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MEANING AND HOPE IN HEALTH BEHAVIOR CHANGE:
AN EXAMINATION OF HEALTH COACHING FOR INDIVIDUALS WITH DISABILITIES

by

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Bachelor of Arts, Psychology
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2015

Thesis

Presented in partial fulfillment of the requirements
for the degree of

Master of Science
Health and Human Performance
Community Health and Prevention Sciences option

University of Montana
Missoula, Montana
2019

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Abstract

Standley, Krys, M.S., Fall 2019

Health and Human Performance

Meaning and hope in health behavior change: An examination of health coaching for individuals with disabilities

Chairpersons: Dr. Annie Sondag, PhD, Dr. Gene Burns, PhD

Introduction: In an effort to expand the reach of health-promotion efforts for people with disabilities, a one-on-one health promotion intervention titled Health My Way was piloted. This intervention incorporated health coaching and health-promotion curriculum designed specifically for people with disabilities.

Purpose: The intervention was evaluated for its effects on health behavior change. Additionally, personal sense of meaning and hope were examined as potential mechanisms of influence in the hypothesized behavior change process.

Methodology: A convergent-parallel mixed-methods research design was used to examine the research questions. Pre- and post-intervention surveys were used to evaluate changes in levels of meaning, hope, and health behavior. Qualitative interviews were conducted with a subset of research participants to better understand the interactions among these variables.

Results: Survey responses were available for 39 participants, 12 of whom were interviewed. A main effect of the overall intervention was seen on physical activity. Additional effects on health responsibility, nutrition, and spiritual growth were seen for participants who engaged in relevant curriculum content. No mediational effects were found; however, correlations between pre- and post-test hope scores were low relative to the reliability of the measure, and a portion of the variance seen in physical activity change was associated with changes in hope. Qualitative analysis revealed both meaning and hope were important to health behavior change. The identification of sources of personal meaning was important to the identification of personally meaningful goals and for the initial motivation for health behavior change. Hope was an important component of sustained health behavior change. Increases in hope were seen in some participants, however most participants who achieved their goals or sustained health behavior change experienced an increased only the agency component of hope.

Conclusions: Individualized health coaching in the current study was found to be an effective method for improving health behavior in people with disabilities, with the strongest effects in the domain of physical activity. Within this process, personal sense of meaning and hope both functioned as active components. The identification of personally meaningful goals and the generation and maintenance of hope appear to be vital to successful health behavior change via health coaching.

Acknowledgments

I would first like to thank my thesis committee chairperson, Dr. Annie Sondag, for her investment in seeing me through this undertaking, and for her flexibility and constructive feedback along the way.

I would also like to thank the other members of my thesis committee, all of whom have taught me a great deal about the research process and life in general. Thank you to Dr. Gene Burns, for supporting me in undertaking a thesis topic that was both personally meaningful to me and outside the box of what was usual for the department. I am profoundly grateful to Dr. Craig Ravesloot for encouraging me to develop this research topic, and for offering practical suggestions for addressing challenges; I am also extremely appreciative of Dr. Rayna Sage, for her guidance and support throughout the research process.

I have tremendous appreciation for the opportunity to work with the members of the Health My Way research team. Thank you to Tannis Hargrove, for her mentorship throughout this project, to Justice Ender, for his camaraderie and practical knowledge, and to Gretchen Neal, for her willingness to assist with data collection.

Thank you to Sharna Fabiano, for her guidance throughout this process, to Laure Pengelly Drake, for helping me orient to the big picture, and Jacob Hansen, for helping me organize my thinking about using details to support that big picture.

I am deeply grateful to my parents, Sue and Ed Standley, for their continuous encouragement throughout my years of study. Likewise, I am immensely thankful for my friends and other family members who offered emotional support during the undertaking of this project, especially Chris Drobnock, Buell Whitehead, Julie Rae O'Connor, and the late Lee Esbenshade.

The contents of this paper were developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR; grant number 90RT5025). NIDILRR is a unit within the Administration for Community Living (ACL) of the U. S. Department of Health and Human Services (HHS). The contents of this paper do not necessarily represent the policy of NIDILRR, ACL, or HHS; you should not assume endorsement by the Federal Government.

Chapter 1: Introduction

Introduction to the Study

For the billion people worldwide who have some form of disability, associated adverse health conditions can lead to diminished quality of life. Disability is not synonymous with poor health; however, people with disabilities experience worse health outcomes than the general population. This disparity is due in part to barriers related to accessing services for the prevention and treatment of health conditions, as well as barriers to participating in communities. (World Health Organization & World Bank, 2011).

Although much is known about the behaviors that precede states of disease or health, questions remain regarding the processes leading to the development and maintenance of health behaviors, and the process of health behavior change (Glass & McAtee, 2006). These processes are still less well understood for people with disabilities, for whom health-relevant behavioral and environmental factors may differ systematically from the general population (Ravesloot et al., 2011). Health promotion interventions targeting individual behavior change have been developed for people of diverse demographics; however, health promotion interventions for people with disabilities are lacking (Nieuwenhuijsen et al., 2006).

Research has found health coaching to be effective for improving health behavior (Dejonghe et al., 2017) and for improving self-management of chronic illness (Kivelä, Elo, Kyngäs, & Kääriäinen, 2014) in the general population. These effects have been found to be more significant in people from vulnerable groups (a category in which people with disabilities fall), who tend to have poorer control of existing health conditions. Health coaching has been identified as promising approach for health behavior change in people with disabilities.

To explore one-on-one health coaching as a delivery method for a disability-specific health-promotion curricula, the Research and Training Center on Disability in Rural Communities (RTC: Rural) at the University of Montana conducted a pilot research project titled Health My Way. This intervention used curricula developed by the RTC: Rural for use in group settings with people with disabilities, in combination with health coaching. This pilot project aligned with Dennis et al.'s (2013) recommendation that future research evaluates the efficacy of health coaching for people with disabilities.

Dennis et al. further recommended that future research into health coaching assess the mechanisms of influence of health coaching on health behavior change. In line with these recommendations, the current study evaluated two potentially influential factors in the efficacy of health coaching on health behavior change: meaning and hope.

Meaning has long been considered a primary motivational driver of individual behavior. Presence of meaning in life has been positively correlated with health-promoting behaviors in a range of age groups spanning from adolescence to older adulthood (Roepke, Jayawickreme, & Riffle, 2014). Although the association between meaning and health-promoting behavior is clear, much remains to be understood about the process by which meaning can lead to health-promoting behavior. Roepke et al. (2014) recommended future research into meaning and health behavior parse the unique influences of positive psychological variables upon health, which is

similar to the recommendation of Brandstatter et al. (2012) that future research into meaning examine related constructs, specifically including hope.

Hope is composed of two interrelated aspects of goal-directed cognition. The first aspect is agency: the determination to succeed at reaching goals. The second is pathways: a plan to reaching goals, including surmounting obstacles. A hopeful mindset has been associated with physical health, mental wellbeing, and adaptive coping. (Feldman & Snyder, 2005). Hope may be especially relevant for people with disabilities, because agency and pathways may both be adversely affected by having a disability.

Statement of the Problem

People with disabilities experience worse health outcomes than do non-disabled people (World Health Organization & World Bank, 2011). Some of these health outcomes relate to the disability itself, whereas others relate to health conditions occurring secondarily to disability. Improving health outcomes for people with disabilities requires a multi-faceted approach. Engagement in health-promoting behaviors is one such facet; however, knowledge regarding factors that influence health-promoting behaviors for people with disabilities is limited. Without further investigation into the systematic factors that influence health-behavior change for people with disabilities, it is challenging to design behavior change interventions that are effective in enhancing the health and well-being of this population.

Purpose of the Study

The purpose of the present study is twofold: (1) to explore the effect of a curriculum-based health coaching intervention on health promoting behavior among people with disabilities, and (2) to examine whether or not meaning and/or hope mediate engagement in health behavior change among participants in the health coaching intervention.

Significance of the Study

Research into this topic is important in terms of health equity, quality of life, and healthcare spending. Disparities in health outcomes are of ethical significance in terms of health equity: The increased predisposition of people with disabilities to adverse health outcomes underlies the value of understanding how to increase health-promoting behavior in this population. Additionally, health outcomes associated with disability relate to individual quality of life: Although people with disabilities tend to report good quality of life, secondary health conditions can lead to diminished life quality (World Health Organization & World Bank, 2011). Finally, health inequities for people with disabilities are poignant in relation to healthcare spending: Nearly half of all public healthcare expenses in the United States have been attributed to the approximately 18% of the population with disabilities (Anderson, Armour, Finkelstein, & Wiener, 2010).

Research Hypotheses

Health coaching (independent variable) will result in increased health-promoting behavior (dependent variable) for people with disabilities. Within this dynamic, meaning and/or hope function as mediating variables.

Research Questions

- 1) Does working with a health coach (using a health promotion curriculum) result in increased health-promoting behavior in people with disabilities?
- 2) How does working with a health coach influence health behavior change in people with disabilities?
- 3) Do changes in meaning or hope mediate changes in health-promoting behavior?
- 4) How do meaning and hope relate to health coaching and health behavior change?

Delimitations

The scope of interest for the present study encompasses adults with disabilities of any type.

Definition of Terms

- **Centers for Independent Living:** Non-profit agencies providing a variety of services to support independent living for people across the spectrum of disabilities; these non-residential service and advocacy organizations are operated within local communities by individuals with disabilities and are federally funded under Title VII of the Rehabilitation Act of 1973 (National Council on Independent Living, 2018).
- **Disability:** an umbrella term used to describe impairments, limitations to activity, and restrictions to participation (World Health Organization, 2018).
- **Ecology of Rural Participation-Longitudinal Survey:** A survey of the Research and Training Center on Disability in Rural Communities (RTC: Rural), delivered annually from 2014-2017. Participants were selected randomly from twelve rural communities demographically representative of the four U.S. census regions and agreed to be contacted to participate in future studies (RTC: Rural, 2016).
- **Health-promoting behavior:** Behavioral choices including action and preparation for action that enhance or maintain one's degree of wellness or fulfillment (Walker, Sechrist, & Pender, 1987).
- **Health behavior change:** Indicated by scores on the Health Promoting Lifestyle Profile II (HPLP II; Walker, Sechrist, & Pender, 1987), health behavior change is a shift from engagement in health-detrimental behaviors to adoption and maintenance of health-

promoting behaviors and activities, including the self-management of chronic conditions (Nieuwenhuijsen et al., 2006).

- **Health coaching (wellness coaching, lifestyle wellness coaching):** a client-centered educational method based on behavior-change theory that employs an action-oriented partnership to facilitate a client's self-determined goals for health and wellness (Gavin & Mcbrearty, 2013).
- **Health My Way:** A consumer-directed health-promotion program designed for people with disabilities who live in rural communities (Research and Training Center for Disabilities in Rural Communities [RTC: Rural], 2015a).
- **Hope:** Indicated by scores on The Hope Scale, hope is a construct involving the overall mindset that goals are attainable (Snyder et al., 1991).
- **Meaning:** Indicated by participant scores on the Presence of Meaning subscale of the Meaning in Life Questionnaire (MLQ-P; Steger, Frazier, Oishi, & Kaler, 2006); meaning is an individualized perception, sense, or belief about a person's life and life activities, including the value the individual attributes to them (Brandstätter, Baumann, Borasio, & Fegg, 2012).
- **Mediation:** an intervening process between stimulus and response (Baron & Kenny, 1986).
- **Mediating variables:** those variables that account for the relationship between the predictive (independent) variable and the criterion (dependent) variable (Baron & Kenny, 1986).
- **Secondary health condition:** A health condition that occurs subsequent to, and implies the existence of, a primary health condition (World Health Organization & World Bank, 2011).

Chapter 2: Review of Related Literature

Disability and Health

People with disabilities experience worse health outcomes than the general population (World Health Organization & World Bank, 2011). This disparity is due in part to barriers related to accessing health services for prevention and treatment of health conditions, and barriers to participating in communities. For people with disabilities, adverse health outcomes can be related to their disabilities *or* to adverse health problems that occur subsequent to the disability. These adverse health problems, termed secondary conditions,¹ imply the existence of primary health conditions or disabilities. As an example, depression could be a secondary condition for a person with spinal cord injury. Secondary health conditions may, in turn, exacerbate disabling conditions. Fortunately, many secondary conditions are considered preventable. Chronic and secondary health conditions are both more prevalent among people with disabilities than in the general population (Kinne, Patrick, & Doyle, 2004; Reichard, Stolzle, & Fox, 2011).²

The World Health Organization (2018) describes disability as a “complex phenomenon reflecting the interaction between features of a person’s body and features of the society” in which the person lives. This fundamentally ecological concept of disability covers three broad aspects of functioning: Impairments (problems with a bodily structure or process), participation restrictions (difficulties with involvement in life activities), and activity limitations (challenges related to task execution). Disability can: (1) arise from conditions present in utero or at birth (e.g., genetic or environmental conditions); (2) be related to development during childhood (e.g., Autism Spectrum Disorder); (3) occur as a consequence of injury, or (4) correspond to a longstanding condition (e.g., diabetes) (Centers for Disease Control and Prevention, 2018). In addition to these various modes of origin, disability can be static (consistent over time), progressive (more severe over time), or intermittent. Fluctuation in disability can reflect changes in environmental characteristics or the degree of the impairment, including time-limited conditions.

Worldwide, over a billion people have some form of disability, and the prevalence of disability is increasing (World Health Organization, 2018). Major factors contributing to the rising prevalence of disability in the United States and the world are aging populations and global increases in chronic health conditions, including cardiovascular disease, cancer, diabetes, and mental health disorders. Disability is categorized along six dimensions, which include impairments pertaining to: (1) hearing, (2) vision, (3) cognition, (4) mobility, (5) self-care, and

¹ Secondary conditions can be distinguished from primary health conditions/disabilities by the time lapse between the occurrence of the primary disability and the development of the secondary disability (Marge, 1988).

² The original concept of secondary conditions centered on prevention of detrimental medical complications related to a primary disability, however, a more recent concept of secondary conditions has incorporated identification with outcomes of social participation and with quality of life (Marge, 2008).

(6) activities of daily living.³ Having a disability is not synonymous with having poor health; however, having a disability can be a barrier to health-promoting behaviors. Therefore, in comparison with the general population, people with disabilities are at greater risk of experiencing poor health.

Health-Promoting Behavior and Health Behavior Change

Efforts to acknowledge and integrate the various factors that influence health have led to conceptualizing health through an ecological model, which posits that a nested system of influences contributes to individual health (Susser & Susser, 1996). Ecological models explicitly consider multiple categories of influence on health, from individual behavior to the broader sociocultural context (Sallis, Owen, & Fisher, 2008). Environmental factors (including physical environments, economic resources, and education) can be understood as both affecting health outcomes and providing a context for personal behavioral factors (Glass & McAtee, 2006). Ecological orientations to health are especially salient for people with disabilities who experience environmental barriers to engagement in health-promoting behaviors. Barriers to health behaviors can include low socioeconomic status, lack of transportation, and absence of adaptive equipment. These types of barriers can increase the likelihood of adverse health outcomes, for example obesity and its associated negative health consequences.

Environmental factors are clearly important targets for health promotion; however, they are often more difficult to address than are behavioral factors (Braveman, Egerter, & Williams, 2011). For example, recommending that people engage in a certain level of daily physical activity is easier than funding an adequate sidewalk infrastructure at the citywide level. Personal factors including behaviors related to health and factors involved in shaping these behaviors (such as knowledge, beliefs, and attitudes), are commonly targeted in health promotion efforts. These efforts are warranted, as clear relationships exist between behaviors and health outcomes. The influence of regular physical activity on cardiovascular disease risk is just one illustration.

