuals and groups, but how individuals can manipulate environmental

factors to control their behavior. Observational learning, another key SCT concept, identifies peer modeling as a strategy and aligns well with both Slavin's (1996) and Topping and Ehly's (2001) integrative group learning models that spotlight the importance of peer interaction, peer modeling, peer practice as important elements to enhance learning in a group setting. SCT considers the influence that psychological factors such as beliefs about the value of outcomes that may be achieved if an individual changes their health habits, social norms of the individual or group, and self-efficacy levels can impact health behavior change. Psychological determinants of behavior in SCT also include the role that collective efficacy (i.e. teamwork) plays in helping individuals to change their health habits. One of the paramount features of SCT is that it has a "reciprocally deterministic viewpoint and hypothesizes that no amount of observational learning will lead to behavior change unless the observers' environments support the new behaviors" (Glanz, Rimer & Viswanath, 2008, p. 173). Therefore, it is essential to consider how motivation and facilitation can be used to overcome environmental obstacles that prevent an individual from pursuing change.

Like the Health Belief Model, SCT is not without its detractors. Two major limitations in research have been aimed at SCT. One critique suggests that SCT is too broad and ambitious in its attempts to provide explanations for how human phenomena affect health behavior change (Bandura, 1986). Research advises that the key concepts from SCT be more clearly defined, measured, and manipulated through experimentation. Presently, self-efficacy and moral disengagement are the only key SCT concepts that have been repeatedly validated. It is less clear how to measure facilitation or outcome expectations. Another criticism of SCT is that research applications have been small in

scale and have not undergone robust evaluation to measure the effectiveness of SCT-informed strategies. Glanz, Rimer and Viswanath (2008) report that research on SCT has been mostly descriptive or qualitative and they advocate for research on SCT interventions to include comparison groups.

Limitations aside, SCT does provide a strong foundation for understanding how social and physical environments influence health behavior change. Coleman and Pasternak (2012) have been supportive of SCT's applicability to peer support interventions by contending that SCT strategies in health behavior change can create a support mechanism to persuade the individual that health behavior change is important and providing supportive situations in which the individual can build the self-efficacy needed to carry out the change.

### **Gaps in the Literature**

Several gaps in the literature emerge when linking benefits associated with volunteerism among older adults, peer support health interventions, group learning and health behavior change. In investigating benefits of volunteering among older adults, it is clear that little scholarly attention has been paid to the type of volunteer activity and the quantity of volunteer activity necessary to promote positive health benefits. The present study may shed light on this area as two types of volunteer activities were explored: professional-led group visit intervention and a peer-led self-management training intervention, both of which use older-aged adult volunteer peer leaders. The interventions vary in the type of role and the time commitment that the peer leaders will provide. There is also limited literature in the area of monitoring and evaluating peer support interventions. A logical aspect of peer support interventions to evaluate is the peer

support experience in regards to their satisfaction, learning, behavior change, and the impact that they have on the intervention targets. This study aims to examine the learning and behavior change that volunteer peer leaders personally experience through their role and to investigate if differences in the type and intensity of the peer support training and intervention are associated with changes in health knowledge and health behavior change.



## **Chapter 3: Methods**

### **Philosophical Framework**

This investigation used secondary data from the POWER Program to compare changes in health and health behaviors among three groups of participants: peer leaders in a professional-led group intervention, peer leaders in a peer-led self-management intervention, Veteran Service Organization (VSO) members in both the professional-led group intervention and peer-led self-management intervention. The quantitative methodology used in this study shares its philosophical foundation with the positivist research paradigm (Weaver & Olson, 2006). The positivist research paradigm is based on the use of logic and measurement to explain changes and differences in a certain phenomenon. This study embraced a positivist orientation through the use of measurable outcomes from clinical and survey data. This investigation used numerical data on participants' blood pressure, weight and survey responses to compare changes among the groups and was therefore well suited to use quantitative methodologies. Creswell (2008) defines quantitative research as the “type of research in which the researcher decides what to study; asks specific, narrow questions; collects quantifiable data from participants; analyzes these numbers using statistics; and conducts the inquiry in an unbiased, objective manner” (p. 46). By this definition, the phenomena studied focused on health and health behavior change over time among the three groups and comparison of these changes among the groups. Data analysis in this study demanded the use of both descriptive and inferential statistics to organize, summarize and interpret the data. The original study also employed an experimental research strategy to account for the different types of variables involved in the study. Each participant was randomized to one

of two groups; representing the independent variable in the research design. Blood pressure, weight and survey responses of health habits related to blood pressure represent the dependent variables of interest that were observed and measured to assess the effect of the independent variable (Gravetter & Wallnau, 2009).

### **Research Questions**

The purpose of this research was to explore how peer support health interventions affect the health and wellbeing of peer leaders participating in a program that emphasized support for veterans at risk for high blood pressure and other chronic diseases. This study was a branch of the larger study, “A Randomized Control Trial of a Peer Support Intervention to Improve Hypertension” (POWER Program) that compared the following two peer support models: 1) a professional-led group intervention and 2) a peer-led self-management intervention. Both interventions used peer leaders.

The following questions guided this research:

- How did peer leaders health status and health behaviors change over time as a result of participating in a health promotion program for U.S. veterans?
- How did changes in peer leaders participating in the professional-led group visit intervention compare to changes in peer leaders in the peer-led self-management training intervention?
- How did changes in peer leaders compare to the changes in the peers that were receiving the interventions?

### **Procedures**

**Study setting.** Posts Working for Veterans Health (POWER) was a three year community-based randomized peer support trial comprised of two peer support

approaches that focused on blood pressure reduction, disease self-management, and lifestyle change at Veteran Service Organization (VSO) posts in Southeast Wisconsin. Figure Four displays a map of the VSO posts that participated in the program. The VSO “post” is the locally-operated unit of a VSO, and the site for most of POWER’s intervention-related activities. VSO posts typically meet on a monthly basis. Only the more engaged VSO post members attend meetings regularly; among the VSO posts participating in this project, mean meeting attendance was 21.7, even though mean membership was 208.5. VSO posts meet in a variety of venues, and their meeting places often display patriotic elements, such as American flags, a veterans’ memorial, or retired military equipment. The POWER Program worked with 10 VSOs (Appendix A) across 58 posts to develop, implement, and test two interventions to improve the hypertension self-management skills of their VSO members and support healthy behaviors.

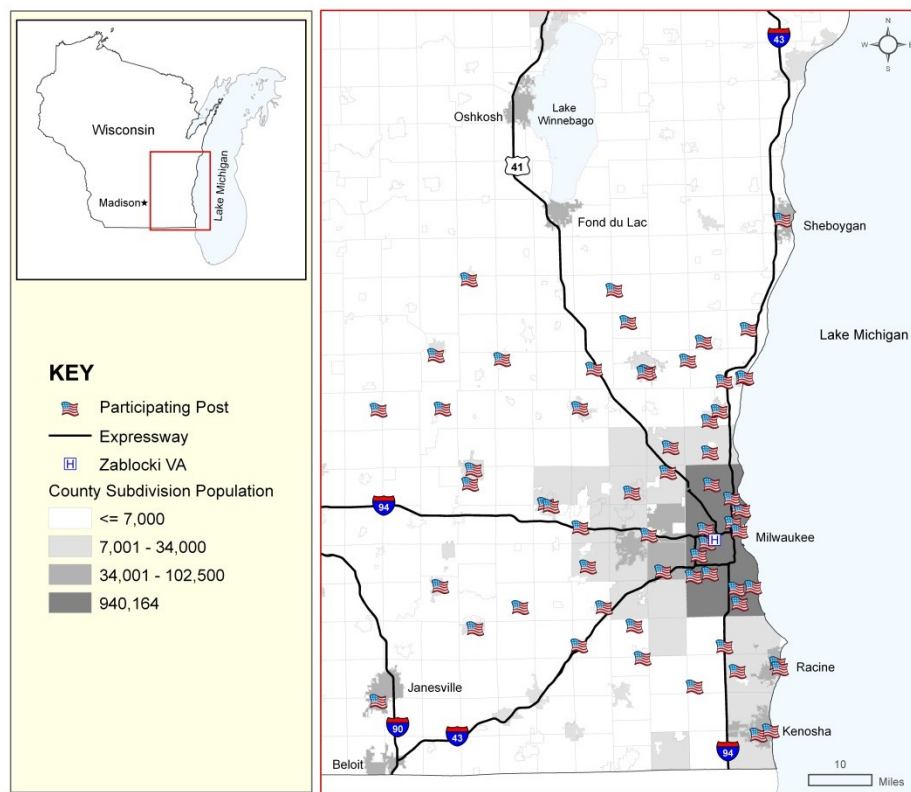


Figure 4: Location of VSO posts participating in the POWER program.

The primary study compared a peer-led self-management training intervention to a professional-led group visit intervention (Hayes et al., 2010). Study investigators hypothesized that the study participants at the VSO posts randomized to the peer-led group would have better blood pressure control, self-management skills, and health-related behaviors than participants at VSO posts randomized to the professional-led group. The investigators measured participants' blood pressure and weight and surveyed them regarding health-related knowledge, attitudes, and behaviors at baseline, 6, and 12 months. The investigators measured systolic blood pressure in 404 participants at baseline and 379 at twelve months. Systolic blood pressure decreased significantly (4.4 mmHg  $p < 0.0001$ ) overall; the decrease was similar in peer-led and professional-led VSO

posts (3.5 mmHg vs. 5.4 mmHg,  $p = 0.24$ ). Weight decreased significantly more at 12 months in peer-led posts (-0.85 vs. + 1.29 pounds,  $p = 0.043$ ), particularly among obese participants (-4.01 vs. +1.05 pounds,  $p = 0.0023$ ). Both interventions to improve self-management were similarly effective for blood pressure, however, peer-led activities were more effective for weight control. These results suggest that peer-led community interventions to encourage self- management can have important impacts on chronic disease (manuscript in preparation). The Zablocki VA Medical Center's (ZVAMC) institutional review board approved the primary study.

The present research used secondary data from the POWER Program to examine health and health behavior changes in the POWER Program's peer leaders.

**Study subjects.** This study identified and compared changes in health status and health behaviors among three groups of participants in the POWER Program: peer leaders in a professional-led group intervention, peer leaders in a peer-led self-management intervention, VSO members in both interventions. A description of each group follows.

***Peer leaders prior to randomization.*** Peer leaders were recruited at each participating VSO post before randomization to one of the two intervention arms. Details of the VSO post recruitment process have been published (Patterson, McGinley, Ertl, Morzinski, Fyfe, and Whittle, 2012). Briefly, VSO post eligibility requirements were 1) location within 60 miles of Milwaukee's Zablocki VA Medical Center; 2) two members willing to serve as peer leaders, 3) willingness to provide time during meetings for project activities, and 4) hypertensive VSO members willing to participate in an

evaluation study. The POWER Program recruited 58 total VSO posts to participate and 114 peer leaders.

Prior to randomization, the study team meet with all peer leaders in small groups (4-16 people) for two hours to review hypertension self-management, train them in automated blood pressure monitor use, and answer questions. The study team also explained the study and basic elements of research (e.g., informed consent, privacy issues). The study team provided self- monitoring equipment (two blood pressure monitors, 12 pedometers, and one bathroom-style scale) to all VSO posts; they asked peer leaders to demonstrate how to use the equipment at VSO post meetings and encourage its use among VSO members.

***Peer leaders in the peer-led intervention.*** Fifty-eight peer leaders were randomized to the peer-led intervention. Of the 58 peer leaders, 44 were eligible to enroll in the study and became study participants (in addition to their peer leader role). The peer leader delivered short presentations (5-10 minutes) at every post meeting, distributed handouts, and encouraged use of the post's blood pressure cuffs and scale. They also set up a "health corner" stocked with professionally-printed brochures, and relayed health-related inquiries from VSO members to the study team. Study staff visited each VSO post twice during the study period to document intervention fidelity. These visits demonstrated that peer leaders reliably made equipment available and presented the educational materials, but that equipment use and attention to presentations varied among posts. A qualitative evaluation of the peer-led intervention has been published (Mosak et al., 2012).

Peer leaders in the peer-led intervention received training in adult education techniques, hypertension self-management skills, and small group leadership. The study team oriented the peer leader to their role during regional 8-hour training sessions. The session addressed basic hypertension facts, the importance of hypertension self-management, and the peer leader expectations. Study staff described and modeled teaching techniques, provided health corner materials, and reviewed equipment use. They also explained how the study team would support and monitor peer leader activities. Thereafter, study staff met with peer leaders in each region for a total of eight 90-minute sessions (four monthly sessions, then bimonthly). At these sessions, peer leaders and study staff debriefed regarding peer leader's experience at posts and planned for subsequent presentations. Study clinicians answered clinical questions that arose from peer leaders or their VSO members. Study staff and peer leaders worked together to address barriers and facilitators to engaging VSO members in self-management activities. Study staff used feedback gathered from the peer leaders at these sessions to improve subsequent sessions. The attendance rate for peer leader training activities was 87.6% (attendance rate was calculated by dividing the sum of the actual number of attended training sessions by the sum of the possible number of attended training sessions). In total, peer leaders received approximately 22 hours of training. Peer leader training details and training evaluation findings, including satisfaction with the training, learning, and behavior change have been published (Morzinski, Patterson, Ertl, Wilke, Fletcher, Wurm, et al., 2012).

***Peer leaders in the professional-led intervention.*** Fifty-six peer leaders were randomized to the professional-led intervention. Of the 56 peer leaders in the

professional-led intervention, 36 were eligible to enroll in the primary study and became study participants (in addition to their peer leader role). Peer leaders in the professional-led intervention met with the study's Principal Investigator (PI) to discuss possible seminar topics, incentives for attendance, and logistics. Once the schedule was set, peer leaders advertised the three seminars to VSO members. The seminars were repeated at six different locations. The PI and a guest speaker (e.g., an emergency medical technician who was also a former combat medic) presented at each session. Attendance at the seminars was low, ranging from 2 to 18 attendees (mean 10.3, standard deviation 5.7). Peer leaders were often the only VSO members in attendance, but they often collected and distributed educational materials at subsequent VSO post meetings.

***VSO members in both interventions.*** Study staff enrolled 404 eligible VSO members in the POWER Program. VSO members were eligible for the study if they usually attended VSO post meetings and either 1) reported doctor-diagnosed hypertension and use of at least one BP medication or 2) had BP  $\geq 140/90$  mmHg (130/80 if diabetic) at the time of enrollment. Study staff invited potentially eligible members to provide contact information. Research assistants then contacted these individuals to arrange for private meetings at which they confirmed eligibility and obtained informed consent. The study team recruited participants between August, 2008 and May, 2009.

