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In-depth exploration of successful weight loss management

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AN IN-DEPTH EXPLORATION OF SUCCESSFUL WEIGHT LOSS MANAGEMENT

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ABSTRACT

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The purpose of this study was to advance knowledge in the area of health behavior change maintenance, specifically weight loss maintenance, and develop a substantive theory of successful weight loss maintenance in adults. Using classical grounded theory methodology, the researcher conducted in-depth interviews with 12 adult men and women who lost at least 10% of their body weight and had maintained the weight loss for at least one year. Analysis of the interviews revealed a basic social process called Transforming Self, wherein participants described a process through which they designed and made significant lifestyle changes that resulted in weight loss and maintenance. Three stages of change and significant factors associated with each stage emerged from the data. In addition, critical junctures and important contextual factors thaat supported or impeded successful weight loss and maintenance were described. Social processes were similar among study demographics of gender and age. This model has implications for nurses and other health care professionals seeking ways to support individuals in weight loss efforts.

Search Terms: weight loss, maintenance, qualitative research, grounded theory

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CHAPTER I

INTRODUCTION

Today, more than 133 million Americans are living with chronic disease, 45% of the U.S. population (Partnership to Fight Chronic Disease, 2009). Each year, millions more are diagnosed and die from chronic conditions. The United States spends over $2 trillion a year, or about 16% of the gross national product, on health care; 75% of that is associated with the treatment of chronic disease (Partnership to Fight Chronic Disease, 2009). In addition, it is estimated that chronic disease costs the U.S. economy $1 trillion in lost productivity (Partnership to Fight Chronic Disease, 2009). Considering the aging of the population and upward trends in chronic disease prevalence, it is expected that by the year 2023, there will be 230 million reported cases of chronic disease, an increase of 42% from 2003 (Partnership to Fight Chronic Disease, 2009).

According to Reinhart, Hussey, and Anderson (2002), the 1999 total health spending per capita in the United States far exceeded that of any other industrialized country in the world. Despite this investment, 44 countries have life expectancies that exceed those of the United States (United Health Foundation, 2007).

In addition to the financial burden of providing chronic illness care, there are devastating personal and financial consequences to individuals and families affected by these conditions. Research has demonstrated that if the United States continues on this pathway, our nation will be unable to pay for the cost of chronic care and children will

have poorer life expectancies than their parents (Partnership to Fight Chronic Disease, 2009). While health care reform is beginning to offer some promise of making insurance coverage more available and there is a renewed emphasis on primary and preventive care, clearly a new direction that engages individuals in adopting and sustaining healthier behaviors will be a key to a healthier American future.

What are some of the factors that contribute to health? Individual health is the result of a complex combination of factors, both within and beyond our control, including personal behaviors, our genetic makeup, the environment in which we live, the health care we receive, and local and national healthcare policy (United Health Foundation, 2009). While all of these are important, personal behaviors are a very significant determinant of health. Personal behaviors include everyday activities as well as the habits and practices we learn and adopt throughout our lives that affect our health in both the short- and long-term. Personal behaviors are significant in the prevention and management of chronic disease and are also the factor over which we have the most control (United Health Foundation, 2007).

Although personal behaviors are under individual control, to realize improvements in health and better manage chronic disease, individuals are required to both undertake and sustain behavior change. Social and behavioral scientists have devoted extensive efforts in identifying conceptual and theoretical frameworks that explain and predict an individual's health-related decisions (Clark & Houle, 2009). Numerous models have been developed to guide our research about health behavior change. Most models do not separate the construct of behavior change maintenance from the behavior change model, thus considering maintenance as the next step or stage in a

change continuum (Rothman, 2000). Despite the fact that behavior change is challenging for most people, much less is known about factors associated with successful maintenance (Jeffery et al., 2000; Wing, 2000). Chronic disease prevalence is predicted to continue to rise steeply. To alter this trajectory, it is important to better understand factors that contribute to maintenance of successful behavior change. Therefore, it is apparent that even though much is known about behavior change, there is still more to be learned, specifically about behavior change maintenance and how individuals are able to sustain personal and lifestyle changes they adopt.

Obesity and Chronic Disease

Obesity is a major contributor to rising rates of more than 20 chronic conditions and is now considered to be one of the most serious health problems facing the United States (Robert Wood Johnson Foundation, 2008). Unprecedented growth in the prevalence of obesity is dramatically impacting the health of Americans. A recent report released by the Robert Wood Johnson Foundation (2011) indicates that in 2001, 61% of adults and 12% of children and adolescents were considered overweight or obese. Today, these rates have risen to 68% of adults and nearly 32% of children and adolescents. That means that on average, every American adult female is 15.4 pounds heavier and every adult American male is 17.1 pounds heavier than they would have been in 1988 (United Health Foundation, 2009).

Obesity is also a significant factor in lost productivity and health care costs. It is estimated that obesity is linked to an annual cost of $73 billion in lost productivity and more than $150 billion on obesity-linked health care costs (Robert Wood Johnson Foundation, 2011).

Despite greater access to information about the relationship between chronic disease and obesity, and the wide availability of programs, pharmacologic, and nutrition aids, obesity rates continue to rise. While there are many factors that contribute to obesity such as cost of healthy foods, location of grocery stores, and access to safe places to exercise, a significant portion is related to personal behavior choice (Robert Wood Johnson Foundation, 2008). The current national emphasis on the relationship between health and obesity has failed to reverse the obesity epidemic. Short-term weight loss has not led to long-term success; most dieters gradually return to baseline weight (Hawley et al., 2008). The reasons most dieters are unable to maintain weight loss are not completely understood. Therefore, this dissertation sought to study individuals who were successful in not only achieving but also sustaining significant weight loss, one of the most important but difficult behavior changes to sustain.

Problem Statement

Grounded theory is intended for use when existing theory is either not available or not adequate to guide the research process (Artinian, 2009a). While there has been significant research and theory development regarding behavior change overall, most has been associated with phases of change including contemplation, initiation, or action. Less is known about behavior change maintenance, particularly knowledge obtained through the voices and experiences of individuals who have been successful.

This study used a grounded theory approach to further explore theory development and knowledge in the area of health behavior change, specifically health behavior maintenance related to weight loss. Although no standard definition exists for all the branches of inquiry around health behavior, health behavior change theory is most

often associated with disease prevention or management, particularly as it relates to preventable conditions that are strongly correlated with personal behavior (Curry & Fitzgibbon, 2009). Gochman (1997) stressed that health behavior change research is an important area of interdisciplinary research; he provided examples of ways in which the disciplines of medicine, sociology, psychology, and anthropology approached behavior change. Notably absent was a reference to the discipline of nursing, despite the fact that this large professional body has such a significant focus on health behavior change.

To specifically address the identified gap in our understanding of how people maintain weight loss, this study interviewed individuals who had sustained significant weight loss for at least one year. Significant sustained weight loss is defined as a total weight loss of at least 10% of the initial body weight of individuals, sustained for one year or more, in individuals previously categorized as having an overweight or obese body mass index. Although no national definition of significant weight loss has been identified, a definition has been suggested as a national standard by Wing and Phelan (2005). Professor Rena Wing, Director of the Weight Control and Diabetes Research Center at Brown University, and Suzanne Phelan, Professor of Kinesiology at Cal Poly and co-principal investigator of the National Weight Control Registry are national leaders in weight control research and education. Classical Glaserian grounded theory was used to explore the thoughts and perceptions related to factors associated with successful weight loss maintenance. Factors identified were systematically analyzed using constant comparative technique to identify important concepts and an integrated set of hypotheses that accounted for most of the maintenance factors by employing a classical grounded theory approach.

Significance for the Profession of Nursing

Why is health behavior change theory of significance to the discipline of nursing? Theory is the conceptualization of some aspect of nursing for the purpose of describing, explaining, predicting, or prescribing nursing care (Meleis, 2007). Theory-based practice enables us to predict and explain behavior that facilitates the development of interventions that are more efficient and effective in achieving the desired outcomes. According to Fawcett (2005), the discipline of nursing is concerned with the principles and laws that govern human processes of living and dying, the patterns of human health experiences, especially within the context of their environment, and nursing actions that can be taken to improve the health of individuals and groups. This research sought to contribute to knowledge of health behavior change that might be of value to nursing and other disciplines as ways to support health behavior change maintenance, specifically supporting individuals attempting to maintain weight loss.

Application of theoretical concepts related to significant weight loss maintenance might assist nurses and other professionals as they design interventions and systems to support patients in this difficult behavior change. This research, directed toward studying successful weight loss maintenance, also has the potential of laying new theoretical groundwork that might contribute to broader scientific knowledge regarding behavior change. The scope and standards of professional nursing practice (American Nurses Association, 2010) clearly highlighted the nursing role in promoting consumer health and wellness. These standards established an expectation that all registered nurses competently provide health teaching that supports healthy lifestyles and risk-reducing behaviors, and that they apply, create, and synthesize evidence related to risk behaviors,

behavioral change theories, and motivational theories as appropriate to care situations and roles.

Recently, the Institute of Medicine (IOM; 2011) published a report describing the importance of the profession of nursing in advancing the health of our nation. This report highlighted the diversity of settings and roles in which nurses practiced and recognized the tremendous opportunity the discipline of nursing has to effect change on local and national levels. The Institute of Medicine envisioned a future health care system that "makes quality care accessible to all, intentionally promotes wellness and disease prevention, reliably improves health outcomes, and provides compassionate care across the lifespan" (p. 1). These expectations are clearly within the scope and long-standing emphasis of the nursing profession and rely upon nurses to continue to advance our knowledge.

This point in time also represents a significant opportunity for the profession of nursing to contribute to a redesigned healthcare system. The current emphasis on acute treatment and intervention and lack of emphasis on health and wellness has resulted in a high-cost system that has not demonstrated high performance (United Health Foundation, 2007).

A more balanced emphasis on health promotion, in addition to disease management, requires effective models to support behavior change. Weight loss maintenance has the potential to significantly impact rates of chronic disease. Although substantial research regarding behavior change in general and weight loss specifically has already been done, our nation's citizens continue to struggle. These facts clearly indicate that unanswered questions remain.

To date, much of the behavior change theory development has been undertaken by psychologists and physicians. Research conducted has focused on contemplation, initiation, and action phases of behavior change with less focus on maintenance (Merrill et al., 2008). Current behavior change theories have approached behavior change as one theoretical construct applicable to all behavior changes. This study sought to examine weight loss maintenance in greater detail by developing theory through the voices of those who have been successful. It has the potential to not only contribute to knowledge about weight loss maintenance but also to question previous assumptions about the universal applicability of behavior change theory, thus setting the stage for behavior change-specific, theory development.

Conclusion

The richest nation in the world is suffering from an ever increasing burden of chronic disease that our continued investment in illness care cannot cure. The causes of chronic illness are multifaceted but one of the most significant is the personal behaviors we choose every day. One readily identifiable symptom of this problem is the epidemic of obesity. Today 68% of adults and 32% of our children are overweight or obese and these rates continue to rise (Robert Wood Johnson Foundation, 2011). Increases are happening despite the wide availability of programs and pharmacologic and nutritional aids.

The disciplines of psychology and medicine launched behavior change theory in the 1950s and development continues today. These theories have been the foundation for countless research studies and interventions, many of which have focused on weight loss. Despite what we know about behavior change, short-term weight loss has not led to long-

term success; most dieters gradually return to baseline weight. However, some are able to maintain their weight loss. This study sought to understand factors that contributed to sustained significant weight loss using classical grounded theory to identify core factors and relationships in that success. It will contribute to the body of knowledge regarding weight loss maintenance and offer a fresh perspective from the discipline of nursing as it seeks to contribute to this important area of interdisciplinary research.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this study was to create substantive theory in the area of behavior change maintenance related to weight loss. Since classical grounded theory was the methodology chosen for the study, this literature review provides a brief overview of the origins of health behavior change theory and selected models of behavior change. During data collection, a more comprehensive literature review occurred in the substantive area of weight loss, especially as concepts and themes emerged.

This general area of inquiry falls under the broad category of behavioral medicine, which is the field concerned with the development of behavioral science knowledge, techniques relevant to the understanding of physical health and illness, and the application of knowledge and techniques to prevention, treatment, and rehabilitation (Gochman, 1982). The Society of Behavioral Medicine (2011) has since expanded upon this definition:

> Behavioral Medicine is the interdisciplinary field concerned with the development and integration of behavioral, psychosocial, and biomedical science knowledge and techniques relevant to the understanding of health and illness, and the application of this knowledge and these techniques to prevention, diagnosis, treatment and rehabilitation. (para. 2)

Matarazzo (2002) further defined a subfield within behavioral medicine, called behavioral health, as

> an interdisciplinary field dedicated to promoting a philosophy of health that stresses *individual responsibility* in the application of behavioral and biomedical

> science knowledge and techniques to the *maintenance* of health and the *prevention* of illness and dysfunction by a variety of self-initiated individual or shared activities. (p. 813)

Why is theory important in health behavior change? Because health behaviors are complex and affected by many variables, theory provides a framework that identifies relationships among major concepts. These relationships can help to explain and predict behaviors and provide the foundation from which to develop interventions that help individuals be successful in attaining health behavior goals (Glanz, Rimer, & Viswanath, 2008).

Health Behavior Change Constructs and Concepts

To understand health behavior change models, it is important to first consider the definition and use of major concepts and constructs that underpin these theories. Clarity in concept definition impacts decisions regarding theoretical sampling of participants and affects the study's ability to clearly communicate findings.

After a review of the literature, it became apparent that there is a lack of common nomenclature for health behavior change constructs. Theorists and researchers frequently do not define major constructs of behavior change, only including study-specific definitions of behavior change characteristics important to their theory or research design. Development of a common language and taxonomy for operationalization of core behavioral processes and measurement metrics would facilitate cross-disciplinary research from both a basic and applied science perspective (Seymour et al., 2010). To this aim, the National Institutes of Health has funded the Health Maintenance Consortium. This consortium sought to identify behavior change concepts, instruments, and measurement approaches across multiple studies and models (Seymour et al., 2010).

Clearly defined taxonomy and measurement approaches assisted in study design, evaluation, and interpretation.

Although in many studies major construct definitions are implicit, standard definitions are beginning to emerge. Gochman (1982) defines health behavior as

> those personal attributes such as beliefs, expectations, motives, values, and other cognitive elements; personality characteristics; including affective and emotional states and traits; and overt behavior patterns, actions, and habits that relate to health maintenance and wellness, to health restoration, and to health improvement. (p. 169)

In addition to those personal attributes, Gochman also acknowledges the important influence of families, peer groups, social factors, and societal, institutional, and cultural determinants.

Also of significance is the construct of health behavior change. All of the theories included in this literature review considered health behavior change as part of their model. Although no standard definition was identified, health behavior change was most often discussed in conjunction with disease prevention or management, particularly as it related to preventable conditions that are strongly correlated with personal behavior. The top three behavioral risk factors for chronic disease include tobacco use, diet and nutrition (both quality and quantity of food), and low levels of physical activity and energy expenditure. These three represent the target health behavior changes found in many studies (Curry & Fitzgibbon, 2009).

Health behavior change initiation is another important construct and has been defined in several ways: an attempt to change behavior (Rothman, 2000), an individual deciding to start a new pattern of behavior (Baldwin et al., 2006), and “the phase during which people work to master new behavioral changes and for which success is contingent

on people maintaining optimistic perceptions of both their ability to perform the behavior and the outcomes that are afforded by their efforts" (Fuglestad, Rothman, & Jeffery, 2008, p. S261). Prochaska, DiClemente, and Norcross (1992) identifid a similar concept as the action stage of the transtheoretical model, which is discussed in more depth later in this chapter. This is the stage in which individuals modify their behavior, experiences, or environment to overcome their problems. The action stage is defined as successfully changing a behavior for a time period from one day to six months. The transtheoretical model is the only model described that links health behavior change to a defined time frame.

The construct of health behavior change maintenance also has several definitions. Rothman (2000) defines it as sustained changes in lifestyle over time. As part of the transtheoretical model, Prochaska et al. (1992) defines maintenance as the stage in which people work to prevent relapse and consolidate the gains attained during action. In their model, this stage begins six months after the action stage is initiated and lasts for an indeterminate period. The transtheoretical model views maintenance as part of a continuum in the stages of change and notes that it is a dynamic process that often involves repeated cycles of abstinence and relapse. However, Rothman believes that behavior change initiation and maintenance are not part of one continuum and describes different psychological factors that underlie initiation and maintenance of behavior change. Researchers who use behavior maintenance as a study construct often define it in terms of time frames and results of self-reports, surveys, or physiologic measures (Dougherty, Dawes, & Nouvion, 2009; Jeffrey et al., 2000; McCann & Bovbjerg, 2009; Wilcox & Ainsworth, 2009). Time frame definitions for behavior change maintenance in

studies are variable--six months to several years (Anderson, Konz, Frederich, & Wood, 2001; Klem, Wing, McGuire, Seagle, & Hill, 1997; Ogden & Hills, 2008). Seymour et al. (2010) define maintenance as "sustained behavior during the period of observation and after the intervention has stopped that meets a threshold believed to be necessary to improve health or well being within a given population" (p. 661). Seymour et al. also identify the construct of grace period as "a window of time during which lack of adoption of the behavior was not counted as a failure" (p. 661).