Whereas much is known about the behaviors that precede disease, the processes through which health-related behaviors develop, are maintained, and change are less fully understood (Glass & McAtee, 2006). The processes leading to health behavior change for people with disabilities are even less-well understood. Health behavior change has been defined as a shift from engagement in health-detrimental behaviors to adoption and maintenance of health-promoting behaviors and activities, and self-management of existing chronic conditions (Nieuwenhuijsen et al., 2006). Health behavior change requires much more than the provision of information or the understanding that behavior can be harmful to health. On the contrary, health behavior change incorporates cognitive, social, and emotional factors (Schwarzer, 2008). Interactions among these factors are common. For example, knowledge regarding the value of physical activity in combination with social support can lead to a regular practice of physical activity.

³ Surveys conducted by the United States Department of Health and Human Services assess disability via a question set aligned with these six dimensions (United States Department of Health and Human Services, 2011).

Presence of disability is an important consideration in health behavior change. Rimmer (2009) recommended that the International Classification of Functioning, the World Health Organization's (2001) framework for understanding disability, can be a useful tool for developing health-promotion interventions for people with disabilities. Additionally, Ravesloot et al (2011) suggested that experiences of health-relevant environmental and personal factors differ between people with disabilities and the general population, therefore having a disability may systematically influence factors that are important in health behavior change.

Ravesloot et al., (2011) investigated the function of disability in health behavior change to explore the proposition that having a disability may be an important consideration in health behavior change, and that, therefore, it is important to examine factors that support the efficacy of health behavior change for people with disabilities. They analyzed and compared four widely researched health behavior change theories (Transtheoretical, Health Belief, Social Cognitive, and Planned Behavior) against the International Classification of Functioning. This investigation revealed that the International Classification of Functioning corresponds to common components among health behavior change theories. Additionally, Ravesloot et al. proposed that because meaning is intertwined with participation in life activities, health promotion interventions targeting meaningful participation may result in sustainable health behavior change for people with disabilities. On this basis, they proposed that sense of meaning in life should be considered an additional personal factor in models of health behavior change for people with disabilities. Models of health behavior change incorporate various combinations and patterns of factors targeting motivation, with the eventual aim of sustained behavior changes.

Health Coaching

An increasingly widespread approach to health behavior change, health coaching is a client-centered process based in behavior change theory that integrates health education with client goal setting (Wolever et al., 2013). Health professionals from diverse backgrounds (e.g., nurses, physical therapists, psychologists) use health coaching to motivate clients to improve their wellbeing and to promote self-management of existing health conditions. The work of a health coach involves partnering with clients to facilitate the clients' ability to set their own agendas in service to personally relevant goals (Gavin & Mcbrearty, 2013). Health goals may be the primary objectives of the coaching partnership or they may be ancillary objectives, in which case the primary life goal is advanced by attainment of the health objective. In either case, tapping into what motivates a client is essential to the work of a health coach.

Whereas some overlap exists between health coaching, health education, and counseling, several key features distinguish them. All three modalities aim to support client wellbeing, and all three may be delivered in individual or group formats. Differences exist in methods and underlying tenets. In contrast to health education, which is based on an instructional premise of delivering health-relevant content to the client, health coaching focuses on motivating and empowering the client (Gavin & Mcbrearty, 2013). Although a health coach may have expertise in a specific area of health-promoting behavior (e.g., nutrition), it is not the primary goal of the coach to share their specific expertise with the client. Likewise, health coaching and counseling

are based on differing presuppositions. In health coaching, the focus is on action in service to a client's agenda. This orientation sets health coaching apart from counseling, which tends to focus more on client processes (Jordan & Livingstone, 2013). Health coaching often includes the use of a health education curriculum. Curricula can be a valuable component of health coaching; even so, the role of the health coach is an important factor in health behavior change (Lindner et al., 2003).

Efficacy of Health Coaching

Health coaching has been found to be effective for improving both health behaviors and health outcomes in the general population. Dejonghe et al. (2017) conducted a systematic review of the efficacy of coaching interventions in rehabilitation and prevention of disease using randomized controlled trials. They found that health coaching interventions involving minimum durations ranging from a half-day (in a preventive setting) to three months (in a rehabilitation setting) have been effective in producing health behavior change and improved health outcomes. Although a shortage of research exists evaluating health coaching for people with disabilities, research has shown health coaching to be effective for improving health behavior change and health outcomes for people living with chronic conditions. A systematic review by Kivelä et al. (2014) showed that health coaching supported self-management of chronic illnesses. Statistically significant improvements were found in the areas of physiological, psychological, behavioral, and social wellbeing, including weight management and physical activity. Additionally, health coaching was found to be effective in changing lifestyle behaviors and improving self-efficacy.

Health Coaching for People with Disabilities

Health coaching may be particularly relevant for people with disabilities.⁴ A review by Dennis et al. (2013) indicated that health coaching is more effective for people from vulnerable groups in managing chronic health conditions than for people not from vulnerable groups. The authors suggested this may be because people from vulnerable groups had poorer control of their chronic conditions at baseline and thus showed greater improvement than people from groups that demonstrated better control of their conditions at baseline. People from vulnerable groups appear to derive the most efficacy from coaching sessions that are planned (as opposed to being triggered by an event) and unscripted.

Although health coaching has been found to be an effective intervention for health behavior change, questions remain about the mechanism of influence (Kivelä et al., 2014),

⁴ Health coaching aligns with the idea of self-determination. In the context of disability, self-determination is the idea that people with disabilities need to be able to exercise choice and control in their lives (Field et al., 1998). Self-determination is an integral issue in the field of disability. Historically, people with disabilities have been denied autonomy (for example, the widespread practice of forced institutionalization). In response to historic injustices, Centers for Independent Living have been established across the United States to provide services that support people across the spectrum of disabilities to live independently. Self-determination is a fundamental aspect of the philosophy of these centers (National Council on Independent Living, 2018).

especially for people with disabilities. A qualitative study by Liddy et al. (2015) suggested one way through which health coaching may be effective: this study showed that people believe health coaching is effective in building accountability for health behavior change.

Understanding what motivates an individual is essential to the work of a health coach (Boehmer et al., 2016). Oftentimes, clients present with objectives that, although concrete, are superficial. By clarifying clients' values associated with their goals, health coaches can help to uncover meaningful sources of their clients' motivation. Health coaching entails “appreciating the meaning clients are creating from their experiences and what new meanings they are yearning for” (p. 175). This orientation to meaning aligns with the proposal by Ravesloot et al. (2011) to incorporate sense of meaning in life as a personal factor in models of health behavior change for people with disabilities.

Meaning

Meaning in life is a topic of profound and universal human interest, which is relevant cross-culturally (Park, 2017). Understanding the ways in which personal sense of meaning in life can lead to health-promoting behavior is an issue of vital importance (Roepke et al., 2014). Meaning in life has long been considered a primary motivational driver of individual behavior. Human nature, Frankl (1959) argued, is characterized by an innate drive to find meaning in personal experience; failure to discover meaning in one's life results in psychological distress, which can manifest as adverse psychological health outcomes, including addiction, depression, or suicide. Frankl proposed that, fortunately, meaningfulness can be cultivated through one's actions, experiences, or attitudes. Contemporary researchers have echoed this understanding of meaning as a phenomenon that is built by the individual over time. Prochaska & Norcross (2010) proposed that “we create meaning in our lives by the lives we create. We are not born with intrinsic meaning in our existence, but we are born with a creative self who can fashion intrinsic meaning from our existence” (p. 74). Meaning involves integrating one's past, present, and future through conceptual, culturally informed values (Baumeister, Vohs, Aaker, & Garbinsky, 2013). Steger (2012b) elaborated on this integral conceptualization:

Meaning is the web of connections, understandings, and interpretations that help us comprehend our experience and formulate plans directing our energies to the achievement of our desired future. Meaning provides us with the sense that our lives matter, that they make sense, and that they are more than the sum of our seconds, days, and years (p. 165).

Meaning is a principle component in Sense of Coherence theory (Antonovsky, 1987), a comprehensive theory supported by empirical evidence and important in the field of health promotion (Eriksson & Lindstrom, 2006).⁵ Sense of Coherence has been strongly linked to health outcomes, particularly mental health, in the general population (Eriksson & Lindstrom,

⁵ Sense of Coherence theory was originally proposed as a theory of health and stress (Antonovsky, 1987).

2006). The theory is composed of three parts: comprehensibility, manageability, and meaningfulness. Comprehensibility is the expectation of being able to understand the events that occur in one's life; manageability is the belief that an individual will be able to cope with these events; meaningfulness is an individual's confidence that coping with life events serves a purpose. According to Sense of Coherence theory, meaningfulness is the foundational component for the development of a sense of comprehensibility and manageability.

Frankl (1959) proposed that meaning in life is fundamentally subjective, differing "from man to man [*sic*], from day to day, and from hour to hour," (p. 108). Frankl described meaning in life through analogy to the game of chess, in which there is no one best move, nor even any one move that is good in every situation. Similarly, Frankl proposed, there is no utility in searching for a single understanding of meaning in life that can be applied across all individuals. The subjective nature of meaning remains a current understanding (Brandstatter et al., 2012; Park, 2010 & 2017; Huta, 2016). Brandstatter et al. (2012) described meaning as a "highly individual perception, understanding, or belief about one's own life and activities and the value and importance ascribed to them" (p. 1045). Although the subjective framework of meaning may preclude a more specific definition, such open-endedness is necessary to capture the essence of the construct.

Meaning can be divided by scale into two levels. Yalom (1980) termed these levels *terrestrial* and *cosmic*. Terrestrial meaning refers to the type of meaning that individuals find in their lives through daily activities. Cosmic meaning, conversely, is the idea of making sense of human life or life in total. Contemporary models of meaning have retained a two-level understanding of meaning. Park's (2010) meaning-making model distinguishes between *situational* meaning (meaning made in the context of a challenging event) and *global* meaning, which relates to an individual's general way of orienting to life. According to this model, global meaning consists of (1) beliefs about the world, oneself, and one's place in the world, (2) goals, and (3) a subjective sense of meaning or purpose. Global meaning largely serves to determine the situational meaning people assign to important or traumatic life events (Park, 2017). It is these general beliefs about meaning in life that relate to the current investigation.

Peterson, Park, & Seligman (2005) described meaning in the context of two longstanding historical orientations to understanding what makes for a good life: hedonia, which dates back to Aristippus (435–366 B.C.) and eudaimonia, which dates to Aristotle (384–322 B.C.). Whereas happiness is widely considered to center on hedonic wellbeing (the attainment of pleasure and avoidance of pain), meaning aligns with eudaimonic wellbeing (identifying, cultivating, and living by one's virtues). These orientations remain relevant to current thinking; eudaimonia provides the basis for the modern psychological concept of psychological wellbeing.⁶

Whereas theories of meaning in life are abundant, empirical evaluation of meaning has been less robust (Park, 2010). The majority of empirical research on meaning has focused on

⁶ Additional modern psychological ideas based upon eudaimonia include Maslow's notion of self-actualization and Deci & Ryan's Self-Determination Theory.

psychological wellness (Brassai, Piko, & Steger, 2015): Presence of meaning in life has been found to be positively associated with and is widely understood to be critical to psychological wellbeing (Steger, 2012a; Frankl, 1959). Meaning is understood to mediate psychological wellbeing in some instances (e.g., in relationship with intrinsic religiosity; Steger and Frazier, 2005).

A substantial research base (Frankl, 1959; Steger, Frazier, Oishi, & Kaler, 2006) supports the reciprocal relationship between meaning and psychological wellbeing; however, support for a positive correlation between meaning and physical health is still emergent (Brassai, Piko, & Steger, 2015).

Associated Health Outcomes and Health Behaviors

Preliminary evidence indicates that numerous positive health outcomes are linked to presence of meaning (Roepke, et al., 2014). Among these outcomes are immune functioning and autonomic nervous system regulation. Compared to individuals with lower levels of meaning in life, people with high levels of meaning in life experience greater longevity, faster recovery times following surgeries, better health-related quality of life, and less disability related to aging. Czekierda, Banik, Park, and Luszczynska's (2017) systematic review and meta-analysis found evidence for a correlational relationship between meaning and indicators of physical health, with significant estimates of average effects across health status (healthy individuals vs. those with chronic disease), age, indicators of health (objective or subjective), and conceptualizations of meaning. Ravesloot, Seekins, and Young (1998) found that for people with spinal cord injuries, a health promotion intervention based in part on Sense of Coherence theory (of which meaning is a key component) resulted in a 37% decrease in limitations due to secondary conditions. Some experimental research has supported a causal relationship between meaning and health outcomes; however, additional research is needed before firm conclusions can be drawn (Roepke, et al., 2014). Meaning is strongly linked to positive health outcomes, yet the exact nature of the relationship is still under debate.

Presence of meaning in life is positively correlated with behaviors that factor into the probability of positive health outcomes. A systematic review by Roepke, et al. (2014) found that people with higher levels of meaning tended to engage more in health-promoting behaviors. Among the studies included in this review, the health behaviors that were positively associated with meaning included: healthy eating, physical activity, relaxation, hygiene practices, sun protection, sleep practices, accident prevention, and regular check-ups with a medical provider. Meaning was found to be associated with health-promoting behaviors in a range of ages spanning from adolescence to older adulthood.

Sources of Meaning

Meaning in life has been characterized as both essential to thriving and survival, and as chronically elusive. Heintzelman and King (2014) explored this paradox and found that evidence from large, representative research samples indicates that most people assess their lives to be fairly meaningful. The widespread prevalence of meaning can be explained by examining

the sources from which people derive meaning in life. Frankl (1959) proposed that meaning can be discovered by (1) action or work, (2) experiencing something (such as beauty, truth, or goodness) or connecting with another person, and (3) the attitude a person takes toward inescapable suffering. Empirical research has supported and expanded upon this understanding. Battista and Almond (as cited in Debats, 1999) identified the major orientations to meaning as arising from a few common sources: interpersonal interaction, service, comprehension, acquisition, expression, and ethics. DeVolger and Ebersole (as cited in Debats, 1999) later added to this list the domains of life work, personal growth, health, and pleasure. Debats (1999) explored sources of meaning with patients and non-patients, and found that for both groups, sources of meaning exist along a hierarchy, with relationships accounting for the majority of meaning in life. Schlegel and Hicks (2017) proposed that relationships are meaningful when people are able to express their true selves and when they can be understood and appreciated as such. Schnell (2011) found that generative activities were powerfully predictive of meaning in life, and that high levels of meaning in life were associated with both depth and breadth of sources of meaning. Additionally, Feldman & Snyder (2005) found that individuals create meaning in their lives through setting and working toward goals that align with their values.

Hope

The experience of meaning is connected to hope through a common focus on the pursuit of goals. Feldman & Snyder (2005) proposed that personal goals are a frequent component of theories of meaning. Hope is an important factor in goal pursuit, and has therefore been conceptualized as central to meaning, with meaning being the larger concept. Feldman & Snyder (2005) used factor analysis to examine meaning and hope; their results indicated that a single common factor underlies the two constructs.

Hope is a cognitive construct anchored in the perception that people can achieve their personal goals (Snyder et al., 1991). A hopeful mindset is associated with a multitude of indicators of positive psychological functioning, including physical and mental wellbeing and adaptive coping (Feldman & Snyder, 2005). Hope is composed of two interrelated aspects of goal-directed cognition: agency and pathways. Agency refers to thoughts about one's ability to begin and continue moving toward personal goals; it reflects one's past and present accomplishments, as well as one's determination to attain desired results in the future. Pathways indicate beliefs about one's ability to plan an effective strategy that will result in successful goal-completion. The present study integrates hope because (1) it is related to meaning, (2) it has been well operationalized and is less subjective than meaning, and (3) it may be especially important for people with disabilities, because agency and pathways may both be negatively affected by having a disability.