### **Data Collection**

After obtaining informed consent, trained research assistants collected identical health survey, blood pressure, and weight data for participants in both interventions at baseline, six and twelve months after randomization. Research assistants scheduled appointments with each participant to collect data. Appointments averaged 30-60 minutes



in length. Participants were compensated at each time point, with the largest component reserved for the study completion visit (\$15, \$10, \$25). All survey data were managed using REDCap electronic data capturing tools (Harris, Taylor, and Thielke, 2009). Data were reviewed every six months for missing values and shifted responses, and after correction, 10% of the data were randomly selected for re-entry to verify data entry accuracy. The error rate at each step was estimated to be no more than 0.5% per item entered before additional errors found on double-entry were corrected.

### **Instruments**

**Blood pressure and weight measurement.** Research assistants measured resting blood pressure three times using aneroid sphygmomanometers and averaged the second and third measures. They then weighed participants using a basic bathroom scale. All measurements were determined by using calibrated equipment and standard techniques.

**Health survey items and justification.** The study team gathered detailed survey data regarding a variety of participant's demographics, traits, attitudes and health behaviors. They collected survey data during the same appointment that blood pressure and weight data were collected. The health survey included a series of items related to participant demographics to characterize the population. Similarly, the data related to clinical history, current blood pressure treatment, and the participant's involvement in managing the blood pressure were collected to examine how consistently their blood pressure was being treated; as well of the participant's attitude about their blood pressure. These variables were identified for their potential to be affected by the interventions. The survey also included standardized measures of health behaviors (e.g., fruit and vegetable intake, sodium intake, physical activity) and personal characteristics likely to affect

health behaviors (e.g., positive orientation towards healthcare and behavior change). The measures were repeated six and twelve months after the interventions began. The health survey can be found in Appendix B.

**Reliability and validity.** Data for the present study were collected as part of the primary analyses of the POWER Program. The health survey utilizes validated instruments with appropriate reliabilities and internal consistencies noted in Appendix C.

**Additional data collected on peer leaders.** The study team collected additional peer leader data. Peer leaders completed a brief survey at the time they were consented that included demographics, factors that could affect their success as peer leaders, and open-ended reason as to why they agreed to serve as a peer leader for their post (Appendix D). The study team identified five key reasons for volunteering: 1) peer leader was asked by VSO post leadership, 2) peer leader wanted to help post members be healthier, 3) peer leader wanted to improve personal health, 4) peer leader wanted to share health-related expertise with VSO post, and 5) peer leader was interested in the topic of hypertension self-management (Mosack, Patterson, Brouwer, Wendorf, Ertl, Eastwood, et al., 2013). At the end of the intervention, additional data on peer leaders in the peer-led intervention were collected through written feedback about what they learned through their participation; further each peer leader identified one health behavior they might either begin or maintain in the subsequent months following the completion of the POWER Program. Third, peer leader performance in the peer-led intervention was evaluated by peer leader self-reports of presentation activities and site observations conducted by trained field staff in qualitative observation techniques. Each VSO post had two observation visits where the field staff noted the level to which the intervention had

been implemented at the VSO post-level. The field staff were looking for evidence of intervention fidelity and to provide recommendations to the peer leaders on how to improve their presentations and POWER-related activities at their VSO posts. These observations occurred at two time points: 1) within the first six months of the intervention, and 2) during the last six months of the intervention. At each visit, two field staff used a structured data collection form with ample space for note-taking. Each field staff member recorded the meeting context (i.e., number of participants, description of the room, date and time); presence or absence of a health corner, blood pressure cuffs, and scale; and whether or not a presentation occurred. In addition, field staff recorded information with respect to the peer leaders' behavior during the presentation, how they worked with each other, and their interactions with the other VSO members before, during, and after the presentation.

### **Data Analysis**

**Overview of cluster-adjusted randomization.** The POWER Program was a randomized controlled trial that randomized participants to two groups: a peer-led self-management intervention (peer-led intervention) and a professional group visit intervention (professional-led intervention). Randomization occurred at the post level and the randomization process was designed to account for two considerations. First, peer leaders were trained in a group setting based on geographic regions and it was necessary to randomize in a way to ensure that a critical mass of leaders was present in each geographic region. Second, the POWER Program randomized a small number of VSO posts (N=58) and a blocked design was needed to have a balanced distribution of posts across the geographic regions.

**Population description.** Descriptive statistics were generated for all peer leaders at baseline (n=114) based on responses from the initial peer leader questionnaire administered to all peer leaders prior to randomization. Next, descriptive statistics for VSO members in both of the interventions at baseline were calculated (N=404). This analysis included the 44 hypertensive peer leaders in the peer led intervention and 36 hypertensive peer leaders in the professional-led intervention that met study eligibility criteria and were also enrolled as study participants. The descriptive statistics generated on the VSO members included the 175 posts members (excluding peer leaders) who were randomized to the peer-led intervention and the 149 post members (excluding peer leaders) who were randomized to the professional-led intervention. Although there was some study attrition with respect to VSO members during the course of the study (20 VSO members were lost in baseline to twelve-month follow-up), there was no attrition among hypertensive peer leaders in either intervention during the study period and thus data analyses comparing these groups included data from all original peer leaders.

**Peer leader change over time.** A repeated-measures design was used to determine whether hypertensive peer leaders in the peer-led intervention or hypertensive peer leaders in the professional-led intervention experienced health change over the course of the project (e.g., baseline, 6 months and 12 months). According to Gravetter and Wallnau (2009), a repeated-measures design is appropriate for studying learning, development, and behavior changes that take place over time. Specifically, repeated-measures t-tests, controlling for baseline values for each variable were conducted. The researcher measured changes in weight, systolic blood pressure, diastolic blood pressure and health habits related to blood pressure control at two time points: baseline to six-

month change and baseline to twelve-month change. Significance levels were adjusted to account for multiple comparisons included in the analysis.

**Between-group comparisons.** The research questions called for two between-group comparisons. The main research question sought to compare changes between hypertensive peer leaders in the peer-led intervention versus hypertensive peer leaders in the professional-led intervention. The researcher conducted Repeated-Measures ANOVA tests for continuous dependent variables and chi-square tests for categorical dependent variables to compare baseline to twelve month changes in weight, systolic blood pressure, diastolic blood pressure and health habits related to blood pressure control between the two groups of peer leaders.

To examine whether hypertensive peer leaders (n=80) changed more than VSO members (n=324) with respect to weight, systolic blood pressure, diastolic blood pressure and health habits related to blood pressure the researcher also used a Repeated Measures ANOVA for continuous dependent variables and chi-square tests for categorical dependent variables to compare baseline to twelve-month changes. The researcher used least-square means estimates to estimate means for the differences in changes between the two groups of peer leaders and changes between peer leaders and the VSO members. Significance levels were adjusted to account for multiple comparisons.

Table Two displays all statistical analyses conducted in this research. All statistical analyses were conducted using IBM SPSS Statistics 20.0 (SPSS, Inc., Chicago, IL).

Table 2				
<i>Variables and Statistical Analyses</i>				
<b>Research Questions</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Instrument/Scale</b>	<b>Statistical Analysis</b>
How did peer leaders in each intervention health status and health habits change over time as a result of participating in a health promotion program for U.S. veterans?	Peer leaders in peer-led intervention	Weight	Pounds	Repeated Measure t-tests  Chi-square tests for categorical dependent variables
	Peer leaders in professional-led intervention	Systolic BP & Diastolic BP	mmHg	
How did health changes in peer leaders compare to the health changes in the VSO members that were receiving the intervention?	Peer leaders  VSO members	Servings: Fruit and vegetables (BRFSS, 2008)	6 item recall	Repeated Measure ANOVA for continuous dependent variables  Chi-square tests for categorical dependent variables
		Sodium Restriction (Hopkins et al., 1989)	2 items; correlation with three 24-hour recalls 0.28	
		Social Support (MOS Social Support; Sherbourne & Stewart, 1991)	20 items, 5-pt Likert; Cronbach's alpha .90	
		Self-Efficacy (General Self-Efficacy)	10 items, 4-pt Likert; Cronbach's alphas range from .76-.90	
		Blood pressure knowledge (HELM) (Schapira et al., 2012)	14 items; item total correlation 0.06-0.27	
		Pedometer Use	4 yes/no items; score 0-3	

## Chapter 4: Results

### Participant Characteristics

**Peer leader characteristics.** Peer leaders ( $n=114$ ) in the POWER Program were middle-aged to older adults (age range 36-84 years,  $M=62.9$ ,  $SD=11.38$ ) (Table Three). A majority of peer leaders were men (86.8%) and fifteen were women (13.2%). The population of peer leaders was largely retired (63.2%) and thirty-two peer leaders had a college degree (28%). The average years of VSO involvement was 17 years ( $SD = 12.8$ ).

A moderate percentage of peer leaders had a medical background (31.6%) and many peer leaders were diagnosed with hypertension (70.2%). Peer leaders' reasons for volunteering varied with "to help the post" most commonly cited as the reason for agreeing to act in the peer leadership role (52.6%). Peer leaders also indicated "the topic of hypertension" and "for their own personal health reasons" as popular motives for serving as a peer leader (27.2%, 24.6% respectively). In a previous study, it was found that peer leaders in the peer-led intervention and peer leaders in the professional-led intervention did not differ on demographic variables in terms of gender, medical training, occupational status, age, or VSO involvement (Mosack et al., 2012). Peer leaders in the professional-led intervention were more likely to report having an interest in hypertension as a reason for volunteering.

Table 3	
<i>Peer Leader Characteristics</i>	
Characteristic	Peer Leaders (n=114)
Gender, <i>n</i> (%)	
Male	99 (86.8)
Female	15 (13.2)
Age in years, <i>M</i> ( <i>SD</i> ); ranged from 36-84 years	62.9 (11.38)
Years of VSO involvement, <i>M</i> ( <i>SD</i> )	17 (12.8)
Diagnosed with hypertension, <i>n</i> (%)	80 (70.2)
Medical background (e.g., paramedic, physician), <i>n</i> (%)	36 (31.6)
Occupation Status, <i>n</i> (%) <sup>*</sup>	
Retired	72 (63.2)
Working for pay	34 (29.8)
Other	6 (5.3)
Education, <i>n</i> (%) <sup>**</sup>	
High school diploma, GED, or less	22 (19.3)
Some College	44 (38.6)
Earned College Degree	32 (28.0)
Some graduate training or degree	10 (8.8)
Reasons for Volunteering, <i>n</i> (%) <sup>***</sup>	
Was asked to volunteer	7 (6.4)
To help the post	60 (52.6)
Personal health reasons	28 (24.6)
To share my expertise	4 (3.5)
Interest in the topic of hypertension	31 (27.2)
* Missing data (n=2)	
** N/A (n=4); Missing data (n=1)	
*** Data represents multiple responses from a few peer leaders; 5 peer leaders did not respond	

**VSO member characteristics.** Demographics characteristics on VSO members were collected at the start of the study (N=404) (Table Four). The VSO member population included the 80 hypertensive peer leaders that were eligible for the study and the 324 VSO members who were the intervention targets. Similar to the peer leader characteristics, a majority of VSO members were middle-aged to older men (age range



39-93 years,  $M=68.2$ ,  $SD=10.1$ ). Over eighty-seven percent of VSO members were men and 96.3% identified as racially or ethnically White. For 41.6% of the VSO member population, a high school diploma, GED, or less was the highest level of education and 68.8% of VSO members were retired.

Table 4	
<i>VSO Member Characteristics</i>	
Characteristic	VSO Members (n=404)
Gender, $n$ (%)	
Male	404 (87.4)
Female	45 (12.6)
Age in years, $M$ ( $SD$ ); ranged from 39-93 years	68.2 (10.1)
Occupation Status, $n$ (%)*	
Retired	278 (68.8)
Working for pay	100 (24.7)
Other	24 (5.9)
Education, $n$ (%) **	
High school diploma, GED, or less	168 (41.6)
Some College	139 (34.4)
Earned College Degree	96 (23.8)
Race or Ethnicity, $n$ (%)	
White	389 (96.3)
Black or African American	11 (2.7)
Other	4 (0.9)
<i>Note.</i> * Missing data (n=2)	
** Missing data (n=1)	

### Peer Leader Change during the Study

The primary focus of this study was to investigate how peer leaders' health status and health behaviors changed throughout the duration of the study. As such, Table Five reports on changes that peer leaders experienced from baseline to six months and from baseline to twelve months. Results from repeated-measures t-tests revealed that peer

leaders reported eating 0.39 more servings of fruits and vegetables after six months ( $t(78) = 2.3, p = .02$ ) and almost a half more serving a day after twelve months ( $t(74) = 3.1, p < .01$ ). The number of peer leaders that reported using a pedometer also increased at both the six and twelve month time points. After six months, an additional 24.7% of peer leaders reported using a pedometer ( $t(77) = 4.6, p < .01$ ) and 26.7% reported using a pedometer after twelve months of the intervention ( $t(74) = 4.1, p < .01$ ).

Findings on baseline-to-twelve month change indicate that peer leaders lowered their systolic blood pressure by 3.87mmHg ( $t(75) = 2.3, p = .03$ ). Peer leaders improved their self-efficacy scores by over a point ( $t(74) = 2.8, p < .01$ ), as well as their hypertension knowledge scores by almost a full point after twelve months ( $t(74) = 3.7, p < .01$ ).

Table 5									
<i>Peer leader health status and health behavior change over duration of POWER Program*</i>									
Variable	Δ Baseline to 6 month				Δ Baseline to 12 month				
	M	SD	t(79)	p value <sup>+</sup>	M	SD	t(79)	p value <sup>+</sup>	
Weight	-0.53	8.9	0.05	0.96	-0.26	11.6	0.19	0.85	
Systolic BP	-1.96	18.5	0.94	0.35	-3.87	14.9	2.3	<b>0.03</b>	
Diastolic BP	-0.49	9.9	0.44	0.66	-1.09	10.0	0.95	0.35	
Fruit and Vegetables (servings/day)	+0.39	1.5	2.30	<b>0.02</b>	+0.45	1.2	3.11	<b>&lt;0.01</b>	
Sodium Intake	-0.08	2.2	0.30	0.77	+0.01	2.1	0.06	0.96	
Social Support	Data not collected				+1.73	15.6	0.96	0.34	
Self-Efficacy	Data not collected				+1.01	3.1	2.80	<b>&lt;0.01</b>	
Hypertension Knowledge	Data not collected				+0.84	2.0	3.67	<b>&lt;0.01</b>	
Use pedometer Δ n (Δ in % )	+18	24.7	4.60	<b>&lt;0.01</b>	+17	26.7	4.13	<b>&lt;0.01</b>	
<p><i>Note.</i> * Data reflect subset of hypertensive peer leaders who participated in the study (n=80). Mean change scores are reported; standard deviations are in parentheses.</p> <p><sup>+</sup>p values based on Repeated Measures ANOVA for continuous dependent variables and Chi-Square test for categorical dependent variables; significance criterion was p &lt; .05. Bolded values are significant.</p>									

## Between-Group Comparisons

**Baseline comparisons between peer leaders and VSO members.** A comparison of baseline scores for weight, systolic blood pressure, diastolic blood pressure and health behavior variables are presented for peer leaders and VSO members in Table Six.