When health behavior change is prescribed or requested by a health care professional, the terms adherence or compliance are often used. These terms describe the degree to which patients follow through with clinical recommendations of health care providers (Leventhal, Diefenbach, & Leventhal, 1992; Otsuki, Clerisme-Beaty, Rand, & Riekert, 2009). Seymour et al. (2010) define adherence as "protocol-related behaviors such as attendance and participation in intervention-related activities" (p. 661). The related term—relapse--describes a breakdown or failure in a person's attempt to change or modify a target behavior, with lapse often used to describe a single behavior slip (Marlatt & George, 1984). Seymour et al. define relapse as "a period of interruption of regular sustained behavior after its initiation and maintenance" (p. 661). They also identify related terms of reactivation as "the resumption of the sustained behavior following a period of relapse" (p. 661).

Finally, the concept of self-efficacy underlies many of the behavior change theories. Bandura (1997) defines perceived self-efficacy as "belief in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Clark and Houle (2009) emphasize that self-efficacy influences aspects of behavior

such as acquisition of new behaviors, inhibition of existing behaviors, disinhibition of behaviors, amount of effort individuals are willing to expend on a task, the length of time they will persist in the face of obstacles, and their emotional reactions to behaviors, e.g., fear or discomfort with the new behavior.

Selected Behavior Change Theories

Theory development in the area of behavior change has been significant; thus, this review includes only selected works. Most of the behavior change models arose from the discipline of psychology or medicine; however, specific attention was paid to relevant theories from the nursing discipline. Theories that had similar constructs were grouped together to highlight similarities and differences. These theories were developed over the course of years, even decades; as such, some concepts within them have also changed over time. Although some theories have been applied more widely than others, there is a lack of evidence that one theory is more effective than others (Brewer & Rimer, 2008). Since this research aimed to study aspects of behavior change maintenance, particular emphasis was placed on how maintenance was considered by each theory. Interestingly, as acknowledged by Wing (2000), little is known about the process of behavior change maintenance. While interventions to assist in short-term behavior changes have been successful, new conceptual models are needed to better understand maintenance (Jeffrey et al., 2000; Seymour et al., 2010). Since this study specifically examined obesity, also included in theories reviewed is a short overview of the neurobiological connection to obesity.

Theories Describing Health Protective Behaviors

The Health Belief Model

The health belief model was first developed through research conducted by the U.S. Public Health Service in the 1950s by Hochbaum (1958) and Rosenstock (1960). These researchers were trying to understand reasons Americans chose not to participate in programs designed to detect and prevent disease. The health belief model hypothesized that behavior depends on two primary variables: the value an individual places on a particular goal and an estimate of the likelihood that a given action will achieve that goal. It also considers the individual's perceived risk around the following related dimensions: the individual's risk of contracting a particular illness or health condition, the severity or seriousness of the condition, the benefits regarding the effectiveness of health behaviors to reduce the threat of disease, the barriers and potential negative aspects of a specific health action, and the particular stimuli or cues to take action (Champion & Skinner, 2008). In essence, the theory suggests that individuals undertake a type of cost-benefit analysis as they consider behavior change. For behavior change to occur, people must feel threatened by their current behavior patterns and believe that specific changes will result in valuable outcomes at an acceptable cost.

Later, health belief model researchers acknowledged the importance of competency. Individuals must also feel competent to overcome perceived barriers to be successful in making changes (Rosenstock, Strecher, & Becker, 1988). It has been used extensively in health education research as a theoretical lens to understand health behavior with regard to a wide variety of conditions and diagnoses, populations, and

interventions; it is clearly a building block in other behavior change theories. The health belief model did not specifically address the concept of behavior change maintenance.

Theory of Reasoned Action

In 1975, Fishbein and Ajzen developed the theory of reasoned action, which was subsequently extended to form the theory of planned behavior (Ajzen, 1991). This theory describes an individual's motivational factors and how they relate to the likelihood of performing a particular behavior. The theory postulates that the best predictor of behavior is behavioral intention, which is made up of interrelationships among attitudes, social norms surrounding the behavior, and the individual's perceived control (Montaño & Kasprzyk, 2008). Attitude is affected by beliefs that a behavior leads to an outcome and the value attached to the outcome. Social norms are impacted by what others think about the behavior and how important their approval is to the individual. Perceived control relates to the degree of power and control individuals believe they have over the behavior and the presence or absence of facilitators or barriers. Factors outside an individual's control can affect both intention and behavior. This new dimension of perceived behavioral control can include both personal and external factors such as social support, knowledge, time, money, willpower, and opportunity. This theory also states that individuals will try to perform a behavior if they believe that the benefit of success outweighs the cost of failure and if they feel that significant others believe they should perform the behavior. Congruence among these factors is strongly correlated with behavior change; lack of congruence might impact the change but not necessarily prevent it. This theory has been widely used in many types of behavior change. It does not make a distinction between behavior initiation and behavior maintenance.

Health Decision Model

Eraker, Kirscht, and Becker (1984) developed the health decision model in an effort to find ways in which physicians could intervene to improve patient compliance. It is an extension of the health belief model. Like the health belief model, this model posits that patients undertake an active "cost-benefit" analysis approach as they consider the value of a health behavior change in terms of perceived risk and severity of illness along with the perceived benefit, barriers, and negative consequences of the action. In addition, this model recognizes the impact of patients' health beliefs, knowledge (both factual and non-factual), and other factors such as the impact of socio-cultural factors as they consider a course of action. This model is credited as being one of the first to incorporate patient preferences into healthcare decision-making (Clark & Houle, 2009).

Protection Motivation Theory

The protection motivation theory was originally developed to examine the effects of fear on health attitudes and behavior change (Rogers, 1975). It applies many of the tenets of the health belief model, theory of reasoned action, and theory of planned behavior. These theories all share the same belief that individuals weigh the benefit of an action against the perceived "cost" of the behavior change. The protection motivation theory was originally developed to consider the impact of fear on intention to change behavior. This theory hypothesized that increased levels of fear resulted in a greater likelihood of adopting behavior change to protect themselves from the negative outcome of a perceived threat. The protection motivation theory described a process by which behavior change was considered as an interaction along two planes--the threat appraisal process and the coping-appraisal process. Both planes are influenced by environmental

and intrapersonal factors, self-efficacy, and rewards (Floyd, Prentice-Dunn, & Rogers, 2000). Health behavior maintenance is not separately addressed.

The Self-Regulation Model

The self-regulation model was developed by Leventhal et al. (1992) to describe processes individuals go through in adopting and adhering to behavior change. The self-regulation model sees individuals as active problem solvers who select strategies to manage threats, always using feedback to alter strategies in response to new information. Problem solving strategies occur in response to stimuli received from the physical and social environment in which the individual lives; attention and action are directed toward what is perceived as most significant and urgent. The model contains two parallel processing systems that individuals undertake in making sense of their illness. The first is an objective representation of the health threat and the other is a subjective or emotionally-based representation. Individuals may use factual, accurate data from which they base representations or they may use misconceptions, misunderstandings, or misinterpreted cues to base their adherence decisions (Leventhal et al., 1992). Although not explicitly stated in the model, there is an underlying assumption that in the absence of significant stimuli, the individual is unlikely to take any action.

This model highlights the importance of the physician-patient relationship and suggests that non-adherence rises when practitioners fail to discuss, provide clear information, or connect a treatment regimen to the health risk at hand. It is also very important to understand the illness representations that the patient holds, ensuring that decisions are being made based on factual information (Theunissen, de Ridder, Bensing, & Rutten, 2003). In addition, it emphasizes the use of proximal goals for adherence.

Proximal goals allow for frequent, regular feedback that the individual can use in their active problem solving strategy. The model also relates adherence to the concept of coherence--how well parts fit together, make sense, and fit the individual's culture and personality (Leventhal et al., 1992). Maintenance is not identified as a separate construct.

Social Cognitive Theory

In 1986, Albert Bandura began developing social cognitive theory, which attempts to explain and predict behavior change through inter-relationships among the key constructs of incentives, outcome expectations, and self-efficacy for change. According to this theory, individuals choose to make changes based on their expectations about whether the behavior change will actually lead to the desired outcome and their perceived ability to be successful in making the change.

Self-efficacy is a key construct; it does not refer to an innate trait but one that is heavily dependent on contextual factors and may vary according to the proposed change. Bandura believes that self-efficacy influences all aspects of new behavior acquisition. It affects the amount of effort individuals choose to expend on a task and their persistence toward goal attainment in the face of challenges. Self-efficacy also mediates individuals' emotional reactions to change and their ability to move beyond anxiety and distress to action and goal attainment (Bandura, 2005).

Efficacy expectations are learned from four major sources: previous experience with mastery over a difficult or feared task, observation of others' successes as they overcame difficulty using personal effort and focus, verbal persuasion and encouragement from others, and an individual's previously experienced physiological

distress (e.g., tension, somatic complaints) when facing difficult challenges (Clark & Houle, 2009).

In 2005, Bandura connected elements of social cognitive theory with self-regulation. He recognized that in order to improve health, people need to make positive health choices and exercise ongoing control over their motivation and health behaviors. To do this, they need to have knowledge about positive health behaviors, self-efficacy to make and maintain change, and outcome expectations that the benefit of the change will exceed the cost. They also need to develop health goals, associated plans for realizing them, and the ability to identify the socio-cultural facilitators and impediments for change.

Transtheoretical Model

One of the most frequently cited models to describe and predict behavior change is the transtheoretical model, often called the stages of change model, developed by Prochaska et al. (1992). It is called transtheoretical because it applies stages, processes of change, and core constructs as a framework for integrating several major theories that describe how individuals and populations adopt and maintain health behavior change. While this model incorporates many constructs of health protective theories, it has been separated from them because of its wide use and the way it incorporates additional concepts.

The six stages of change include (a) precontemplation (no intention to change or demonstrate change only under external pressure), (b) contemplation (aware of a problem, thinking about change, but not yet committed to action), (c) preparation (exhibiting signs of intention and early behavior change but not yet reached effective

action), (d) action (behavior, environment or experiences modified with observable change from one day to six months), (d) maintenance (people work to prevent relapse and consolidate gains, (e) a continuation of change lasting six months through about five years), and (f) termination (stage in which individuals have zero temptation and 100% self-efficacy). Termination as a stage has received less research attention and may not be a realistic goal for all people (Prochaska, Redding, & Evers, 2008).

In addition to the stages of change, the model also identifies 10 processes of change. Processes of change are activities individuals use to help themselves progress through the stages of change. These processes include consciousness raising (increased awareness about the causes, consequences and cures), dramatic relief (increased emotional experiences followed by reduced affect if appropriate action can be taken), self-reevaluation **(**cognitive and affective), environmental reevaluation (the effect a behavior has on the social environment), self-liberation (belief that one can change and the commitment and recommitment to act on that belief), social liberation (increased social opportunities or alternatives for people who are trying to change behavior), counter-conditioning (learning to exhibit healthier behaviors as a substitute for problem behaviors), stimulus control (removal of cues for unhealthy habits), contingency management (provision of consequences for taking steps in a particular direction and could include either rewards or punishments), and helping relationships (social support emphasizing caring, trust, openness, and acceptance and support of new behaviors (Prochaska et al., 2008).

Three additional core constructs have been given special attention in the model. The first--decisional balance-- reflects the individual's weighing of the pros and cons of

the change they are contemplating. Self-efficacy relates to the confidence an individual has to be able to be successful in the behavior change but also their ability to face high risk situations without relapsing into previous behaviors. Temptation is the final construct that describes the intensity or urge to return to previous behaviors, especially in high risk situations.

The transtheoretical model assumes that individuals will pass through the stages of change in a linear process; however, it is recognized that individuals frequently regress to earlier stages and once again begin their journey, perhaps at a different stage. This may happen numerous times (Prochaska et al., 1992). This model has been broadly applied with numerous behaviors and populations. The ability to design tools to measure stages of change and develop interventions that apply the processes of change to help move individuals through the stages toward action has broad appeal and often forms the basis for theory-based intervention design. Although this model identifies maintenance and termination stages, those stages have been less developed and less studied than other stages.

Nursing Theories

Theory of Self-Care and Theory of Self-Care Deficit

Beginning in the 1950s, Dorothea Orem**,** a noted nursing theorist, began to distinguish between the nurse's role in assisting patients to achieve health and recovery and the patient's role in self-care (Renpenning & Taylor, 2003). Orem posited that self-care is "the continuous performance of sets of related actions by older children and adults that supply the materials and bring about the conditions that are regulatory of their own functioning and development" (Renpenning & Taylor, 2003, p. 212). She recognized that

self-care is performed in a social context and requires knowledge, skills, and the understanding to manage health conditions. Her theory also recognizes the need to incorporate self-care into daily life and that more burdensome care regimens become more difficult to incorporate. This marked the beginning of the theory of self-care and the theory of self-care deficit (Fawcett, 2005). Orem's self-care theory highlights the regulatory function of self-care and notes that "every act of every human being is motivated and that there is no such thing as an unmotivated act" (Renpenning & Taylor, 2003, p. 225). The challenge then is not to motivate but to affect motivation. She identified three stages of deliberate action: estimative, transitional, and productive. In the estimative stage, the individual seeks information regarding the conditions significant for self-care, how these conditions can be created or maintained, and the desirability of changing or maintaining conditions. Activities of the transitional stage include engagement in a decision-making process and determining the chosen course of action. The productive stage seeks to create positive self-care. In this stage, individuals prepare themselves and their environment for performing and regulating self-care, monitoring for results, and reflecting upon the adequacy of results and whether action should be continued (Renpenning & Taylor, 2003).

Orem also identified six conditions that encourage action for self-care: having the knowledge necessary to distinguish desirable action, the development and communication of patient-determined goals, allowing sufficient time for the patient to develop ideas and action plans, use of reflection in the chosen behavior, support for the actual goals and decisions made by the patient, and the recognition that when a person "owns" his actions to attain a goal, it becomes part of the person's self-image or self-

concept (Renpenning & Taylor, 2003). Orem identifies differences between support for the performance of estimative, transitional, and productive operations of self and support for the actions persons engage in to further develop their ability to continue to perform self-care operations (Renpenning & Taylor, 2003). This would seem to support a distinction between early phases of adoption of new health behaviors and their maintenance. This theory has been used extensively in nursing research and practice design (Fawcett, 2005); however, it is notably absent in psychological and medical literature describing health behavior change. Although the theoretical design style is very different from the psychological theories, it clearly highlights some of the same constructs of previous theories, e.g., cost-benefit analysis, but brings forward a strong emphasis on the importance of patient self-determination and self-regulation and the nurse's role in influencing motivation. Maintenance of behavior change is not directly addressed.

Health Promotion Model

Pender, Murdaugh, and Parsons (2006) developed the health promotion model. This framework seeks to integrate constructs from psychological models that emphasize expectancy and social cognitive theory with a holistic human functioning perspective from nursing. This theory is an "approach-oriented" model that stresses change for its beneficial effects rather than change to avoid fear or threat. Authors believe that relying on imminent threat to motivate change is not effective in promoting healthy lifestyles, especially for individuals free from serious health conditions (Pender et al., 2006).

The original model described the interactions among seven cognitive-perceptual factors and five modifying factors to explain and predict health behavior. Since then, it

has been revised to stress the interaction among individual characteristics and experiences and behavior-specific cognitions and affect. Together, these factors lead to behavioral outcomes (Pender et al., 2006).

Individual characteristics include prior related behavior and personal factors such as biological, psychological, and/or sociocultural factors. Behavior-specific cognitions and affect include perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect (subjective feelings/states that are associated with an activity), personal influences, norms and support, and situational influences (Pender et al., 2006).

Pender et al. 2006) acknowledged that behavioral changes are also influenced by competing demands and preferences and commitment to a plan of action. Competing demands are often seen as beyond the individual's control and include things such as family and job commitments. Competing preferences, on the other hand, are subject to individual control and can be highly motivating. Pender et al. noted that commitment to a plan is necessary to initiate a behavior change.

Health-promoting behavior is the endpoint or action outcome in the health promotion model. Health-promoting behaviors integrated with other aspects of healthy lifestyle result in improved health and an enhanced quality of life. In this model, nursing interventions are aimed at raising the consciousness of the need for behavior change, encouraging self-reflection regarding their current state and what their preferred state might be, recognizing and supporting attempts to change, helping them to control their environment, and overcoming barriers to change (Pender et al., 2006).

This model provides special consideration for the challenges posed by maintenance of behavior change. In the health promotion model, maintenance begins when the new behavior is stabilized and continues throughout the life span. Factors identified that affect continuation of new health behaviors include personal skill in carrying out the behavior, personal beliefs and attitudes, positive emotional response to the change, ease of incorporation into daily life, intrinsic awards assigned by the individual, extent to which the change has been communicated to significant others, and perceived attractiveness of previous behavior (Pender et al., 2006).