Hope is connected to motivation in a variety of ways. Agency and pathways can be considered to parallel the expectancies referenced in research on motivation (Snyder et al., 1991). Similar to agency, efficacy expectancies denote an individual's confidence to act in a way that will facilitate a desired outcome and are thus considered as primary behavioral

determinants. Outcome expectancies, similar to the pathway component of hope, are based upon the belief that one's actions will produce a certain outcome. Hope, therefore, can be conceptualized as a reciprocal interaction between efficacy expectancies reflecting agency and outcome expectancies reflecting available pathways.

Emphasis on agency is the primary differentiation between hope and optimism. Whereas hope and optimism overlap in that both reflect general outcome expectations that are relatively stable across a variety of situations, optimism focuses primarily on outcome expectancies in shaping goal-directed behavior (Scheier & Carver, 1985). Compared to optimism, hope involves greater emphasis on peoples' beliefs about their agency related to goal achievement (Snyder et al., 1991).

The connection between goal pursuit and hope can be informed by research into self-concordant goals. Self-concordant goals are goals that align with, express, and integrate an individual's core values and active interests (Sheldon & Elliot, 1999).⁷ Such goals tend to elicit greater effort and result in higher levels of goal attainment than do goals that are not integrated in these ways. Goals that are self-concordant also tend to result in higher levels of reported wellbeing.

In comparison to people who are less hopeful, people who are highly hopeful tend to set more challenging goals for themselves, appraise their goals in a more positive light (in terms of potential for success rather than failure), and feel more confident that they will attain their goals (Snyder et al., 1991). For people with disabilities, the pursuit of meaningful goals has been found to be associated with an increase in learning and practicing health behaviors (RTC: Rural, 2015c).

Meaning and Hope: Potential Mediation Variables in Health Behavior Change

Health behavior change interventions developed from theoretical bases have increasingly targeted mediational variables (Ory, Jordan, & Bazzarre, 2002). This practice reflects an increasing awareness and incorporation of ecological models of health (understanding the interplay among factors external to and within individuals). Mediating variables are those that account for the relationship between the predictive (independent) variable and the criterion (dependent) variable (Baron & Kenny, 1986). Oftentimes mediating variables are internally-experienced phenomena. The best use of mediating variables is in cases in which there is a strong relationship between independent and dependent variables; mediating variables address

⁷ Similar to self-concordance, intrinsic motivation (as it related to goals, behaviors, attitudes, and goal-relevant processes) is a focus of Self-Determination Theory (Ryan & Deci, 2000), which also encompasses Cognitive-Evaluation Theory (in which universal needs for competence, autonomy, and affiliation are understood to motivate individual behavior). Seen through the lens of Self-Determination Theory, goal-oriented behavior is fueled in part by a need for competence (accomplishing a goal demonstrates a level of competence) and autonomy (intrinsically motivated goals satisfy a need for autonomy).

how or why effects occur between these variables. A variable may be considered to be a mediator to the extent to which it accounts for this relationship.

The present study tested a direct effect of health coaching on health-promoting behavior and a mediational effect of meaning and hope in the relationship between health coaching and health-promoting behavior. The present evaluation of meaning and hope as mediational variables is based on previous findings that meaning mediates the relationship between intrinsic religiosity and psychological well-being (Steger & Frazier, 2005) and the effect of physical impairment on distress related to interference with daily activities (Jim & Anderson, 2007).

Linkages between the Literature Reviewed and the Direction of the Study

Given that health-promotion interventions for people with disabilities are lacking (Nieuwenhuijsen et al., 2006), the present study aimed to contribute to the body of knowledge about health promotion for this population. Additionally, the present study corresponds to recommendations for research into health coaching, and to recommendations for research into meaning as it relates to health behavior change.

Researchers have demonstrated that health coaching is an effective intervention for health behavior change, however, questions exist regarding the mechanism of influence. Dennis et al. (2013) recommended that further research is necessary to assess the efficacy of health coaching for people from vulnerable groups, including people with disabilities. Most health coaching models identified in Dennis et al.'s literature review focused on the management of a single chronic condition; therefore, the authors also recommended that future research is needed to assess the efficacy of health coaching for people who are managing a variety of health conditions. The present study responded to the first recommendation by assessing the effect of health coaching on health behavior change in people with disabilities, and to the second recommendation by not placing limits on the type or number of health condition participants were managing.

Preliminary evidence has indicated a link between high levels of meaning and health-promoting behavior, however, the nature of the relationship is still under debate. Roepke, et al. (2014) conducted a systematic review of 56 studies on meaning (and related constructs) and physical health. They concluded that the question of how meaning in life can lead to health-promoting behavior is an issue of vital importance, with broad implications for health outcomes. The authors recommended that future research into the role of meaning in health behavior change should parse the unique influences of positive psychological variables upon health. Related to this recommendation, Brandstätter et al. (2012) concluded their systematic review of meaning in life assessments with the recommendation that an important area for future research is to analyze meaning in combination with related constructs, specifically including hope. The present study responded directly to this recommendation by measuring and analyzing hope in conjunction with meaning.

Roepke, et al. also recommended future research employ prospective measurement strategies that assess meaning over time, without reliance on retrospective self-reporting.

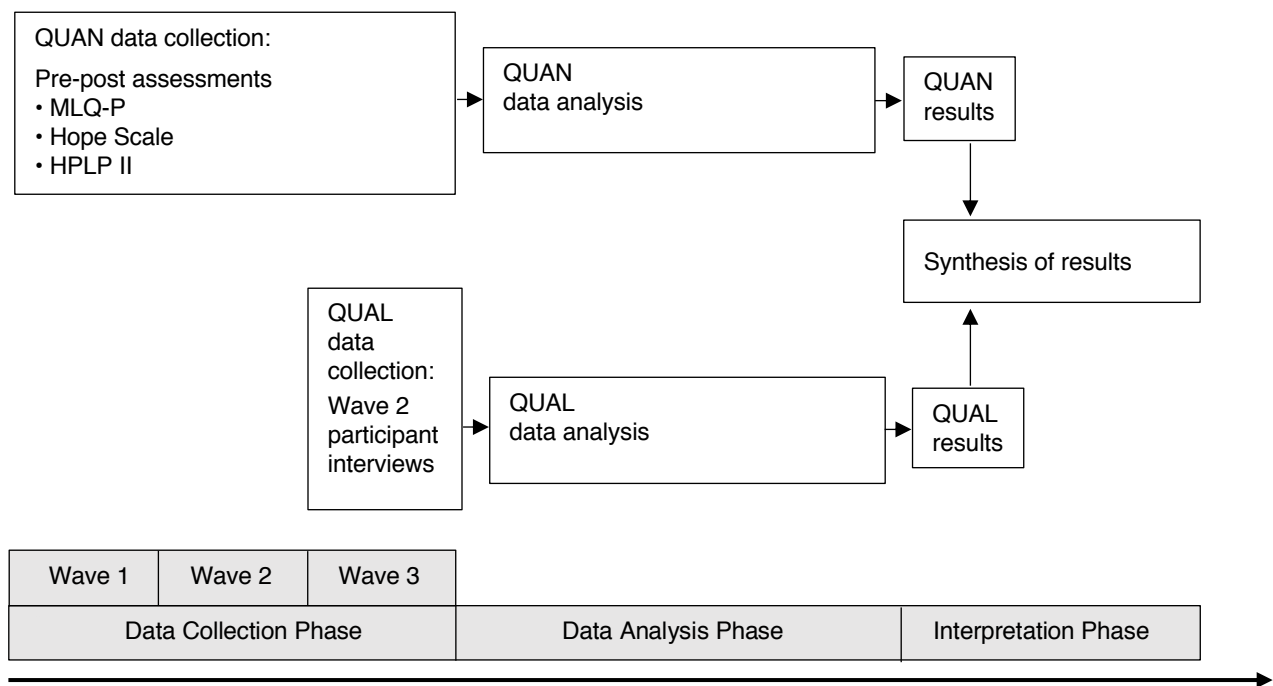
Similarly, Schlegel and Hicks (2017) recommended future research incorporate measurement strategies that de-emphasize face-valid self-reporting. The present study responded to these recommendations by collecting quantitative data on meaning (and hope), and by using a pre- and post-measure research design.

Finally, qualitative research has been recommended as an important method of understanding issues of both disability and meaning. The World Health Organization and World Bank, in their World Report on Disability (2011), advised that more qualitative research is needed to “understand the lived experiences of people with disabilities” p. 46). Likewise, a common understanding from the 2014 Summit of the International Network on Personal Meaning was that qualitative research is essential to understanding the issues that really matter to people “in their daily struggles for survival and flourishing” (Wong, 2017, p. 85). The present study responded to these recommendations by incorporating a qualitative research component.

Chapter 3: Methods

The present study used a mixed methods design (i.e., convergent parallel mixed methods design (QUAN + QUAL); Creswell, 2014) to facilitate a comprehensive understanding of the intervention results. Quantitative data obtained from pre-test/post-test surveys and qualitative data from semi-structured interviews were collected and analyzed separately before the results were synthesized. Quantitative and qualitative perspectives were merged to answer the research questions. Figure 2 provides a model of the study design.

Figure 2. Convergent parallel mixed-methods design model and timeline (QUAN = quantitative; QUAL = qualitative)



Participants

Recruitment

A convenience sample⁸ of 51 eligible participants was recruited for a pilot study of the Research and Training Center on Disability in Rural Communities (RTC: Rural),⁹ titled Health My Way Health Promotion Pilot Program (Health My Way). Participants were 18 years of age

⁸ The investigators of Health My Way determined 48 participants to be a sufficient sample size for the purpose of the pilot study.

⁹ The RTC: Rural conducts disability research as part of the Rural Institute for Inclusive Communities at the University of Montana, which is one of 67 University Centers for Excellence in Developmental Disabilities in the United States and its territories.

or older and had a disability (of any type).¹⁰ Disability was assessed through active use of a Center for Independent Living or self-report of a disabling condition on the Ecology of Rural Participation-Longitudinal Survey. Participating individuals were required to have internet access at their home or another location.

Recruitment sources were approximately equally divided between Centers for Independent Living and the Ecology of Rural Participation Longitudinal Survey.¹¹ Nineteen eligible participants were recruited from the former, and 20 from the latter. Participants recruited from Centers for Independent Living were active consumers at either North Country Independent Living, in Superior, Wisconsin, or Independence, Inc., in Minot, North Dakota. Center for Independent Living staff members recruited participants from their centers. Participants recruited from the Ecology of Rural Participation-Longitudinal Survey were individuals who participated in the longitudinal survey, completed the most recent annual survey, and agreed to be contacted to participate in future studies. These individuals were selected randomly from twelve rural communities demographically representative of the four U.S. census regions (RTC: Rural, 2016). An additional eligibility criterion for participants recruited from the survey was the ability to consent to participation in Health My Way (they could not have guardians).

Participant Demographics

Of the 51 recruited participants, 39 were deemed eligible for inclusion in the data analysis.¹² Of those 39 eligible, 24 were female and 15 were male. The average participant age was 53 years old ($SD = 17.10$, range 18 - 90). Participants reported their race as White (82%), Native American/Alaska Native (8%), Black/African American (5%), or other (5%). Three percent of participants reported Hispanic ethnicity.

Impairment was assessed with the six questions used for this purpose in the American community survey (United States Census Bureau, 2017). For each impairment category, participants rated their experience over the previous 30 days. Impairment was rated on scale of zero to ten (no difficulty to extreme difficulty). Average impairment scores ranged from 1.4 to 4.3 across impairment types. Mobility impairments received the highest average score ($\bar{x} = 4.3$), followed by impairments to cognition ($\bar{x} = 3.6$), activities of daily living ($\bar{x} = 2.8$), hearing ($\bar{x} = 2.7$), self-care ($\bar{x} = 2.6$), and vision ($\bar{x} = 1.4$).

The most common health conditions experienced by participants were: emotional conditions (54%), arthritis (51%), back or neck problems (44%), weight problems (44%), vision conditions (39%), hypertension (31%), asthma (31%), hearing conditions (28%), migraines

¹⁰ Intellectual and developmental disabilities were addressed through the study's inclusion criteria, which varied with the two recruitment sources in terms of guardianship guidelines.

¹¹ The Ecology of Rural Participation-Longitudinal Survey was delivered annually from 2014-2017.

¹² Six participants dropped out and did not complete the survey. Cited dropout reasons comprised: problems with internet connection (2), feeling overwhelmed by the tablet-computer technology (1), health problems (1), and unspecified (3). The survey data from five additional participants was omitted from the sample due to non-completion of either the pre- or post-survey; coincidentally, none of these participants were interviewed.

(26%), diabetes (23%), gastrointestinal problems (23%), respiratory problems (21%), and heart problems (20%).

Additional demographic data included education, health insurance coverage, and receipt of benefits. Educational achievement ranged from some high school (5%) to a master's degree or higher (8%). The most common level of education was some college or technical school (36%), followed by high school graduation/GED (20.5%), bachelor's degree (20.5%), and associate or technical degree (10%). Health insurance coverage included: Medicare (54%), Medicaid (46%), and private health insurance (31%), with some participants reporting multiple types of coverage. Three percent reported having no health insurance. The majority of participants (85%) reported receiving financial benefits, including: Social Security (28%), Social Security Disability (33%), Social Security retirement (26%), and/or other types of benefits (26%).

Thirteen eligible intervention participants from the winter 2019 cohort (Wave 2) were invited to be interviewed for the qualitative component of the study. Twelve of 13 agreed to participate. Three Wave 2 participants did not meet inclusion criteria due to either having guardians (2) or not accessing the curricula (1). Table 1 shows the profiles of individual participants. Across the demographics the only categories that were statistically different between interviewees and participants who were not interviewed were age, mobility impairment, and education. Interviewees were older ($\bar{x} = 61.8$) than non-interviewees ($\bar{x} = 48.5$), $t(34.455) = -2.878$, $p = 0.007$. Rates of impairment were statistically similar across categories, with a notable elevation in mobility impairments among interviewees ($\bar{x} = 5.8$) compared to participants who were not interviewed ($\bar{x} = 3.6$), $t(37) = -1.771$, $p = 0.085$. The interviewed sample also had higher rates of educational attainment than the participants who were not interviewed: crosstabs analysis revealed that 100% of interviewees had completed at least some college, compared to 62.96% of participants who were not interviewed. Other demographic categories including sex, race, ethnicity, health insurance, and financial benefits were not statistically different between groups.

The Health My Way study was approved by the University of Montana's Institutional Review Board (IRB). Informed consent was obtained from all participants prior to enrollment and participation in the study (Appendix G). Additional informed consent was obtained from participants who were interviewed prior to the commencement of interviews (Appendix I)

Measures

In addition to demographic variables, the study used three measures for the assessment of quantitative data: the Presence of Meaning Subscale of the Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006; Appendix A), the Hope Scale (Snyder et al., 1991; Appendix B), and the Health Promoting Lifestyle Profile (HPLP) II (Walker, Sechrist, & Pender, 1987; Appendix C). Additionally, a qualitative interview was used with a subset of the participants. Each of these measures are described below.