Findings revealed significant differences between the two groups at baseline in terms of hypertension knowledge and the percent of participants that use a pedometer. At baseline, peer leaders scored significantly higher than VSO members on the HELM instrument to measure hypertension knowledge ( $M=9.4$ ,  $SD=2.1$  compared to  $M=8.5$ ,  $SD=2.2$ ,  $F(1, 402) = 10.5$ ,  $p<.01$ ). Over sixty percent of peer leaders reported using a pedometer compared to 38.3% of VSO members ( $\chi^2(3, n=404) = 30.2$ ,  $p<.01$ ). Also, while not statistically significant, VSO members tended to weigh less than peer leaders ( $M=208.2$ ,  $SD=43.0$  compared to  $M=218.1$ ,  $SD=47.3$ ,  $F(1, 401) = 3.3$ ,  $p=.07$ ).

Table 6						
<i>Baseline health status and health behavior for hypertensive peer leaders and VSO members*</i>						
	M	SD	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	F	<i>p</i> value <sup>+</sup>
Weight						
Peer Leaders (n=80)	218.1	47.3	1	401	3.27	0.07
VSO Members (n=324)	208.2	43.0				
Systolic BP						
Peer Leaders (n=80)	134.5	16.4	1	402	0.00	0.99
VSO Members (n=324)	134.5	15.4				
Diastolic BP						
Peer Leaders (n=80)	74.5	11.3	1	402	3.10	0.08
VSO Members (n=324)	72.0	11.3				
Fruit and Vegetables** (servings/day)						
Peer Leaders (n=80)	3.40	1.5	1	402	0.13	0.72
VSO Members (n=324)	3.40	1.6				
Sodium Intake***						
Peer Leaders (n=80)	5.3	2.1	1	401	1.38	0.24
VSO Members (n=324)	5.0	2.0				
Social Support**						
Peer Leaders (n=80)	75.7	17.3	1	398	0.95	0.33
VSO Members (n=324)	73.5	18.2				
Self-Efficacy**						
Peer Leaders (n=80)	31.9	4.1	1	402	0.57	0.45
VSO Members (n=324)	31.5	3.8				
Hypertension Knowledge**						
Peer Leaders (n=80)	9.4	2.1	1	402	10.53	<b>&lt;0.01</b>

VSO Members (n=324)	8.5	2.2			
Use(d) Pedometer, <i>n</i> (%)					
Peer Leaders (n=80)	49	61.3%	3	30.2	<b>&lt;0.01</b>
VSO Members (n=324)	124	38.3%			
<p><i>Note.</i> Weight= pounds; SBP=systolic BP (mmHg); DBP=diastolic BP (mmHg); FNV=servings of fruit and vegetables (per day); Sodium=sodium intake; Social Support=MOS Social Support measure; Self-Efficacy=General Self-efficacy measure; HELM=hypertension evaluation lifestyle and management knowledge; Pedometer=Use pedometer in the past, occasionally, regularly</p> <p>*Data for the subset of Peer Leaders who were hypertensive and completed study measures and the VSO members who received the intervention. Mean scores are reported; standard deviations are in parentheses.</p> <p>**Higher scores reflect better outcomes.</p> <p>***Lower scores reflect better outcomes</p> <p><sup>+</sup> <i>p</i> values based on ANOVA for continuous dependent variables and Chi-Square test for categorical dependent variables; significance criterion was <math>p &lt; .05</math>. Bolded values are significant.</p>					

### **Comparison of twelve-month differences between peer leaders and VSO**

**members.** Table Seven captures the differences in health status and health behavior change between peer leaders and VSO members after the twelve month intervention. Results show that peer leaders, when compared to VSO members, reported eating one half more servings of fruits and vegetables on average ( $M=+0.45$  versus  $M= -.05$ ,  $F(1, 372) = 7.7$ ,  $p<.01$ ). Peer leaders' hypertension knowledge scores also significantly improved beyond that of their VSO members counterparts ( $M=+0.84$  versus  $M= +0.30$ ,  $F(1, 372) = 4.8$ ,  $p=.03$ ). Likewise, peer leaders were more likely to report using a pedometer than VSO members. After twelve months, 88% of peer leaders reported using a pedometer compared to 65.2% of VSO members ( $\chi^2(1, n=374) = 14.8$ ,  $p<.01$ ).

Although not significant, data on twelve-month change showed that peer leaders lost more weight than VSO members and experienced greater improvement on measures of self-efficacy and social support. VSO members were reported to have lowered their systolic and diastolic blood pressure readings more than peer leaders. ( $-4.49\text{mmHg}$  versus  $-3.87\text{ mmHg}$ ,  $F(1, 377) = 0.1$ ,  $p= 0.76$  and  $-2.10\text{ mmHg}$  versus  $-1.09\text{ mmHg}$ ,  $F(1, 377) = 0.6$ ,  $p= 0.43$ ).

Table 7						
<i>Comparison of twelve- month differences in health status and health behavior change between peer leaders versus VSO members.*</i>						
	M	SD	df <sub>1</sub>	df <sub>2</sub>	F	p value <sup>+</sup>
Δ Weight						
Peer Leaders (n=80)	-0.26	11.6	1	375	0.13	0.72
VSO Members (n=324)	0.21	9.8				
Δ Systolic BP						
Peer Leaders (n=80)	-3.87	14.9	1	377	0.09	0.76
VSO Members (n=324)	-4.49	15.9				
Δ Diastolic BP						
Peer Leaders (n=80)	-1.09	10.0	1	377	0.62	0.43
VSO Members (n=324)	-2.10	9.94				
Δ Fruit and Vegetables** (servings/day)						
Peer Leaders (n=80)	0.45	1.24	1	372	7.66	<b>&lt;0.01</b>
VSO Members (n=324)	-0.05	1.44				
Δ Sodium Intake***						
Peer Leaders (n=80)	0.01	2.05	1	371	0.22	0.64
VSO Members (n=324)	-0.12	2.26				
Δ Social Support**						
Peer Leaders (n=80)	1.73	15.6	1	367	0.00	0.98
VSO Members (n=324)	1.68	15.3				
Δ Self-Efficacy**						
Peer Leaders (n=80)	1.01	3.13	1	372	3.04	0.08
VSO Members (n=324)	0.22	3.63				
Δ Hypertension Knowledge**						



Peer Leaders (n=80)	+0.84	1.98	1	372	4.75	<b>&lt;0.03</b>
VSO Members (n=324)	+0.30	1.91				
<b>Δ Use(d) Pedometer, <i>n</i> (%)</b>						
Peer Leaders (n=80)	66	88%	1		14.8	<b>&lt;0.01</b>
VSO Members (n=324)	195	65.2%				
<p><i>Note.</i> Weight=pounds; SBP=systolic BP (mmHg); DBP=diastolic BP (mmHg); FNV=servings of fruit and vegetables (per day); Sodium=sodium intake; Social Support=MOS Social Support measure; Self-Efficacy=General Self-efficacy measure; HELM=hypertension evaluation lifestyle and management knowledge; Pedometer=at 12 months, use pedometer in the past, occasionally or regularly</p> <p>* Data reflect subset of hypertensive peer leaders (n=80) or the VSO members (n=324) who participated in the study. Mean change scores for baseline to 12 month differences are reported; standard deviations are in parentheses.</p> <p>**Peer leader missing data (n=5); VSO member missing (n=25);</p> <p><sup>+</sup><i>p</i>-value based on ANOVA for continuous dependent variables and Chi-Square test for categorical dependent variables; significance criterion was <math>p &lt; .05</math>. Bolded values are significant.</p>						

### **Comparison of twelve-month differences between peer leaders in each**

**intervention.** The final between group comparisons examined differences between the two groups of peer leaders. Forty-four hypertensive peer leaders were randomized to the peer-led intervention and thirty-six hypertensive peer leaders were randomized to the professional-led intervention. Results from a repeated-measures ANOVA revealed there were no significant differences between the two peer leader groups for the study variables between the baseline-to-twelve month measurements (Table Eight).

Interestingly, peer leaders in the peer-led intervention lost an average of 1.90 pounds during the 12 month intervention. Peer leaders in the professional-led intervention gained 1.83 pounds; although the difference was not significant ( $F(1, 73) = 1.9, p = 0.17$ ). Peer leaders in the peer-led intervention also demonstrated greater improvements in both systolic and diastolic blood pressure readings, greater gains in the number of servings of fruits and vegetables they self-reportedly consumed, greater improvements in their hypertension knowledge and self-reported greater use of a pedometer after twelve months compared to peer leaders in the professional-led intervention. Conversely, peer leaders in the professional-led intervention showed greater improvement in social support and self-efficacy after twelve months than peer leaders in the peer-led intervention.

Table 8						
<i>Comparison of twelve-month differences in health status and health behavior change between peer leaders in the peer-led intervention versus peer-leaders in the professional-led intervention*</i>						
	M	SD	df <sub>1</sub>	df <sub>2</sub>	F	p value <sup>+</sup>
<b>Δ Weight</b>						
Peer Leaders in peer-led intervention (n=44)	-1.90	13.8	1	73	1.92	0.17
Peer Leaders in prof-led intervention (n=36)	1.83	7.8				
<b>Δ Systolic BP</b>						
Peer Leaders in peer-led intervention (n=44)	-3.93	12.0	1	74	0.00	0.97
Peer Leaders in prof-led intervention (n=36)	-3.78	18.2				
<b>Δ Diastolic BP</b>						
Peer Leaders in peer-led intervention (n=44)	-1.30	6.88	1	74	0.04	0.84
Peer Leaders in prof-led intervention (n=36)	-0.82	13.2				
<b>Δ Fruit and Vegetables** (servings/day)</b>						
Peer Leaders in peer-led intervention (n=44)	0.55	1.42	1	73	0.65	0.42
Peer Leaders in prof-led intervention (n=36)	0.32	0.98				
<b>Δ Sodium Intake***</b>						
Peer Leaders in peer-led intervention (n=44)	0.00	2.13	1	73	0.00	0.95
Peer Leaders in prof-led	0.03	1.98				

intervention (n=36)						
<b>Δ Social Support**</b>						
Peer Leaders in peer-led intervention (n=44)	1.60	16.1	1	73	0.00	0.94
Peer Leaders in prof-led intervention (n=36)	1.89	15.2				
<b>Δ Self-Efficacy**</b>						
Peer Leaders in peer-led intervention (n=44)	0.67	3.25	1	73	1.17	0.28
Peer Leaders in prof-led intervention (n=36)	1.45	2.98				
<b>Δ Hypertension Knowledge**</b>						
Peer Leaders in peer-led intervention (n=44)	1.17	1.83	1	73	2.66	0.11
Peer Leaders in prof-led intervention (n=36)	0.42	2.10				
<b>Δ Use(d) Pedometer, <i>n</i> (%)</b>						
Peer Leaders in peer-led intervention (n=44)	38	91%	1		14.8	0.35
Peer Leaders in prof-led intervention (n=36)	28	85%				
<i>Note.</i> Weight=pounds; SBP=systolic BP (mmHg); DBP=diastolic BP (mmHg); FNV=servings of fruit and vegetables (per day); Sodium=sodium intake; Social Support=MOS Social Support measure; Self-Efficacy=General Self-efficacy measure; HELM=hypertension evaluation lifestyle and management knowledge; Pedometer=Use pedometer in the past, occasionally or regularly * Data reflect subset of hypertensive peer leaders who were randomized to either the peer-led intervention (n=44) or the professional-led intervention (n=36). Mean change scores for baseline to 12 month differences are reported; standard deviations are in parentheses.**Peer leaders in peer-led intervention missing data (n=2); Peer leaders in professional-led intervention missing data (n=3); + <i>p</i> -value based on ANOVA for continuous dependent variables and Chi-Square test for categorical dependent variables; significance criterion was <i>p</i> < .05. Bolded values are significant.						

## **Chapter 5: Discussion**

### **Summary of Findings**

The main purpose of this study was to examine peer leader change in health status and health behaviors during a twelve-month intervention and to compare peer leader changes to the VSO members who were part of the intervention. The community-based intervention targeted U.S. veterans with chronic health conditions; specifically targeting hypertensive veterans. The intervention used volunteer peer leaders who completed a training curriculum to prepare them for their role as a peer leader and it was hypothesized that peer leaders would achieve greater improvements in health status and behavior change than VSO members due to an additional dose of the intervention (i.e., the peer leader training curriculum). Changes in health status and health behavior were also investigated over the twelve-month intervention between two groups of peer leaders: 1) peer leaders in a peer-led intervention and 2) peer leaders in a professional-led intervention. After six months of the intervention, peer leaders demonstrated statistically significant positive changes in their health behaviors through an increased consumption of fruits and vegetables and greater use of a pedometer to track the number of steps the individual took daily. At the completion of the twelve-month intervention, peer leaders significantly lowered their systolic blood pressure, reported a greater sense of self-efficacy, and increased their hypertension knowledge. Peer leaders also significantly increased their fruit and vegetable intake and pedometer use after twelve months. When compared to VSO members, peer leaders demonstrated greater progress after the twelve-month intervention towards changing their health behaviors in a positive way. Peer leaders improved their fruit and vegetable consumption and pedometer use more than

VSO members. Peer leaders also showed a significantly greater improvement in hypertension knowledge than VSO members. Results of this study did not reveal any statistically significant differences in health status and health behaviors between peer leaders in the peer-led intervention and peer leaders in the professional-led intervention after the twelve-month study period.

### **Findings in Relation to the Literature**

Peer support interventions that emphasize the use of peer leaders have been shown to be beneficial in activating participants to become more empowered to manage their chronic diseases (Barlow, Turner, Wright, 2000; Lorig, Sobel, Stewart, Brown, Bandura, et al., 1999). Additionally, there is a body of literature that identifies the health benefits associated with volunteerism in older adults (Morrow-Howell, Hinterlong, Rozario, & Tang, 2003). However, little research has examined volunteerism in the context of a trained peer leader. The current study takes findings on health benefits associated with volunteerism among older adults and extends them to trained volunteer peer leaders. Not only did volunteer peer leaders make positive changes to their health habits, improve their self-efficacy and hypertension knowledge, they also improved their systolic blood pressure. These primary findings are in keeping with previous research that has demonstrated older adult volunteers experience improved physical health, greater self-efficacy, improved health-related knowledge and greater adoption of healthy lifestyles and practices (Caplan & Harper; 2007; Hainsworth & Barlow, 2001; Lum & Lightfoot, 2005, Morrow-Howell, Hinterlong, Rozario, & Tang, 2003).