Health as Expanding Consciousness Theory

In the health as expanding consciousness theory, Margaret Newman (1986) described a view of health and illness in which lifestyle transformation can occur by using a reflective process to understand one's own life pattern. She drew upon Rogers' (1980) theory of unitary human beings when describing the interaction between human beings and environment as "a single process and, like rhythmic phenomena, becoming manifest in ups and downs, or peaks and troughs, moving through varying degrees of organization and disorganization, but all as one unitary process" (p. 4). As such, she rejected the view of health and illness as dichotomous states, viewing them instead as "permutations of order and disorder" (Newman, 1990, p. 39) and physical manifestations of the patterns of our lives. These physical manifestations provided clues and insights into the total pattern of the person. This pattern might manifest itself as pathology but the pattern exists prior to any structural or functional changes. Therefore, elimination of the condition or pathology does not address the pattern and does not address issues of the whole (Marchione, 1993). Newman also drew upon Young's (1976) theory of human

evolution to assist in integrating the concepts of health as expanding consciousness into a graphic portrayal of stages of human development as humans move from a stage of potential freedom into an increasingly deterministic role and the struggle for identity. As the individual identifies aspects of their life that are not working (e.g., threat/reality of disease), there is an opportunity for change and transformation (Newman, 1990). This theory does not conceptualize maintenance as a construct separate from the life pattern of the unitary person.

Behavior Maintenance Theories

Relapse Prevention Model

Marlatt and George (1984) took a somewhat different approach with their relapse prevention model (RLP). This model is targeted toward individuals who have already initiated behavior change. It describes a framework for understanding the concept of lapse and relapse as a dynamic process and describes specific strategies for the prevention of return to previous behaviors. This model explores the impact of immediate precipitants (e.g., high risk situations, emotional states, and interpersonal events) and covert antecedents (e.g., day to day life balance, pleasurable activities, and a sense of self-deprivation) on lapse and relapse. It emphasizes that even after successful behavior change, there continue to be times when previous behaviors return. This model uses a cognitive-behavioral approach emphasizing the contextual features that contribute to behavior and views a lapse in desired behavior, not as an endpoint or treatment failure, but as a temporary setback, and an opportunity to learn and return to desired behavior (Hendershot, Marlatt, & George, 2009).

Intervention strategies associated with this model fall into two broad categories. The first is to work directly with clients to identify the unique triggers and cues associated with high risk of relapse. When those are identified, clients then develop pre-planned responses to reduce the risk of relapse. The second category focuses on changes in personal habits to promote a balanced lifestyle. The relapse prevention model stresses the importance of a positive balance between pleasurable activities and obligations; the risk of relapse is higher when individuals perceive a lack of pleasurable activities. This imbalance may lead individuals to "reward" good behavior with a "small return" to previous behavior. Ideally, "positive addictions" such as exercise may become a source of pleasure for the person and become a reward that will facilitate maintenance of the behavior (Marlatt & George, 1984).

Behavior Maintenance Theory

The behavioral maintenance theory (Rothman, 2000) acknowledges that most traditional behavior change models either do not address behavior change maintenance or conceptualize maintenance as a continuation of change. As such, they assume that forces that support initiation of change will also support maintenance. The behavioral maintenance theory differentiates the forces at work in behavior change initiation from those of maintenance (Baldwin et al., 2006; Rothman, 2000). This model asserts that individuals change their behavior when expectations regarding the outcome of change are more positive than what they are experiencing with the current behavior. This move toward the perception of an improved future state is sometimes called an "approach-based" self-regulatory system.

In contrast, maintenance relies on satisfaction with outcomes achieved. Satisfaction with the new state reinforces the "correctness" of the original decision, helps to sustain the change, and avoids relapse. This is called an "avoidance-based," self-regulatory system. However, if expectations of outcomes are not met, it might lead to dissatisfaction and predispose one to return to original behaviors. Implications for this research are that if unrealistic expectations are set during the behavior change initiation process, there is a greater likelihood of dissatisfaction in the maintenance phase. In other words, the motivators for initiation of change might actually de-motivate behavior change maintenance if expectations are unrealistic (Baldwin et al., 2006).

This theoretical framework was developed by Rothman (2000) as a result of his own unpublished research and review of other studies that contained contributory elements. He referenced a study done by Klem et al. (1997), which demonstrated that women who maintained weight loss for greater than one year attributed greater benefits to the weight loss than women who did not maintain. In addition, he noted tentative support for his theory from a study done by Oettingen and Wadden (1991), which found that women with overly optimistic ideas of their life after weight loss had more difficulty with weight loss success in a 12-month program.

Subsequent studies have tested behavior maintenance theoretical concepts using experimental designs in populations seeking either weight loss or smoking cessation. Baldwin et al. (2006) demonstrated that satisfaction with smoking cessation was a stronger predictor of maintaining cessation than was perceived self-efficacy. A study performed by Hertel et al. (2008) manipulated level of participant expectations regarding smoking cessation. This study demonstrated that initiation of smoking cessation was

correlated with previous quit attempts and level of optimism regarding the behavior change. It failed to demonstrate that participants' expectations about the outcomes of behavior change impacted their satisfaction with the behavior change. It did, however, support that satisfaction with the change appeared to be more predictive of behavior change maintenance than were expectations of the change. Fuglestad et al. (2008) examined the impact of an individual's regulatory focus in weight loss and smoking cessation. This study utilized Higgins' (1997) regulatory focus to hypothesize that initiation of behavior change would be facilitated by a health promotion regulatory focus, while successful maintenance would be supported by a regulatory focus on prevention. This study showed that individuals with a higher promotion focus were better able to initiate smoking cessation but only in the first six months after treatment. A higher prevention focus predicted maintenance of smoking cessation in participants who were able to quit smoking for at least two months. The population attempting weight loss demonstrated that individuals with a promotion regulatory focus were more successful at initiating change and those with a prevention focus were more successful maintaining weight loss only if they were close to their weight loss goal. Those far from their weight loss goal were more likely to continue weight loss over the next year if they had a promotion focus. Both populations supported the research hypothesis (Fuglestad et al., 2008).

This theory was very interesting from the perspective that most advertising is designed to raise individual expectations of a life that would be significantly improved by choosing a particular product or service, e.g., products supporting weight loss. Rothman's (2000) theory suggested this type of overly optimistic advertising might lead

more people to initiation of weight loss but actually sabotage weight loss maintenance, thus promoting ongoing product demand but not sustained weight loss.

Although these studies were significant in beginning to build knowledge about differences between initiation and maintenance of behavior change, it appeared that there might be more to discover. None of the studies that contributed to the development or testing of Rothman's (2000) theory were informed directly by individuals successful in maintaining behavior change. Thus, it appeared that a study that examined the experiences of individuals maintaining weight loss might be able to provide additional insight and contributions to this area of research.

Self-Determination Theory

Deci and Ryan (1985) developed an approach to human motivation and behavioral self-regulation called self-determination theory. This theory posited that there are three innate psychological needs that underlie human motivation: competence, autonomy, and relatedness. When these needs are supported and satisfied, the result is enhanced self-motivation and well-being. When these basic needs are hindered, the result is diminished motivation and well-being.

In this model, motivation is envisioned as a continuum (Ryan & Deci, 2000). Amotivation represents the lowest level and is described as a state of lack of intention to act or perceived lack of value of the activity. Extrinsic motivation, which is performance of an activity to attain an outcome, is represented along the continuum by several levels. These range from motivation whose source is external regulation, e.g., through rewards and punishments, to more autonomous or self-directed extrinsic motivation in which the

individual values the goal or regulation and internalizes it or accepts it as personally important.

Intrinsic motivation is defined as doing an activity for its inherent satisfaction. This represents the highest level of the motivation continuum; individuals expressing intrinsic motivation perform activities because of personal interest, enjoyment, or satisfaction. In self-determination theory, positive outcomes in health behaviors are achieved through higher levels of internalization of the activity, resulting in improved behavioral effectiveness, persistence, personal well-being, and integration into social processes (Deci & Ryan, 1985).

Ryan and Deci (2000) identified social conditions that nurture motivation internalization and integration as those that promote the basic psychological needs of autonomy, competence, and relatedness. An individual's perception of autonomy is particularly critical for behavior integration. Autonomy is supported when people experience the behavior as being self-directed rather than externally controlled. Therefore, tangible rewards for task performance and threats, directives, pressure, and coercion undermine autonomy, whereas choice, acknowledgement of feelings, and opportunities for self-direction enhance autonomy. Even activities perceived as uninteresting can be supported when a meaningful rationale is shared and embraced.

Competence was also identified as a basic psychological need. Competence is supported through optimal challenges (those that are rigorous but possible to attain), constructive feedback, the perception of causality that their behavior will produce a desired outcome, and important social group value of the behavior. Competence is

threatened by demeaning, negative feedback, the belief that the behavior is meaningless, or the perception that significant others do not exhibit the behavior (Ryan & Deci, 2000).

The third basic psychological need is that of relatedness. Self-determination theory indicates that intrinsic motivation is more likely to flourish in environments that exemplify a sense of security, relatedness, and when role models or significant others embrace the activity (Johnson, 2007).

While the primacy of these psychological needs is universal, their expression is influenced by developmental level, culture, and circumstances. Motivation is not thought to be stage-based. Individual movement along the continuum is affected by context. Individuals may function in a variety of social contexts. However in general, environments that support autonomy, competence, and relatedness support the integration and adoption of positive behaviors that are both externally and intrinsically motivated, and thus promote the health and well-being of the individual (Ryan & Deci, 2000).

Learning Theory

While not a health behavior change theory per se, applications of learning theory employing behavior modification techniques have been used for a variety of behavior changes, notably those related to physical activity (Marcus, Ciccolo, Whitehead, King, & Bock, 2009). Bouton (2000) described a learning theory perspective that might provide additional insight into the challenges of lapse, relapse, and behavior change maintenance. Classical conditioning, a common form of behavior modification, relies on two commonly used principles to modify behavior--extinction and counter-conditioning. According to Bouton, classical conditioning techniques might produce a desired change in behavior; however, the original learning remains largely intact. This essentially leaves

the individual with two different responses that might be signaled by an event, producing ambiguity. This ambiguity could be significantly affected by context and retrieval factors that promote behavior change maintenance.

To assist the client in continuing to choose the new behavior in the face of ambiguity, he suggested that one way to support behavior change maintenance even after therapy ends is through regular retrieval cues such as telephone calls, reminder cards, and text messages.

Since context provides such an important signal for previous behaviors, it is important to consider ways to connect new behaviors with multiple contexts. Most often, therapy occurs in only one context. Since multiple contexts may trigger previous behaviors, Bouton (2000) suggested that therapy should also take place in multiple contexts. This would connect new behavior to multiple contexts. It is especially helpful to situate the new learning in contexts that present the patient with a strong signal to the old behavior.

Population-Health Promotion Model

McKinlay (1995) developed the population-health promotion model. Although not specifically concerned with individual behavior, this model acknowledges that social, political, and environmental factors have a strong influence on individual behavior and that "short-term behavior change and maintaining it requires broad-spectrum approaches" (Orleans, 2010, p. 78). McKinlay identified downstream, midstream, and upstream approaches to health promotion. "Downstream" approaches for change target individuals who are already exhibiting symptoms of disease or significant health risk factors such as diabetes education, medication changes, and chronic disease management strategies.

"Midstream" interventions target populations, attempt to influence behavior, or offer large-scale prevention programs that are low-cost and easy access, e.g., worksite wellness programs and school-based screening and prevention. "Upstream" interventions include state or federal policy changes that affect large scale change including legislative actions limiting access to unhealthy products, advertising guideline regulations, and the use of economic incentives to discourage unhealthy behavior such as taxes on unhealthy foods or products, or incentives for healthy behavior such as reimbursement for health-related changes. While this is not a model of individual behavior change, it does describe social and contextual factors that have a strong influence on behavior change.

The Biological Connection to Obesity

Although behavioral models have been frequently applied in obesity research, there has been an increased awareness of the important connection of neurobiology and behavior (Spiegel, Nabel, Volkow, Landis, & Li, 2005). Human energy balance is controlled by a very complex network of feedback mechanisms involving the hypothalamus, brainstem, higher brain centers, the gut, stomach, liver, thyroid, and adipose tissues (Markus, 2005). Overeating has also been compared to drug addiction, both physiologically and behaviorally (Volkow & Wise, 2005). Behaviorally, overeating is often connected to the availability of inexpensive, easy to access, high-calorie, high-fat foods, and the strong behavioral reinforcers associated with ingestion of foods, e.g., the use of food as a stress reducing tactic. Biologically, intake of both food and drugs has been shown to stimulate dopamine, which seems to further stimulate ingestion of food, potentiating pleasurable reinforcement of continued eating. As noted by Volkow and Wise (2005) "addictive drugs, like addictive foods, activate brain circuitry involved in

reward, motivation and decision-making" (p. 557). Behaviors leading to obesity reflect a complex combination of body systems and cognitive processes, suggesting that effective treatment will require multiple modalities to be successful.

Conclusion

Because personal behavior has such a significant impact on the overall health and well-being of our nation, it is important to continue to seek an improved understanding of how people change and how the health care system can better support individuals as they adopt new behaviors. Most of the major behavior change theories summarized in this section did not separately address the construct of maintenance, instead assuming it is a part of a linear continuation of the change. Only two, the behavior maintenance theory (Rothman, 2000) and the relapse prevention model (Marlatt & George, 1984), reflected the growing belief that behavior change maintenance might be fundamentally different from initiation and adoption of change (Nilsen, Haverkos, Nebeling, & Taylor, 2010). In fact, early actions taken to promote change initiation might actually hinder behavior change maintenance (Rothman, 2000). As noted by several researchers (Jeffrey et al., 2000; Ory, Smith, Mier, & Wernicke, 2010; Wing, 2000), initially achieved behavior change gains often diminished after conclusion of an intervention. Behavior change progression followed a fairly predictable pattern that began with early adherence and significant change followed by a gradual return to previous behaviors (Merrill et al., 2008). In addition, theories reviewed did not consider the notion that different types of health behavior change might require different theoretical perspectives.

There is increasing recognition that previous models of behavior change have not fully explored the construct of maintenance and that new conceptual models are needed

(Institute of Medicine, 2001; Jeffrey et al., 2000; Wing, 2000). Ory et al. (2010) noted that

> practical strategies and theoretical mechanisms for sustaining health behaviors over the life span are not well established or understood, but maintenance studies are necessary for translating behavior change research into practice and reducing the burden of disease and health disparities. (p. 648)

In 2001, the Institute of Medicine published a report entitled *Health and Behavior: The Interplay of Biological, Behavioral, and Societal Influences.* This report highlighted their finding that most research studies examined the ability to alter behavior in the short-term with few demonstrating sustained behavior changes. In addition, weight loss researchers (Klem et al., 1997) noted that few studies examined weight loss in individuals who had been successful in the long-term and strongly recommended more investigation of success factors and supports.

Despite the discipline of nursing's long history of health education and promotion, nurses have been underrepresented in the development of knowledge about health behavior change. As noted earlier, most theory has arisen from the disciplines of psychology and medicine, even though nurses play a crucial role in promotion and support of behavior change. A recent Institute of Medicine Report (2011) emphasized the fundamental role nurses play in prevention, health promotion, and early intervention while practicing as primary care providers, care coordinators, health educators, and coaches. With this pivotal role and the significant need to prevent and better manage chronic conditions, it is critically important to identify effective and efficient ways to support health behavior change maintenance from the perspective of different disciplines. Current knowledge has not been proven to be sufficient. It is important for nurses to

participate in the development and application of evidence about successful behavior change maintenance.

Given the incredible personal and financial burden of chronic illness in the United States, it is hard to deny the importance of continued research in health behavior change maintenance. Personal behaviors are a very significant determinant of health and the factor over which we have the most control (United Health Foundation, 2007). But this control has been elusive. Health behavior theorists described complex factors that impacted personal choices such as individual weighing of the costs and benefits of choosing to change or the perceived threat of not changing, always in the midst of a complex array of social, political, and environmental influences. Bouton (2000) reminded us that even though our behaviors might change, previous learning and behaviors remain etched in our mind waiting to be reawakened.

Innumerable studies have been conducted and theories adapted; yet statistics show we have not yet bent the obesity curve, one of the most troubling trends predicting future chronic disease burden (Robert Wood Johnson Foundation, 2008). Notably absent in any of these theoretical perspectives was theory development grounded in the voices of individuals who had been successful in behavior change maintenance. Even though we have some preliminary understanding of behavior maintenance from different perspectives, the ability of persons attempting weight loss appears to be an area of particular difficulty as many people who begin weight loss are unable to maintain the loss. Factors that contribute to successful weight loss have not been clearly elucidated. Therefore, this study provided an important contribution to weight loss and behavior change maintenance theory; examining the voices of success might identify missing links

or theoretical perspectives previously unrecognized in this important area of knowledge development.