Table 1: Baseline characteristics of interview participants

Age	Pseudonym	Demographics	Impairment ratings						Recruitment Source and State
			Hearing	Vision	Cognition	Mobility	Self-Care	Daily Living	
70	Dan	Male, white, divorced, master's degree or higher, not employed	1	1	0	10	1	0	ES: Montana
54	Max	Male, white, married, master's degree or higher, not employed	2	1	4	10	4	8	ES: Montana
76	Velma	Female, white, widowed, some college or technical school, employed part-time	6	0	0	10	5	5	ES: Montana
55	Teresa	Female, white, widowed, some college or technical school, not employed	3	1	4	6	2	5	ES: Texas
59	Frank	Male, white, married, some college or technical school, not employed	8	6	8	10	8	3	ES: Idaho
61	Sarah	Female, white, widowed, some college or technical school, not employed	0	0	5	0	0	0	CIL: North Dakota
64	Saul	Male, black, divorced, bachelor's degree, not employed	2	2	0	5	2	2	CIL: North Dakota
63	Simon	Male, race: other, married, bachelor's degree, not employed	2	1	1	7	1	2	ES: Montana
54	Paula	Female, white, married, bachelor's degree, employed part-time	1	1	1	3	2	5	ES: Kansas
80	Margaret	Female, white, widowed, some college or technical school, not employed	7	0	4	4	0	0	ES: North Carolina
63	Diane	Female, white, unmarried couple, some college or technical school, not employed	9	4	7	4	5	4	CIL: Wisconsin
42	Coleen	Female, white, unmarried couple, associate or technical degree, not employed	1	2	5	1	0	2	CIL: Wisconsin

Note. CIL = Center for Independent Living. ES = Ecology of Rural Participation Longitudinal Survey. Ratings of impairment are responses to the questions set used in United States Department of Health and Human Services surveys to assess disability; rated from zero (no difficulty) to ten (extreme difficulty).

Meaning in Life Questionnaire, Presence of Meaning subscale (MLQ-P). Personal sense of meaning was measured using the MLQ-P (Steger, Frazier, Oishi, & Kaler, 2006). This subscale is composed of five questions and was designed to measure the degree to which individuals experience their life to have meaning. Each question was scored using a 7-point Likert-style rating scale ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*). Scores ranged from 5 to 35, with higher scores reflecting greater meaning in life. Steger's (2010) evaluation of the MLQ indicated the total measure had "excellent reliability, test-retest stability, stable factor structure, and convergence among informants." The MLQ-P subscale has been found to

correlate positively to a number of well-being constructs, including life satisfaction, agreeableness, positive emotionality, extraversion, conscientiousness, and an intrinsic religious orientation (Steger et al., 2006). Presence of meaning has also been found to have an inverse relationship with negative emotionality, depression, and anxiety. Scores on the MLQ-P appeared stable over a span of two weeks, with test–retest stability coefficients of 0.80 (Steger & Kashdan 2007). The alpha coefficient of internal consistency for the MLQ-P ranged from 0.81 - 0.86 (Steger, Frazier, Oishi, & Kaler, 2006). The MLQ-P has convergent correlation levels of 0.61-0.74 with other measures of meaning (e.g., Life Regard Index, Purpose in Life Test).

In addition to its high general quality, the MLQ-P was chosen for the present study because of its moderate sensitivity to change over time. Over a one-month timespan, test–retest stability coefficients were 0.70 (Steger & Kashdan, 2007). Over the course of one year, scores were moderately stable, with test–retest stability coefficients of 0.41. The authors described their confidence that the constructs of meaning assessed by the MLQ are durable over the life course. At the same time, the authors acknowledged that one-year stability coefficients indicated the existence of considerable unexplained variance, which suggested that the measure is "adequately sensitive to life events that influence levels of meaning in life and life satisfaction" (p. 173).

The Hope Scale. Hope was measured with Snyder et al.'s (1991) Hope Scale. The Hope Scale is composed of eight items relevant to hope and four filler items. Four relevant items measure sense of agency (determination to succeed at reaching goals); the other four measure the capacity to find pathways for reaching goals, including surmounting obstacles (Snyder et al., 1991). Questions were scored using a 4-point Likert-type response rating scale ranging from 1 (*definitely false*) to 4 (*definitely true*). Scores ranged from 12 to 48, with higher scores reflecting greater hope.

Snyder et al.'s (1991) evaluation of the Hope Scale found it has good internal consistency and is relatively stable over time. A systematic review of the psychometric properties of hope measures evaluated 31 peer-reviewed journal articles assessing the Hope Scale and adaptations thereof (Redlich Amirav et al., 2018). This analysis indicated the scale has adequate reliability (coefficient alpha ranged from 0.76 to 0.95) and validity, assessed through content, structural, and criterion validity (e.g., criterion validity was established through comparison with results of scales measuring goals, self-efficacy, identity, and life orientation).

Health-Promoting Lifestyle Profile II. Health-promoting behavior was measured using a revised (1995) version of the HPLP II (Walker, Sechrist, and Pender's, 1987). The HPLP II is a 52-item scale used to measure health-relevant behaviors in the following dimensions (which are assessed through subscales of the same names): stress management, health responsibility, physical activity, nutrition, interpersonal relations, and spiritual growth (Walker & Hill-Polerecky, 1996). This measure used a 4-point response format for gauging behavior frequency, with answer possibilities ranging from 1 (*never*) to 4 (*routinely*). Cumulate scores range from 52 to 208, with higher scores reflecting greater degrees of health-promoting behavior. Subscale

means are calculated using the 1-to-4 metric to facilitate comparison among subscales. Walker and Hill-Polerecky (1996) found the following in their evaluation of the measure:

Data from 712 adults aged 18 to 92 were used to assess validity and reliability. Content validity was established by literature review and content experts' evaluation. Construct validity was supported by factor analysis that confirmed a six-dimensional structure of health-promoting lifestyle, by convergence with the Personal Lifestyle Questionnaire ($r = .678$), and by a non-significant correlation with social desirability. Criterion-related validity was indicated by significant correlations with concurrent measures of perceived health status and quality of life (r 's = .269 to .491). The alpha coefficient of internal consistency for the total scale was .943; alpha coefficients for the subscales ranged from .793 to .872. The 3-week test-retest stability coefficient for the total scale was .892 (p.1).

Qualitative Interviews. A semi-structured interview guide (Appendix F) based on the research questions was developed to explore participant experiences of changes in meaning, hope, and health behavior. The interview guide consisted of three sections: Section 1: Experiences in a typical day, Section 2: Experiences with the curriculum and the coaching, and Section 3: Experiences with goals. This interview guide was reviewed by individuals familiar with Health My Way for face and content validity and was consequently revised. The interviews occurred via telephone and were expected to take one to one-and-a-half hours to complete.

Procedures

The Intervention

The Health My Way program used a health-promotion curriculum developed by the RTC: Rural, titled *Living Well in the Community* (2015b). This core curriculum focused on setting quality-of-life goals and making lifestyle changes in service to those goals. It was supported by another curriculum developed by the RTC: Rural, titled *Community Living Skills*. Whereas *Living Well in the Community* sessions centered on health and wellness topics, *Community Living Skills* sessions covered foundational skills for independent living, including transportation, housing, and self-care.

Recruited participants completed the study informed consent and returned it to the research team. Participants then met with health coaches trained by the RTC: Rural Health My Way project team. Health coaches received 11 health coaching training sessions of 30 to 60 minutes duration as well as ongoing support throughout the intervention in the form of weekly consultations. Participants associated with Centers for Independent Living worked with one of five Center for Independent Living staff members (two with counseling backgrounds and three with Center for Independent Living staff training). Participants drawn from the Ecology of Rural Participation Longitudinal Survey worked with one of three health coaches who were graduate students at the University of Montana (two in the Clinical Psychology program and one in the Community Health program).

The Health My Way intervention typically involved participants meeting with a health coach either face-to-face or using a telephone for up to one hour, once per week. The coach reviewed health promotion content, asked content-driven discussion questions, and answered questions about using the curriculum. The duration of the intervention varied from 1 to 12 sessions, which were scheduled on a weekly basis. The number of sessions was based on the amount of content participants choose to view. This flexible structure was chosen to reflect the Independent Living philosophy of self-determination, which values freedom of choice. Informed choice was operationalized in the app with navigational supports that used probability statements about intervention outcomes that might be observed for selecting a specific content area (e.g., most people who worked on skills like handling frustration, for six weeks, were able to sleep 45 minutes longer each night).

Quantitative Data Collection

After returning the study informed consent to the research team, participants completed pre-measures. Responses to the measures were collected using a Samsung Galaxy Tab A computer tablets (model SM-T580NZKAXAR; screen resolution 1920 x 1200 pixels). These tablets were also used to store participants' pre- and post-intervention responses and to deliver the intervention curriculum. Participants received a participation incentive of \$10 via money order immediately after completing the pre-measures. Once participants completed the pre-measures, they began the Health My Way intervention (RTC: Rural, 2015a). Participants completed their chosen curriculum content, and then completed a post-intervention measure comprising the same survey questions as on the pre-test. After they returned the tablet computer, they received an additional 30-dollar participation incentive.

In eight instances, there was a lack of precision in data reports regarding which health topics participants engaged; in these cases, coaches were asked to provide this information based on their notes and recollections. An estimate of reliability was calculated by comparing coaching notes to Drupal data; according to this calculation, measurements were found to be reliable at the .90 level. Another complication with data collection was that some participants took the pre-surveys multiple times; in these instances, the first survey was selected for data analysis in an effort to capture both the earliest date of pre-survey and participants' instinctive responses. The survey data for five participants was not able to be located electronically, even though coaches verified being present with participants when they took the surveys; in these instances, participants' data was not included in the data analysis.

Qualitative Data Collection

Participants in the winter 2019 cohort (Wave 2) were interviewed about their experiences during the intervention. These interviews were conducted by telephone and occurred an average of 5 weeks (range: 3-13 weeks) from completion of the Health My Way intervention. Prior to the interviews, participants were mailed a letter inviting their participation. Participants were recruited for 1- to 1.5-hour interviews. Participants returned interview informed consent forms

(Appendix I) prior to interviews. Average actual interview time was 47 minutes (range: 35-83 minutes). The sample size was determined to be adequate because it comprised over 80% of eligible participants from this cohort. Additional inclusion criteria for interviews comprised: the ability to consent to participation, engagement with the Health My Way curricula content, and participation in at least two health coaching sessions. Each interviewee received a 50-dollar participation incentive.

Two graduate students conducted interviews. In order to reduce potential bias, participants were paired with an interviewer who was not their health coach. Interviews were recorded using a device that was not connected to the internet (for security purposes) and were transcribed for subsequent analysis.

Data Analysis

Quantitative. Statistical analysis was performed using the Statistical Package for the Social Sciences, version 25 (SPSS). A repeated-measures t-test was used to assess change scores on the MLQ-P, the Hope Scale, and the HPLP II. Evaluation of change on the HPLP II was calculated in three ways: for the overall measure, for each subscale, and for each subscale associated with curricula content viewed by the participants (e.g., nutrition). For the latter calculation, participants were included in the analysis only when they viewed a session for at least 15 minutes, as indicated by website use tracking data. Table 2 shows the HPLP II subscales that were used to evaluate each intervention content area. (Descriptions of HPLP II subscales and *Living Well in the Community* sessions can be found in Appendices D and E, respectively.)

Mediation analysis. Scores on the MLQ-P and Hope Scale were examined for mediating effects of health coaching on health behavior change. Mediation analysis was conducted using a path-analytic approach appropriate to within-subject evaluation described by Montoya and Hayes (2017). This computation was conducted using the SPSS macro (a mini-program) MEMORE (MEdiation and MOderation analysis for REpeated measures designs). Meaning and hope were tested, using this process, as separate mediating variables. Lastly, post-hoc analyses were conducted using multiple regression analyses to evaluate change in the MLQ-P and Hope Scale.

Qualitative. Semi-structured interviews were analyzed using QSR NVivo data analysis software. Interview data underwent thematic coding and analysis, following a sequence recommended by Creswell (2014): (1) organization and preparation of data, including interview transcription; (2) examination of data, looking for general ideas, tone, and depth of information; (3) coding of data, including segmenting transcribed text into categories; (4) identifying main themes; (5) planning the manner in which to represent themes in the qualitative narrative; and (6) interpreting the meanings of thematic findings.

Table 2. Health Promoting Lifestyle Profile II (HPLP II) subscales used to evaluate *Living Well in the Community* content areas.

		Living Well in the Community sessions									
		Goal Setting	Building Support	Healthy Reactions	Staying on Course	Healthy Communication	Information Seeking	Physical Activity	Eating Well	Advocacy	Maintenance
HPLP II subscales	Health Responsibility					X	X	X	X	X	X
	Physical Activity							X			
	Nutrition								X		
	Spiritual Growth	X	X	X	X						
	Interpersonal Relations		X		X	X				X	X
	Stress Management	X	X	X	X	X		X			

Note. The Health Promoting Lifestyle Profile II (HPLP II) is from Walker, Sechrist, & Pender (1995); all subscales are included in the table. The *Living Well in the Community* curriculum is from the Research and Training Center on Disability in Rural Communities (2015b); all curriculum sessions are included in the table.

As recommended by Creswell (2014), validity and reliability strategies were incorporated into the qualitative data analysis. Validity strategies included presentation of discrepant information and spending prolonged time in the field. Reliability strategies consisted of checking transcripts for obvious mistakes and ensuring code definitions did not drift from their original meanings. Coding of data followed the eight steps proposed by Tesch (as cited in Creswell, 2014): (1) obtaining a sense of the whole by reading all transcriptions carefully; (2) evaluating several individual transcriptions for their underlying meaning(s); (3) listing, clustering, and organizing topics; (4) translating topics into codes to create a preliminary organizational scheme; (5) describing codes, creating and merging categories; (6) finalizing category abbreviations and organizing categories alphabetically; (7) assembling data to respective categories, performing preliminary analysis; and (8) recoding data as necessary.

Coding categories were established in alignment with the dramaturgical coding method (Saldaña, 2013), which was chosen for its applicability to the internal and interpersonal nature of the research questions. In the dramaturgical coding process, theatrical analogy is used to depict social interactions and individual behavior. The current study used this process as a framework through which to understand the complex phenomena of participants' internal and interactional experiences. Saldaña (2013) characterized dramaturgical coding as well suited for exploring participants' internal and interactional experiences, and for attuning the researcher to the

perspectives, qualities, and motivations of the participants, promoting in-depth understandings. Five strategical codes characteristic of the dramaturgical method were used in the current study: objectives, tactics, attitudes, emotions, and conflicts.

The research approach to qualitative analysis process was kept primarily descriptive, rather than interpretive. In so doing, the intention was to minimize researcher bias and to instead allow participants' narratives to do the talking. Focus was directed both toward emergent themes of similar nature and to divergent perspectives.

Interpretation of Results. Perspectives drawn from the quantitative and qualitative research components were merged to answer the research questions: the qualitative results were used to inform, clarify, and explain the quantitative results, and to explain the interaction of variables in greater depth than was provided by the quantitative data alone.

Strengths and limitations of the study

A strength of the study was that it was conducted using mixed-methods research methodology. As a result, the study produced a substantial breadth of data for analysis. The use of qualitative research methodology aligned with recommendations for research into meaning (World Health Organization and World Bank, 2011) and disability (Wong, 2017). An additional strength was that quantitative measurement strategies were prospective and therefore assessed the factors under study over time, as recommended by Roepke, et al. (2014) and Schlegel and Hicks (2017) for research into meaning. The geographic distribution of participants was another strength.