Peer leader success might be attributed to the CBPR approach embraced by the study team. The peer leader training curriculum represented a health education program

that peer leaders were involved in both the planning and guidance of (e.g., they offered suggestions for future training topics and provided feedback on the strengths and barriers of the program). Also, the training approach called for peer leaders to attend a series of training sessions at which time they were given information and a scripted presentation about the health messages they were to share with VSO members. The study team encouraged peer leaders to autonomously prepare for their VSO presentations and to adapt and revise each scripted health message to their comfort level (i.e., “make it their own”). This approach extends findings in the CBPR literature which has found that interventions are more successful when there is shared power among partners and respect for the knowledge and skill of the community partner or in this case the peer leaders (Minkler and Wallerstein, 2003).

The CBPR approach emphasized by this study connects to several group learning principles. Specially, the group learning environment in this study called for peer leaders and educators to work collaboratively from defining the learning topic to identifying strategies to advance the group’s progression through Kolb’s learning cycle. In the context of the peer leader training curriculum, concepts of the Health Belief Model (HBM) were used to assist peer leaders to learn about and reflect on their perceived susceptibility and severity for developing hypertension and/or managing hypertension, identifying barriers that prohibit them from making healthy changes, and identifying cues to action to activate their readiness to change. It was the study team’s belief that by reflecting on these HBM concepts, peer leaders would progress to Kolb’s experimentation phase and implement new healthy behaviors that would improve their physical health status. Improvement in

peer leader health status may provide evidence that peer leaders reached Kolb's experimentation phase.

The health change in peer leaders from baseline to twelve months can also be framed from a program evaluation perspective. By applying Kirkpatrick's Evaluation Model, findings indicate that peer leaders achieved Level Two (i.e., knowledge gain) through their increased hypertension knowledge and Level Three (i.e., behavior change) by implementing positive health behavior changes (Kirkpatrick & Kirkpatrick, 2006). Improvements in physical health status were minor; indicating that peer leaders did not quite achieve Level Four (i.e., impact) in Kirkpatrick's Evaluation Model for which more observable physical health changes would have been observed.

This study also contributes to the literature by investigating differences between trained volunteer peer leaders and the peers they serve. Previously published research on health benefits associated with volunteerism has rarely used a comparison group to increase the rigor of research on volunteerism. This study compared health improvements achieved by volunteer peer leaders to the peers that were the intervention targets. The findings suggest that volunteer peer leaders made modest improvements in health behaviors and health knowledge above and beyond that of the peers they served in this community-based hypertension self-management program for U.S. veterans. The positive health behavior changes and improved hypertension knowledge experienced by the peer leader (compared to the VSO members) may be attributed to the peer leader training curriculum that the peer leaders completed. By virtue of their role, peer leaders had exposure to the materials twice (i.e., once when learning about the material and the second time when delivering it to VSO members).



Another plausible explanation to the greater health gains peer leaders experienced when compared to VSO members may be rooted in the construct of cognitive dissonance (Stone & Fernandez, 2008). Festinger's (1957) seminal work on the theory of cognitive dissonance described cognitive dissonance as the inconsistencies that exist between one's behavior and beliefs. His original work found that an inconsistency between behavior and belief creates a negative tension for the individual that they rectify with a changed behavior. Stone and Fernandez (2008) contend that individuals enter a state of cognitive dissonance "when people *publicly advocate* the importance of the target course of action and are then *privately reminded* of their own recent personal failures to perform the target behavior" (p. 1024). Applied to the POWER Program, peer leaders delivered health messages and modeled the use of the blood pressure cuff and scale on a monthly basis. It may be that their public advocacy for VSO members to make positive health behavior changes and therefore improve their health status was enough to privately remind them that their personal choices were incongruent with the messages they were promoting. This disconnect may have prompted them to embrace the action they were teaching to VSO members.

Third, while there is evidence that suggests being a volunteer can increase health knowledge, skills, self-efficacy and health behaviors, little research specifies the conditions under which such benefits are achieved. There is little known about the nature of the volunteer work and the mechanisms by which the volunteer activity improves the volunteers' health. This study compared two types of volunteer peer leaders that had different experiences in terms of training requirements, interaction with the study team/other volunteer peer leaders, expectations as a volunteer and interaction with peers.

There were no significant differences between the two types of volunteer peer leaders, suggesting that role of a volunteer peer leader may be important in and of itself. It may be that the improved health and positive health behavior changes that all peer leaders (regardless of the group they were randomized to) is connected to their elevated status as a peer leader. Hainsworth and Barlow's work involving the use of peer leaders in an arthritis program found that, in addition to experiencing positive health changes, peer leaders also enjoyed their acquired status as a lay health leader (2001). Research on volunteerism among older adults also corroborates this finding by suggesting that the connection between volunteerism and health benefits is in the embodiment of the volunteer role. Lum and Lightfoot (2005) and Moen et al. (1992) found that older people experience an enhanced role in their social networks by virtue of their volunteer role; leading to opportunities to increase power, prestige, resources and emotional gratification. Gottlieb and Gillespie (2008) link the volunteer role to increased self-regulation as an explanation for improved health benefits. They posit that "by assuming a volunteer role, older adults gain an identify and corresponding set of behaviors that place them in a position to interact with people who provide feedback essential for self-regulation (Gottlieb & Gillespie, 2008, p. 403). Finally, the very nature of the helping relationship and the interdependent relationships formed in the volunteer experience may have been central to the personal benefits volunteer peer leaders experienced.

From a broader perspective, findings from this study support the theoretical foundations of Social Cognitive Theory (SCT) by illustrating relationships between observational learning, self-efficacy, self-regulation and health behavior change. First, observational learning is a key SCT concept and embodies how individuals learn to

perform new behaviors by exposure to interpersonal demonstrations of the behavior. This is often accomplished by peer modeling. Many studies have shown that behavior modeled by peer leaders are imitated more frequently when observers perceive the leaders as similar to themselves, making peer modeling a well-recognized method for influencing behavior (Broadhead, Heckathron & Altice, 2002; Wilson & Pratt, 1987). In this study, the ways in which peer leaders modeled new behavior to one another may have influenced the positive health behavior changes peer leaders experienced.

Second, self-regulation was an integral component in assisting peer leaders to implement health behavior changes. Peer leaders and VSO members provided feedback to one another during monthly VSO meetings. The presentation of the monthly health message, the use of the scale to monitor weight and regular blood pressure monitoring provided opportunities for peer leaders and VSO members to self-monitor, give/receive feedback and enlist in social support as a strategy to change health behaviors. The self-regulation component that the peer leaders and VSO members experience also links to models of group learning that stress the importance of self-regulation in promoting learning to all group members (Topping and Ehly, 2001; Van Meter and Stevens, 2000).

Next, findings can be viewed from SCT's concept of outcome expectations and collective efficacy as it relates to the social norms of the group. It is possible that peer leaders' and VSO members' health behaviors were influenced by their beliefs about how other members would view their health changes. Said another way, the social influence of peer leaders and VSO members may have increased or decreased the likelihood for new behaviors to be embraced by all individuals involved in the intervention. Also, the degree to which the intervention became embedded into the VSO culture may have influenced

the group's collective efficacy to make positive health behavior changes at the VSO-level, as well as the individual level. Another consideration in understanding the group's collective efficacy is the relationship between individual learning and group learning.

It is the collective behaviors of individuals that create group behaviors and examining individual behavior change will always remain integral to understanding health behavior change. But macro-level theories are also important in understanding the complex environments in which individual behavior takes place. Theoretical approaches to group health behavior change include community activation, diffusion of innovations, organizational change, and mass media communications. Diffusion of innovations is well suited to explain group change in the peer leader and VSO population. In fact, Bandura (1986) devotes a chapter on social diffusion of innovations in his volume on Social Cognitive Theory. Bandura emphasizes the need to achieve a good fit between the attributes of an innovation, the individuals and groups targeted by the innovation, and the environment or context.

Rogers (2003) identified three considerations required to maximize the success of an innovation. First, communication channels must be appropriate and clearly identified for group members. Second, Rogers (2003) underscores the need for collaboration between the innovation developers and the innovation users; known as linkage agents. Third, the context in which the diffusion takes place (i.e., characteristics of the system or environment) is critical to informing the development and success of an innovation. Gladwell (2000) has also popularized ideas about diffusion of innovations and offers the following strategies for increasing the likelihood of success. The first strategy underscores the importance of identifying early adopters or champions (i.e., peer leaders)

for the innovation. Early adopters should be influential people in the group. Next, the innovation needs to have attributes that people find compelling. This sentiment links with the Health Belief Model which stresses the need for individuals to have a perceived susceptibility and perceived severity about the illness or disease. Becoming aware of the risk factors for developing an illness or disease and the consequences, may be a compelling reason for a group to adopt the innovation. Third, the physical and broader social environment can have a tremendous impact on the innovation's success.

Applying Gladwell's strategies to the findings in the current study, it is possible that the presence of influential peer leaders and VSO members who adopted the intervention could have propelled their fellow comrades to behave in a similar fashion of positive health behaviors change for both peer leaders and VSO members. Conversely, the findings reveal that changes in health behavior and health status from baseline to twelve months were small for both peer leaders and VSO members. It is possible that greater changes in health behavior and health status would have resulted if the intervention had more early adopters. Gladwell's second strategy which emphasizes the need for group members to find the innovation compelling may explain the improvements that peer leaders made during the intervention. The peer leader training curriculum may have adequately educated peer leaders about the risk factors for hypertension and the consequences of developing the disease. The learning that occurred through the curriculum may have compelled peer leaders to change their personal health habits for the better, as well as find value in adopting the POWER Program as a standard part of the VSO culture. Lastly, there may have been physical and social environmental factors that facilitated or impeded the uptake of the innovation and ultimately the findings

of this study. In the VSO environment such factors may include: the VSO post's meeting location (e.g., in a bar, restaurant or their own building), whether or not a meal is served during the meeting (e.g., high salt/high fat food and snacks served), if alcohol is served during the meeting, and/or if there are women members of the VSO post. Also, adoption of the innovation may be contingent on the need for a critical mass of people available to participate for the VSO leadership to believe that participation in the innovation is worthwhile. Indeed, leaders often promote a new innovation only after a large number of group members favor it (Bolman and Deal, 2008). The present study does not provide insight on how such factors may have impacted the innovation success, but represent an interesting and important future direction to consider.

### **Limitations and Strengths**

While this study adds new knowledge to the literature on peer leaders in health promotion activities and volunteerism, there are both limitations and strengths to acknowledge. Main limitations of the current study are due to study parameters, the use of several self-reported measures, and the use of secondary data.

First, study findings are limited to the population and setting of the current study. This study represents veteran participants with hypertension participating in a specific chronic-disease self-management program (the POWER Program) in one geographic area. Also, this study is homogeneous in terms of age, gender and racial diversity. Most study participants were older, white men; limiting generalizability to other groups of individuals. Further research is needed to extend these findings to other community groups, populations, geographic areas, and disease conditions. However, the fact that the quantitative approach used in this study focused on a specific disease condition within an

identified group of people in a defined area, can also be regarded as a strength as such parameters enabled the researcher to better understand the central phenomenon (i.e., changes in peer leaders' health behaviors and health status over time) (Creswell, 2008). A last limitation in regard to study parameters was the length of the intervention. This was a twelve-month intervention and analyses were confined to baseline to six-month change and baseline to twelve-month change in health status and health behavior change. For many individuals, changing health behaviors and achieving greater physical health status is a prolonged process and a longer intervention period may have produced different outcomes.

Second, the current study relied on self-reported measures of fruit and vegetable consumption, sodium intake, social support, self-efficacy and pedometer use. With the exception of pedometer use, all instruments have been validated and allowed for the study team to collect data on a large sample of people. However, self-reported data are not without challenges. Self-report measures can be influenced by bias and measurement error (Howell, 2009). Further, participants' recall on the measure can be biased by poor memory, lack of understanding of the questions and social desirability (Howell, 2009).

Third, the use of secondary data is also a limitation and strength of this study. The major disadvantages to using secondary data include: 1) the data may not contain the specific information that the researcher would like to have, 2) the variables might not be the exact ones the researcher would have selected, and 3) the researcher does not know exactly how the data were collected and is not familiar with the data (Boslaugh, 2007). The current study did not include health status and health behavior data on all peer leaders and the analyses were restricted to data on peer leaders who were hypertensive.

Ideally, the study would have included health status and health behavior data on all peer leaders to generate more complete conclusions. Another limitation in using this secondary data set is the variable of “pedometer use” was used as a surrogate variable to demonstrate an increase in physical activity. The findings of this study would have been strengthened by the use of a validated instrument to better measure physical activity levels among participants. Fortunately, lack of familiarity with the secondary data was not a barrier in this study. As a member of the study team, the researcher was familiar with the context of the primary study, the participants (both peer leaders and VSO members), and how the data were collected.

### **Future Research Directions**

Inspection of findings from this study reinforced the need to learn more about peer support interventions, the peer leader experience and the peer groups served by volunteer peer leaders. Indeed, to intervene effectively and make informed judgments about how to measure the success of peer support interventions, additional research is needed to understand how *all* individuals are affected by the intervention, as well as the inherent relationships.

Differences in health status and health behavior between volunteer peer leaders and their peers is a particular area in need of further research. No significant differences were found in physical health status (i.e., weight and blood pressure) between peer leaders and VSO members during the twelve-month intervention, yet there were significant differences demonstrating that peer leaders made greater improvement in health behavior change than VSO members (i.e., increased fruit and vegetable consumption, increased physical activity levels and improved knowledge of about



hypertension). Observable changes in health status (e.g., weight and blood pressure) often take a greater amount of time to transpire and, perhaps, the twelve month intervention was not enough time to detect changes in health status between the two groups. Further research should extend the length of the intervention or include a post-intervention data collection point to see if peer leaders experience improvements in health status that are greater than their VSO counterparts beyond the timeframe of the intervention.

Also, there is still much to learn about the role that volunteerism plays in improving health. These findings, added to the body of literature on volunteerism, confirm the need for research that investigates greater granularity in defining and measuring volunteer roles in order to specify causation between volunteerism and improved wellbeing. Specifically, inspection of findings raises questions about possible connections between volunteer peer leader health change and the volunteer peer leader's personality characteristics and leadership styles. Example questions include:

- Is a volunteer peer leader's leadership style associated with changes in health status or health behavior change? And, is any health behavior change experienced by a peer leader related to his/her leadership role?
- Is there a shared personality characteristic among older adults that volunteer or don't volunteer?
- Does the volunteer peer leaders' sense of loyalty or attachment to the organization influence their personal outcomes and that of the group?
- Is there a relationship between peer leader leadership styles or personality characteristics and intervention outcomes?