CHAPTER III

METHODOLOGY

Introduction

Although there are many well-known models of behavior change, most assume that behavior change maintenance is but a continuation of other steps beginning with contemplating and implementing change. In addition, there is an underlying assumption that all types of behavior changes are ascribed to the same theoretical model. Despite existing models and a wide variety of programs, products, and other aids available to support behavior change, increasing numbers of people continue to maintain unhealthy behaviors that predispose them to a wide variety of chronic conditions (Partnership to Fight Chronic Disease, 2009; United Health Foundation, 2009). The purpose of this study was to rigorously examine the experiences of individuals who are successful in maintaining significant weight loss--one example of health behavior change. This study created substantive theory in the area of weight loss maintenance, discovering the challenges faced by individuals, and the processes by which these challenges were resolved.

Research Design

To best address the area of inquiry, it is helpful to describe the lens from which the study was considered. First was the epistemology or the general way of understanding or explaining what is known about a particular area of inquiry. This study

embraced the epistemology concepts of constructionism by assuming there is no objective truth to be discovered but that truth or meaning is created or constructed by people as they engage in relationship with their world. This epistemology acknowledges the importance of culture. As noted by Crotty (1998), culture directs our behavior and organizes our experiences. Culture determines a set of rules, instructions, and norms that govern much of our behavior. Constructionism views the world as not only the way things are but the sense we make of it.

This study viewed weight loss maintenance as being clearly related to the constructed realities, habits, and norms of culture. Also of importance in study design is the theoretical perspective--the viewing lens from which the methodology is chosen. Different ways of viewing the world drive different ways of researching the world (Crotty, 1998). The interactionist perspective that informed the study may be summarized by the following tenets:

- human beings act toward things on the basis of meanings that these things have for them;
- the meaning of such things is derived from, and arises out of, the social interaction that one has with one's fellows;
- these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters (Blumer, 1969, p. 2).

Symbolic interactionism was the theoretical perspective chosen as it provided the best fit for this study. A study designed using a symbolic interactionist perspective requires the researcher to enter into the setting of the participants in order to understand it as the

insider understands it. Symbolic interactionism emphasizes dialogue to better appreciate and interpret the perceptions and feelings of others. In symbolic interactionism, the investigator must exercise discipline to ensure that what is recorded and interpreted truly reflects those studied and not those of the investigator. Symbolic interactionism emphasizes understanding the perceptions and circumstances of individuals confronting a problem. Since little is known about the concept of weight loss maintenance, gaining the perspective of those successful provided important foundational information to inform future interactions between individuals, significant others, and caregivers, as well as contribute to knowledge about this important concept.

Grounded Theory Methodology

Grounded theory is the methodology chosen to achieve the goals of this study. It is a research design that is often employed when adequate theory is unavailable to explain a process or describe a concern of a group of subjects and how to resolve the issue or concern (Creswell, 2007). It is consistent with a constructionist epistemology and a symbolic, interactionist, theoretical perspective. It is an inductive methodology that systematically obtains and analyzes data, resulting in the development of an "integrated set of hypotheses that account for much of the behavior in the substantive area" (Glaser, 1998, p. 3). Theory discovered in this way is grounded in social reality and provides relevant predictions, explanations, interpretations, and applications for many social processes (Glaser & Strauss, 1967).

This design used unstructured interviews, observations, and documents as sources of data that were systematically analyzed using a constant comparison method to generate hypotheses. Fundamental assumptions of this methodology are that the underlying

concern and core category will emerge with consistent application of the method, that a social organization of the group exists and will be discovered in analysis, and that the focus of the research is the concerns and resolutions of the participants rather than the researcher. It is an inductive method in which there are no pre-conceived hypotheses to test or prove (Glaser, 1978). Artinian (2009a) notes that "the major strength of the grounded theory method is its ability to move data from the descriptive level to the conceptual level" (p. 6).

The grounded theory methodology came into existence in the 1960s through the seminal work of Drs. Barney Glaser and Anselm Strauss (1967). This work was recognized as revolutionary in the development of qualitative traditions (Walker & Myrick, 2006), though often fraught with debate and controversy. The methodology emphasizes the discovery of theory through systematic data collection and concurrent comparative analysis. Theory discovered in this manner is considered "grounded" in the social processes and experiences of individuals (Glaser, 1978).

Since the time of its discovery, a chasm emerged between theory originators, resulting in distinct differences in methodological processes. In addition, evolution of the theory continued to occur as researchers changed the methodology to suit their purposes or philosophies, or conducted studies that did not maintain the theory tenets. Stern (1994) describes the latter as the "erosion of grounded theory," often a result of an unskilled researcher and poorly described methods, and sometimes the result of investigators who "tinker with their ways-of-going in pursuit of an explanation" (p. 213). Oftentimes, the end result is a study called grounded but in reality is something else. To

further cloud the grounded theory methodology, currently there are three primary grounded theory genres: classical (Glaserian), Straussian, and constructivist.

Classical grounded theory is an inductive method in which the researcher attempts to identify the main concern of a group of participants and the behaviors they use to resolve this concern (Artinian, 2009a). Data are collected through unstructured interactions and are analyzed through concurrent collection and coding of data. Initially, coding is at the substantive level, emphasizing the identification of categories and properties. As data collection continues and patterns begin to emerge, coding becomes theoretical as substantive codes become woven together to create theory. Description is used only to demonstrate and illustrate coding decisions. Care is taken by the researcher to remain true to the data and not allow preconceived hypotheses or information to bias the study (Artinian, 2009a). As core categories emerge, the literature review is accomplished and woven into the theory as part of the data for constant comparison (Glaser, 1998).

The 1990 publication of Strauss and Corbin's *Basics of Qualitative Research* marked the beginning of public controversy between researchers and grounded theory methodologies. According to Walker and Myrick (2006), the debate centered not upon language or general grounded theory processes but upon how the processes were implemented. Strauss and Corbin identified the concept of "dimensionalizing"--the category's properties as a core task. Dimensionalizing is the process of breaking down a property into its dimensions, which are the characteristics or attributes along a continuum (Strauss & Corbin, 1990). Glaser (1992) describes this as a form of forced coding that may lead the researcher astray of data emergence.

In addition, Strauss and Corbin (1990) also advocate for the use of a variety of tools and techniques to increase theoretical sensitivity of the researcher. These tools add significant structure to the research process, which Glaser (1992) argues again has the potential to force data into preconceived categories rather than allowing for data emergence.

The main controversy, however, is Strauss and Corbin's (1990) use of axial coding: "a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by using a coding paradigm involving conditions, context, action/interaction strategies, and consequences" (p. 96). Strauss and Corbin stress the use of this model as "a way to think systematically about data and to relate to them in very complex ways" (p. 99). Glaser (1992) argues that "this method of labeling and grouping is totally unnecessary, laborious, and is a waste of time" (p. 43). Glaser further indicates that use of categorizing and labeling processes through the use of preconceived questions does not generate grounded theory but a methodology more aptly described as "full, preconceived conceptual description" (p. 43).

Diverging beliefs about grounded theory methodology continued when Charmaz (2006) introduced the constructivist grounded theory approach. She compares grounded theory methods to" a container from which different content can be poured" (p. 9); she views grounded theory guidelines as a set of principles and practices, steps of a research process that can be applied in different ways. Mills, Bonner, and Francis (2006) describe a grounded theory constructivist approach as one that requires:

- The creation of a sense of reciprocity between participants and the researcher in the co-construction of meaning and, ultimately, a theory that is grounded in the participants' and researchers' experiences.
- The establishment of relationships with participants that explicate power imbalances and attempts to modify these imbalances.
- Clarification of the position the author takes in the text, the relevance of biography and how one renders participants' stories into theory through writing (p. 9).

Charmaz (2006) suggests that studies are strengthened by "situating grounded theories in their social, historical, local, and interactional contexts" (p. 180). In addition, Charmaz believes that this approach to grounded theory is less reductionist in nature, freeing the researcher to construct an "interpretive rendering of the worlds we study rather than an external reporting of events and statements" (p. 184).

Several authors identify grounded theory as the most common research methodology adopted by nurses and others in the qualitative tradition (Artinian, 2009a; Benoliel, 1996; Gelling, 2011). However, as noted above, approaches diverge and those performing grounded theory research have often blurred or used grounded theory approaches (Benoliel, 1996) that did not remain true to the premise of the original grounded theory designers. This lack of common approach to grounded theory design makes it imperative that specific methodology be identified early and adhered to in all aspects of design, data collection, and analysis. Rigor in the grounded theory study depends on careful implementation of methodology and rules (Cooney, 2011).

This study implemented the classical grounded theory approach. This decision was made after a review of literature describing methodological differences and in response to the study aims. In light of the paucity of information in the area of weight loss maintenance, it was believed that a grounded theory approach that relies on theory emergence was paramount. In addition, the potential for data forcing and unnecessary and complex processes required to implement axial coding processes (Artinian, 2009a; Kendall, 1999; Melia, 1996, Walker & Myrick, 2006) led to the elimination of the Straussian approach. The constructivist approach, which relies heavily on the researcher as co-creator of information with participant, was also eliminated as it did not meet the overall study aims. Thus the classical, sometimes referred to as the Glaserian, approach was utilized.

Method

Literature Review and Theoretical Sensitivity

Theoretical sensitivity is a term used to describe personal qualities and attributes of the researcher. It is the ability to have insight and ascribe meaning to data, as well as the capacity to recognize the most salient concepts and how they are inter-related, with the ultimate purpose of generating theory. There are many sources of theoretical sensitivity including review of research literature, professional experience, personal experience, and personal development through other sources (Glaser, 1978). Although Glaser (1978) recognizes the advantage a researcher has by being “steeped” in the literature, he also identifies that too much knowledge can negatively impact a study through data forcing.

According to classical grounded theory methods, literature review strategies vary at different stages of a study. In the planning stage, literature is reviewed in an attempt to identify gaps in knowledge. Glaser (1998) describes several reasons to limit pre-study literature review. First, not having an extensive knowledge of the area of study allows the researcher to remain open and unbiased, more able to allow emergence of concepts and categories. Extensive knowledge may predispose the researcher to look for concepts already found in the literature, "forcing the data" rather than allowing it to emerge. Also, since the main concern and resolution of the participants is unknown, it is difficult to identify the "right" literature to review, which could result in time wasted and repeat work (Glaser & Strauss, 1967). In developing this study, an initial review of the literature was conducted and focused on behavior change theory, especially behavior change maintenance. The purpose of this review was to identify gaps in theory related to behavior change maintenance. Nursing contribution to behavior change theory was also examined. In addition, information was reviewed regarding prevalence of obesity, chronic disease trends, and relationship between obesity and chronic illness.

During early data collection and coding using the classical grounded theory methodology, the primary focus of the researcher was to accurately apply the research methodology and, using constant comparison, take raw descriptive data and begin to identify conceptual themes (Giske & Artinian, 2009a). During this stage, because the researcher was a novice to this methodology, resources on grounded theory were reviewed to ensure fidelity to the methodology.

As the core categories and subcategories began to emerge during the coding phase, it was recommended that the researcher undertake a literature review to fully

compare and contrast findings with the pre-existing literature and to weave the finding of the current study into the body of existing knowledge (Glaser, 1998).

Theoretical Sampling

The purpose of a grounded theory study is to understand the main concern of a group of individuals experiencing the same social situation and how they have resolved their main concern. "Theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them in order to develop his theory as it emerges" (Glaser, 1978, p. 36). In the initial phases of this study, the researcher identified potential participants who met study inclusion criteria of maintaining significant weight loss for one year or more.

Initial participants in this study included adult men and women (18 years of age and older) who had maintained a significant weight loss for one year or more. Significant weight loss was defined as weight loss of at least 10% of their initial body weight (Wing & Phelan, 2005). Individuals whose weight loss was secondary to bariatric surgery were excluded because their weight loss would have been undertaken and maintained through markedly different processes. Individuals whose weight loss was unintended or secondary to serious illness were also excluded. Residents of long-term care settings were excluded due to health and institutional constraints potentially affecting their ability to initiate or maintain weight loss. Individuals unable to speak English were also excluded.

Originally, it was thought that the best way to identify potential participants was from a pool of patients cared for at a large upper Midwest primary care practice (140,000

impaneled patients), which is part of an academic medical center. Because this center regularly conducts research, it instituted a process whereby patients were asked about their willingness to have their electronic medical record reviewed for research purposes. This consent was obtained through a form (see Appendix A) mailed to patients annually. Its return was noted in the electronic medical record. The researcher planned to identify potential participants through primary care providers contacted by letter explaining the research study and asking for their assistance in identifying potential participants (see Appendix B). Primary care providers were asked to send a letter to individuals meeting study inclusion criteria and for whom a Medical Research Authorization was on file explaining the study and asking them to contact the researcher through telephone or email if willing to participate (see Appendix C). In addition, it was planned that participants would also be sought by asking health and fitness coaches in the medical center's wellness facility and leaders of community weight loss programs (e.g., Weight Watchers) to give flyers (see Appendix D) to potential participants, asking them to contact the researcher by phone or email if interested in participating in the study. If an adequate participant pool was not identified, additional sampling could have been undertaken following a similar format as noted above but with primary care practices of the Mayo Clinic Health System. The Mayo Clinic Health System consists of community-based practices in 70 locations in Minnesota, Iowa, and Wisconsin. Initial contact would have occurred in the southeast region of Minnesota, the region most proximal to Rochester. Facilities in this region are within a radius of approximately 60 miles to Rochester. Based on the proximity from Rochester, face-to-face interviews would still have been possible. The researcher contacted several primary care providers, which resulted in

referrals; however, referrals from the health and wellness center and participant referral proved to be the most reliable way to identify potential participants.

At the beginning of a study using the classical grounded theory approach, the researcher does not know the identity of the final participant groups. Although initial participants are from a homogeneous group, continued data collection cannot be planned in advance but is guided by emerging gaps in the research and questions suggested by previous answers, called theoretical sampling (Glaser & Strauss, 1967). As the theory begins to emerge, additional sampling will be linked with constant comparative analysis to "verify, clarify, and compare against the ongoing analysis" (Hunter, Murphy, Grealish, Casey, & Keady, 2011, p. 7). The constant comparative analysis technique allows the researcher to simultaneously collect and analyze data, always looking for patterns and relationships in the coded data and moving data into higher levels of abstraction from open to selective coding. Selective coding begins to identify and focus on core categories--those which most seem to account for the main concerns of the participants. From these theoretical connections, the researcher selects the core categories--those that have the most explanative power. Theoretical sampling of core categories and associated subcategories continues until the researcher is confidant of saturation of both core categories and subcategories. In this study, data collection and additional participant invitation continued using the method described above until the core theoretical categories were saturated, a core category emerged, and integration occurred (Glaser & Strauss, 1967).

To estimate the number of participants for this study, 22 grounded theory studies were reviewed for total number of participants (Alsén, Brink, & Persson, 2008; Artinian,

1995, 2009b; Artinian & Milligan-Hecox, 2009; Cone & Artinian, 2009; Etowa, Sethi, & Thompson-Isherwood, 2009; Friesen & Artinian, 2009; Giske & Artinian, 2009b, 2009c; Hallas, Banner, & Wray, 2008; Hjälmhult, 2009; Huang, Yates, & Prior, 2009; Lambert, Loiselle, & Macdonald, 2009; Osuri & Artinian, 2009; Pash & Artinian, 2009; Radsma & Bottorff, 2009; Satinovic, 2009; Thompson & Artinian, 2009; Turris, 2009; Vuckovich & Artinian, 2009; West & Artinian, 2009; Winter & Artinian, 2009). Studies reviewed demonstrated a range of 7 to 32 participants with a mean of 16.1. Based on this review, it was estimated that 15-20 participants would be needed for data collection. The same studies were reviewed to compare the percentage of individuals invited to participate with those who actually participated. This data element was reported in only one study with a 50% rate of participation (Hallas et al., 2008). In this study, 16 participants were contacted and 12 participants were interviewed. The rate of participation was 75%. Three individuals declined prior to interview and one did not meet study criteria.

Procedure

Grounded theory data collection typically occurs in a "field" setting; it relies on formal and informal interviews and participant observations (Beck, 2004). Data collection often begins with unstructured formal interviews consisting of open-ended questions in which participants are allowed to control the direction of the conversation (Beck, 2004). As the study progresses, interview questions become targeted more directly toward the emerging theory (Glaser & Strauss, 1967). For this study, interviews were conducted at a time and place agreed upon by researcher and participant. Although telephone interviews were considered, all interviews were conducted in person.

Consent for Participation in the Study

Informed consent was obtained prior to beginning the interview by reading the consent form aloud and providing an opportunity for the participant to ask any questions before signing the form (see Appendix E). The participant was assured that all information provided during the interview would be kept confidential. Originally, it was planned that the primary investigator, dissertation advisor, nursing faculty from the dissertation committee, and one grounded theory methodology expert would have access to the interviews; however, three transcribed interviews were forwarded to the research advisor but other committee members were not provided access. All data are stored in password protected files or in a locked cabinet in the primary investigator's office and will be destroyed upon dissemination of the work. In addition, quotes from their interviews were used to illustrate and support the resultant theory; however, most information they shared was used to identify themes, concepts, and their inter-relationships. They were assured that their participation was completely voluntary and that they could withdraw from the study at any time. They were also informed they might be requested to participate in a second interview to further explore emerging theory concepts; however, no second interviews were conducted.