Despite these strengths, there were a number of limitations to this exploratory study. The sample size was small, and participants were not randomly selected. Due to the fact that there was no control group, increases in health behavior and hope cannot be directly attributed to the Health My Way intervention. Additionally, the exclusion criteria in the qualitative arm of the study may have influenced the degree to which interviewees was representative of the study participants overall. Because individuals who had guardians (presumably those individuals with cognitive disabilities) were excluded from the interviews, people with cognitive disabilities may be underrepresented in the qualitative results. Additional complications existed related to data collection via the website and computer tablets. Field research tends to be messy, and this phenomenon is perhaps exacerbated when occurring at a distance.

Chapter 4: Results

Quantitative Results

Pre- and post-intervention measures including the Hope Scale, MLQ-P, and HPLP II were available for 39 participants. Data from these participants were used to evaluate the research hypothesis that health coaching would result in increased health-promoting behavior for people with disabilities, and that meaning or hope mediate engagement in health behavior change among participants in the health coaching intervention.

Two quantitative research questions were examined to evaluate the two components of this hypothesis: 1) Does working with a health coach (using a health promotion curriculum) result in increased health-promoting behavior in people with disabilities, and 2) Do changes in meaning or hope mediate changes in health-promoting behavior?

The first quantitative research question, does working with a health coach increase health-promoting behavior, was evaluated using a repeated measures t-test for the total HPLP II scale and for each of the measure's subscales. The only statistically significant effect in these results was a main effect of the overall intervention on the Physical Activity subscale of the HPLP II (Table 3). Next, these analyses were recalculated with only the participants who completed content¹³ that were hypothesized to affect health behavior change. These results were different (Table 4). Only two of the hypothesized changes were evident: increased physical activity scores for participants who completed the physical activity session, and health responsibility scores for participants who completed the maintenance session. However, there were a number of statistically significant results that were not hypothesized. Notably, for people who completed relevant content, the intervention appeared to have effects on health responsibility, physical activity, nutrition, and spiritual growth, but did not affect interpersonal relations or stress management.

Table 3

Health Promoting Lifestyle Scale II (HPLP II) Outcomes for Total Scale and Subscales

HPLP II scale	Paired differences			<i>p</i> (one-tailed)	95% <i>CI</i>		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>t</i> (38)		<i>LL</i>	<i>UL</i>	
Total Scale	0.073	0.312	1.471	0.075	-0.175	0.028	0.234
Health Responsibility	0.085	0.433	1.233	0.113	-0.226	0.055	0.196
Physical Activity	0.202	0.500	2.524	0.008 *	-0.364	-0.040	2.000
Nutrition	0.063	0.427	0.916	0.183	-0.201	0.076	0.148
Spiritual Growth	0.108	0.442	1.530	0.067	-0.252	0.035	0.244
Interpersonal Relations	-0.061	0.034	-1.018	0.158	-0.060	0.182	0.163
Stress Management	0.055	0.391	0.868	0.196	-0.182	0.073	0.140

Note. *CI* = confidence interval; *LL* = lower limit; *UL* = upper limit; * = statistically significant

¹³ Participants engaged in an average of 54% of the available Living Well in the Community curricula sessions (range = 0 – 10, mode = 3).

Table 4

Interaction Effects: Health Promoting Lifestyle Profile II (HPLP II) subscales and Living Well in the Community sessions

		Living Well in the Community sessions									
		GS (n = 37)	BS (n = 23)	HR (n = 19)	SoC (n = 16)	HC (n = 11)	IS (n = 16)	PA (n = 15)	EW (n = 19)	A (n = 6)	M (n = 17)
HPLP II subscales	HR			$t(18) = 2.069$ $p = 0.027$ $d = 0.473$		NS	NS	NS	NS	NS	$t(16) = 2.054$ $p = 0.029$ $d = 0.499$
	PA	$t(36) = 2.638$ $p = 0.006$ $d = 0.434$		$t(18) = 2.180$ $p = 0.022$ $d = 0.499$				$t(14) = 2.044$ $p = 0.030$ $d = 0.527$			$t(16) = 2.608$ $p = 0.010$ $d = 0.632$
	N		$t(22) = 2.285$ $p = 0.016$ $d = 0.476$	$t(18) = 1.777$ $p = 0.046$ $d = 0.408$			$t(15) = 1.918$ $p = 0.037$ $d = 0.479$	$t(14) = 1.946$ $p = 0.036$ $d = 0.503$	NS		$t(16) = 2.657$ $p = 0.009$ $d = 0.645$
	SG	NS	NS	NS	NS						$t(16) = 2.678$ $p = 0.009$ $d: 0.651$
	IR		NS		NS	NS				NS	NS
	SM	NS	NS	NS	NS	NS		NS			

Note. HPLP II subscales: HR = Health Responsibility, PA = Physical Activity, N = Nutrition, SG = Spiritual Growth, IR = Interpersonal Relations, SM = Stress Management. Living Well in the Community sessions: GS = Goal Setting, BS = Building Support, HR = Healthy Reactions, SoC = Staying on Course, HC = Healthy Communication, IS = Information Seeking, PA = Physical Activity, EW = Eating Well, A = Advocacy, M = Maintenance. **Bolded** results denote a priori hypotheses. NS = not significant. All p-values in the table are one-tailed.

Next, the second quantitative research question, do changes in meaning and hope mediate changes in health-promoting behavior, was evaluated. Having established that the overall intervention had statistically significant effects on physical activity, paired-sample t-tests on each of hypothesized mediating variables, hope and meaning, were calculated separately. No change was observed between pre- and post-test scores on either the Hope Scale or MLQ-P.

Despite the fact that the intervention did not have main effects on the hypothesized mediating variables, the MEMORE program (Montoya, 2017) was used to provide a single significance test to evaluate the presence of mediation for each hypothesized variable. The omnibus test of significance in each analysis indicated that null hypotheses could not be rejected for the variables on physical activity, which was the only health behavior that changed significantly when calculated for all participants over the intervention period (Hope: $F_{(2,36)} = 1.86, p = 0.170$; Meaning: $F_{(2,36)} = 1.91, p = 0.163$).

Examining the changes in hope and meaning more carefully, it was observed that the within-subject correlation between pre- and post-test scores was low relative to the reliability of these measures. The Pearson correlation coefficient for the Hope scale was $r(39) = 0.560, p = <.001$, compared to published coefficient alpha scores, which range from 0.76 to 0.95 (Redlich

Amirav et al., 2018). The Pearson correlation for the MLQ-P was $r(39) = 0.665, p = <.001$, compared to published coefficient alpha scores ranging from 0.81 to 0.86 (Steger, Frazier, Oishi, & Kaler, 2006). However, additional published data on MLQ-P test-retest reliability demonstrate declining test-retest stability coefficients over time: 0.80 over two weeks, 0.70 over one month, and 0.41 over one year (Steger & Kashdan 2007), therefore indicating no substantial variation between observed and published change in meaning scores.

Finally, a post-hoc regression analysis was computed, regressing the change in hope on the change in physical activity scores. For this analysis, presurvey (Time 1) physical activity scores were entered on the change score to regress out variance due to regression to the mean. In the next step hope was regressed at post-survey (Time 2) on the residual variance. The same analysis was computed for the meaning scores. Results indicate that 13.5% of the variance in physical activity change scores was associated with change in hope scores (Table 5). However, change in meaning scores were unrelated to change in physical activity scores.

Table 5

Multiple Regression of Change in Hope Scale Scores on Change in Physical Activity Scores

	<i>Beta</i>	<i>t</i>	<i>Sig.</i>	Δr^2
(Constant)		4.183	< 0.001	
Physical activity at Time 1	-0.447	-3.142	0.003	0.153
Change in hope	0.373	2.622	0.013	0.135

Note. Physical Activity at Time 1 = pre-survey HPLP II, Physical Activity subscale. Change in hope = Hope Scale at Time 2 (post-survey) – Hope Scale at Time 1 (presurvey).

Qualitative Results

Two qualitative research questions were examined: a) How does working with a health coach influence health behavior change in people with disabilities, and b) How do meaning and hope relate to health coaching and health behavior change.

Twelve intervention participants were interviewed.¹⁴ Interviews were structured to elicit participant experiences while avoiding leading language and allowing for the spontaneous generation of topic areas. The resulting four main themes emerged from the interviews: 1) engagement in goal setting and health behavior change, 2) provision of tailored information and social support, 3) increased engagement in meaningful activities, and 4) increased hopefulness. One additional minor theme also emerged: hopelessness and lack of meaningful engagement, accompanied by goal-abandonment.

¹⁴ Due to technical difficulties the interview with one participant, Frank, was not recorded; in this case the interviewer took extensive notes within five hours of the interview, using the interview guide to aid recall. Excerpts from these notes are paraphrased within this section.

Engagement in Goal Setting and Health Behavior Change

All participants who were interviewed set one or more personal goals. Most participants (11 of 12) chose at least one goal related to health behavior. Of these health-related goals, physical activity was the most common goal type and was selected by six participants. Regardless of the type of goal set, all participants experienced health behavior change during the course of the intervention. Increased engagement in health-promoting behavior was seen in all six HPLP II categories: physical activity (9 participants), health responsibility (7 participants), spiritual growth (5 participants), nutrition (4 participants), interpersonal relations (3 participants), and stress management (3 participants). For example, three participants worked on goals that related to the health behavior of stress management. One of these participants had a time management goal; another had a budgeting goal.

“For one thing, I don’t feel embarrassed [anymore]. Because, you know, a lot of places now like where I go for my therapist, if you’re ten minutes late they can say ‘we cancelled your appointment.’ So, you kind of have to get in there, so you hurry and say, ‘you didn’t cancel my appointment, did you?’ It’s a lot better going in there and saying, ‘I’m on time,’ and not [being] embarrassed.” (Diane)

“[My goal was] to be able to get a budget that would work for me. And I did, you know, I got that done. And a goal of being able to have money left over. And I don’t have much, but I do have money left over in the end.” (Coleen)

For the one participant who did not set a goal related to health behavior, health behavior change occurred incidentally to her goal. This participant set a quality of life goal to read books and found that she began to visit the library on a regular basis. She became more socially engaged as an incidental consequence of her reading goal.

“It was a basic goal, but it did improve my everyday life from day-to-day, having books to read. It kind of helped with feeling isolated also, so... That wasn’t even a part of my goal, but it became apparent that that was also good.” (Paula)

Health behavior change occurred at some point in the intervention for all participants, even two who did not sustain goal-directed action or accomplish their goals did engage in health behavior change during the intervention. One of these participants had a weight-reduction goal, and increasing his physical activity was part of his strategy to reach his goal.

“I can’t say it was completely unsuccessful. I did, well, I was able to get out and do a little more, you know. [...] I could at least get out [...] when I walk, do that one block anyway. So, I was able to do that, whereas a lot of times I would just, I wouldn’t do anything.” (Simon)

Provision of Tailored Information and Social Support

Health coaches were instrumental in the health behavior change. Participants' descriptions of the mechanism of influence of this process fell into two categories: tailoring of information and provision of social support. Both mechanisms were cited by all participants as ways health coaches helped them engage in goal-directed thought and action. Health coaches tailored information either by focusing on aspects of the curricula topics that connected to participants situations, or by providing additional resources. One participant described his coach's approach to tailoring.

"[The coach] was able to adapt, I guess is what's the best way to put it, and try to make it work more for me, which it did." (Simon)

Social support was more varied. Participants described several components of this mechanism of influence: 1) encouragement of goal setting and goal directed action, 2) the coaching relationship, 3) facilitation of self-reflection, and 4) accountability. The first component, coaching encouragement of goal setting and goal-directed action, was cited by nearly all (11 of 12) participants as important to their experience of setting and working toward self-determined and personally meaningful goals.

"I think the coach mainly played [a role] with the goal setting. Talked about what I was planning on doing the next week. That way I could bounce some ideas off of her and then reinforce them the next week when we talked about what I was able to find and do." (Paula)

"[My coach] was wonderful about being patient and encouraging. [...] And, you know, she just guided, she didn't, you know, she didn't try to micromanage me. [...] she didn't tell me what to do, but she would, you know, if I said something that I felt was relevant and important, she encouraged me to take that action." (Margaret)

The second component of social support, the coaching relationship, was also cited by almost all (11 of 12) participants as an important factor in their engagement in intervention.

"Right away I was at ease because it was just like talking to a friend, you know, talking things out with a friend." (Margaret)

"I was always looking forward to [the coaching sessions] [...] because, you know, you could relate to somebody, you know, talk about the experiences." (Saul)

The third component of social support, facilitation of self-reflection, was important for many (6 of 11) participants.

“I think [if I’d had the curricula without the coach] I would have just scanned through it and thought, well, I’ve been through it, but then as [the coach and I] were talking about different things, it encouraged me to look further into it. [...] I would think about my goal and in specific look at the different [curricula] sections.” (Paula)

“I knew I needed to do this, but I didn’t get right on it. I could have, I guess, but I didn’t. I needed somebody to kick me in the butt. And [my coach] did that. She’s the one that said, ‘you can talk about physical therapy; why aren’t you going to physical therapy?’. And I thought, yeah, you know, I mean that’s a great question.” (Dan)

Several (4 of 11) participants cited the fourth aspect of social support, accountability, as an important aspect of health coaching.

“The experience of discussing it with the health coach, it just kind of kept me on course because I knew the phone call was coming and that allowed me to think about where I was in reaching my goal.” (Paula)

“[My coach] would keep me on track with goals, which was great.” (Simon)

Increased Engagement in Meaningful Activities

Health coaches assisted participants in exploring sources of meaning in their lives. Participant identification of personally meaningful aspects of life was important in the processes of goal setting and goal-directed action. Most participants identified multiple sources of personal meaning, including relationships, health, independent living, reciprocity, and altruism. The most common source of meaning, cited by all participants, was relationships. Meaningful relationships included those with immediate family members as well as friendships. For many participants, tapping into roles in meaningful relationships served to motivate goal-setting and initial goal-directed action.

“I thought about my daughter, really, and how being a good example for her was extremely important to me, and that I don’t want her to suffer the weight problems that I’ve had all my life. And anything I’m able to do, you know, nutritionally, to help her learn, you know, basically how to eat more healthy and things like that.” (Teresa)

“I can no longer go see my granddaughters because I can’t get into [their] house. So, the whole idea, the whole goal for me, was to get into physical therapy to be able to walk with my walker again.” (Dan)

About half of the participants cited health, independent living, reciprocity, or altruism as personally meaningful. As in the case of meaningful relationships, connecting goals to these

sources of meaning provided motivation for goal-setting and subsequent goal-directed action. One participant discussed being motivated to work on goals related to health, which he valued.

“Mainly, you know, because, you know, I’ve had problems for a long [time], you know, with my kidneys and overweight, and hypertension, and you know, so that’s really was my main, you know, thinking about that got me going more.” (Saul)

Another participant described how her physical activity goal related to independent living, which she valued.

“I know exercise is a big part of being able to stay independent. So, the more I’m able to get up and around the better.” (Paula)

Although all participants described meaningful components of their lives, a few participants (4 of 12) also characterized their daily lives as lacking in engagement in meaningful activities. For three of these participants, disability contributed to lack of meaningful engagement.

“My life is quiet. My life is pretty quiet and kind of boring. [...] I watch TV sometimes and try to read and just kind of fall asleep. I’m not busy right now, like I was when I was working. I was a cashier at the Salvation Army for about four years and I got sick and I had to quit.” (Sarah)

“What aspects [of daily life] are important to me? I don’t really know. I don’t really have an important aspect. [...] [my wife] takes care of me and I feel so bad that I can’t even contribute to the house anymore. I don’t do anything. [...] [I] cook dinner for my wife [...] that’s the only contribution, and that’s hardly even that.” (Max)

Most participants (11 of 12) had positive emotions, including feeling energized, motivated, or empowered, about setting personally meaningful goals.