Also, regarding volunteerism, the length of the volunteer activity and sustained occupancy of the peer leader role could make a difference in the level of health change the peer leader achieves. Longitudinal studies on peer leaders serving in a voluntary capacity for the same role are needed to investigate this area. The length of the volunteer activity and the sustained involvement in the volunteer are particularly relevant to grant-funded health promotion interventions. The end of the grant funding period and the exit of researchers from the field often influence the sustainability of the intervention and the volunteer role may change or even end when the grant concludes. Currently, researchers have investigated little about how benefits associated with volunteerism change as the volunteer role starts and stops in response to change in the volunteers' lives as well as in response to the nature of the volunteer service. Rotolo's (2000) work was the single study that qualitatively found voluntary work tends to be transitory and often volunteers move from one volunteer activity to another. At the present time, this movement has not been captured by measurement approaches.

Another area in need of future research that this study exposes is the investigation on how Social Cognitive Theory (SCT) and the Diffusion of Innovations model can be used to understand individual and group behavior change. The findings in this research may have been influenced by environmental elements that impacted the level in which an intervention was accepted by the VSO groups. Future work needs to attempt to better identify, isolate and alter barriers that affect the success of peer support health interventions. This will require experimental research that manipulates environmental factors thought to impact such interventions.

The study findings also have implications for future research in the field of adult learning as it relates to health education programming. As mentioned previously, two group learning settings were represented in this study. The first group learning setting was that of the peer leaders that completed the peer leader training curriculum and the second group of learners consisted of the VSO members. The goal of both group learning settings was to facilitate authentic group learning that was synergistic and continuous (Dechant, Marsick and Kasl, 1993). Simplified, the study team was interested in promoting both individual learning and shared group learning that was sustained throughout the intervention period and beyond. The knowledge created by the learning groups could then be transferred to practice demonstrated by peer leaders' and VSO members' positive changes in their health behaviors. Inspection of findings showed that peer leaders were able to perform the transfer of knowledge to behavior change more effectively than VSO members. The implication for research in terms of how this transition occurs is clearly to pursue various understandings of how to create health interventions that use group learning approaches to promote a learner's ability to transition from Level 2 to Level 3 in Kirkpatrick's Model of Evaluation (Kirkpatrick's and Kirkpatrick, 2006). Future research on peer support health interventions should consider factors that affect a group's ability to develop group cohesion and identify strategies that best assist learners to share experiences, reflect on experiences and create an environment in which learners can engage in dialogue with another as a means to provide the feedback that is essential for self-regulation in changing and managing health behaviors.

The review of literature and the peer leader approach emphasized in this study point to the need for future research to examine if and how a community-based participatory research approach (CBPR) influences group learning outcomes and ultimately the health outcomes of participants. CBPR attempts to involve participants in every aspect of the research process so that they can make an individual decision to be involved in the intervention. As CBPR relates to group learning, engaging learners and demonstrating respect for their skills, perspectives and learning needs has been shown to positively enhance learning (Israel, Krieger, Vlahov, Ciske, Foley, Fortin et al., 2006). Can these previous findings be extended to the group learning environment created by the peer leaders and VSO members in this research? And more broadly, does using a CBPR approach in a peer support intervention provide a promising strategy to improving the intervention for all participants; both peer leaders and their peer groups? Further research is needed examine the intersection between CBPR principles, peer support and health education programming. This particular line of inquisition may have implications on how peer leaders are often used as co-researchers in urban and rural underserved environments.

Lastly, this study has implications for health professions education (e.g., nursing school, medical school, public health programs). The literature review cited positive outcomes associated with the use of trained peer leaders for certain disease conditions and with certain community groups. Given present pressures on health systems and obstacles for individuals to self-manage their chronic diseases, community participation through the use of trained laypeople may become an integral part of health care delivery in the future. Educating the next generation of health professionals on the ways that

trained community members (i.e., peer leaders) can make valuable contributions to their peers' health will be a valuable topic to be addressed in health professions' curricula. Educational programming in the health professions should explore how using peer leaders can improve community members' access to and coverage of health care. Further, as interventions that use peer leaders are often delivered by health professionals, it will be important that training in the health professions teach students how to make interventions work better by considering factors such as peer leader selection/recruitment, compensation, expectations/demands for the peer leader role, and peer leader training/monitoring. Health professions education should also consider how to best involve health service staff in health promotion interventions that use trained peer leaders.

## **Conclusion**

The current study confirms findings on health benefits associated with volunteerism among older-aged adults and applies them to a setting that used volunteer peer leaders to deliver a health promotion program to U.S. veterans. Further, this research contributes to health education and health behavior theory, research and practice by examining how serving as a volunteer peer leader can impact health status and health behavior change compared to peers involved in the intervention. Research on the effectiveness of health interventions has long sought to investigate outcomes connected to the intervention targets. This study's findings shed light on the importance of considering the "unintended" targets of health intervention, such as peer leaders. While outcomes on the intervention targets will continue to be of paramount significance when reporting on the effectiveness of interventions, it is my desire to continue to learn more

about the peer leader “experience”. In my future work, I will continue to use peer leaders in diverse circumstances and with varying responsibilities and expectations but my interest in how they learn and change their behavior through their role as a leader and how they advocate for their peers to make similar changes will remain constant. My sentiment about using individual change to empower others to change is best articulated in a quote by Marie Curie:

You cannot hope to build a better world without improving the individuals. To that end, each of us must work for our own improvement and, at the same time, share a general responsibility for all humanity, our particular duty being to aid those to who we think we can be most useful.

I conclude this research process with a renewed respect for the benefit and power of group learning to facilitate health behavior change among peers. This research demonstrated that the informational and emotional support that peer leaders provided to one another was an effective strategy to improve their health behaviors and potentially improve their chronic disease control long term. It is my hope that the positive health behavior changes experienced by peer leaders will ignite in them a greater desire to educate and support their VSO comrades in their journey towards improved health and wellbeing.

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## Appendix A

## Veteran Service Organizations Participating in the POWER Program

Veterans Service Organization	Posts participating/ posts contacted (%)	Study participants per organization  N (% of total)
American Legion	34/106 (32.1)	258 (63.9)
Veterans of Foreign Wars (VFW)	11/69 (15.9)	72 (17.8)
Vietnam Veterans of America (VVA)	5/8 (62.5)	20 (5.0)
Benevolent and Protective Order of the Elks (Elks)*	2/9 (22.2)	13 (3.2)
National Association of Black Veterans (NABVETS)	1/2 (50)	4 (1.0)
American Veterans (AMVETS)	1/2 (50)	14 (3.5)
Disabled American Veterans (DAV)	1/2 (50)	8 (2.0)
Korean War Veterans of America (KWVA)	1/1 (100)	7 (1.7)
Jewish War Veterans (JWV)	1/1 (100)	4 (1.0)
Marine Corps League	1/1 (100)	4 (1.0)
Masons	0/2 (0.0)	-
Total	58	404

## Appendix B

## Health Survey Administrator Form

Participant Number:

Date Completed:

\_ \_ / \_ \_ / \_ \_ \_ \_

**Interviewer reads:** Thank you for agreeing to participate in this important research. This research is being conducted as part of a study funded by the Department of Veterans Affairs. The information you are about to provide will be used to see if this project has an effect on you.

You will complete this health survey (or just certain parts of it) four times over the course of the study: once at the start of the project, again at 6 months, after one year, and at 18 months.

The information you provide in this survey will be **confidential**.

This first survey will take approximately one hour to complete. The surveys at 6, 12 and 18 months will be shorter. **You do not have to answer any question you do not want to.** Let's begin.

**SECTION A – Demographics 1**

**[NOTE: Interviewer should use 7 for a "Don't know/Not sure" response, and 9 for "Prefer not to answer."]**

A1. **[Interviewer: Assess gender, but do not directly ask.]**

1 Male

2 Female

—

A2. What is your age?

A3. About how tall are you without shoes? (feet/inches)

\_ / \_ \_

A4. Which one or more of the following would you say is your race?

1<sup>st</sup> \_

1 White

2 Black or African American

3 Asian

4 Native Hawaiian or other Pacific Islander

2<sup>nd</sup> \_

5 American Indian or Alaskan Native

**OR**3<sup>rd</sup> \_

6 Other [specify] \_\_\_\_\_

A5. Are you Hispanic or Latino?

1 Yes

2 No

—

**SECTION B – Clinical History**

B1. How would you rate your general health status?

1 Excellent

2 Very Good

3 Good

4 Fair

5 Poor

—

B2. What is the number of different prescription drugs you are currently supposed to be taking every day? **[Interviewer may clarify by saying "for any condition."]**

— \_

**The next series of questions are about some medical conditions that could affect your blood pressure.**

B3. Have you ever been told by a doctor, nurse, or other health

—



professional that you have diabetes?

**[Interviewer: If "Yes," and respondent is female, ask:  
"Was this only when you were pregnant?" If respondent says  
pre-diabetes or borderline diabetes, use response code 4.]**

- 1 Yes                      2 Yes, but female told only during pregnancy  
3 No                      4 No, pre-diabetes or borderline diabetes

B4. Have you ever taken, or are you now taking, drugs for diabetes? —

- 1 Yes                      2 No

B5. Have you ever been told by a doctor, nurse, or other health professional that you have renal failure or kidney damage? —

- 1 Yes                      2 No

**Now I would like to ask you some questions about cardiovascular disease.**

**Has a doctor, nurse, or other health professional EVER told you that you had any of the following?**

B6. (Have you ever been told) you had a heart attack, also called a myocardial infarction? —

- 1 Yes                      2 No

B7. (Have you ever been told) you had angina or coronary heart disease or had to have a bypass surgery or angioplasty or stent placement? —

- 1 Yes                      2 No

B8. (Have you ever been told) you had a stroke? —

- 1 Yes                      2 No

### SECTION C – Current BP Treatment

**The next set of questions I am going to ask pertain to blood pressure.**

C1. Prior to this study, had you ever been told by a doctor, nurse, or other health professional that you have high blood pressure, also called hypertension? —

**[Interviewer: If "Yes" and respondent is female, ask:  
"Was this only when you were pregnant?"]**

- 1 Yes                      2 Yes, but female told only during pregnancy                      3 No

C2. How many months ago was your **last visit** to the doctor who checks your blood pressure? —

**[NOTE: Code 1 month or less as 01]**

C3. How would you rate your blood pressure control at **your last visit**? —

- 1 Good                      2 Fair                      3 Poor

C4. How would you rate your blood pressure control **on average**? —

- 1 Good                      2 Fair                      3 Poor

C5. Have you talked with your doctor about your blood pressure goal? —

- 1 Yes                      2 No

C6. What do you think your blood pressure should be?

*Alternate wording: What is your goal?*

— — — / — —

**[Interviewer can provide an example, such as 136/82]**

- C7. On average, how often do you check your blood pressure at home, or use one of the blood pressure machines at a pharmacy, shopping center, or your veterans organization? **[Read options below]**
- 1 Daily                      2 Weekly                      3 Monthly  
4 Annually                      5 Less than once a year
- C8. Are you currently taking prescription medicine for high blood pressure?
- 1 Yes                      2 No **[Skip to C21]**  
7 *Don't know / Not sure* **[Skip to C21]**  
9 *Prefer not to answer* **[Skip to C21]**
- C9. How many prescription blood pressure medicines do you take? —
- C10. What are the names of your prescription blood pressure medicines?
- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

***Interviewer Comment (e.g. don't know/not sure):***

\_\_\_\_\_

**Morisky Adherence Scale:**

		Yes	No
C11.	Do you ever forget to take your blood pressure medicine?	1	2
C12.	Are you careless at times about taking your blood pressure medicine?	1	2
C13.	When you feel better, do you sometimes stop taking your blood pressure medicine?	1	2
C14.	Sometimes if you feel worse when you take the medicine, do you stop taking it?	1	2

**Please tell me how much you agree or disagree with each of the following statements. Your options are Strongly Agree (SA), Agree (A), Neither Agree nor Disagree (A/D), Disagree (D), or Strongly Disagree (SD).**

**[Interviewer: For questions in table format, circle the number of the participant's response. If participant says "Don't know/Not sure" circle 7; for "Prefer not to answer" circle 9.]**

	SA	A	A/D	D	SD
--	----	---	-----	---	----

C15.	Taking my blood pressure medicine will help control my blood pressure.	1	2	3	4	5
C16.	Taking my blood pressure medicine will help me avoid serious health problems.	1	2	3	4	5
C17.	My blood pressure medicine costs me a lot of money.	1	2	3	4	5
C18.	Taking my blood pressure medicine is inconvenient.	1	2	3	4	5
C19.	My blood pressure medicine causes side effects.	1	2	3	4	5
C20.	I have a spouse, family member, or friend who helps me to take my blood pressure medicine.	1	2	3	4	5

### **Satisfaction with BP Treatment Plan:**

- C21. Have you talked with a health professional about your blood pressure at any time during the last year?
- 1 Yes                      2 No                      **[Skip to Section D]**  
 7 Don't know / Not sure                      **[Skip to Section D]**  
 9 Prefer not to answer                      **[Skip to Section D]**

**I am going to read six statements about the steps you have been taking to control your blood pressure. These steps include both medicine and/or lifestyle. Please tell me how much you agree or disagree with each of the following statements. Your options are Strongly Agree (SA), Agree (A), Neither Agree nor Disagree (A/D), Disagree (D), or Strongly Disagree (SD).**

		SA	A	A/D	D	SD
C22.	I am satisfied that I am adequately informed about the issues that are important to my blood pressure control plan.	1	2	3	4	5
C23.	The steps I am taking to control my blood pressure are the best ones for me personally.	1	2	3	4	5
C24.	I am satisfied that my blood pressure control plan is consistent with my personal values.	1	2	3	4	5
C25.	I expect to be able to successfully carry out my blood pressure control plan.	1	2	3	4	5
C26.	I am satisfied with the way my health providers and I came up with my blood pressure management plan.	1	2	3	4	5
C27.	Overall, I am satisfied with my blood pressure management plan.	1	2	3	4	5

### **Section D – Knowledge and Attitudes**

**This next series of questions are designed to test your knowledge of high**

**blood pressure. You may find many of them to be hard. This is OK, just do the best you can. We will give you the answers to these at a later date.**

**First, I am going to read six statements. Please tell me if you think the statement is true or false.**

		<b>T</b>	<b>F</b>
D1.	A person is considered to have hypertension if <b>either</b> their systolic blood pressure is 140 or higher <b>or</b> their diastolic is 90 or higher on two separate occasions.	<b>1</b>	<b>2</b>
D2.	Most people can tell when their blood pressure is high because they feel bad.	<b>1</b>	<b>2</b>
D3.	People with hypertension do not need to take medicine if they exercise regularly.	<b>1</b>	<b>2</b>
D4.	Most people with hypertension need more than one kind of blood pressure medicine to control their blood pressure.	<b>1</b>	<b>2</b>
D5.	Most of the salt Americans eat is added with a salt shaker.	<b>1</b>	<b>2</b>
D6.	There are about as many calories in 12 ounces of regular orange juice as there are in 12 ounces of regular cola.	<b>1</b>	<b>2</b>

**Now I am going to read a series of multiple choice questions. Please choose only one answer for each question.**

- D7. A man reports that his blood pressure (BP) is 148/78 when he checks it using the BP machine in the pharmacy, 144/66 in his family doctor's office, and 132/74 when he checks it at home. Which of the following statements is TRUE? —
- 1 It is common for blood pressure readings to vary like this.
  - 2 The highest blood pressure reading is the correct one.
  - 3 The lowest blood pressure reading is the correct one.
  - 4 He can be reassured that his blood pressure is normal.
- D8. Which one of the following increases your risk of having hypertension? —
- 1 Weight lifting.
  - 2 Drinking more than 2 cups of coffee a day.
  - 3 Smoking a pack of cigarettes daily.
  - 4 Gaining 15 pounds.
- D9. What is the goal blood pressure for a 70-year old man with no other health problems who is taking medicine for hypertension? —
- 1 Less than 120/80 mmHg.
  - 2 Less than 130/86 mmHg.
  - 3 Less than 160/90 mmHg.
  - 4 Less than 140/90 mmHg.
- D10. Blood pressure is measured with two numbers, an upper number and a lower number. It is usually written as upper/lower. If someone is told that their goal blood pressure is 126/76, when have they reached that goal? —
- 1 When the upper is below 126 **and** the lower is below 76.
  - 2 When the upper is below 126, even if the lower is over 76.