Data Collection

If the participant decided to participate in the study after reviewing the consent form and having had the opportunity to ask any questions, the interview began. At the beginning of the interview, general demographic information was obtained through a short survey form (see Appendix F). Collection of demographic information is not considered critical to grounded theory studies, primarily because it is thought that

pertinent information will be revealed during interviews and because this information may influence the researcher (Cone & Artinian, 2009). However, for this study, demographic information regarding age, gender, educational level, employment status, and information regarding with whom (if anyone) the participant lives was requested. This information was intended to assist with theoretical sampling if concepts emerged that appeared to be related to demographic information. As noted by Glaser (1978), demographic information must "earn its way into the theory" (p. 60). These demographic elements were chosen as it was believed they might have relevance to factors related to weight loss maintenance (Keller & Allan, 2001; Wierenga & Oldham, 2002).

For the interview, an unstructured interview guide (see Appendix G) with general questions intended to establish rapport and open the discussion was used initially to stimulate discussion and encourage participants to freely talk about their social situation with little interruption from the primary investigator (Artinian, 2009a). As the interview progressed, questions were asked to guide participants in describing their experience with weight loss. The questions were not always the same from participant to participant but were directed by the exchange between researcher and participant. Although participant stories were captured through the interview process, the primary purpose of grounded theory research was not to create rich descriptions or stories. Examples were used in the eventual theory development, primarily for illustrative purposes (Glaser, 1978).

Classical grounded theory does not recommend the use of an audio recorder. However, several authors noted that having recorded interviews was very helpful, especially for a novice researcher; it was employed in this study (Artinian, 2009a; Beck, 2004). Use of an audio recorder helped to capture the concise examples and quotes that

were used later to illustrate theory concepts. Since a digital recorder was used, all interview recordings are stored in a secured password protected file on a drive accessible to the researcher and transcriptionist. Paper interview transcriptions are stored in a secure, locked filing cabinet in the primary investigator's office and will be destroyed when data collection and analysis have been completed.

As a study progresses, follow-up interviews with initial participants may be necessary or new participants may need to be identified through theoretical sampling for continued data collection. If additional interviews are necessary from initial participants, they would be approached for the interviews by the researcher in the participant's preferred method, which was noted on the researcher's contact list. Interview questions would be directed by the emerging theory and questions would become more honed as categories emerged. In this study, follow-up interviews were not deemed necessary. In addition, this study was intended to have adult male and female participants. When it was noted that most study participants were female, theoretical sampling occurred to identify additional male participants. Data collection continued until thematic categories were saturated (Glaser, 1978).

Memoing and Field Notes

Memos are an essential feature of classical grounded theory method. They consist of an informal description of ideas about codes and their relationships as they occur to the researcher (Glaser, 1998). A memo can be a sentence, a paragraph, or several pages. Memos do not describe people but are conceptual ideas about the substantive codes or the emerging theory. Memos are part of a constant process that begins when first coding data and continues through every aspect of the study, even

writing about the resultant theory (Glaser, 1978). According to Glaser (1978), "the basic goals of memoing are to theoretically develop ideas (codes) with complete freedom into a memo-fund which is highly sortable" (p. 83). Memos help the researcher move descriptive data to conceptual ideas. They stimulate hypotheses and help to clarify categories and properties. "Memo-writing continually captures the 'frontier of the analysts' thinking' as he goes through either his data, codes, sorts or writes" (Glaser, 1978, p. 83).

Memo writing occurred throughout the study in the form of unstructured notes kept in a binder by the primary investigator. Use of a binder allowed for easy sorting, a key component of theory development. A binder also kept memos together and secure. No specific information about the participants was written in the memos and no one had access to the notes except the primary investigator. The binder was kept in a locked cabinet in the primary investigator's office and will be destroyed after dissemination of study findings.

Data Analysis and Coding

In grounded theory research, data analysis begins with the collection and coding of data. Glaser (1978) noted that computer programs cannot replace the analytical processes of the researcher. However, Cone and Artinian (2009) discussed the enhanced ability of computer programs to manage large amounts of data generated by a qualitative study. In this study, data analysis was undertaken using NVivo qualitative research software to assist with data management and retrieval. Classical grounded theory considers everything as data from the content of interviews to the impressions of the researcher, field notes, observations, and informal conversations. Formal and informal

interviews are captured by audiotape, transcribed, and coded. Field notes, observations, and informal conversations are recorded immediately from the researcher's memory, transcribed, and coded by the researcher similar to other data. Impressions are recorded as memos. Coding is the generation of categories and their properties by constant comparison of incidents and categories. It is of primary importance in the generation of theory and consists of open codes and theoretical codes (Glaser, 1978). This study followed classical grounded theory coding guidelines and used NVivo to manage and organize data.

The first level of abstraction is open or substantive coding. Open coding has no preconceived codes or categories and allows the researcher to let the data speak for itself and the study to emerge. Glaser (1978) identified three questions that need to be considered at all times while coding:

- What is this data a study of?
- What categories does this incident indicate?
- What is actually happening in the data? (p. 57)

For this study, codes were identified from both the specific words of the participants as well as inferences of the researcher by examining both the participant interview transcripts and field notes and memos, keeping the three questions outlined by Glaser (1978) in mind. Data were coded line by line to identify the main concern and its resolution. This process fractured the data into pieces that were independently analyzed to form the basis of higher conceptual levels. As data collection continued, ongoing coding and constant comparison techniques were done to continually modify and restructure substantive codes (Glaser, 1978).

During the course of substantive coding as outlined above, core categories emerged. At this point, open coding stopped and selective coding that focused on the core category and its related categories began. Core categories are those that are central and reoccur frequently in the data. Core categories relate to many other categories and have "clear and grabbing implications for formal theory" (Glaser, 1978, p. 95). A core category has relevance, explanatory power, and is highly variable in degree, dimension, and type. As they emerged, these core categories guided further data collection and theoretical sampling.

Sampling and data collection continued until the core categories were saturated and no additional information was gathered from participant interviews. Theoretical coding then began. While not required for grounded theory studies, theoretical codes help the researcher maintain a conceptual level in writing about the new connections and ideas identified. As noted by Glaser (2005), "A grounded theory will appear more relevant and more enhanced when integrated and modeled by an emergent theoretical code" (p. 14). Theoretical codes begin to weave together the fractured data and codes to identify one or more core categories that explain how participants resolve their main concern (Artinian, 2009a). Glaser (1978) identified many families of theoretical codes as abstract models of integration based on best fit. These models described conceptual models to be considered for how the substantive codes related to each other in a set of hypotheses that accounted for resolving the main concern (Glaser, 1978, 1998).

Finally, the overall integration of data into theory through data sorting was done by sorting conceptual memos. This process produced a generalized, integrated model by forcing connections between categories and properties, generating a dense complex

theory (Glaser, 1992). During this sorting stage, it is possible for new ideas to emerge, which in turn are recorded in new memos and continue to inform the theory generation. Glaser (1998) described sorting as the "epitome of the theory generation process" (p. 187). Conceptual mapping as a tool to organize data into schema and visually demonstrate how variables are interrelated will be used during this final phase (Artinian & West, 2009). The researcher made extensive use of color-coded post-it notes to sort and organize emerging concepts.

Instrumentation

This study used formal and informal unstructured participant interviews and researcher/participant observation field notes, informal communications, and memos for data collection. After a brief introduction and obtaining informed consent, initial interviews consisted of collecting demographic data **(**see Appendix F) followed by unstructured open-ended questions designed to stimulate discussion regarding the individual's weight loss maintenance experience (see Appendix G).

Classical grounded theory methodology does not recommend collection of demographic data. Since data are thought to be "abstract of time, place, and people" (Cone & Artinian, 2009, p. 39), it is thought that collection of demographic data serves no purpose and may distract from theory development. Glaser (1978), however, opened the door for collection of demographic information when he noted that "the analyst should not assume the analytic relevance of any face sheet data such as age, sex, social class, race, skin color, etc. until it emerges as relevant" (p. 60). In this study, it was believed that demographic information could contribute to theoretical sampling. For instance, the researcher considered the possibility that gender or age related, demographic

information might be helpful in planning theoretical sampling. Glaser also recognized the potential for future secondary data analysis when demographic data might be useful.

Although the researcher entered into the participant interviews with an open mind, classical grounded theory methodology allows a set of general questions to stimulate discussion (Glaser, 1978). General questions used for unstructured interviews in this study are found in Appendix G. The purpose of grounded theory research is not to collect responses to a pre-determined set of questions but to find out the participant's main concern and how it has been resolved (Artinian, 2009a). Additional participant interviews were considered but not employed as the theory emerged. As noted above, theoretical sampling is the process whereby data are collected, coded, analyzed, and used by the researcher to help determine what additional data are needed to develop the emerging theory. Thus, continued data collection is controlled by the emerging theory (Glaser, 1978). Since this study sought to examine weight loss maintenance from the perspectives of adult men and women, additional male participants were sought to continue development of care concepts.

In addition to interviews, it is recommended that the researcher record field notes regarding any other aspects of the participant exchanges that may be pertinent to the study. Moreover, participants may share information with the researcher after the audio recorder is off. These data had great significance and were written and captured for the study.

Quality

The ultimate purpose of grounded theory research is to create theory that is intimately connected to and induced from data. This purpose guides the way in which the

research is both planned and conducted. The establishment and documentation of the processes by which validity is established is especially important in grounded theory research because of the divergent grounded theory methodological approaches (Chiovitti & Piran, 2003).

Acknowledging the importance of both process and product in grounded theory research, Cooney (2011) suggested that evaluation of rigor in grounded theory research be organized around the constructs of methodological and interpretive rigor. Methodological rigor is concerned with the researcher's practice in the conduct of the research and adherence to grounded theory methods. Interpretive rigor emphasizes the analytic process, how conclusions are drawn, and the extent to which they are grounded in data. Glaser's (1978, 1998) initial criteria of fit, workability, relevance, and modifiability were considered within Cooney's constructs.

Methodological Rigor

Fit and relevance seem to be most closely associated with methodological rigor. As noted by Glaser and Strauss (1967), "the adequacy of a theory cannot be divorced from the process by which it was generated. Thus one canon for judging usefulness is how it was generated" (p. 5). The concept of "fit" refers to the connection between theory and data and the importance of emergence of theoretical concepts and categories. The connections among theory, concepts, and categories must be created by the researcher's adherence to continuous comparative analysis methods and appropriate theoretical sampling throughout the entire research process. Lomberg and Kirkevold (2003) argued that "fit" forms the basis for all other evaluative criteria of grounded theory studies.

All interviews were conducted by the researcher using an open, unstructured approach. Interviews commenced with a first question designed to promote open dialogue: "Would you please share with me our story of weight loss from the time when you decided to lose weight until the present time?" Although the focus of this study was weight loss maintenance, participants described perceptions and events that occurred during the course of their lives that influenced them and later impacted their decision-making process and their weight loss and maintenance journey. The ability of participants to direct discussions demonstrated consistency with classical grounded theory methodology. Memos were created to serve the dual purpose of data analysis and guarded against potential researcher bias (Elliott & Lazenbatt, 2005). Memoing serves to sensitize the researcher to personal biases and allows the researcher to reconsider the fit of the memos to the emerging theory, potentially rejecting those that do not fit with emerging concepts. Thus, memos serve the dual purpose of data analysis and guarding against potential researcher bias (Elliott & Lazenbatt, 2005). Constant comparison was used during the process of interviews and throughout the analysis period. Findings of the study were illustrated with participant quotes. Actual participant words were used in naming of a critical juncture—Committing, and the maintenance stage--Staying the Course. The researcher's personal views were bracketed in the preparation phase and addressed in memos throughout the study.

The concept of relevance meant the research had importance because it addressed the main concern of the participants involved (Glaser, 1998). This process created a pragmatic theory that should be relevant to action in the area it is meant to explain. Theory well-grounded in data should be relevant.

The researcher's view of the emerging main concern changed over time. Initially, given the research focus on weight loss maintenance, Staying the Course was considered as the emergent core category. Upon further reflection of the actual interviews and review of theoretical coding families and processes described by Glaser (1978), the researcher concluded that participants were describing a basic social process of self-transformation with multiple stages rather than a core category primarily associated with maintenance.

Methodological rigor also included ensuring that concepts and categories were emerging from data and not inadvertently being forced by the researcher. Regular use of memos was the technique used to remain true to the data and minimize researcher bias. Glaser (1998) noted that "during constant comparing, the researcher may experience many non-grounded ideas occurring from personal biases, personal experiences of an idiosyncratic nature, logical conjectures or deductions, received preconceptions, etc." (p. 182). At one point, the researcher was considering exploration of concepts of interest not emphasized by the participants but related to the weight loss decision-making. Upon further reflection, a plan for theoretical sampling was abandoned as it seemed to be a type of data forcing. This was consistent with advice given by Cone and Artinian (2009) who noted that "sampling to complete the picture places the researcher at risk of forcing data into preconceived themes or ideas" (pp. 44-45).

Methodological rigor might also be challenged by discussing the emerging theory with others. Glaser (1998) warned of this practice, describing it as "incident tripping" (p. 96). This practice is discouraged as others will identify their experiences or knowledge in the field and the researcher is tempted to stray from actual data collected and theory

emergence by forcing data in a different direction, thus impacting study validity. Cone and Artinian (2009) suggested confining discussions only with research colleagues familiar with grounded theory. Consistent with grounded theory tenets, early discussion of the emergent theory was not undertaken with colleagues. Later, discussions occurred with two experienced nurse researchers who provided insight into the data analysis and emerging theory.

The researcher is a novice. Lack of personal experience in grounded theory research was partly ameliorated by attendance at a Grounded Theory Institute led by Dr. Barney Glaser, completion of academic coursework, and personal review of grounded theory books and articles. The researcher has a fundamental appreciation of the complexities of grounded theory methodology; however, methodological rigor of the study could have been impacted by the researcher's lack of experience.

Interpretive Rigor

Glaser's (1978, 1998) concepts of *workability* and *modifiability* are more closely aligned with interpretive rigor. Workability is the theory's ability to explain the phenomenon of interest and to predict and interpret actions connected to the phenomenon (Backman & Kyngäs, 1999). A grounded theory that "works" depicts the way in which participants solve their main concern. The researcher took care during the data collection, analysis, and formulation of findings to insure that the main concern emerged from the participants; however, a novice theorist might be challenged in sensitivity to emerging concepts, analysis, and abstraction.

The concept of modifiability refers to the need for ongoing modification of the theory to match emerging data. As new data were revealed, the theory was modified.

True to its epistemological roots, truth is never fully established (Lomberg & Kirkevold, 2003). Glaser (1978) admonished that "nothing is sacred if the analyst is dedicated to giving priority to the data" (p. 5). Theory is always new, always modifiable. It is the researcher's belief that Transforming Self is modifiable; however, modifiability is yet to be proven. Time will determine if the theory of Transforming Self is of interest to others and if it is workable.

Rigor in grounded theory research has also been conceptualized using Beck's (1993) qualitative standards of credibility, auditability, and fittingness. How grounded theory rigor was established using these standards, as well as processes that were incorporated in this study, are discussed herein.

Credibility. Credibility in grounded theory research refers to an end product that is "such a vivid and faithful description that people who had that experience would immediately recognize it as their own" (Cooney, 2011, p. 19). Practices to enhance credibility are targeted toward ensuring that the resultant theory accurately reflects the experiences of the participants (Cooney, 2011). Credibility can be demonstrated through examples of how the study evolves in relation to emerging categories. In other words, is the information being obtained from the participants who are directly informing the study? This study used techniques suggested by Chiovitti and Piran (2003) to enhance credibility. This included modifying participant questions to reflect emerging categories and, whenever possible, using participants' actual words in the codes and emerging theory. In this study, actual words or paraphrases were used during open coding. As categories began to emerge, there was an attempt to carry through some of the words into the final category. Actual words were used to name the critical decision-making juncture

and the final maintenance stage. Consistent with grounded theory tenets, copies of the actual research were not shared with participants; however, as the interviews proceeded, the researcher modified questions somewhat to test emerging concepts. The researcher also conferred with two experienced nurse researchers to provide further validation of findings.

Chiovitti and Piran (2003) also suggested that credibility is enhanced when the researcher's views and personal insights are articulated. Consistent with grounded theory methodology, they suggest using post-interview memos as a way to document the researcher's reactions to the interviews, helping to identify how personal views may impact interpretations of interviews. This practice was used. Post-interview memos and researcher thoughts and insights were recorded in a notebook for ongoing review.

Credibility is also enhanced by how the literature is reviewed (Chiovitti & Piran, 2003). The purpose of early literature review is only to provide a rationale for conducting the study because of a gap in knowledge. Subsequent literature review is conducted after the theory is emerging and only around emergent core categories. In this study, an early literature review focused on behavior change theory. The gap identified was theory related to behavior change maintenance. The researcher avoided literature specifically related to weight loss maintenance. As the core category began to emerge, an additional literature review was conducted to assess findings in light of current weight loss and maintenance literature.