“I was excited.” (Max)

“[It felt] awesome. Totally awesome.” (Velma)

“I felt that I was going to be proud of myself if I could [meet my goal].” (Diane)

Over the course of the intervention, most participants (10 of 12) experienced an increase in engagement in personally meaningful activities, having either accomplished their goal or sustained goal-directed action. This change was connected to positive emotion. One participant set a personally-meaningful goal to increase his mobility, which related to two sources of personal meaning: independent living and relationships.

“The whole goal was just to get back up on my walker again [...]. It went slower than I wanted it to go, but I got there yesterday and I’m just, I’m thrilled because [...] I’m there. It took me a lot longer to get here than I thought it would take, but I made it.” (Dan)

Frank talked about setting a goal to get things done around the house, which related to reciprocity and relationships, both of which were personally meaningful. He shared that he had accomplished and felt good about several of tasks related to this goal, including cleaning up the clutter and having a 60-foot-tall dead pine tree removed from his yard. As a result, he said, felt like a productive family member again.

Another participant set a goal to become more physically active, which connected to health as a source of meaning.

“I have had triple bypass surgery, cardiac surgery, and my doctors have all stressed how important it is to maintain your weight and to exercise, which is really easy for the doctor to say but kind of goes in one ear and out the other. That old song in one ear and out the other (laughs) [...] Well, one of the goals I set was, of course, actually getting off my duff and going to the gym, you know, and signing up. [...] What I’ve been doing primarily is just going on my own and going on the equipment and then swimming freestyle.” (Margaret)

Several participants talked about being satisfied with their progress and having an intention to continue working on their goals.

“[I had] a weight loss goal, and I met it, and I’m able to keep going.” (Teresa)

“I’ve pretty much accomplished [my goal]. Pretty much there. [...] We started getting to our appointments on time. [...] I feel good about it because I think I’ve come a long way with it. Things are going really good with it right now.” (Diane)

“I’ve [been going to] Silver Sneakers, and my intention now [is to start attending] classes that will incorporate some of the swimming things that I would like to do.” (Margaret)

“It’s going to be with me the rest of my life. I mean [drinking more] water is staying there, and those vitamins are staying there, and Silver Sneakers is staying there, and getting more exercise.” (Velma)

Increased Hopefulness

Hopefulness was commonality among the majority (10 of 12) of participants who either achieved their goals or sustained goal-directed action. Some participants used of the term ‘hope’ to describe a passive, optimistic orientation to desired outcomes. Reports of hopefulness,

therefore, were evaluated for evidence of both the agency and pathways components of hope. The majority (7 of 10) of these participants reported an increase in either agency or pathways. In contrast, the remainder (3 of 10) indicated only the presence of hope and did not indicate if levels of the components of hope increased over the course of the intervention. All seven of the participants who reported increased levels of one or more components of hope spontaneously described a positive shift in self-perception during the intervention. This positive shift coincides with the agency component of hope. Participants described this shift variously as an improvement in overall perspective, attitude, or self-appraisal.

“This [Health] My Way thing? Well it sure opened up my eyes. I mean [...] take the month of February. I just, all I did was just go to work and come home and let the world out there go by. And all of a sudden this [Health] My Way started coming and opened up my eyes. I just, you know, every day is a treasure that you wake up to and you just take out of it what you can get out of it. [...] You know it changed my way of thinking.” (Velma)

“I felt that I had improved and to tell you the truth, I really had friends that I thought ‘oh my Lord, I would really like for them to experience this as well.’ I just had an improved overall attitude, I would say.” (Margaret)

“I feel more confident; [I have] more self-esteem. [...] Before I thought ‘I ain’t worth much,’ you know?” (Saul)

“I learned a lot about myself. That I could change. That I knew more than I thought I knew. And even though I have the different things wrong with me I could do it. [...] I was really down on myself before [Health My Way] started, thinking I couldn’t do things, and going through the process with [my coach], I guess you could say my self-esteem went up a little.” (Diane)

Several of these participants (3 of 7) also spontaneously reported an increase in the pathways component of hope. Participants described this shift as developing tactics or positive attitudes related to overcoming obstacles enroute to their goals.

“It got me thinking, you know, you can do that, you know. You can do an easy goal. You’ve just got to stay committed.” (Saul)

Frank talked about how working with his coach to visualize what he needed to do to complete his goals made the goals seem more achievable. He said he felt more empowered to find ways around his mobility limitations than he had been before starting Health My Way.

Several participants directly linked the encouragement they received from their health coaches to elements of hope. In these cases, health coaching appeared to bolster participants' sense of hope about working around obstacles.

"[My coach] was the most help I ever had. [...] One conversation I had with [her], I even started physical therapy and I wasn't progressing as fast as I wanted to. [...] I thought that I would be in physical therapy about, maybe a month, okay, because I thought I'll just, you know, shoot, I'll be able to get back up on my walker in no time at all. And then about three weeks in I got really bummed out because I figured out, I'm not making any progress at all. I'm not. [...] And I was really bummed out about it. And I don't know, she was just a lot of help because she was still very encouraging. And you know, talked about the fact that it doesn't happen overnight, that it takes a while to do this. Don't give up." (Dan)

Hopelessness and Lack of Meaningful Engagement, Accompanied by Goal-Abandonment

In contrast to the general trajectory of increasing hopefulness over time, a minority (2 of 12) of participants experienced hopelessness in relation to their goals. Hopelessness was indicated by a lack of both the agency and pathway components of hope. Both participants who experienced hopelessness also experienced lack of meaningful engagement in life. These low hope/low meaning participants neither achieved their goals nor sustained goal-directed action. One participant entered the intervention with low levels of hope, which did not fluctuate over the course of the intervention. This participant felt hopeless in relation to a long-term weight-loss goal. He talked about already having knowledge and having tried everything, without success, including seeking help from professionals. His language for describing his weight problem suggests a belief that this obstacle is, for him, insurmountable.

"I've been working on those goals for forty-something years now. If... there wasn't a whole lot you could tell me. I've been to weight coaches, and it's been such a long struggle, it's so ingrained." (Simon)

For the other low hope/low meaning participant, hope decreased during the intervention.

"I worked maybe two weeks on [my goal] and I was making progress and then I hit the plateau, and not really a plateau. I went downhill. And then that discouraged me. [...] And then it got to the point where I said, you know, I can't." (Max)

This participant experienced a pervasive sense of hopelessness, reaching in scope beyond his goal.

"When you wake up and you don't really have a goal in life and things don't really matter and you think, you know, I'd like to walk again but then if you could walk and do things then what

would you do? And that comes through my mind. So, if I can walk and I can do things, what would I do? But I can't think of anything I'd rather be doing.” (Max)

Additionally, this participant spontaneously shared that he had been diagnosed with depression, and he expressed uncertainty in the effectiveness of his medication.

“I take medication for depression, but I am up against a wall because you go to psychiatrists, and [my town] has one psychiatrist, and I went to her. [...] I was not impressed. [...] And I know my dad had depression and he said he never really found a good psychiatrist until he got down to California [...] After he died I found out what medication he was on, and that's the kind of medication I keep telling my doctors that I'm on and so they just keep me on it. I don't know if it's helpful to me or not.” (Max)

Chapter 5: Discussion

The purpose of this study was to better understand the effects of the Health My Way one-on-one health coaching intervention on health-promoting behavior for people with disabilities, as well as the possible influences of personal sense of meaning and hope within this hypothesized process. A mixed-methods research approach allowed for a comprehensive examination of these factors and illuminated the experiences of people within the broad scope of disability types. This strategy also facilitated inquiry into how meaning and hope may function to increase health behavior in the context of health coaching in this population.

The present study examined four research questions:

- 1) Does working with a health coach (using a health promotion curriculum) result in increased health-promoting behavior in people with disabilities?
- 2) How does working with a health coach influence health behavior change in people with disabilities?
- 3) Do changes in meaning and/or hope mediate changes in health-promoting behavior?
- 4) How do meaning and hope relate to health coaching and health behavior change?

Does working with a health coach (using a health promotion curriculum) result in increased health-promoting behavior in people with disabilities?

Both quantitative and qualitative data analysis indicated that participants engaged in more health-promoting behaviors after working with a health coach, which including going through health education content on tablet computers. The most robust effects were seen in the health behavior of physical activity. Additional effects were seen in the health behavior domains of health responsibility, nutrition, and spiritual growth. In addition to these health behavior domains in which statistical significance was seen, qualitative findings indicated that some improvement was seen in the domains of stress management and interpersonal relations.

The occurrence of health behavior change in the current study aligns with previous findings that health coaching is effective for producing health behavior change not only in the general population (Dejonghe et al., 2017) but also in people with existing chronic health conditions (Kivelä et al., 2014) and for people from vulnerable groups (Dennis et al., 2013). The current study indicates that health coaching is also effective for people with disabilities who are managing a variety of health conditions.

How does working with a health coach influence health behavior change in people with disabilities?

Qualitative analysis expanded on the qualitative findings that working with a health coach resulted in increased health-promoting behavior. Several mechanisms of influence were found through which health coaching supported participants' progress to greater engagement in health behavior. Relevant mechanisms of influence were tailored information, social support,

meaning, hope, and the *Living Well in the Community* curriculum. All interviewed participants cited the tailored information and social support provided by health coaches as integral components of the experience of health behavior change. Tailoring content to suit the specific needs of clients has been acknowledged to be an essential component of health coaching (Hill, Richardson, & Skouteris, 2015). The tailoring process may be especially important for people with disabilities, given the broad spectrum of disability types and the unique interactions between bodily and environmental features present in any individual's experience of disability. Therefore, health coaching may be particularly well-suited as an approach to health behavior change for people with disabilities.

The social support provided by health coaching was a topic richly described by interviewees as a mechanism of influence. Social support is an interactional process, including verbal and non-verbal communication, the intent of which is the provision or receipt of help (MacGeorge, Feng & Burlison, 2011). Participants described several types of social support they experienced as beneficial, the most prominent of which were the coaching relationship and the coach's encouragement of goal-directed action, followed by accountability and facilitation of self-reflection. Although definitions of social support vary to some degree among disciplines (including anthropology, sociology, psychology, epidemiology, and medicine), common features include the structure and function of the relationship (Uchino, 2004). As it pertains to health coaching, social support from the coach is delivered through active listening, orientation to the client's well-life vision, and provision of unconditional positive regard.

Additionally, health coaching functioned by tapping into sources of personal meaning as an initial source of motivation, and by increasing participants' hope (both of which are discussed more fully in response to research questions three and four). In addition to these qualitative findings, quantitative data analysis showed that health behavior changes in the domains of physical activity, health responsibility, nutrition, and spiritual growth corresponded with relevant *Living Well in the Community* curriculum content. Participant engagement in self-selected curriculum sessions serves to indicate the health topics of interest to participants. This finding also appears to indicate that engagement in individual curriculum sessions facilitated health behavior change in related areas.

Do changes in meaning or hope mediate changes in health-promoting behavior?

Statistical examination did not support the hypothesis that meaning or hope mediate the relationship between health coaching and health behavior change. This finding was not surprising, given that overall changes were not seen in the overall levels of health behavior, meaning, or hope.

Of note, although changes in hope scores were not significant from pre- to post-test, some changes in levels of hope were noted over the course of the intervention, especially in association with changes in the health behavior domain of physical activity. Possible interpretations of this association are addressed in the interpretation of findings.

How do meaning and hope relate to health coaching and health behavior change?

Personal sense of meaning and hope were both found, in the qualitative analysis, to play important roles in the process by which health coaching influences health behavior change. Meaning was particularly relevant to goal identification and the initial motivation to engage in health behavior change, whereas hope was relevant to sustained health behavior change. Examination of these processes helps to explain the quantitative finding that neither meaning nor hope mediated the effects of health coaching on health behavior change.

Meaning. Identification of personal sources of meaning was an important step in the process of goal setting related to health behavior change. All interviewed participants chose goals they anticipated would move them toward greater alignment with their identified source(s) of meaning. Meaning was likewise important in generating motivation for the goal-directed action that led to health behavior change among participants. Meaning functioned as a resource that participants were able to tap to motivate initial health behavior change.

Most participants experienced an increase in engagement in personally meaningful activities over the course of the intervention. These changes corresponded to either accomplishing their goal(s) or sustaining goal-directed action. Engagement in meaningful activities represents situational meaning. Park (2010) described situational meaning as the meaning people make from life events, which is smaller in scale than global meaning. The quantitative component of the current study assessed, and did not find, changes in levels of global meaning. Therefore, the qualitative findings of increases in situational meaning serve to explain and shed light on the functioning of meaning in relation to health coaching and health behavior change.

Hope. All participants who either achieved their goals or sustained goal-directed action also experienced hopefulness over the intervention timeframe. A few of these participants reported entering the intervention feeling hopeful, and maintaining hopefulness over the duration of the intervention. However, the majority of participants who achieved their goals or sustained goal-directed action experienced an increase in hope or the agency component of hope over the course of the intervention.

In cases in which an overall increase in hope was seen, an increase in efficacy expectancies (agency) occurred in conjunction with an increase in outcome expectancies (pathways). Snyder et al. (1991) conceptualized hope as a reciprocal interaction between efficacy and outcome expectations. The agency component of hope was frequently indicated by a positive shift in self-perception. Agency represents efficacy expectancies, described by Snyder et al. as “a person's confidence in his or her ability to perform a given behavior that will lead to a desired outcome” (p. 571). These authors described the pathway component of hope (aligning with outcome expectancies) as indicating a belief that a specific behavior will result in a desired outcome. Several participants directly attributed their increased outcome expectancies to the encouragement they received from their health coaches.

Meaninglessness and Hopelessness. In contrast to the general trend of successful goal attainment or continued goal directed action, two participants experienced opposite trajectory types. These participants did not attain their goals or sustain goal-directed action and had additional experiences in common: hopelessness in relation to achieving their goals at one or more points in the intervention and low levels of meaning in their daily lives. This combination of low hope and low meaning corresponded with resignation to not achieving goals and with the abandonment of goal-directed action. These findings are consistent with Snyder's (2002) understanding that an individual's perception of success in goal-pursuit will influence their subsequent emotional states, and that repeated failure to attain goals can lead to the loss of hope.

Interpreting the findings

In accordance with the recommendation of Dennis et al., (2013), the current study evaluated the effects of health coaching for people with disabilities, including people who are managing a variety of health conditions. The current study found individual health coaching to be effective for improving health behavior in people with disabilities. Effects were seen in several domains of health promoting behavior. Health behavior change was either directly related to participants' terminal goals or occurred as an instrumental (supportive) goal in service to a terminal goal. These findings align with Gavin and Mcbrearty's (2013) understanding that health goals may be the primary objectives of the coaching partnership or they may be ancillary objectives, in which case the primary life goal is advanced by attainment of the health objective.

The current study found one discrepancy to this rule: health behavior change that occurred incidentally to a terminal goal. This phenomenon, while noteworthy, was not widespread. It occurrence in a single instance in which the participant chose not to establish any health behavior objectives. This occurrence may be a unique artifact of the research context or it may be relevant to practical application: health coaching referrals may occur in the context of client ambivalence or disinterest in health behavior change.