- 3 When the lower is below 76, even if the upper is over 126.
- 4 When the average of the upper and the lower is less than 100.

- D11. An overweight 60-year old man has hypertension. He drinks one bottle of beer and 4 cups of regular coffee a day. He adds regular table salt to his food at most meals. Which one of the following changes is the **most likely** to lower his blood pressure? —
- 1 Lose 10 pounds.
  - 2 Stop drinking alcohol.
  - 3 Switch to decaffeinated coffee.
  - 4 Switch to sea salt.
- D12. Uncontrolled hypertension can lead to which of the following: —
- 1 Lung cancer.
  - 2 Kidney failure.
  - 3 High cholesterol.
  - 4 Diabetes.
- D13. A healthy 60-year old man has a blood pressure of 130/84. Which of the following statements about his risk of developing hypertension by the time he is 80 is TRUE? —
- 1 If a person has not developed hypertension by the age of 60, he won't have it when he's 80.
  - 2 It would be very unusual for a person to first develop hypertension at the age of 80.
  - 3 It would be very common for a person to first develop hypertension at the age of 80.
  - 4 Everyone who lives to be 80 will eventually have hypertension.
- D14. Which of the following statements about taking blood pressure medicine is TRUE? —
- 1 Blood pressure medicine should always be taken with food.
  - 2 More than one type of blood pressure medicine can be taken at the same time.
  - 3 Blood pressure medicine works best if it is taken at bedtime.
  - 4 Blood pressure medicine should not be taken if a person drank alcohol that day.
- D15. When measuring your blood pressure at home, you should: —
- 1 Always take your reading before you take your blood pressure medicine.
  - 2 Take several readings, a minute or two apart, and record the lowest one.
  - 3 Take your blood pressure right after exercising and at least two hours after a meal.
  - 4 Take two readings, a minute or two apart, and write down the average value.
- D16. Which one of the following changes to your diet is most likely to lower blood pressure? —
- 1 Eat more fruits, vegetables, whole grains and low fat dairy products.
  - 2 Eliminate spicy foods.
  - 3 Drink one glass of red wine daily.
  - 4 Drink herbal tea instead of coffee.

D17. Which one of the following statements about exercise and blood pressure is TRUE?

- 1 People who are on their feet most of the day will not benefit from more exercise.
- 2 Exercising for 30 minutes every day lowers blood pressure more than exercising for 30 minutes, 3 days a week.
- 3 Weight lifting should be avoided by people with high blood pressure.
- 4 When exercising, you must raise your heart rate to at least 100 beats a minute to improve blood pressure.

**I am going to read a series of statements. Please tell me how much you agree or disagree with each of them. Your options are Strongly Agree (SA), Agree (A), Neither Agree nor Disagree (A/D), Disagree (D), or Strongly Disagree (SD).**

		SA	A	A/D	D	SD
D18.	Having high blood pressure is a serious health condition in general.	1	2	3	4	5
D19.	Controlling my high blood pressure is important to me.	1	2	3	4	5
D20.	If a person's blood pressure is high, it is important to treat it.	1	2	3	4	5
D21.	Uncontrolled high blood pressure can cause serious health problems.	1	2	3	4	5

**In the next two statements, a "healthy lifestyle" means exercising on a regular basis, eating healthy foods, and being a healthy weight.**

		SA	A	A/D	D	SD
D22.	A healthy lifestyle will help me control my high blood pressure.	1	2	3	4	5
D23.	A healthy lifestyle will help me avoid serious health problems.	1	2	3	4	5
D24.	Getting regular exercise is hard for me to do.	1	2	3	4	5
D25.	Eating healthy food is hard for me to do.	1	2	3	4	5
D26.	Making sure that I am a healthy weight is hard for me to do.	1	2	3	4	5
D27.	I have a spouse, family member, or friend who helps me to exercise regularly.	1	2	3	4	5
D28.	I have a spouse, family member, or friend who helps me to eat healthy foods.	1	2	3	4	5
D29.	I have a spouse, family member, or friend who helps me to be a healthy weight.	1	2	3	4	5

#### SECTION E – Doctor/Patient Relationship

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**Krantz Health Opinion Survey:**


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**Now I would like you to consider some of your recent visits to healthcare professionals. Would you Agree or Disagree with the following statements?**

		<b>A</b>	<b>D</b>
E1.	I usually don't ask the doctor or nurse many questions about what they're doing during a medical exam.	<b>1</b>	<b>2</b>
E2.	Except for serious illness, it's generally better to take care of your <i>own</i> health than to seek professional help.	<b>1</b>	<b>2</b>
E3.	I'd rather have doctors and nurses make the decisions about what's best than for them to give me a whole lot of choices.	<b>1</b>	<b>2</b>
E4.	Instead of waiting for them to tell me, I usually ask the doctor or nurse immediately after an exam about my health.	<b>1</b>	<b>2</b>
E5.	It is better to rely on the judgments of doctors (who are the experts) than to rely on "common sense" in taking care of your own body.	<b>1</b>	<b>2</b>
E6.	Clinics and hospitals are good places to go for help since <i>it's best for medical experts to take responsibility</i> for health care.	<b>1</b>	<b>2</b>
E7.	Learning how to cure some of your own illness without contacting a physician is a good idea.	<b>1</b>	<b>2</b>
E8.	I usually ask the doctor or nurse lots of questions about the procedures during a medical exam.	<b>1</b>	<b>2</b>
E9.	It's almost always better to seek professional help than to try to treat yourself.	<b>1</b>	<b>2</b>
E10.	It is better to trust the doctor or nurse in charge of a medical procedure than to question what they are doing.	<b>1</b>	<b>2</b>
E11.	Learning how to cure some of your illness without contacting a physician may create more harm than good.	<b>1</b>	<b>2</b>
E12.	Recovery is usually quicker under the care of a doctor or nurse than when patients take care of <i>themselves</i> .	<b>1</b>	<b>2</b>
E13.	If it costs the same, I'd rather have a doctor or nurse give me treatments than to do the same treatments myself.	<b>1</b>	<b>2</b>
E14.	It is better to rely less on physicians and more on your own common sense when it comes to caring for your body.	<b>1</b>	<b>2</b>
E15.	I usually wait for the doctor or nurse to tell me the results of a medical exam rather than asking them immediately.	<b>1</b>	<b>2</b>

E16.	I'd rather be given many choices about what's best for my health than to have the doctor make the decisions for me.	<b>1</b>	<b>2</b>
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***Patient Activation Measure (PAM):***

**For the next set of statements, please choose from Strongly Agree (SA), Agree (A), Disagree (D), or Strongly Disagree (SD).**

		<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
E17.	When all is said and done, I am the person who is responsible for managing my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E18.	Taking an active role in my own health care is the most important factor in determining my health and ability to function.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E19.	I am confident that I can take actions that will prevent or minimize some symptoms or problems associated with my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E20.	I know what each of my prescribed medications does.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E21.	I am confident that I can tell when I need to get medical care and when I can handle a health problem myself.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E22.	I am confident I can tell a doctor concerns I have even when he or she does not ask.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E23.	I am confident that I can follow through on medical treatments I need to do at home.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E24.	I understand the nature and causes of my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E25.	I know the different medical treatment options available for my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E26.	I have been able to maintain the lifestyle changes for my health condition(s) that I have made.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E27.	I know how to prevent further problems with my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E28.	I am confident that I can figure out solutions when new situations arise with my health condition(s).	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>
E29.	I am confident that I can maintain lifestyle changes, like diet and exercise, even during times of stress.	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>

**The questions in the next section [Section F] are about your health habits. We will start with "FA."**

**SECTION F – Health Habits Related to BP**  
**BRFSS Questions on Cigarettes:**



- FA. Have you smoked at least 100 cigarettes in your entire life? —  
**[NOTE: 100 cigarettes = 5 packs]**  
 1 Yes 2 No **[Skip to diet questions]**  
 7 or 9 **[Skip to diet questions]**
- FB. Do you now smoke cigarettes every day, some days, or not at all? —  
 1 Every day 3 Not at all **[Skip to diet questions]**  
 2 Some days 7 or 9 **[Skip to diet questions]**
- FC. During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking? —  
 1 Yes 2 No

### ***Hopkins Sodium Restriction:***

**Now I'm going to ask a few questions about your diet. Please look at the list of salty foods in your binder. [Interviewer should ask if he/she would like the list read aloud.] I want you to keep these foods in mind when you answer the next two questions. I'll give you a minute to look them over. I want you to count each item separately. For example, if you salted your eggs and had bacon for breakfast that would count as TWO salty items.**

Bacon or Ham	Pickles	Chili Sauce
Herring, Sardines	Sauerkraut	Mustard
Potato Chips	Hot dogs	Olives
Pretzels	Bologna and lunch meats	Relishes
French Fries	Smoked or salted meats	Meat Tenderizers
Salted Snacks (e.g. popcorn, nuts)	Bouillon	Sauces (soy, steak)
Salted Crackers	Ketchup	Sausage
Seasoning Salts	Canned Soups	Chipped Beef
(e.g. celery, garlic, onion)	Dried Soups	Corned Beef

**[Interviewer: Be sure to emphasize the "OR" in the next two questions.]**

- F1. How often do you salt your food from a shaker OR eat salty foods like those on the list? — — —  
 1 \_\_\_ \_\_\_ per day 2 \_\_\_ \_\_\_ per week  
 3 \_\_\_ \_\_\_ per month 4 4 4 Less than monthly
- F2. When was the last time you used a salt shaker on your food OR ate one of the salty foods on the list? —  
 1 Within the last three meals 2 A day ago  
 3 2-5 days ago 4 A week ago  
 5 Over a week ago 6 Over a year ago

### ***Servings of Fruits and Vegetables:***

**These next questions are about some of the other foods you eat or drink.**

**Please tell me how often you eat or drink each one (for example, twice a week, three times a month, and so on). Remember, I am only interested in the foods you eat. Include all the foods you eat, both at home and away from home.**

- F3. How often do you drink fruit juices such as orange, grapefruit, or tomato? \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly
- F4. Not counting juice, how often do you eat fruit? \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly
- F5. How often do you eat green salad? \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly
- F6. How often do you eat potatoes, not including French fries, fried potatoes, or potato chips? \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly
- F7. How often do you eat carrots? \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly
- F8. Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat? (Example: A serving of vegetables at both lunch and dinner would be two servings.) \_ \_ \_  
 1 \_ \_ per day 2 \_ \_ per week  
 3 \_ \_ per month 4 4 4 Less than monthly

#### **Alcohol Consumption (AUDIT):**

**The next three questions are about alcohol consumption. For each, one drink is:**

- 12 ounces (a typical bottle or can) of average strength beer/lager
- One 5-ounce glass of wine
- One and one half ounce (one shot) of spirits (usually 80 proof)

**NOTE: Some drinks may contain deceptively high quantities of alcohol. For example, a can of high strength lager may contain twice as much alcohol as most beer. A pre-mixed drink may contain 2 or more shots. With that in mind...**

- F9. How often do you have a drink containing alcohol? \_  
 1 Never **[Skip to F12]**  
 2 Monthly or less  
 3 2-4 times a month (e.g. once a week)  
 4 2-3 times a week  
 5 4 or more times a week
- F10. How many drinks do you drink on a typical day when you are drinking? \_  
 1 1 or 2  
 2 3 or 4

- 3 5 or 6  
 4 7, 8, or 9  
 5 10 or more
- F11. How often do you have five or more drinks on one occasion? —  
 1 Never  
 2 Less than monthly  
 3 Monthly  
 4 Weekly  
 5 Daily or almost daily

**The next series of questions are about physical activity and exercise.**

- F12. Have you ever used a pedometer? —  
**[Interviewer: If needed, a pedometer is a device that measures the number of steps you take.]**  
 1 Yes **[Ask questions F13-14]**  
 2 No **[Skip to question F15]**  
 7 Don't know / Not sure **[Skip to question F15]**  
 9 Prefer not to answer **[Skip to question F15]**
- F13. If yes, how many days in the last month did you wear it? — —  
 — — / — —  
 —
- F14. About how many steps do you take in a day? —

**Exercise (IPAQ):**

**You can use the yellow sheet in your binder entitled "General Physical Activities Defined by Level of Intensity" to help you answer the next questions. I'll give you a moment to look it over.**

I want you to think about all the **vigorous** activities which take hard physical effort that you did in the last 7 days. Vigorous activities make you breathe much harder than normal. Think only about those activities you did for at least 10 minutes at a time.

- F15. During the last 7 days, on how many days did you do **vigorous** physical activities? —
- F16. —  
 How much time did you usually spend doing **vigorous** physical activities —  
 on one of those days? —  
 1 \_\_\_ minutes 2 \_\_\_ hours —

Now think about activities which take **moderate** physical effort that you did in the last 7 days. Moderate physical activity makes you breathe somewhat harder than normal. **Do not include walking.** Again, think only about those activities that you did for at least 10 minutes at a time.