Auditability. According to Cooney (2011), the concept of auditability refers to the completeness and accuracy of all methodological decisions made in the study. This includes decisions such as sources of data, analytical procedures, and process

implementation. These steps make it possible for another researcher to repeat the study (Beck, 1993). In the present study, memos were dated and titled. Audio recordings were captured using Sony® software, which automatically recorded dates and times of data collection. Interview transcripts were uploaded into NVivo qualitative research software as soon after transcription as possible. The researcher experienced some delay in transcription requiring reliance on audio files for early constant comparison analysis. Coding processes were undertaken utilizing NVivo software; thus, many of the actual dates/times were captured in this way. These steps would make it possible for another researcher to repeat the study (Beck, 1993).

Fittingness. Beck's (1993) third concept is that of fittingness. Fittingness reflects the probability that findings from this study have meaning in similar situations. Fittingness is similar to the concept of transferability (Chiovitti & Piran, 2003). This concept was demonstrated in the study through a clear description of the context in which the participants were drawn and is further enhanced in Chapter IV by a description of actual study demographics. In this study, elements of selective and theoretical sampling were used. In selective sampling, participant characteristics are chosen in advance. This was felt to be necessary in order to develop substantive theory in the area of interest. Selective sampling was accomplished through referrals from the medical center's health and wellness facility, self-referral after seeing a flyer or poster, or through a snowball-like process in which some participants recruited others. During the course of the study, theoretical sampling was undertaken to increase representation of male participants. Actual demographic characteristics of participants were similar to those of members of

the National Weight Control Registry (Wing & Phelan, 2005) and those of studies reviewed.

Chiovitti and Piran (2003) also connected the transferability of the research findings with how well the emergent theory related to and was woven into existing theoretical constructs in the literature. A literature search was conducted to compare study findings with relevant weight loss and behavior change literature.

Evaluation in Relation to Middle Range Theory

In addition to research validity, Smith (2003) identified a framework for evaluation of middle range theories. This framework was intended for the discipline of nursing and might provide an additional evaluative framework for this study. She identified three evaluative categories. The first was the substantive foundation of the theory. Smith indicated that a middle range theory in nursing should contribute to knowledge in the discipline of nursing and should have clearly identified assumptions congruent with a focus of the discipline. In addition, the theory should provide a substantive description of a phenomenon at the middle range of abstraction and have origins rooted in practice and research experience. The researcher believed this theory contributed to knowledge in the discipline of nursing and further explores implications for nursing practice in Chapter V. Transforming Self fits Smith's description of requirements of middle range theory as being "a basic, usable structure of ideas, less abstract than grand theory and more abstract than empirical generalizations or microrange theory" (p. 8).

The next category identified by Smith (2003) was structural integrity. This category examined the organizing framework of the study, sought clear definitions of

concepts, and observed whether the theory was parsimonious with inclusion of only the concepts needed to explain the phenomenon and that the concepts and relationships were integrated and clearly depicted in a model.

Theory development has undergone several revisions with an attempt to exclude concepts that appeared to be extraneous or less vital. In retrospect, it is possible that construct exemplars could be further pared in order to make the theory description more parsimonious.

The final category was functional adequacy (Smith, 2003). This category described application of the theory in research and practice, the presence of published examples, and evolved scholarly inquiry related to theory use. Glaser and Strauss (1967) stressed the importance of the creative or artistic elements of theory development. These included vividness, congruence, and sensitivity (Cooney, 2011). Glaser (1978) described this as "grab"-- the ability to resonate and spark interest among readers. The researcher attempted to draw the reader into the constructs of Transforming Self through a visual image of a journey or pathway--an abstraction for a lifelong journey participants were undertaking to maintain lifestyle changes. Several actually described their experiences as a journey with no destination. Names of constructs were chosen both because they seemed to reflect the essence of the concept and also to connect to experiences one might encounter on an actual journey. The researcher attempted to incorporate elements of functional adequacy; however, scholarly utility will be determined by the broader external audience of health behavior change researchers, nurses, and other practitioners seeking to apply theoretical tenets.

Generally, criteria for credibility, auditability, and fittingness were met in the present study. One potential weakness was the inexperience of the researcher. This lack of experience might have affected credibility and theoretical sensitivity. Another concern was sampling methodology. Initially, it was planned to receive referrals from primary care practices; however, in reality, participants were drawn from referrals from health and wellness personnel at the Mayo Clinic Dan Abraham Healthy Living Center through self-referral and participant networking. Midway through the data collection, theoretical sampling was undertaken to recruit additional male participants, again through the Healthy Living Center. This might have presented a participant pool not representative of the community, thereby limiting transferability. However, after reviewing demographic characteristics of the National Weight Control Registry and other similar research studies, it appeared that overall demographics of this group were similar to those in other studies.

It is believed that study concepts have broad generalizability with areas of both congruence and dissimilarity with existing behavior change theory and weight loss/weight loss maintenance research. Although there were some potential limitations to the study, the researcher followed a rigorous method, was true to the data and the participants, and discovered an important, interesting basic social process.

A challenge faced by the researcher was to determine at what point saturation was reached. Saturation is an important principle in qualitative research. Saturation means "bringing new participants continually into the study until the data set is complete, as indicated by data replication or redundance" (Bowen, 2008, p. 140). Glaser (1978) noted that saturation assures that no important data have been ignored. In classical grounded

theory, the processes of constant comparative analysis and theoretical sampling are particularly helpful in saturating theoretical categories. On the other hand, selective coding, wherein you begin to set aside data that do not support your main category, must be done carefully so important data are not set aside and ignored. Initially, the category of Staying the Course was believed to be the main concern of the participants. Upon further reflection and analysis, it was determined that the main concern actually related to the basic social process of Transforming Self, representing events leading up to a critical decision juncture and stages reflective of significant lifestyle changes and the realities of lifetime maintenance. When considering the "influencing forces" of headwinds and tailwinds, originally the concept of prevailing winds was also considered with respect to the social forces exerted on participants by society. This was abandoned as a separate construct as it was believed to be confusing and was subsumed into the construct of headwinds. Thus, constant comparative analysis allowed checking for and setting aside exceptions.

This study relied primarily on selective sampling to identify participants with theoretical sampling used to avoid gender bias. This was done to ease compliance with requirements of the Institutional Review Boards and also to ensure participants met study criteria. It is possible that additional descriptors or even additional categories might have emerged if additional theoretical sampling would have occurred.

Interestingly, consistent stories emerged across demographic groups. One exception was that younger participants had fewer comments about the impact of exercise on stiffness or flexibility. In summary, saturation appeared to be reached as no new

information was being obtained regarding the processes underlying lifestyle transformation.

Ethical Considerations

This study was approved by the Institutional Review Board of the University of Northern Colorado (see Appendix H), the Mayo Clinic Nursing Research and Evaluation Committee (see Appendix I), and the Institutional Review Board of the Mayo Clinic (see Appendix J) in Rochester, Minnesota before any participant was approached to join the study. Originally, it was planned that Mayo Clinic primary care providers would be sent a letter explaining the research study and asking them to identify potential participants (see Appendix B). For individuals identified, the electronic medical record was reviewed to determine if a valid authorization for the Mayo Clinic to use Medical Information for Medical Research was present (see Appendix A). If the authorization was on file, the electronic medical record was reviewed for inclusion/exclusion criteria. For those meeting criteria for study inclusion, primary care providers were asked to send a letter (see Appendix C) to each individual explaining the study and asking them to contact the researcher through telephone or email if willing to participate. In this study, contacts with the institution's health and wellness facility and posters proved to be the primary mechanism in which participants were identified. As the study proceeded, participants also contacted others who also came forward to volunteer. The original consent form was modified to follow requirements of the Mayo Clinic Institutional Review Board (see Appendix E). This requirement was accepted by the University of Northern Colorado Institutional Review Board. Prior to conducting interviews, consent forms were read and signed by the participants after they were given ample opportunity

to ask questions. The consent forms will be kept in a locked cabinet in the primary investigator's office for three years after the study completion and then will be destroyed. The study itself identified additional participants needed through theoretical sampling. A similar process that ensured protection of human subjects occurred as participants were identified. Data confidentiality was maintained. All data including consent forms, interview transcripts, demographic information, and investigator memos are kept in a locked cabinet in the primary investigator's office and will be destroyed upon dissemination of study results.

It was anticipated that this research would have minimal risk for participants. The research output was abstract of time, place, and people and used only select quotes to support theoretical categories and relationships. The purpose of the data collection was not description but conceptualization; therefore, the risk of connecting individuals to study outcomes was minimal. Study participants might have experienced anxiety or feelings of discomfort as they described their experiences with weight loss maintenance. The informed consent process stressed his/her ability to withdraw from the study at any time.

Conclusion

Chapter III provided a general overview of the research design, the rationale for choice of grounded theory methodology, and a specific description about fidelity to grounded theory methods used throughout the study. Also included was a description of instances in which classical grounded theory tenets were not followed and rationale for this divergence was noted. Changes made to the sampling methodology were outlined as well as ethical considerations in the protection of human subjects. In addition, an in-

depth examination of how grounded theory quality standards were built in to the research process and product was described. In general, the researcher concluded that grounded theory quality standards were met. Study findings, fit with current literature, and future implications are considered in Chapters IV and V.

CHAPTER IV

FINDINGS

Introduction

The purpose of this study was to advance knowledge in the area of health behavior change maintenance, specifically weight loss maintenance theory. While there are many well-established theoretical models that addressed behavior change, few specifically examined the construct of maintenance. Given the lack of well-established maintenance models and the pressing societal need to address the obesity epidemic, this study sought to (a) advance knowledge in the area of health behavior change, specifically weight loss maintenance, utilizing perspectives from successful individuals; and (b) develop a substantive theory of successful weight loss maintenance in adults. Classical grounded theory methodology was applied to allow for emergence of theoretical concepts.

In-depth interviews were conducted with 12 adult men and women. Each self-reported a minimum weight loss of 10% of their body weight and one year or more of stable maintenance. Although learning about factors related to weight loss maintenance was the original study intent, it soon became apparent that participants wished to discuss their perceptions of events before and during the weight loss, as well as maintenance. Analysis of the interviews revealed a series of stages, which together formed a basic social process through which participants were able to resolve their main concern. This

concern was a personal goal to transform their lives forever. This process was named *Transforming Self.* Study participants described their personal experiences, which reflected a progressive journey, often over years or decades, beginning with increasing discontent with their former weight and lifestyle, making a commitment to change, implementation of significant lifestyle changes, undergoing transition from weight loss to maintenance, and culminating in an endless stage of continual adaptation to maintain weight loss (see Figure 1).

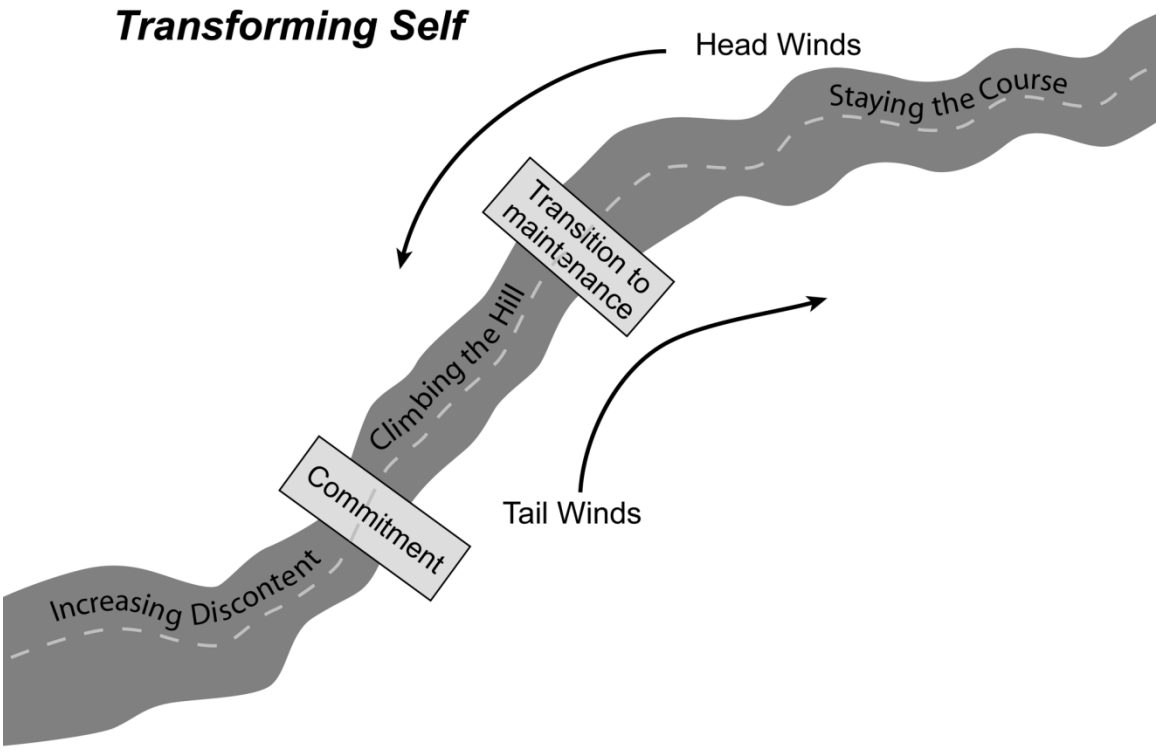

Figure 1. Transforming self.

Participant Recruitment

Planned sampling techniques allowed for two primary pathways to identify potential participants. The first was through direct contact with primary care providers, with an underlying premise that they could identify patients in their practice who would qualify for the study. The researcher then reviewed their electronic medical records; if study criteria were met, a letter was sent to patients on behalf of the primary care provider inviting participation. The second sampling technique was through use of posted flyers and direct contact with weight loss program leaders such as local health centers.

The researcher contacted three primary care providers who identified several patients. Records were reviewed; of five referred, only one qualified. At the same time, flyers were posted in several locations around the Medical Center. Leaders of the Medical Center's health and wellness center were contacted about the study. Posted flyers, in combination with referrals from the health and wellness center, resulted in the researcher's ability to quickly identify potential participants. After interviews began, a snowball-like phenomenon occurred with participants identifying others and even contacting other qualifying individuals--people they knew who had lost significant weight and maintained weight loss. As a result, the researcher was able to maintain a consistent flow of participants to the study without need for additional primary care practice recruitment. Of those who self-identified, only one did not meet study inclusion criteria of weight loss for one year or more.

Participant Demographics

Participant demographics are displayed in Table 1. Ages were distributed across three categories with the highest percentage in the 50-69 year category; 67% of the participants were women. During the course of data collection, the researcher noted a high percentage of female participants and worked with the health and wellness center leaders to theoretically sample additional male participants. Using this technique, three additional males were recruited; one did not meet study criteria. Most participants worked full-time (75%) and most lived with others (92%); 25% lived with a significant other and dependents. All had completed some college; 75% had a college degree.

Table 1

Demographic Data

Characteristic	*N*	Characteristic	*N*
Gender		Employment	
Male	4	Full-time	9
Female	8	Part-time	2
		Retired	1
Age		Living Arrangement	
18-29	2	Alone	1
30-49	4	Significant Other	8
50-69	6	Significant Other + Dependents	3
Educational Level			
Some College	3		
College Degree	9		

Participant demographics appear to be similar to those of related studies. Wing and Phelan (2005) noted demographic characteristics of members of the National Weight

Control Registry, a self-selected group of more than 4,000 successful weight loss maintainers. They described demographic characteristics of registry members as being 77% female, 82% college educated, and 64% married. Literature reviewed demonstrated a preponderance of female participants (Boutelle & Kirschenbaum, 1998; Colvin & Olson, 1983; Hindle & Carpenter, 2011) or female-only studies (Barnes & Kimbro, 2012; Berry, 2004; Bryrne, Cooper, & Fairburn, 2003; Kayman, Bruvold, & Stern, 1990; Popkess-Vawter, Wendel, Schmoll, & O'Connell, 1998).

Data Collection and Analysis

Data collection was performed through interviews using the previously developed interview guide to structure discussions. Interview locations were primarily office settings on the campus of the Medical Center: one occurred in a distant community wellness center close to the residence of the participant; one was in the participant's business office, and one was in a participant's home. Nine (75%) were employees of the Medical Center. A total of 12 interviews were conducted. Study aims were discussed with participants and informed consent obtained. Interviews were audio recorded and transcribed verbatim by research support staff. The researcher also recorded field notes to further describe the interview and capture comments made by participants after the recorder was turned off. In addition, a notebook of impressions and ideas (memos) was kept by the researcher.

Grounded theory analytical procedures were followed. Raw data were open coded with the assistance of NVivo qualitative analysis software. Glaser (1978) described this early phase of data coding as "running the data open" (p. 56). In essence, this process tried to examine data in many different ways, coding into multiple categories

as data were examined from different perspectives. Constant comparison was the method of data analysis. Memos and field notes were also considered during data analysis. Saturation of data was obtained with participant 12.