This study also responded to Roepke, et al.'s (2014) recommendation to analyze the unique influences of positive psychological variables upon health, and to Brandstätter et al. 's (2012) recommendation to analyze meaning in combination with hope and related constructs. Previous research has indicated that meaning tends to be derived from a few main sources: interpersonal relationships, service, comprehension, acquisition, expression, and ethics (Battista & Almond, as cited in Debats, 1999), as well as life work, personal growth, health, and pleasure (DeVolger & Ebersole, as cited in Debats, 1999). Relationships have been found to be the primary source of meaning (Debatts, 1999), especially those relationships in which people can express their true selves and can experience acceptance and appreciation as such (Schlegel & Hicks, 2017). The current study revealed similarities to these sources of meaning: relationships were the most commonly cited source of meaning, and about half of interviewees cited health, independent living, reciprocity, or altruism as personally meaningful. Of note, independent living, although not found as a major theme in previous research, appears to be an important source of meaning for people with disabilities.

In the current study, quantitative data revealed that levels of global meaning experienced by participants did not change appreciably over the course of the intervention. Qualitative analysis expanded on these quantitative findings: although global meaning was relatively stable across the intervention timeframe, situational meaning increased for most participants. Health coaches supported participants in identifying personal sources of meaning and in connecting sources of meaning to self-identified goals, both of which were crucial to participant engagement in health behavior change.

The desire for greater engagement in meaningful life realms motivated participants' initial goal-directed action, which included health behavior change. These findings align with Boehmer et al. 's (2016) understanding that a coaching orientation to clarifying clients' values associated with their goals can help to uncover meaningful sources of motivation. Notably, for a subset of participants, absence of meaningful engagement was directly related to having a disability. This finding appears to indicate that research into meaning in life may be especially relevant for people with disabilities.

The current study found that goal progress or abandonment tied directly to emotional state: positive emotions were linked to successful goal completion or sustained goal-directed action and negative emotions linked to goal abandonment. These findings are fairly intuitive and align with Snyder et al. 's (2002) assertion that perception of progress toward goals leads to positive emotion, whereas negative emotion is a sequela of perceived setbacks or stagnation in goal pursuit. This study also found that the emotional valence associated with goal success connected with feelings of hope, whereas the emotional valence of goal abandonment corresponded to feelings of hopelessness. This idea is in line with Snyder et al.'s (2002) understanding that throughout an event sequence, experiences with agency and pathways culminate to set in motion a cycle influencing subsequent appraisal of agency and pathway capabilities. In alignment with this view, hopelessness appears to be a barrier to health behavior change. Therefore, the generation and/or maintenance of hope in individual health promotion interventions is vital to successful health behavior change.

Quantitative and qualitative findings regarding hope were complementary. Quantitative results indicated that although levels of hope varied to some degree over the course of the intervention (especially in relation to changes in physical activity levels), there was not a significant increase in levels of hope across participants from pre- to post-intervention. The qualitative findings can help to explain the quantitative findings in this case: qualitative data indicated that participants experienced a variety of hope trajectories. Whereas some participants had high levels of hope prior to the intervention, others became more hopeful over the course of the intervention. Still others (a minority of participants) experienced hopelessness.

Most interviewees reported the existence of both components of hope, agency and pathways, over the course of the intervention. Hope increased in total or in part for these participants: most experienced sustained increases in agency, and several participants also reported increases in pathways. Qualitative analysis of hope was complicated by participants' colloquial use of the word hope, which differed from the definition used in the current study:

participants tended to use the term “hope” to describe optimism. Consequently, descriptions of hope were evaluated for evidence of both agency and pathways.

There are a few possible interpretations of these findings. A likely possibility is that the predominant trajectory of increasing hope was obscured by less common hope trajectories (high/stable hope, low/stable hope, and low/decreasing hope). Another possible interpretation is that participant scores on the Hope Scale did not indicate change overall because participants did not generalize the increased sense of hope they experienced across all domains of their lives. A third possible interpretation is that the change experienced by most participants can more accurately be understood as an increase in self-efficacy. Efficacy expectations align with agency, the motivational component of hope theory (Rand & Cheavens, 2009), which is "the perceived ability to use pathways to reach desired goals" (p. 324). Self-efficacy centers on people's judgements of their abilities to produce desirable outcomes and the idea that these judgments are the most important determinants of behavior, as well as perseverance in the face of obstacles (Bandura, 1982). Some conceptual overlap exists between hope and self-efficacy, although hope is more durable and trait-like (Snyder, 2002), whereas self-efficacy is more situation-specific (Bandura, 1982).

Self-efficacy features in two prominent theories of individual behavior change: Social Learning Theory (Bandura, 1977) and the Health Belief Model (Rosenstock, 1974), and has been implicated in numerous others: Locus of Control, Theory of Reasoned Action/Planned Behavior, Learned Helplessness, and Attribution Theory (Holloway & Watson, 2002). Previous research, including a systematic review by Kivelä et al. (2014), has found that health coaching improves self-efficacy. The issue of definitional overlap among optimism, hope, and self-efficacy has also been identified by Rand and Cheavens (2009), who recommended that future research explore empirical support for distinctions among these constructs. This definitional ambiguity points toward the importance of unpacking the meanings of participant descriptions of hope, and that the use of the word should not be taken at face value. The current study supports this recommendation for further research into these distinctions.

Conclusion

Individualized health coaching appears to be an effective method for improving health behavior, especially physical activity, in people with disabilities. The mechanisms of influence at work in this process include personal sense of meaning as well as hope. It appears that identifying personally meaningful aspects of life provides initial motivation for behavior change, and that hope trajectories correspond with progress towards personally meaningful goals. Individual hope trajectories appear to progress cyclically: hope stems from and fosters sustained goal-oriented progress, whereas hopelessness proceeds from and precedes goal abandonment. Hopefulness, therefore, appears to function as a virtuous cycle in which the emotional valence of progress regarding goal pursuit influences future appraisal of the potential for success. Both the identification of personally meaningful goals and the generation and maintenance of hope appear to be vital to successful health behavior change via health coaching.

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Appendices

Appendix A

The Meaning in Life Questionnaire

Please take a moment to think about what makes your life and existence feel important and significant to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

Absolutely Untrue	Mostly Untrue	Somewhat Untrue	Can't Say True or False	Somewhat True	Mostly True	Absolutely True
1	2	3	4	5	6	7

1. ____ **I understand my life's meaning.**
2. ____ I am looking for something that makes my life feel meaningful.
3. ____ I am always looking to find my life's purpose.
4. ____ **My life has a clear sense of purpose.**
5. ____ **I have a good sense of what makes my life meaningful.**
6. ____ **I have discovered a satisfying life purpose.**
7. ____ I am always searching for something that makes my life feel significant.
8. ____ I am seeking a purpose or mission for my life.
9. ____ **My life has no clear purpose.**
10. ____ I am searching for meaning in my life.

MLQ syntax to create Presence and Search subscales:

***Presence = 1, 4, 5, 6, & 9-reverse-coded**

Search = 2, 3, 7, 8, & 10

The copyright for this questionnaire is owned by the University of Minnesota. This questionnaire is intended for free use in research and clinical applications. Please contact Michael F. Steger prior to any such noncommercial use. This questionnaire may not be used for commercial purposes.

**Note.* Only the Presence of Meaning subscale was used in the current study

Appendix B
The Hope Scale

The Hope Scale

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

1 = Definitely False 2 = Mostly False 3 = Mostly True 4 = Definitely True

1. I can think of many ways to get out of a jam. (Pathways)
2. I energetically pursue my goals. (Agency)
3. I feel tired most of the time. (Filler)
4. There are lots of ways around any problem. (Pathways)
5. I am easily downed in an argument. (Filler)
6. I can think of many ways to get the things in life that are most important to me. (Pathways)
7. I worry about my health. (Filler)
8. Even when others get discouraged, I know I can find a way to solve the problem. (Pathways)
9. My past experiences have prepared me well for my future. (Agency)
10. I've been pretty successful in life. (Agency)
11. I usually find myself worrying about something. (Filler)
12. I meet the goals that I set for myself. (Agency)

Appendix C
The Health Promoting Lifestyle Profile II (HPLP-II)

University of Michigan
1995

Health Promotion Model - Instruments to Measure Health Promoting Lifestyle: Health-Promoting Lifestyle Profile [HPLP II] (Adult Version)

Walker, Susan N.; Sechrist, Karen R.; Pender, Nola J.
<http://hdl.handle.net/2027.42/85349>
Deep Blue deepblue.lib.umich.edu

DIRECTIONS: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

N for never, S for sometimes, O for often, or R for routinely

	NEVER	SOMETIMES	OFTEN	ROUTINELY
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, saturated fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R

- | | | | | |
|--|---|---|---|---|
| 10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber). | N | S | O | R |
| 11. Take some time for relaxation each day. | N | S | O | R |
| 12. Believe that my life has purpose. | N | S | O | R |
| 13. Maintain meaningful and fulfilling relationships with others. | N | S | O | R |
| 14. Eat 6-11 servings of bread, cereal, rice and pasta each day. | N | S | O | R |
| 15. Question health professionals in order to understand their instructions. | N | S | O | R |
| 16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week). | N | S | O | R |
| 17. Accept those things in my life which I cannot change. | N | S | O | R |
| 18. Look forward to the future. | N | S | O | R |
| 19. Spend time with close friends. | N | S | O | R |
| 20. Eat 2-4 servings of fruit each day. | N | S | O | R |
| 21. Get a second opinion when I question my health care provider's advice. | N | S | O | R |
| 22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling). | N | S | O | R |
| 23. Concentrate on pleasant thoughts at bedtime. | N | S | O | R |
| 24. Feel content and at peace with myself. | N | S | O | R |
| 25. Find it easy to show concern, love and warmth to others. | N | S | O | R |
| 26. Eat 3-5 servings of vegetables each day. | N | S | O | R |

- | | | | | |
|--|---|---|---|---|
| 27. Discuss my health concerns with health professionals. | N | S | O | R |
| 28. Do stretching exercises at least 3 times per week. | N | S | O | R |
| 29. Use specific methods to control my stress. | N | S | O | R |
| 30. Work toward long-term goals in my life. | N | S | O | R |
| 31. Touch and am touched by people I care about. | N | S | O | R |
| 32. Eat 2-3 servings of milk, yogurt or cheese each day. | N | S | O | R |
| 33. Inspect my body at least monthly for physical changes/danger signs. | N | S | O | R |
| 34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking). | N | S | O | R |
| 35. Balance time between work and play. | N | S | O | R |
| 36. Find each day interesting and challenging. | N | S | O | R |
| 37. Find ways to meet my needs for intimacy. | N | S | O | R |
| 38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day. | N | S | O | R |
| 39. Ask for information from health professionals about how to take good care of myself. | N | S | O | R |
| 40. Check my pulse rate when exercising. | N | S | O | R |
| 41. Practice relaxation or meditation for 15-20 minutes daily. | N | S | O | R |
| 42. Am aware of what is important to me in life. | N | S | O | R |
| 43. Get support from a network of caring people. | N | S | O | R |

- | | | | | |
|---|---|---|---|---|
| 44. Read labels to identify nutrients, fats, and sodium content in packaged food. | N | S | O | R |
| 45. Attend educational programs on personal health care. | N | S | O | R |
| 46. Reach my target heart rate when exercising. | N | S | O | R |
| 47. Pace myself to prevent tiredness. | N | S | O | R |
| 48. Feel connected with some force greater than myself. | N | S | O | R |
| 49. Settle conflicts with others through discussion and compromise. | N | S | O | R |
| 50. Eat breakfast. | N | S | O | R |
| 51. Seek guidance or counseling when necessary. | N | S | O | R |
| 52. Expose myself to new experiences and challenges. | N | S | O | R |

HEALTH-PROMOTING LIFESTYLE PROFILE II

Scoring Instructions

Items are scored as:

Never (N) = 1

Sometimes (S) = 2

Often (O) = 3

Routinely (R) = 4

A score for overall health-promoting lifestyle is obtained by calculating a mean of the individual's responses to all 52 items; six subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales. The items included on each scale are as follows:

Health-Promoting Lifestyle	1 to 52
Health Responsibility	3, 9, 15, 21, 27, 33, 39, 45, 51
Physical Activity	4, 10, 16, 22, 28, 34, 40, 46
Nutrition	2, 8, 14, 20, 26, 32, 38, 44, 50
Spiritual Growth	6, 12, 18, 24, 30, 36, 42, 48, 52
Interpersonal Relations	1, 7, 13, 19, 25, 31, 37, 43, 49
Stress Management	5, 11, 17, 23, 29, 35, 41, 47

© S.N. Walker, K. Sechrist, N. Pender, 1995. Reproduction without the author's express written consent is not permitted. Permission to use this scale may be obtained from: Susan Noble Walker, College of Nursing, University of Nebraska Medical Center, Omaha, NE 68198-5330.

Permission to reproduce this instrument was obtained from the authors.

Appendix D HPLP II subscale descriptions

The HPLP II contains six subscales: stress management, health responsibility, physical activity, nutrition, interpersonal relations, and spiritual growth. The following summaries guided the evaluation of individual question items to be either retained or added to the scale since its initial development (Walker & Hill-Polerecky, 1996, Defining the Dimensions of Health-Promoting Lifestyle, para 2).

- **Stress Management** encompasses identifying and mobilizing resources (both psychological and physical) to effect control or reduction of tension.
- **Health Responsibility** concerns active accountability for one's wellbeing. This includes noticing one's state of health, informing oneself about health, and engaging with healthcare providers as an informed consumer.
- **Physical Activity** consists of regular participation in bodily exertion, and can include a range of activity levels, from light to vigorous. This activity may be planned or incidental to one's regular activities.
- **Nutrition** involves consumption and informed selection of foods necessary for sustenance and overall health. Specifically, the HPLP II operationalizes this definition in terms of the alignment of one's daily diet with the guidelines set forth by the Food Pyramid.
- **Interpersonal Relations** focuses on communicating in a manner that fosters intimacy within meaningful relationships. Communication includes verbal and nonverbal sharing one's thoughts and feelings.
- **Spiritual Growth** centers on developing one's inner capacities. Spiritual growth involves inner peace that comes through transcendence, feelings of harmony and connectedness with elements of life larger than oneself, and maximizing one's potential for wellness.

Appendix E
Living Well in the Community session descriptions

The *Living Well in the Community* curriculum contains ten sessions: Goal Setting, Building Support, Healthy Reactions, Staying on Course, Healthy Communications, Seeking Information, Eating Well, Physical Activity, Advocacy, and Maintenance (RTC: Rural, 2015b). The content of each session is as follows:

- **Goal Setting** orients participants to setting quality-of-life goals that are personally meaningful. This session discusses how quality-of-life goals can motivate action and outlines the process of setting achievable objectives in support of these goals.
- **Building Support** focuses on establishing assistance to facilitate problem solving, especially regarding obstacles encountered enroute to one's goals.
- **Healthy Reactions** centers on dealing with frustration productively.
- **Staying on Course** is about strategies to protect against discouragement, and includes resources related to depression.
- **Healthy Communication** involves skill development around communicating one's needs to health service providers and others.
- **Seeking Information** centers on information finding, evaluation, and use, and ties into problem solving.
- **Eating Well** addresses food choices, serving portions, and making dietary changes.
- **Physical Activity** covers assessment of one's current activity level and planning to increase physical activity.
- **Advocacy** builds on prior sessions (i.e., goal setting, problem solving, communication, and information seeking) to enhance participants' self-advocacy and systems-advocacy skills.
- **Maintenance** encompasses strategies to sustain new behaviors. This session emphasizes the importance of staying connected with supportive peers.