- F17. During the last 7 days, on how many days did you do **moderate** physical activities? —
- F18. —  
 How much time did you usually spend doing **moderate** physical —  
 activities on one of those days? —  
 1 \_\_\_ minutes 2 \_\_\_ hours —

Now think about the time you spent **walking** in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

F19. During the last 7 days, on how many days did you **walk** for at least 10 minutes at a time? \_

F20. How much time did you usually spend **walking** on one of those days?  
1 \_ \_ minutes 2 \_ \_ hours \_ \_ \_

Now think about the time you spent **sitting** on weekdays during the last 7 days. Include time spent at work, at home, while doing course work, and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

F21. During the last 7 days, how much time did you usually spend **sitting** on a week day?  
1 \_ \_ minutes 2 \_ \_ hours \_ \_ \_

## SECTION G – Personal Resources 1

### ***MOS Social Support Survey:***

**Next are some questions about the social support that is available to you.**

G1. About how many close friends and close relatives do you have (people you feel at ease with and can talk to about what is on your mind)? \_ \_ \_

**People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Your options are None of the Time, a Little of the Time, Some of the Time, Most of the Time, or All of the Time.**

		None	Little	Some	Most	All
G2.	Someone you can count on to listen to you when you need to talk.	1	2	3	4	5
G3.	Someone to give you information to help you understand a situation.	1	2	3	4	5
G4.	Someone to give you good advice about a crisis.	1	2	3	4	5
G5.	Someone to confide in or talk to about yourself or your problems.	1	2	3	4	5
G6.	Someone whose advice you really want.	1	2	3	4	5
G7.	Someone to share your most private worries and fears with.	1	2	3	4	5
G8.	Someone to turn to for suggestions about how to deal with a personal problem.	1	2	3	4	5

G9.	Someone who understands your problems.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G10.	Someone to help you if you were confined to bed.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G11.	Someone to take you to the doctor if you needed it.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G12.	Someone to prepare your meals if you were unable to do it yourself.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G13.	Someone to help with daily chores if you were sick.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G14.	Someone who shows you love and affection.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G15.	Someone to love and make you feel wanted.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G16.	Someone who hugs you.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G17.	Someone to have a good time with.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G18.	Someone to get together with for relaxation.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
G19.	Someone to do something enjoyable with.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
		<b>Non e</b>	<b>Littl e</b>	<b>Som e</b>	<b>Mo st</b>	<b>Al l</b>
G20.	Someone to do things with to help you get your mind off things.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### **General Self Efficacy:**

**Please tell me if you would consider the following statements to be Not at all True, Hardly True, Moderately True, or Exactly True of you.**

		<b>Not at All</b>	<b>Hardly True</b>	<b>Mode- rately</b>	<b>Exactly True</b>
G21.	I can always manage to solve difficult problems if I try hard enough.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G22.	If someone opposes me, I can find the means and ways to get what I want.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G23.	It is easy for me to stick to my aims and accomplish my goals.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G24.	I am confident that I could deal efficiently with unexpected events.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G25.	Thanks to my resourcefulness, I know how to handle unforeseen situations.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G26.	I can solve most problems if I invest the	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

	necessary effort.				
G27.	I can remain calm when facing difficulties because I can rely on my coping abilities.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G28.	When I am confronted with a problem, I can usually find several solutions.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G29.	If I am in trouble, I can usually think of a solution.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G30.	I can usually handle whatever comes my way.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

### **CESD-10 Depression Scale:**

**I am going to read several statements about how you may have felt or behaved. Please indicate how often you have felt this way during the past week. Your options are Less than 1 day, 1-2 days, 3-4 days, or 5-7 days. Remember: Think only about the past week.**

		<b>Less than 1</b>	<b>1-2 Days</b>	<b>3-4 Days</b>	<b>5-7 Days</b>
G31.	I was bothered by things that usually don't bother me.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G32.	I had trouble keeping my mind on what I was doing.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G33.	I felt depressed.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G34.	I felt that everything I did was an effort.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G35.	I felt hopeful about the future.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G36.	I felt fearful.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G37.	My sleep was restless.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G38.	I was happy.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G39.	I felt lonely.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
G40.	I could not get "going."	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>

### **SECTION H – Demographics 2**

**The next questions will help us describe the participants in this project. Remember, this information will be kept strictly confidential.**

- H1. What is the highest grade or year of school you completed? —
- 1 Never attended school or only attended kindergarten
  - 2 Grades 1 through 8 (elementary)
  - 3 Grade 9 through 11 (some high school)
  - 4 Grades 12 or GED (high school graduate)
  - 5 College 1 year to 3 years (some college)
  - 6 College 4 years or more (college graduate)
- H2. Of the following options, which best describes your status? Are you:
- 1 Retired
  - 5 Out of work for less than 1

- H3. What is your annual household income from all sources?
- 0 4 Less than \$25,000 (\$20,000 to less than \$25,000)  
0 3 Less than \$20,000 (\$15,000 to less than \$20,000)  
0 2 Less than \$15,000 (\$10,000 to less than \$15,000)  
0 1 Less than \$10,000  
0 5 Less than \$35,000 (\$25,000 to less than \$35,000)  
0 6 Less than \$50,000 (\$35,000 to less than \$50,000)  
0 7 Less than \$75,000 (\$50,000 to less than \$75,000)  
0 8 \$75,000 or more
- H4. Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?
- 1 Yes                      2 No

## SECTION I – Personal Resources 2

**The next few questions have to do with numbers and reading. You may find some of these to be difficult: Many people do, and that's OK. Just do your best.**

### **Schwartz Numeracy Scale:**

- I1. Imagine that we flip a fair coin 1,000 times. What is your best guess about **how many** times the coin would come up heads in 1,000 flips? \_\_\_\_\_ out of 1,000
- I2. In the BIG BUCKS LOTTERY, the chance of winning a \$10 prize is 1%. What is your best guess about **how many** people would win a \$10 prize if 1,000 people each buy a single ticket to BIG BUCKS? \_\_\_\_\_ out of 1,000
- I3. In ACME PUBLISHING SWEEPSTAKES, the chance of winning a car is 1 in 1,000. What **percent** of tickets to ACME PUBLISHING SWEEPSTAKES win a car? \_\_\_\_\_ %

## REALM Literacy Test:

**The last page in your binder is a list of words. I want to hear you read as many words as you can from this list. Begin with the first word in Column 1 and read aloud. When you come to a word you cannot read, do the best you can or say "blank" and go on to the next word.**

**[Interviewer: If the participant takes more than five seconds on a word, say "blank" and point to the next word, if necessary, to move the participant along. If the participant begins to miss every word, have him/her pronounce only known words.]**

**Enter + if correct, / if incorrect, and – if not attempted.**

<b><u>COLUMN 1</u></b>		<b><u>COLUMN 2</u></b>		<b><u>COLUMN 3</u></b>	
Fat		Fatigue		Allergic	
Flu		Pelvic		Menstrual	
Pill		Jaundice		Testicle	
Dose		Infection		Colitis	
Eye		Exercise		Emergency	
Stress		Behavior		Medication	
Smear		Prescription		Occupation	
Nerves		Notify		Sexually	
Germs		Gallbladder		Alcoholism	
Meals		Calories		Irritation	
Disease		Depression		Constipation	
Cancer		Miscarriage		Gonorrhea	
Caffeine		Pregnancy		Inflammatory	
Attack		Arthritis		Diabetes	
Kidney		Nutrition		Hepatitis	
Hormones		Menopause		Antibiotics	
Herpes		Appendix		Diagnosis	
Seizure		Abnormal		Potassium	
Bowel		Syphilis		Anemia	
Asthma		Hemorrhoids		Obesity	
Rectal		Nausea		Osteoporosis	
Incest		Directed		Impetigo	

**This concludes our health survey. Thank you again for participating in this research.**



## Appendix C

## Health Survey Elements and Categories

Category/Variable	Categories/Scale
<b>Participant Demographics</b> Age Gender Race/Ethnicity Household Income Employment Status Formal years of education Health Insurance	Years Male/female 2000 Census categories Thousands of dollars Full time, part time, retired, unemployed (1 through 17+); GED counted as 12 years Medicare, Medicare suppl, employer, Medicaid, purchased, VA, other
<b>Clinical History</b> # of drugs currently taken Previous hypertension complication* History of diabetes mellitus Drug treatment for diabetes mellitus Renal failure Weight Height General health status	Count Yes/No Yes/No (Standard question) Yes/No Yes/No Pounds Inches Five level ordinal variable (poor–excellent)
<b>Current blood pressure treatment</b> Time since visit to BP doctor BP control at last visit BP control on average Personal BP goal BP medication list Non-clinic BP check per week	Months Good/fair/poor/don't know Good/fair/poor/don't know SBP/DBP (mmHg)/unknown/no answer List/names/pill descriptions/don't know 0, 1-6, 7+
<b>Health Habits related to BP</b> Alcohol (Saunders et al., 1993) Sodium restriction (Hopkins et al., 1989) Exercise (IPAQ) (Craig et al., 2003) Servings: Fruits & vegetables (Resnicow et al., 2004) Morisky adherence scale (Morisky et al., 1986)	Drinks per day (quantity frequency from AUDIT) Subset of 18-item questionnaire 9 items; last 7 days 4 yes/no items; score 0-4
<b>Knowledge and Attitudes re: blood pressure and treatment</b> Importance of HTN Effectiveness of therapy	Questions developed with guidance from article by Nelson et al., 1978

Inconvenience of taking drugs Side effects from medications Inconvenience and side effects of lifestyle changes Inconvenience of follow-up Support of HTN care from family Hypertension Evaluation and Lifestyle Management (HELM) (Schapira et al., 2012)	14 items; 3 domains (general hypertension knowledge, lifestyle and medication management, and measurement and treatment goals); Item total scale correlations 0.06-0.27
<b>Participants personal resources</b>	
	<b>Description</b>
Literacy (REALM) (Davis et al., 1993)	66 words, 2-3 minutes; Correlation with Wide Range Achievement Test 0.88
Numeracy Scale (Lipkus et al., 2001)	11 dichotomous items; scored as percent correct
General Self-Efficacy (Schwarzer et al., 1995)	10 items, 4-pt Likert; Cronbach's alpha 0.87
MOS Social Support Survey (Sherbourne and Stewart, 1991)	20 items, 5-pt Likert; Cronbach's alpha total 0.97; subscales 0.91-0.96 One year test retest reliability 0.78
CESD-10 Depression Scale (Andresen et al., 1994)	10-item adaptation; Kappa vs. 20-item CESD 0.97; test-retest 0.71
<b>Doctor-patient relationship</b>	
Krantz Health Opinion Survey (Krantz et al., 1980)	7 items on information seeking (dichotomous); Internal consistency 0.76; Test-retest 0.59 9 items on participating in decision making (dichotomous); Internal consistency 0.74; Test-retest 0.74
Patient Activation Measure (PAM)	13 item, 4-pt Likert; Cronbach's alpha 0.92

\* Stroke, myocardial infarction, congestive heart failure, renal insufficiency, peripheral vascular surgery, cardiac surgery, percutaneous coronary intervention

## Appendix D

## Post Representative Background Questionnaire

**RESEARCH TRAINING SESSION:**  
**POST REP BACKGROUND QUESTIONNAIRE**

NAME: \_\_\_\_\_  
\_\_\_\_\_

How old are you? \_\_\_\_\_

What veterans organizations are you a member of?

1) \_\_\_\_\_  
Years of membership: \_\_\_\_\_

2) \_\_\_\_\_  
Years of membership: \_\_\_\_\_

3) \_\_\_\_\_  
Years of membership: \_\_\_\_\_

4) \_\_\_\_\_  
Years of membership: \_\_\_\_\_

5) \_\_\_\_\_  
Years of membership: \_\_\_\_\_

What is your medical background, if any? (e.g. army medic, nurse)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Are you: ☐ Working for pay

☐ Retired

☐

Other \_\_\_\_\_

What is/was your job title? \_\_\_\_\_

What is your education? \_\_\_\_\_

Why did you volunteer to be a post representative for this project?

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September 27, 2013

*CURRICULUM VITAE*

*Leslie A. Patterson*  
*Program Coordinator III and Educational Specialist*  
*Medical College of Wisconsin-Family and Community Medicine*

<b><u>Education:</u></b>	09/2000-05/2004	B.S., University of Wisconsin-Madison, Madison, WI (Biology)
	09/2007-01/2009	M.S., University of Wisconsin-Milwaukee, Milwaukee, WI (Administrative Leadership-Higher Education)
	01/2009-Present	Ph.D., University of Wisconsin-Milwaukee, Milwaukee, Wisconsin (Urban Education-Adult and Continuing Education, minor in Public Health)
	01/2010-Present	Graduate Certificate, University of Wisconsin-Milwaukee, Milwaukee, WI (Public Health)

**Postgraduate Employment and Training:**

07/2008-Present	Program Coordinator, Family and Community Medicine- Medical College of Wisconsin, Milwaukee, WI
07/2008-Present	Educational Specialist, Primary Care-VA Medical Center, Milwaukee, WI
08/2007-05/2008	Substitute Teacher, Hartland Lakeside Joint #3 School District, Hartland, WI
09/2005-10/2006	Wellness Coordinator, Tramel Chiropractic, Eagan, MN
05/2005-09/2005	Administrative Assistant, Pamida, Park Falls, WI
06/2004-05/2005	Intern, Athletes In Action, UW-Madison, Madison, WI

**Award and Honors:**

12/2000-05/2004	University of Wisconsin-Madison Dean's List
12/2000-05/2004	Academic All Big Ten
01/2009-Present	Phi Kappa Phi

**Memberships in Professional and Honorary Societies:**

12/2000-05/2004	National Society of Collegiate Scholars
07/2008-01/2010	NASPA (Student Affairs Administrators in Higher Education)
07/2008-Present	Society of Teachers in Family Medicine
09/2010-Present	Wisconsin Public Health Association
05/2012-Present	American Public Health Association

### **Local/Regional Appointed Leadership and Committee Positions**

02/2008-Present	Member of the Rural Health Development Council for the State of Wisconsin- Wisconsin Office of Rural Health, Madison, WI
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### **Research Grants, Contracts, Awards, Projects:**

#### **Peer Review**

Title:	Empowering Individuals to Improve Their Hypertension Control through Peer Support
Source:	Healthier Wisconsin Partnership Program (HWPP)
Role:	Research Coordinator
Dates:	July 1, 2006-June 31, 2009
Direct Funds:	\$450,000

#### **Peer Review**

Title:	Strong Rural Communities Initiative
Source:	Healthier Wisconsin Partnership Program (HWPP)
Role:	Program Coordinator
Dates:	July 1, 2006-June 31, 2009
Direct Funds:	\$450,000

#### **Peer Review**

Title:	BRANCH OUT
Source:	Healthier Wisconsin Partnership Program (HWPP)
Role:	Program Coordinator
Dates:	July 1, 2007-July 31, 2010
Direct Funds:	\$450,000