Categories and subcategories were identified and relationships between them analyzed. While the original intent of the study was to examine weight loss maintenance, it was noted that the participant's main concern was really a process of self-transformation, with weight loss at its core, but also included associated life changes. After considerable review searching for a core category, it became apparent that what was really emerging was a basic social process with emergent phases. Glaser (1978) differentiated a core category and a basic social process. He noted that a basic social process is a type of core category that is "processural" (p. 96), that is it must have two or more emergent stages. To be a basic social process, he further noted that emergent stages "differentiate and account for variations in the problematic pattern of behavior" (p. 97). Stages are characterized as having a time dimension that is fixed. Transition from one stage to another might be contingent upon one or more things taking place. Movement might require a critical juncture. In this study, the researcher identified three emergent stages and two critical junctures. In addition, two additional constructs were identified that impacted successful progression through the stages. Glaser (1978) also stated that the time dimension of a basic social process had a perceivable beginning and end. This study differed--the final stage did not have a perceivable end as was explicitly noted by participants.

Transforming Self

Transforming Self emerged as the basic social process core category. The word "transforming" was chosen as it is a strong verb describing dramatic or total change (Microsoft Encarta). The participants in the study were the transformers who initiated and maintained action that led to dramatic change in themselves. Self very much describes the focus of their action. They were motivated to make changes by themselves and for themselves.

Transforming Self describes a process by which participants became increasingly discontented with their current weight and other personal factors associated with obesity or being overweight. This increasing discontent led to a critical juncture, a personal commitment, in which the participant essentially "drew the line in the sand" or made a decision for lasting change. This change was not a time-limited attempt to lose weight but a commitment to lifestyle transformation. It was most often precipitated by a seemingly minor event but something of personal significance, e.g., being faced with buying a larger size clothing or seeing a photo of themselves. They might have faced the same event previously, but this time it triggered a change.

This personal event led to very significant changes in lifestyle including markedly different diets, much higher levels of activity, new personal habits, and, in some cases, changes in relationships with friends and families with the aim of creating a new reality. Diligence in following their own self-determined lifestyle changes began to yield results with weight loss, leading to increased energy and self-confidence. The concept of social support, both positive and negative, significantly influenced participants' change journey but were considered outside the stage discussion. These personal changes seemed to be

self-perpetuating and propelled participants to meet their weight loss goal despite obstacles. When the desired weight was achieved, the next critical juncture occurred.

At this point, the participants realized they no longer needed to lose weight and could readjust their eating and exercise habits to be energy neutral. At this juncture, weight loss goals were met and lifestyle adaptations were made. This juncture seemed to occur without much fanfare even though some participants had been in the lifestyle change phase for years. One lost 140 pounds over the course of four years. One noted difficulty moving away from lifestyle change into maintenance, continuing to lose weight even after having achieved her goal. All had integrated many significant lifestyle changes and voiced confidence in their ability to maintain the weight loss.

However, several also voiced concerns about known and unknown future adjustments and continued life changes that would pose ongoing challenges for maintenance: one was considering marriage and worried that childbearing would affect her ability to maintain weight loss, one was going back to school and worried about her ability to continue to exercise, and one worried he would not be able to keep up his high activity level much longer. Although concerned about those challenges, there was a sense of confidence that even though they did not know what tomorrow would bring, they knew how to be successful, and even if they had to adjust their definition of success, they had the knowledge and experience that would carry them through future challenges.

Stages of the Basic Social Process: Transforming Self

Stage 1: Increasing discontent. Although the present study did not set out to explore pre-weight loss history, it became apparent that these experiences were significant to the participants and emerged as part of their weight loss journey. This

discontent occurred over years, even decades. Participants voiced feelings of physical discomfort. One participant noted,

> Of course nobody wants to be, you know 5 foot 2 and 220 pounds. It's miserable. You can't shop anywhere, you can't do anything. I'm around all of my friends who are young and beautiful and healthy, and you know here I am and I-it's miserable, but I-I wasn't ready for so many years…

Others voiced concerns about self-image and self-worth. One noted, "There was, you know, issues deep within that I had to resolve, and finally feel like I was worth being what I needed to be". Another noted, "I wasn't like hugely overweight, but it was enough that it made me not feel good and not feel good about myself." One noted the embarrassment of learning to scuba dive: "I got certified scuba diving being obese and they had to strap so much weight on me to get me to go down, and um, it was kind of, um, embarrassing." One participant noted that being obese made her feel "invisible in public."

Childhood eating habits also impacted adult eating behavior. In describing her early experiences with food, one participant noted, "We grew up without a lot of money, and so the food that we could afford was the cheap processed, unhealthy food, and I was taught from a young age that you finish what's on your plate." Another stated, "I-I sort of grew up in a McDonald's drive-through really, you know, with hanging out of the car waiting for the Happy Meal…"

Approximately 50% of the participants voiced a long-standing history of being overweight with several episodes of dieting and weight re-gain. As noted by one participant,

> Well, I've kinda been on a roller coaster my whole life, um, I mean even in grade school I was. My family always has been on the stocky side. We all have

> hips, we're all curvy girls…I just have been watching my weight since I can remember.

Others noted,

> I never really dealt with the emotional issues…and I always thought that there was gonna be an end point to my goal, at that time. I never looked at it as a lifelong thing, as soon as I made that goal then I could eat, I figured I could just do whatever I wanted…
>
> I wanted to play basketball and so I decided to lose some weight and I think I lost 80 pounds like during my sophomore year…I kept that off for a year when I was going out for basketball…the first time I got married then I gained it all back plus some, and then lost again after that divorce, and then gained it back again…we're working on the third time that I gained more back and every time I would gain it would come back on more…

The remaining 50% experienced insidious weight gain over time as adults.

> I had a hysterectomy at age 40. I am now 52. So…over that 12 year time span, I just had increasing weight gain with all the changes with my metabolism and probably my-my eating habits too. I kept eating like I was 20 versus 50…every time I turned around it would be...another two pounds here, another four pounds there and finally it got to the stage where I-I hit 150 pounds and I thought wow, that is too much for my height.

Twenty percent of the participants voiced current or previous addiction to alcohol or tobacco. As noted by one, "I-I believe that my eating was more of a behavioral component… I'm also a recovering alcoholic and I think food was first and then alcohol and then food again."

Critical juncture: Committing. Glaser (1978) described a BSP as demonstrating a process that occurs over time with discernible stages and noted that these stages generally have "breaking points" (p. 97). Movement from one stage to another is contingent upon some type of occurrence, or lack of occurrence, that allows passage to the next stage. This study found that in most cases, there was no identifiable significant event, no medical or personal emergency that laid the way for change. Change

precipitators coalesced around comments of friends or acquaintances, non-emergent medical concerns, and personal choice.

Comments of friends or acquaintances were often non-specific. As noted by one participant, "I felt a little uncomfortable and friend of mine, colleague of mine, uh, was starting to work out in a gym and-and, uh, he asked me if I'd join him and-and, which I did and I enjoyed it. He didn't stick with it, but I did." In one case, a personal trainer used strong language in an initial meeting with one of the participants as described in this exchange:

> You know I met with Dr. So and So and he suggested to come in here and start some type of exercise regime and he said, "OK, well, you know, I have worked with fat people before…but if you're willing to commit, I will work with you, but you have to be willing to commit. I'm not going to put my time, you know, asi- aside and make time for a fat person, [if] they're not to do it. And I said, I'm here, that is my commitment and the other part is that I've never been called fat like this twice in one conversation, so I'm here.

Non-emergent medical concerns were another common theme identified by participants. One noted,

> My blood pressure had always been normal, even though, um, my top weight was 280 pounds…but my blood pressure had gone up to like 140 over 90 something and normally it had been around a hundred, you know over 60 or 70 and I got scared.

Another participant added:

> My mom's on blood pressure [meds] and somebody at work made a comment…well you know sometimes we just can't control our bodies. And that's, I think when I was on that chronic disease team where I learned that we could change. And it's like you know what? We can control our bodies. If you just do these things you can make a difference and it does work.

Prevention of future health issues was also on one participant's mind: "I didn't want to have a heart attack. My father has heart disease. My mother has atrial fib…" Another noted long-term health as his major goal. It was striking that only one

participant noted that a medical provider had even brought up the issue of weight in the absence of other issues such as blood pressure or cholesterol. He stated, "I went in and I think I weighed something like 210 or something and he said um, 'you know you shouldn't be getting any heavier than this'."

The most common factor identified was simply personal choice. This commitment often occurred in relation to clothing size: "so I decided to lose weight because I had to get new pants, and I refused to buy that size…" Another noted, "…something that kind of helped precipitate it was um, shopping for clothes when you're overweight is a pretty dreadful experience when you know, a 2X is even pretty tight, and most stores, at the time at least, didn't really even have 3X…" Another participant became upset about a photo: "…in August of 2008 I went on a camping trip with my family and we came back, and I was looking through some pictures and saw a picture of myself and realized, oh, my God, I am really heavy…" One noted confidence related to another personal change: "I had quit smoking, I decided now was another time to make another change, you know, and just go for it.." For others, it was a personal goal: "I decided on New Year's 2008 that I was going to make a resolution to finally be healthy." One described a particularly painful personal event that spurred the change:

> I had a hysterectomy back in 2007…I had a lot of abdominal umm...extra fat in my abdomen and um, …I had gone in to have my incision looked at because I had some dehiscence on my incision and they um, had to lift up part of my abdomen to actually look at it and I started to cry and the nurse said, "that's OK everybody has those" and right that moment I decided that I wasn't going to be an everybody. I was going to do something about that because it was in my control.

In all cases, the locus of control was internal; participants rarely mentioned others prompting them to change. Also of interest, influence from health care professionals was negligible. It was unclear how success occurred *this* time.

Stage 2: Climbing the hill. Participants uniformly did not view the changes they had made to lose weight as being "on a diet." They had committed to a lasting lifestyle change, not a short-term strategy. This phase lasted from a few months to four years. One noted, "I really committed to making a lifestyle change. It was going to be something for me. I knew if I was going to do it and make it last that I had to make it a lifestyle change…"

Most participants did not follow any particular weight loss program. Two used Weight Watchers, one followed the Atkins diet, and one followed a six week HCG (Human Chorionic Gonadotropin) program. The remaining eight participants did not follow a particular program. Several voiced frustrations with fad diet programs, "I-I get, um really frustrated seeing the next new pill, or the next new diet, or the next new whatever, and a-a billion dollar industry, when it's just as simple as, you know truly watching what you eat and exercising." In general, participants developed their own personal strategies around food intake, exercise and activity, and learning about health and wellness.

Food strategies generally centered on increased intake of fruits, vegetables, whole grains and lean meats, and avoidance of white sugars, high-fructose corn syrup, white flour, white bread, and processed or packaged foods of any kind. Several indicated that their actual food consumption increased even though calories might have decreased: "Do you see how much I eat? It's all healthy, it's not piled on with everything." One individual following a proprietary diet plan eliminated milk from her diet and substituted cheese. All participants had either begun to or continued eating breakfast. Cooking and grocery shopping processes changed; "We just totally changed the way we cooked." For

the most part, people either tried to remove temptations completely or used strategies to distance themselves from those temptations. One noted, "My husband has some stuff for his lunches, and I put it in a certain cupboard, and I just don't go in that cupboard." Many brought food to work: "I always have a bag of fruit which I bring to work...so that if I do get hungry I know I won't go and grab a candy bar." Increasing consumption of water and some other liquids, such as coffee, was another common strategy.

Another important concept was portion control. One commented, "For that entire year I was losing weight I was measuring everything down to my cereal and milk that I put in a bowl every day. I know what a portion looks like; I know what two portions looks like." Several noted that use of smaller plates and glasses was helpful for portion control. One indicated that she now serves orange juice in a shot glass and entrees on a salad plate.

Most spoke of frustrations with eating in restaurants and tended to eat out less. Depending on personal food preferences, they had identified favorite places to eat. Several discussed a strategy of boxing half of their food, even before starting to eat, to avoid temptations of large servings. One noted that she had come to expect water weight gain after every restaurant meal because of increased sodium content in food.

Several noted that there were no foods they could not eat and discussed the importance of not being overly restrictive:

> If I'm losing weight or maintaining it, I have to have treats, and so what I usually have is like-like dark chocolate covered almonds…that I keep in the freezer, and after dinner, I'll have two, and it's enough just texture and a little bit of sweetness that I feel like I've had dessert.

Several recognized the connection between emotions and eating behavior: "If…if you're stuffing calories in your body because you're lonely or because you're mad or because

whatever…I can do something else to fill that void, I don't need food to fill that void…", and discussed processes they employed to analyze whether what they were feeling was hunger or some other emotion.

Increasing activity levels was another universal strategy. Exercise strategies were as varied as food strategies and customized to fit into busy lives. Most had found a way to make it routine: "It's a part of my day just like getting up and brushing my teeth…I do some type of cardio six days a week…that part has engrained. The weight lifting changes, I mean, ideally, I'd like to do two or three times a week…" Another noted,

> I go work out and I-I do pretty much the same thing every time I work out. I've got a routine I go through. It takes about an hour and 15 minutes…. I have certain rules that I just follow. And one of…my husband thinks I'm crazy, but one of my rules is 60 minutes of some sort of aerobic activity every single day.

Some had exercise partners, some exercised alone.

Some participants worked activity into daily routines: "I consider myself very physical at my job…I spend probably 70% of my day on my feet. I started wearing a pedometer so I was counting my steps and I would make sure that I had to get to my, at least my 10,000 plus steps a day." One took a part-time job as a fitness instructor. Several participants started new activities: "

> We bike a lot and we're willing to put money into things like good sports equipment. I remember the first time I biked that trail, I couldn't even go to the five mile point…. Now my husband and I after work as long as we have daylight, we can do 20 miles in like an hour and 20 minutes.

Several noted they became active in organized competitions: "I went in and did a triathlon program which is a 12-week program and at the end of it, they have to do a triathlon." Not everyone enjoyed the exercise but all had found some regular activity they enjoyed and participated in: "I hate to exercise, I hate it, but I do really like yoga, so

I started doing yoga pretty much every day." One noted that for her, exercise was so important that when she was away on vacation, she would get a temporary gym membership to continue with her routine.

Another important activity that occurred during this phase was learning about health. As part of their lifestyle changes, participants noted purchasing cookbooks, exercise books, internet searches, and talking to experts as strategies to learn about nutrition and health. One participant was enrolled in a college course:

> [My class] was all about being healthy inside and out and a lot of talk about organic and eating healthy…holistic health. Um, I found it very inspiring, the timing was right and so, we had to set a goal as part of the class…and part of my goal was to change my behaviors and my lifestyle.

Another altered food preferences based on what she learned: "There's certain foods with a higher glycemic level that make you more hungry, and you learn that, and sometimes it's different for certain people." New cooking behaviors were learned: "I would say the biggest tool, the thing that helped me the most, was that I learned/relearned kind of how to cook." Learning about portion sizes was surprising to one: "…something too that I had to re-teach myself is what an appropriate portion size is, that…, three ounces of beef, you know, four ounces of fish that-that's normal really and that an eight ounce steak is really close to three servings". One relied on a dietitian to help with food planning: " She [the dietitian] asked me what I'm exercising, how active I am and then she does her little work, you know, on her calculator and tells me how many grams of protein, carbs, fats." There was a sense of sustainability in the way participants approached their lifestyle changes: "I guess, the more I've progressed in weight loss, I've thought more, you know, how I can sustain this? The more success you have the more I think you start wondering well, how in the world I can sustain this level of exercise, or this kind of eating."

Participants reported additional impetus to continue as noticeable changes occurred in how they looked and felt. One participant described it like this: "I felt just tremendously better. I could sit up straighter without having to strain, uh, I felt healthier when I walked…And I also uh, started to… like my appearance better. For… I felt good when… I got thinner". All felt more energetic: "I was always tired before, I've-I've a certain level of fatigue with four small kids, but-but it wouldn't be near, I think it would be way worse if I was overweight." Some experienced less pain:

> My feet were another thing. My feet were really bothering me. I'm on them all day long here, and um, they would just hurt so bad at night. I-I couldn't, you know, they just hurt, and getting thirty pounds off has made a difference. I think it'll make a difference in my knees.

Some experienced changes in mood and affect: " …because I was always feeling tired and run down and grumpy and depressed and that's a thing, is my depression went from, you know, I had depression all my life…and now I'm just pretty happy and bubbly and stuff so a lot has changed." Self-confidence also improved:

> I also think I just feel differently about myself, like I'm a pretty shy person anyways, um, and when I was heavier, I never felt, at that time, I didn't feel like people treated me any differently, but since I've lost weight, I notice that now that, I mean, I guess I feel less shy, like I feel like people are, I don't want to say friendlier, it's a very subconscious subtle thing, but I feel like…I don't know I guess I feel like I make a better first impression.

Participants were also motivated by how their body felt when they were following their new food style. They noticed that when they strayed from it, there were consequences in how they felt: "I have experience of knowing how good my body feels when I eat right. And I want that back."