Appendix F Interview Protocol and Moderator's Guide

Interview Protocol and Moderator's Guide

Health My Way Health-Promotion Program, Follow up Interviews

Interview Protocol

Semi-structured interviews will be conducted within eight weeks of the date participants complete the program. Program completion dates will be individualized, based on participant choice. The date a participant completes the Health My Way post-survey will serve as the program completion date. Participants from the winter 2019 cohort will be invited to participate in semi-structured interviews following completion of Health My Way. Potential interview participants will be contacted initially by mail with a recruitment letter (Appendix H) to provide information about the interviews, invite them to participate, and inform them that someone will be contacting them via telephone. Potential interview participants will subsequently be contacted by telephone for the same purposes, and to establish a time and day for the interviews that is convenient for them. A 50-dollar participation incentive, funded by the RTC: Rural, will be sent to participants via money order following interview completion. Interviews will be conducted via telephone and will last for an hour to an hour and a half. With the consent of participants, interviews will be audio-recorded using a device that is not connected to the internet and subsequently transcribed using NVivo software. Analysis of transcribed interviews will employ a coding scheme based on collected interview content.

Interview Moderator's Guide

Interviewers: Krys Standley, Gretchen Neal

Interviewers' location: University of Montana, Missoula, MT

Respondents' location: Varied

Timing of interviews: Within eight weeks post completion of Health My Way post-survey

Length of interviews: 1 to 1.5 hours

Interview Content

- Introductions: Interviewers will properly introduce themselves, briefly establish rapport and confirm that the scheduled time is still a good time to talk.
- Participants will be informed of the following:
 - The purpose of the interview
 - That the interview will be semi-structured and will follow an open-ended question set
 - The categories of the questions
 - Data collected from the interview will be confidential
 - They are free to share anything that comes to mind, even if it feels unrelated
 - Honesty in answering the questions is appreciated

- Their participation is voluntary; they may choose to refuse to answer any question at any time
 - Refusal to answer questions will not affect the participation incentive
 - The interview will be recorded, transcribed, and reviewed
 - Personal information and responses will be kept confidential
- Participants will be given an opportunity to ask questions before the interview commences.

Questions

Interviewers will ask participants the questions listed in the interview moderator's guide.

Interview participants will have the opportunity to answer each question and follow-up probe, or to refuse to answer.

Closing

Following the conclusion of interview questions, the interviewer will invite the interview participant to share any questions or comments they may have. The interviewer will express gratitude to the participant for their time and will inform the participant that the participation incentive will be sent via money order in the mail. The interviewer will end with a closing statement.

Interview Script and Questions

Hi [participant's name], my name is [interviewer's name], calling from the Rural Institute at the University of Montana. I am calling today for our scheduled interview. How are you doing today? [Participant's response/moderator's response.] Is this still a good time for you to talk? [Participant's response/moderator's response.] I would like to begin by thanking you for agreeing to participate in the Health My Way pilot project, and especially this telephone interview. We appreciate your involvement in this research, and I'm looking forward to hearing what Health My Way was like for you.

The purpose of this interview is to better understand the experiences of people who participated in Health My Way. This interview will be semi-structured. It will include a set of open-ended questions about your experiences with a typical day, your experiences with the Health My Way curriculum and coaching, and your experiences with goals. The conversation is open to go in any direction; if these questions make you think of something that you think may not be related, feel free to share. There are no right or wrong answers; please feel free to be honest about your answers.

Before we begin, I would like to remind you that your participation in this interview is voluntary, and you may refuse to answer any of my questions, at any time, without influencing your participation incentive. I would also like to remind you that I am recording this interview and that we will be transcribing and reviewing all of the interviews to look for common themes. We will keep your personal information and your responses to the interview questions confidential, and they will only be used by our research team. Before we get going, I want to

check in to see if you have any questions or concerns about this interview that I can address.
[Participant's response/moderator's response.] Okay, let's go ahead and get started.

Introductory question:

- 1) **[Meaning, Hope]** To start, I'm wondering what made you decide to participate in Health My Way?
 - a) Was there anything about your health that influenced your decision?
 - b) It sounds like [make indications specific] is important to you; am I understanding that correctly?

Category 1: Experiences in a typical day

- 2) **[Health Behavior Change]** I'd like you to walk me through a typical day for you, starting from the time you get out of bed in the morning until you fall asleep at night.
- 3) **[Health Behavior Change]** Is that what a typical day looked like for you before you did Health My Way?
 - a) (if no difference exists): [make indications specific] What does that mean to you?
 - b) (if a difference exists): What has that change been like for you?
 - c) (if a difference exists): People sometimes use metaphors to describe their experiences by comparing them to something familiar. A metaphor uses comparison to explain your experience and your feelings about that experience. [example of a metaphor, including explanation]. If you were to describe the change you experienced in this way, what metaphor would you use?
- 4) **[Meaning]** As you go about your daily life, what aspects are important to you?
 - a) It sounds like [make indications specific], am I understanding that correctly?

Category 2: Experiences with the curriculum and the coaching

- 5) **[Coaching, Curriculum]** Can you tell me about a session you chose to work through on the tablet?
 - a) What was that session like for you?
 - b) Can you say more about how you felt about that session?
- 6) **[Coaching, Curriculum]** How would you describe your experience with using the Health My Way material on the tablet in between coaching sessions?
 - a) What was that like for you?
- 7) **[Coaching]** When you think about the process of working with your coach, from the first meeting with your coach to the last meeting, how would you describe what that process was like for you?
 - a) How do you think the experience would have been different if you had the tablet with the app, but didn't have meetings with your coach?
- 8) **[Coaching]** Can you tell me about a conversation with your coach that really stands out for you?

- a) What is it about that conversation that stands out?
- 9) **[Coaching, Curriculum]** When you think back to your last coaching session, how did you feel about the overall experience of Health My Way, including the coaching calls and the app?

Category 3: Experiences with goals

- 10) **[Meaning, Hope]** People often started the curriculum with the Goal Setting session, which focused on values. What kinds of values did you think about when you were working on the Goal Setting session?
 - a) How did you feel when you thought about [stated value(s)]?
- 11) **[Meaning, Hope]** Can you tell me about your experience with deciding what goals to set for yourself?
 - a) What was your energy level like for your goals?
 - b) What kinds of things did you do that related to your goals? This could include finding information, planning, or taking action.
 - c) Can you tell me about your experience discussing your goals with your health coach during your weekly phone calls?
 - d) If you ran into any obstacles at any point when you were working on your goal, what were your feelings about that obstacle?
- 12) **[Meaning, Hope]** Can you tell me about a goal you set for yourself?
 - a) How did you feel after you decided you wanted to work on that goal?
 - b) Where would you say you are at with that goal?
 - c) How did you get to this point?

Those are all the questions I have for you. Is there anything you were wanting to talk about in this interview that we didn't cover? [Participant's response/moderator's response.] Do you have any questions or comments you would like to share with me? [Participant's response/moderator's response.] Thank you for your time [participant's name]. I will be sending a money order containing your participation incentive out to you in the mail, so you can look for that. I hope you have a great rest of your day!

Appendix G
Informed Consent for Health My Way

PARTICIPANT INFORMATION AND CONSENT FORM
Health My Way, Health Promotion Pilot Program

Title: Health My Way Health Promotion Pilot Program

Sponsor: National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR)

Study Director:

Craig Ravesloot, Ph.D., University of Montana, Rural Institute on Disabilities, 52 Corbin Hall, Missoula, MT 59812, (406) 234-2992, craig.ravesloot@mso.umt.edu

Special Instructions:

If you read any words that are not clear to you, please ask the person who gave you this form to explain them.

Purpose: The purpose of this research is to gain a better understanding of the Health My Way health promotion program curriculum and its use one-on-one on a tablet computer for improving health and quality of life for people with disabilities.

Procedure:

If you agree to participate in this study, you will receive a tablet computer to take home with you for your use in this study. To use the tablet, you will either need to have WiFi at home or you will need to go to a community location that has WiFi access (e.g., a library). You will participate in the Health My Way program by reviewing content on the tablet computer. The topic areas are: Goal Setting, Building Support, Healthy Reactions, Staying on Course, Healthy Communication, Seeking Information, Eating Well, Physical Activity, Advocacy and Maintenance, Disability Identity, Peer Support, Self-Advocacy, Self-Care, Housing, Technical Skills, Budgeting & Finance, Healthy Relationships, Transportation and Time Use.

You will review one of the topic areas weekly, but you may choose to skip any topic area at any time. You will meet with a health coach from the research team weekly for one hour to discuss the program content over the phone, via the internet or in-person. You will meet with your health coach for a maximum of 12 weeks.

You will receive the tablet computer and charging equipment during your first one-hour meeting with the health coach or it will be mailed to you after to your first phone call with that health coach. Your health coach will teach you how to use the touchscreen tablet computer to

The University of Montana IRB	
Expiration Date	9-23-2019
Date Approved	9-24-2018
Chair/Admin	<i>[Signature]</i>

go through the Health My Way application and complete the pre and post surveys on the tablet. You will complete a pre-survey during your first visit with the health coach and a post-survey during the last meeting. These surveys should take no more than 30 minutes, and you may choose to skip any question at any time.

Compensation:

You will receive a \$10 money order for completion of the pre-survey and a \$30 money order for completion of the post-survey when the tablet is returned to your health coach.

Risks/Discomforts: The risks to you are minimal. Answering the questions may cause you to experience feelings that make you sad or upset. You may also experience frustration completing your answers using the touchscreen tablet. You may refuse to answer any of the surveys or any of the questions within a survey at any time. If you choose to change what you do to improve your health, like start an exercise program, you should consult a physician first.

Benefits: You may experience improved health if you choose to change your behavior. Participating in this research project will also contribute to a better understanding one-on-one health promotion for people with disabilities.

Confidentiality: In face-to-face coaching it is the responsibility of the coach to ensure that no one can over hear the conversation. During tele-coaching we will ensure that no one will be able to hear our side of the conversation because we will be in a secure office. However, we cannot assure the privacy of your location. If you are somewhere where a family member, co-worker or even a stranger might be able to hear or see you, then our conversation cannot be kept secure. We strongly encourage you to find a private location for our conversations.

Your records will be kept confidential and will not be released without your consent except as required by law. All responses collected with the tablet will be kept confidential and used only by the research team. Your survey responses will be kept for four years until the end of the project. They will be destroyed at the end of the study. The data will be stored in a locked computer file. This informed consent form will be stored in a cabinet separate from your survey answers.

Permission to Contact You Again: We may contact you again by telephone to discuss your participation in this project and to invite you to participate in an interview that is related to this project.

Voluntary Participation/Withdrawal: Your decision to take part in this study is completely voluntary. You may refuse to answer any of the surveys or any of the survey questions at any time. You may withdraw or choose not to participate in the study at any time. If you choose to withdraw from the study we ask you return the tablet computer to your health coach.

The University of Montana IRB
Expiration Date 9-23-2019
Date Approved 9-24-2018
Chair/Admin <i>[Signature]</i>

Questions: Contact Tannis Hargrove if you have questions about the study. She can be reached by phone at (406) 243-5719 or by email at tannis.hargrove@mso.umt.edu. If you have questions about your rights as a research subject, you may contact the Chair of the Institutional Review Board (IRB) through the University of Montana Research Office at (406) 243-6670.

Statement of Your Consent:

I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part in this study. I understand I will receive a copy of this consent form.

Printed Name of Participant

Address of Participant

City

State

Zip Code

Participants Phone Number

Email Address

Participant's Signature

Date

The University of Montana IRB	
Expiration Date	9-23-2019
Date Approved	9-24-2018
Chair/Admin	<i>[Signature]</i>

Appendix H
Recruitment letter for interviews

[date]

<<salutation>> <<firstname>> <<last name>>
<<address>>
<<city>>, <<state>> <<zip code>>

Dear <<salutation>>. <<lastname>>,

I am writing to ask for your help with a study connected to the research pilot program that recently participated in, Health My Way. In that program you indicated you were willing to be contacted again with an invitation to participate in an interview related to this project.

I am writing in advance because I wanted to let you know I will be contacting you by telephone to tell you more about these interviews and discuss your possible participation. The goal of these follow-up interviews is to gain a better understanding of the Health My Way pilot program and its use for improving health and independent living among rural people with disabilities. I am a graduate student at the University of Montana, and these interviews are part of the research I am conducting for my thesis.

Research can only be successful with the generous help of people like you. I hope you will consider participating in a follow-up interview, and I look forward to speaking with over the phone soon. You may have given us your phone number on our research informed consent. If so, I will call you at that number. However, if you prefer to call me, you can reach me at (406) 243-2348. I will be calling from a phone number that begins with (406) 243-2348 to help you recognize our call.

Best Wishes,

Krys Standley
Health My Way
RTC: Rural
406-243-2348
krysti.standley@mso.umt.edu

Appendix I
Informed consent for interviews

PARTICIPANT INFORMATION AND CONSENT FORM
Health My Way Health Promotion Pilot Program-Follow-up Interviews

Study Title: Health My Way Health Promotion Pilot Program-Follow-up Interviews
Sponsor: National Institute on Disability Independent Living and Rehabilitation Research (NIDILRR)

Study Director: Craig Ravesloot, Ph.D., University of Montana, 52 Corbin Hall, Missoula, MT 59812, (406) 234-2992, craig.ravesloot@umontana.edu

Special Instructions: If you read any words that are not clear to you, please ask the person who gave you this form to explain them.

Purpose: The purpose of this research is to gain a better understanding of the Health My Way pilot program and its use for improving health and quality of life for people with disabilities.

Procedures: If you agree to participate, a researcher from the University of Montana will interview by telephone at a location of your choosing. We will ask you to answer the interview questions as best you can. However, if you do not want to answer a question, you may simply say you do not want to answer the question. Interviews will last approximately one to one-and-a-half hours, and will be recorded.

Payment for Participation: You will receive a \$50 money order for your participation.

Risks/Discomforts: There is no anticipated discomfort for those contributing to this study, so risk to participants is minimal.

Benefits: You may not benefit personally from this study, but your answers may help improve the Health My Way Program as well as other programs aimed at helping people make changes to their health behavior.

Confidentiality: Your identity and records will be kept private. We will not release records without your permission except as required by law. Only the researchers on this project will have access to the data files. Your name will not be used when talking about or reporting the results of this study. Your signed consent form and contact information will be stored in a locked file cabinet and will be kept separate from the data collected. I will sign a separate permission, below, for use of audio recording and to allow use of a transcript of the audio recording for this research.

Permission to Contact You Again: We may contact you again by telephone to discuss your participation in this project.

The University of Montana IRB
Expiration Date <u>9-23-2019</u>
Date Approved <u>3-4-2019</u>
Chair/Admin <u>[Signature]</u>

Voluntary Participation/Withdrawal: Your decision to take part in this research study is voluntary. You may withdraw from the study at any time without penalty or loss of benefits to which you are normally entitled. If you decide to withdraw, the researcher will stop the interview. You will still receive payment if you withdraw from the interview.

Questions: If you have any questions about the research now or during the study, please contact: Krys Standley, she can be reached by phone at (406) 243-2348 or by email at krysti.standley@mso.umt.edu. If you have any questions regarding your rights as a research participant, you may contact the University of Montana's Institutional Review Board (IRB) at (406) 243-6672.

Statement of Your Consent: I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions I may have will also be answered by a member of the research team. I voluntarily agree to take part in this study. I understand I will receive a copy of this consent form.

 Printed Name of Participant

 Participant's Signature

 Date

Statement of Your Consent to be Audio Recorded: I understand that I will be audio recorded during the interview, using a device that is not connected to the internet. I consent to the use of my audio recorded transcript in presentations related to this study. I understand that if any portion of this transcript is used for presentations of any kind, names and other identifying information will not be associated with them. I understand that the audio recordings will be destroyed following transcription, and that no identifying information will be included in the transcription.

 Participant's Signature

 Date

The University of Montana IRB	
Expiration Date	9-23-2019
Date Approved	3-4-2019
Chair/Admin	<i>[Signature]</i>