#### **Peer Review**

Title:	Academic Administrative Units in Primary Care, Family Medicine
Source:	Health Resources and Service Administration (HRSA)
Role:	Program Coordinator
Dates:	September 1, 2008- August 31, 2011
Direct Funds:	\$430,573

**Peer Review**

Title: An RCT of a Peer Support Intervention to Improve Hypertension  
 Source: Department of Veterans Affairs  
 Role: Educational Specialist  
 Dates: July 1, 2008-June 31, 2011  
 Direct Funds: \$866,200

**Peer Review**

Title: MOVE OUT: A Partnership with Veterans Groups to Enhance Weight Management in VHA  
 Source: VA-Health Services Research and Development  
 Role: Educational Specialist  
 Dates: September 1, 2011-August 31, 2015  
 Direct Funds: \$1.1 million

**Peer Review**

Title: Building the FM Workforce through a CBA Three-Year Accelerated MD Program in FM  
 Source: HRSA Predoctoral training in primary care  
 Role: Program Coordinator  
 Dates: September 30, 2011-September 29, 2016  
 Direct Funds: \$950,000

**Peer Review**

Title: Working with Veterans' Organizations to Encourage Use of My HealtheVet  
 Source: Department of Veterans Affairs- QUERI Funding  
 Role: Educational Specialist  
 Dates: March 2, 2012- March 1, 2013  
 Direct Funds: \$100,000

**Peer Review**

Title: Physical Education Healthy Activities Benefiting Individual Teachers and Students (PE HABITS)  
 Source: U.S. Department of Education Carol M. White Physical Education Program  
 Role: Program Coordinator  
 Dates: September 1, 2012-August 31, 2015  
 Direct Funds: \$1,823,076

**Peer Review**

Title: DryHootch iPeer: A Social and Technology Support Program for Veteran Mental Health

Source: Healthier Wisconsin Partnership Program  
 Role: Program Coordinator  
 Dates: January 1, 2013-December 31, 2017  
 Direct Funds: \$749,797

### **Invited Lectures/Workshops/Presentations/Site Visits:**

#### **Local**

Mina, L., **Patterson, L.**, Seckman, D., Cutler, S., Careers in Student Affairs Administration, University of Wisconsin-Milwaukee, 12/2008

Whittle, J., Morzinski, J., **Patterson, L.**, Ertl, K., Hayes, A & Guerrero, L. Empowering Individuals to Improve Their Hypertension Control through Peer Support, Community Engagement for Health Conference 2010, Milwaukee, WI, 10/2010.

Young, S., **Patterson, L.**, Wolff, M. BRANCH Out: Nurturing Healthy Youth Leaders Through Faith Based Partnerships, Community Engagement for Health Conference 2010, Milwaukee, WI, 10/2010.

**Patterson, L.**, Ahmed, S. One Statewide Council, Two Medical Schools & Six Rural Communities: A Collaborative Effort to Address Rural Health in Wisconsin. Community Engagement for Health Conference 2010, Milwaukee, WI, 10/2010.

### **Peer Reviewed Workshops/Presentations**

**Patterson, L.**, Morzinski, J., Whittle, J., Ertl, K., Hayes, A. Wurm, C., & Guerrero, L. Organizational Factors that Influence Health Promotion in Community-based Organizations, Community Campus Partnerships for Health Annual Conference, Milwaukee, WI, 04/2009.

**Patterson, L.**, Morzinski, J., Whittle, J., Ertl, K., Hayes, A. Wurm, C., & Guerrero, L. Community-based Veterans' Organizations: How do their Environments Influence a Healthy Partnership?, Department of Family and Community Medicine Research Forum, Milwaukee, WI, 06/2009.

Whittle, J., Morzinski, J., **Patterson, L.**, Ertl, K., Hayes, A. Posts Working to Improve Hypertension: Main Results, Society of General Internal Medicine Annual Meeting, Minneapolis, MN, 04/2010.

Shirk, J., Fletcher, K., **Patterson, L.**, Grippen, A., Ertl, K., Whittle, J. Peer Leader Characteristics Do Not Predict Their Ability to Deliver a Peer Support Intervention, Society of General Internal Medicine Annual Meeting, Minneapolis, MN, 04/2010.



**Patterson, L.**, Morzinski, J., Whittle, J. Engaging Community-based Veterans in Healthy Partnerships: Exploring Organizational Factors, Society of Teachers of Family Medicine Spring Conference, Vancouver, British Columbia, 04/2010.

Ahmed, S., Crouse, B., **Patterson, L.** Combining One Statewide Council, Two Medical Schools, and Six Rural Communities, Society of Teachers of Family Medicine Spring Conference, Vancouver, British Columbia, 04/2010.

**Patterson, L.** & Ahmed, S. One Statewide Council, Two Medical Schools, and Six Rural Communities: A Collaborative Effort to Address Rural Health in Wisconsin. Medical College of Wisconsin-Department of Family and Community Medicine Annual Research Forum, Milwaukee, WI, 05/2010.

Young, S., **Patterson, L.**, Wolff, M. BRANCH Out: Nurturing Healthy Youth Leaders Through Faith Based Partnerships, International Conference of Urban Health, New York City, NY, 10/2010.

Whittle, J., Schapira, M., Fletcher, K., Hayes, A., Morzinski, J, Ertl, K., Eastwood, D., **Patterson, L.**, Laud, P. Impact of a peer support intervention delivered in Veterans Service Organization on blood pressure control. VA Health Services Research & Development 2011 National Meeting, National Harbor, MD, 02/2011.

Morzinski, J., **Patterson, L.**, Eldredge, C. Teaching Community Health Workers to Train Peers About Hypertension: Outcomes & Implications. Society of Teachers of Family Medicine Spring Conference, New Orleans, LA, 04/2011.

**Patterson, L.**, Morzinski, J., Eldredge, C., Using Veterans as Peer-Group Health Workers to Improve Hypertension Awareness & Management. Wisconsin Public Health Association Annual Conference, Appleton, WI, 05/2011.

Eldredge, C., **Patterson, L.**, Schellhase, K. Implementation of Food Allergy Management Policies in Schools. Medical College of Wisconsin-Department of Family and Community Medicine Annual Research Forum, Milwaukee, WI, 05/2011.

Brouwer A, **Patterson L**, Wendorf A, Ertl K, Eastwood D, Whittle J, Morzinski J, Fletcher K, Mosack K. Evaluation of A Peer-Led Hypertension Intervention for Veterans: Health Effects on Peer Leaders. Society of Behavioral Medicine, New Orleans, LA, 4/2012.

Ahmed, S., Crouse, B., **Patterson, L.**, Size T. The Strong Rural Communities Initiative: A framework for executing statewide community-academic partnerships in Wisconsin's rural communities. Leading the Way Conference, Milwaukee, WI, 9/2012

Young S, **Patterson L**, Wolff M. Nurturing Healthy Youth Leaders Through Faith Based Partnerships, Leading the Way Conference, Milwaukee, WI, 9/2012

**Patterson L**, McGinley E, Morzinski J, Ertl K, Fyfe R, Whittle J. Factors associated with veterans service organizations posts decision to participate in a health promotion program. American Public Health Association Annual Conference, San Francisco, CA, 10/2012

Bower, D., Jones B, Pallay, R, Prabhu F, Buckley R, **Patterson, L**. Three-year Medical Degree Programs: Design Features of Accelerated Curriculum Tracks From Structurally Diverse Medical Schools. Society of Teachers of Family Medicine Medical Student Education Conference, San Antonio, TX, 01/2013

**Patterson L**, Hulbert K, Morzinski J, Bower D. The Impact of Engagement: What Factors Promote Involvement In a Family Medicine Learning Community? Society of Teachers of Family Medicine Medical Student Education Conference, San Antonio, TX, 01/2013

Morzinski J, Hulbert K, Bedinghaus J, **Patterson L**, Marcdante K, Simpson D. Early Clinical Learners: What Should Preceptors Do And Say? Society of Teachers of Family Medicine Medical Student Education Conference, San Antonio, TX, 01/2013

**Patterson L**, Shaw S, Bower D. Development and Use of a Student Tracking Database in a Family Medicine Department. Society of Teachers of Family Medicine Medical Student Education Conference, San Antonio, TX, 01/2013

**Patterson L**, Nelson D, Nelson K, Pyne E, Bastani D, Roensch K, Gronseth A, Meurer L. Medical student-driven, faculty-mentored community engagement in research: Clinical care, education, and community health implications. Society of Teachers of Family Medicine Annual Spring Conference, Baltimore, MD, 05/2013.

Nelson D, Nelson K, **Patterson L**, Pyne E, Drew E. A Pilot Project to Understand Weight Loss: Implications for Patients, Providers and Community. Behavioral Science Forum in Family Medicine Annual Conference, Chicago, IL, 09/2013.

Bower J, **Patterson L**, Bedinghaus J. Accelerated MD Program in Family Medicine (AMP-FM): A Program to Reduce Family Physician Shortages in Primary Care. Family Medicine Midwest Annual Conference, Milwaukee, WI, 10/13.

**Patterson L**, Hall D, Wenzel S. Student Reflections on Participating in a Summer Fellowship in Family Medicine. Family Medicine Midwest Annual Conference, Milwaukee, WI, 10/13.

Bower D, **Patterson L**, Bedinghaus J, Hulbert K, Pierre I, and Morzinski J. An Early M2 Family Medicine Clerkship Experience: A Feasibility Study. Society of Teachers of Family Medicine Medical Student Education Conference, Nashville, TN, 01/2014

Bedinghaus J, Wenzel M, Hall D, **Patterson L**, Bower D, Hulbert K. Use of Sentinel Habits And Field Notes for Formative Feedback on a Family Medicine Clerkship. Society of Teachers of Family Medicine Medical Student Education Conference, Nashville, TN, 01/2014.

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Wenzel M, **Patterson L**, Hulbert K, Bower D. The Effectiveness of a Primary Care Track In Fostering Medical Student Interest In Family Medicine. Society of Teachers of Family Medicine Medical Student Education Conference, Nashville, TN, 01/2014.

Morzinski J, **Patterson L**, Ping Tsao C. How Will Faculty Development Influence Adoption of a Three-year Medical School Curriculum? Society of Teachers of Family Medicine Medical Student Education Conference, Nashville, TN, 01/2014.

### **Publications**

Hayes A, Morzinski J, Ertl K, Wurm C, **Patterson L**, Wilke N, Whittle J. Preliminary description of the feasibility of using peer leaders to encourage hypertension self-management. *Wis Med Journal*. 2010;109(2):85-90.

Whittle J, Fletcher K, Morzinski J, Ertl K, **Patterson L**, Jensen W, Schapira M. Ethical challenges in a randomized controlled trial of peer education among veterans' service organizations. *J Empir Res Hum Res Ethics*. 2010; 5(4):43-51.

Ahmed S, Size T, Crouse B, **Patterson L**, Gass E, Karon S, Lund L, Abert C, Wergin A, Hegranes K, Bishop L, Duffy S, Jacobson K. Wisconsin's Strong Rural Communities (SRCI) Initiative: Challenges in Promoting Healthier Lifestyles. *Wis Med Journal*. 2011; 110(3): 119-126.

**Patterson L**, Morzinski J, Ertl K, Wurm C, Hayes A, Whittle J. Engaging Community-Based Veterans' Organizations in Health Promotion Programs. *J Fam and Com Health*. 2011; 34(4):311-8

**Patterson L**, McGinley E, Ertl K, Morzinski J, Fyfe R, Whittle J. Location and organizational features: What type of veteran communities participate in health programs. [\*Prog Community Health Partnersh\*](#). 2012 Summer; 6(2):141-52.

Schapiro M, Fletcher K, Hayes A, Eastwood D, **Patterson L**, et al. The development and validation of the hypertension evaluation lifestyle and management knowledge scale. [\*J Clin Hypertens \(Greenwich\)\*](#). 2012 Jul;14(7):461-6

Mosak KE, Wendorf A, Brouwer A, **Patterson L**, Ertl K, et al. (2012). Qualitative outcome evaluation of POWER II: A peer-led hypertension intervention for veterans service organization members. [\*Chronic Illn\*](#). 2012; 8 (4): 252-264.

Morzinski J, **Patterson L**, Ertl K, Wilke N, Fletcher K, Wurm C, Hayes A, Whittle J. Peer-Leader Training to Improve the Health of Veterans: The POWER Curriculum. *CES4Health.info*, 2012.

Mosack, K.E, **Patterson, L.**, Brouwer, A.M., Wendorf, A.R., Ertl, K., Eastwood, D., Morzinski, J., Fletcher, K., & Whittle, J. (2013). Evaluation of a peer-led hypertension intervention for veterans: Impact on peer leaders. *Health Education Research*, 28 (3), 426-436.

#### **Conference Abstracts Published in Supplemental Issues:**

**Patterson L**, Hulbert K, Morzinski J, Bower D. The Impact of Engagement: What Factors Promote Involvement In a Family Medicine Learning Community? *Fam Med* 2013; 45(S3).

**Patterson L**, Shaw S, Bower D. Development and Use of a Student Tracking Database in a Family Medicine Department. *Fam Med* 2013;45(S3).

Bower DJ, Jones BG, Pally R, Prabhu FR, Buckley RD, **Patterson LA**. Three-Year Medical Degree Programs: Design Features of Accelerated Curriculum Tracks From Structurally Diverse Medical School. *Fam Med* 2013;45(S3).

#### **Teaching Activities**

##### **Medical Student Education**

Family Medicine M-3 Clerkship, January 2011-Present

MCW Scholarly Pathways, Urban and Community Health, Core Session, Speaker  
Fall 2011, Fall 2013

MCW Scholarly Pathway, Urban and Community Health, Core Session, Small  
Group Facilitator, Fall 2011-Present

M3 Intercession Facilitator, Safe Transitions for Every Patient (STEP), Spring  
2012

Foundations of Clinical Medicine: Guest Speaker, Fall 2012 and Fall 2013

MCW Scholarly Pathways, Master Clinician, Core Session, Small Group  
Facilitator, Spring 2013

Graduate Education

PhD Program in Public and Community Health: Doctoral Seminar in Public and  
Community Health, Fall 2011

### **Activities and Service**

**Family Medicine Midwest Conference (2013)**

Member of the host committee planning group

**Archdioceses of Milwaukee School Wellness Committee (2010- Present)**

Community Advisory Board Member

**Family Medicine Student Association (2011-Present)**

Staff Liaison

**Medical College of Wisconsin's Community Medical Education Program  
(2012-Present)**

Member of the Curricular and Interprofessional Development Work Group

**Wisconsin Office of Rural Health (2009-Present)**

Annual grant reviewer

**Journal of School Health, Peer Reviewer (2011-Present)**

**Progress in Community Health Partnerships Journal, Peer Reviewer (2012)**

**Society of Teachers of Family Medicine: Family Medicine Messenger, Peer Reviewer  
(2012)**