Critical juncture: Transition to maintenance. Participants did not specifically describe the transition from weight loss to maintenance. Several discussed meeting their goal: "I have lost 37 pounds. And, I-I tinker between 119 and 124 pounds…and my BMI is healthy. I'm at 20. So I've...met my goal…" One noted that after she met her goal, she continued to lose: "I think it was about 10 months for me to get to where I wanted to be then I continued going, and I lost a little bit more, and got to the point where I'd lost 35 pounds and then I kept going…I did gain a little bit of that back…" This participant received feedback from family that she was getting too thin. One described her lapse from a strict food regimen:

> I kind of did have this little lapse, I suppose you could say where I kind of thought, oh, I'm thin now, and I look pretty good maybe I can have a few things and just be careful and, but like I said as I did those things…I truly noticed that I did not feel good afterward, and it really took the fun out of it. I really found…the pleasure was gone.

For the most part, it appeared that the lifestyle changes they had made seamlessly blended into the challenges of staying the course.

Stage 3: Staying the course. This stage marked the beginning of realization that Transforming Self is a journey that never ends. One participant described it best: "I've learned a lot of things along the way, I learned that there's never an end…that the journey has no destination." *Staying the Course* is the stage most closely associated with maintenance. It has six associated sub-categories: maintenance eating, maintenance exercise, monitoring and adjustment, doing my part to be healthy, commitment, and helping others.

Maintenance eating. Maintenance eating drew the largest number of comments from participants. Only one of the participants continued to follow a particular diet into maintenance. However, all expressed the need for daily food vigilance. This vigilance involved actually eating more, but healthier, lower calorie foods, and drinking lots of water. It often meant fewer meals out at restaurants and more creative home cooking. For several, it meant packing a lunch and bringing it to work: "So like for me, I bring my lunch every day cause I can't eat here…so for me it's like three bags of fruits and vegetables, and then maybe, um, some bread and a slice or two of meat, so you get your protein…that's what I do". It did not, however, mean that favorite foods were taboo: "It's discipline but it's not that restrictive because there's a lot of food I can eat. It's just choices." It also did not mean restricting special treats:

> One thing I will say is I don't, ah, restrict myself of things I like. It's not that I never have ice cream and never have pizza…it doesn't ever go away you know, those cravings and things, but I work for it too. I make sure that, you know, if I'm going to go out and have that thing, I'm gonna make sure that I get to the gym that day which I usually do anyway, but maybe I might run an extra mile…

Participants often spoke of challenges with family gatherings and holidays and pressure to partake: "There would be times when I would eat what I wanted to eat before I went and then I would just say 'thank you, but no thank you' and have coffee or something". On this never-ending journey, there was also a strong sense of self-tolerance if a lapse occurred:

> It's not the cheeseburger that you eat that day that made you gain five pounds, it's everything you ate after the cheeseburger that made you gain that five pounds…if you're trying to make changes, and you're trying to do good just because you slip up once in a day doesn't mean the rest of the day is gone to heck and you need to go out, like I've already messed up and I might as well make it worth it. You just have to accept it and keep going.

One noted her struggles with the sensation of hunger: "…learning to be comfortable with hunger and realizing like, you know, it's okay to feel hungry I'm not going to die".

Participants had also altered behaviors related to food shopping. Most were taking a more active approach to meal planning. Label reading was also mentioned as something they routinely did. They avoided temptation by not purchasing foods they did not want to eat,

> Before I lost weight, my favorite food was peanut butter, and I honestly could eat it by the spoon out of the jar and finish off a jar in a couple a days… I don't even buy peanut butter anymore…it's kind of like being a drug addict or something, you, like…cold turkey on peanut butter.

Prior to participant's weight loss, they underestimated the cost of eating healthy foods: "Oh, financially it's been huge. Um, I mean the junk-actually in some ways, junk food is cheaper than some of the healthy foods…"

Participants also voiced a different attitude toward food ("I guess I don't get as much pleasure out of food as I used to…but I eat good things, you know…") and a mindfulness about how certain types of food made them feel ("I do pay attention to what I eat, um, not in a calorie counting way but just more of what is this going to do for me later, you know, am I going to be more energized after I eat this or am I gonna feel bad and wished I wouldn't have eaten it"). Most participants found they thought a great deal about food and knew it would be very easy to slip into old ways: "I think it was just changing my whole relationship about food so that it's just second nature now…it's always something that's in the back of my mind like…it's something that I'm always aware of, you know…"

Maintenance exercise. Maintenance exercise was discussed by all participants. One participant had a complex exercise regimen marked by training for particular events, such as a triathlon, but most described a very simple routine marked by walking or running or outdoor activities they found enjoyable. Several described having basic equipment in their home, which they preferred over trips to a health club. Several noted the importance of exercise to their mental and physical well-being. By this point in their journey, exercise had become automatic: "It's not well maybe I should, it's just literally get up, get on the elliptical trainer, eat breakfast, shower..." For most, exercise had become enjoyable: "I crave activity, I think if I didn't do any kind of activity I'd go nuts…" Several noted participating in competitions for the first time in their lives: "I've ran a couple of half marathons since losing weight, and I never thought, would of thought I'd be the kind of guy to do anything like that beforehand, but those are motivating." Busy lives meant being creative; one noted that she put a standing meeting on her calendar that was protected time to walk. Another noted:

> If I'm working, I may not work out that day. I-sometimes I feel like twelve hours on my feet as a nurse is a good enough workout, but…if I'm not going to get to the gym, at work I take the stairs. I work on the tenth floor. I do that at least once in the shift, if not, I do it twice in the shift.

Participants noted that time management was a very difficult task but stressed the importance of prioritizing exercise. One participant with four young children noted:

> We make it work. You just, if-if it's that important to you, you'll find a way to do it…but you've got to find a way to fit it in. Go for a quick run outside. If I can't get to the gym I run the stairs in my house. I've done that before with carrying a kid…

Exercise types and quantities varied among participants but all voiced an understanding that eating and exercise were interrelated and directly impacted their ability to maintain weight loss.

Monitoring and adjustment. The concept of monitoring was universal for all participants. Monitoring process and frequency varied. Several continued to rely on their scale to provide data needed to be objective: "I have to weigh myself at least every other day…cause if I don't have measurements, I can feel that I'm maybe gaining a little weight but sometimes I can talk myself outta that, but the scale doesn't…lie." Some used the fit of their clothing as their gauge:

> I don't weigh myself anymore unless like after the holidays I feel like, okay, my pants are tight time to step back on the scale and I've gained five pounds...but I kind of feel like once I got into the range that I'm at now I felt like my body just really likes to be there, so I don't have to work hard at it, like I kind of retrained my metabolism.

Several mentioned they could identify when they had gained weight by a sense of discomfort: "When I eat a little too much, I feel more discomfort than what I did when I was heavy. So that's another kind of early warning sign." Several noted that while they used the scale often, they also recognized that weight could vary significantly; often one salty meal could result in a short-term weight gain of one to two and a half pounds. They had come to understand and expect it.

Along with monitoring came the necessary adjustments to get back on track. Adjustments might be minor, "Sometimes I just won't eat lunch for a while," or more significant. Since interviews took place immediately before and after the holiday season, all participants mentioned they were actively adjusting for holiday eating. One noted:

> Another thing, too, is this is the first time that I've really, in this six years, that I've really let it go like that, and now I have the experience of knowing how good my body feels when I eat right. And I want that back. And so that experience will help me this time, to keep motivated rather than to give up right away, whereas other times in January you just give up.

While no one relished the idea of returning to more restrictive eating and/or higher levels of exercise, they were confident they knew what was needed and early adjustment would get them back on their chosen path.

Part of making adjustments also included personal appearance. These adjustments included new clothes, "taking more pride in my appearance at work," and in some cases, surgical removal of excess skin. Others noted the importance of simple recognition for effort--applauding yourself for success. It was noted that the external recognition present during the weight loss phase was not present during weight maintenance, so internal recognition was even more important.

Doing my part to be healthy. Five of the participants conveyed a more philosophical attitude when describing their healthy lifestyle: "Mainly I just feel better and I think I'll live longer…so that's kinda what drives me." One noted a sense of absolution from future guilt if he followed a healthy lifestyle: "I'm feeling like I'm trying to do everything I can to maintain a quality of life that I like and then if I can't do that, I feel like, well, it's not my fault, I've done everything I can." Another mentioned the impact of becoming a new father: "For me a motivating factor too is...when you get a little daughter you start thinking down the road and it-it motivates you to, uh, think about your long-term health." Others saw their lifestyle as an investment in the future: "If we invest money now into buying healthy food… we will save money in the long run with medical bills, and not having to, you know, pay for insulin and pay for heart

medication…knee replacements and whatever." Participants saw maintenance of their weight and healthy lifestyle as a way to feel better, look better, and be able to keep doing the things they enjoyed as long as possible.

Commitment. Committing to change was an important critical juncture that occurred prior to initiating lifestyle changes. Commitment emerged as participants described weight loss maintenance. One noted, "I've been successful because you have to stick to it, and if you don't stick with it, you don't exercise, you don't eat the right foods, you're just going to fall right back into the old ways." Several noted the danger of returning to previous habits:

> It's hard to find balance, but you have to find a balance that works for you and just be committed. You really have to make a commitment just like a smoker does to, you know…quitting smoking…you're going to be serious about it, and if you're not fully ready to commit, it's not gonna happen and it's not gonna stick.

Others noted the constant life challenges faced:

> You have to be, committed if you're not, you think of all the different things that you're-you're constantly bombarded with…the food… the people bring stuff into work…. It's a constant. You have to be aware of a constant commitment, and like I said if you're not going to be committed, if you're not going to work out, take care of yourself, you will fall back into your own ways. It's just-it's just going to happen.

An element of self-confidence was also present in this construct. Participants understood that they would face times when their weight increased, but strongly voiced having the skills and commitment to address issues before they got out of control. This was best summed up by a participant:

> And I think that's discipline, you know, to be committed to a goal. So I know I'm gonna fall off the wagon, but uh not very far. And-and I'll just get right back on it some… whether I use a ladder or some other way of jumping up there, but some way I'll get back on it, I know I will and I'll… keep my goal.

Helping others. Several of the participants discussed their personal desire to help others struggling with weight loss. Some indicated they had been featured in television and print news stories, and regularly spoke at weight loss events. Several had participated in workplace task forces to improve cafeteria meals or vending machine choices, and that they served as a unit "wellness champion"--a volunteer position meant to promote wellness at work. One, who had become a part-time fitness instructor, noted that she teaches water aerobics to women, many of whom are significantly overweight. She stated that her swim suit choice intentionally allows visualization of surgical scars left from procedures undergone to remove excess skin: "I want women to ask me questions about it, I want them to know I did it and they can too." Another noted, "I love that I can inspire people and teach people how, to you know, start out. I can share my story." Some mentioned particular examples they were proud of:

> What feels so great is that I've inspired a couple of people that I know to do the same thing, and I've got a couple of friends that are, one right now that's currently, she's down 60 pounds, and she says I was her inspiration. That makes me feel so good.

One talked about the influence he may have had on his family:

> My father and mother were also obese and they are currently, um, through different methods at rather healthy weights. My mother through shear dieting and some exercise has dropped, about 80 pounds…and then my father has dropped…I'm not sure his exact weight...but he just had bariatric surgery, so he has gone from 300 plus pounds, maybe 330 and he currently is taller than me and wears a smaller pant size. I don't know if they were by any ways inspired by me or, you know, by other things but would have never guessed that they, either of them would lose weight.

Another talked about her commitment to teach her children differently than what she learned growing up: "I make it a priority to teach my children about what is good for

you, what is not good for you, why we make these decisions…why if you ask me for a second helping I may say no."

As noted earlier, supportive comments from others waned during the maintenance phase and the opportunity to help others was not only a motivator but was also seen as a responsibility, i.e. others were counting on them to be a role model.

Influencing Forces of the Basic Social Process: Transforming Self

Participants noted influencing forces that impacted their initial weight loss and weight management. These forces were conceptualized as *tailwinds and headwinds*. A tailwind is wind that is blowing in the direction in which an object is traveling. A tailwind speeds progress and requires less energy consumption. A headwind blows against the course of an aircraft. It has the opposite effect; it slows progress and consumes more energy to get to a destination.

Tailwinds. All participants discussed the support they had received with gratitude, acknowledging that without it they might not have been successful. Since most participants were married, spousal support had the largest number of comments: "I don't know if I could of done it by myself. Maybe I could of, but to have him there supporting me and being positive, you know…It's always great to have someone say 'boy you look great. You're doing a good job. Maybe you shouldn't eat that'." Spouses also took an active role in grocery shopping and cooking: "My husband was really supportive, um, he-he was the one who actually started looking at the salt content on all the labels" and "my wife packs me carrots in my lunch. I hate them, but I eat them." One participant mentioned her children: "…my son one day said to me, this was about a year ago now when I had lost the weight, and he goes 'Mom you look really great' and

it's like…thanks!" Even the family dogs were seen as supportive: "…my dogs are very encouraging…on the weekends when we are both home she knows she gets a walk and…she will start on the floor whining in the morning…until we take her for a walk and if we don't she just looks so sad."

One described her experience with Overeater's Anonymous: "The support group in itself, is just being able to talk amongst others that understand and know what, you know, they've been on the same route…"

Friends and co-workers were also seen as encouraging. One noted the challenges of co-workers bringing treats and said, "…sometimes they would bring me a little brick of cheese and say, 'here you go, we want you to be included.'" One work unit hosted a Biggest Loser challenge and the participant (and contest winner who lost more than 100 pounds) noted:

> Having that contest and that goal in mind really helped me for the next six months to try as hard as I could and exercise as much as I could, and refuse to eat any fattening or…sweet foods…and at the end of it I had enough new habits that I had made in that six months plus...that I didn't just gain all the weight back after the contest was over.

All working participants felt that having a supportive work environment was also key to their success.

Headwinds. Participants described surprisingly strong headwinds. The most challenging appeared to be immediate family. "I've had great support from friends. It's interesting you should ask about my family because they're a completely different story," one noted. There was story after story of non-support from family members, especially mothers: "I think my biggest enemy was my mother cause she just pushes… her worth is in feeding people…she's an excellent cook and baking is just like out of this world, so

when I kept turning down her bars or cookies…she...just thought that was terrible." "The sad part is that every time I'm home, every single time I'm home, I get told I look unhealthy, I'm too skinny, I need to gain weight, I've lost too much weight, I need to eat, are you starving yourself" and "there were times when after I would say for like the third or fourth time 'no thank you, no thank you', um, you know I'm not a saint. I would just…just let it go." One mother repeatedly said, "Don't ever get rid of your other clothes because you may need them again." This lack of support sometimes even led to separation, forcing choice between lifestyle and family: "I'm even scared to go visit my mom at home cause I know, I just know she won't… she doesn't cook that way and she would not be accommodating." Sadness was expressed by one: "I mean the family where you'd want that support, most likely you were, you're changing and [they] don't…like that change."

Not all significant others were supportive either, prompting one participant to make a tough choice: "I had a man friend at the time that was jealous of the time I was spending at the gym, so I moved back home and he went bye-bye." Social occasions were also challenging around food: "You know, sometimes I feel like a…party pooper...if I'm out with my kids and they will want to go out for lunch…I find myself saying well there's nothing I can eat there… and so sometimes they kind of give me…a hard time a little bit about that."

Relationships with friends and co-workers were sometimes strained: "…my friend that was a little bit heavier.. I just felt like awkward around her like because I didn't want to be like implying judgment on her…I felt tension there." Friends sometimes did not appear to know how to react ("People…say, 'oh you've lost a lot of weight', but they

won't say that you look good or anything like that, so it's really strange") or were more openly non-supportive ("It is amazing though for, it's like some people don't want you to look better. You know like it becomes a competition so to speak"). Weight loss tactics were sometimes made fun of and participants spoke openly about sometimes just finding new friends, i.e., "birds of a feather."

Another significant challenge was the ever-present work food. Co-workers sometimes made weight maintenance difficult: "That was hard because [in] payroll there's a lot of people that like to eat… and it's really not uncommon for a couple times a week somebody just sends out a note there's muffins and cookies on the counter and help yourself." Work unit celebrations or socials were also challenging: "The other day they had a pizza party and sure I like pizza, but I didn't have any. I just had my fruits and everybody's going 'aren't you going to try any pizza?' Yeah, you fight that." Some participants chose to try to influence work unit activities by suggesting lower calorie options, while others just tried to avoid the temptation. Participants working in patient care areas also noted that family members of patients also frequently brought in food. Participants did not attribute these actions to intentional sabotage but it added to their weight loss and maintenance challenges.

Societal influences were also discussed frequently. Most participants discussed the high cost of healthy, high quality foods, and the relative low cost of processed, low quality foods: "You can probably get a $2 pizza and you can feed a family on it." Restaurant food was a challenge for all. Portions were large and food was often prepared in a way that was high in sodium and calories. Grocery checkout lines, gas station

convenience stores, TV advertisements, newspapers, magazines, and billboards--all try to influence purchasing decisions and are generally not geared to weight loss maintenance.

Summary

Transforming Self emerged as a basic social process (BSP) that described the participants' weight loss and maintenance process. Three stages that formed the BSP were identified: *increasing discomfort, climbing the hill,* and *staying the course*. In increasing discomfort, participants described events leading up to and contributing to being overweight or obese. For all, a critical juncture or event, called committing, was identified, which propelled them to go to the next stage, climbing the hill. This stage was marked by a series of very significant lifestyle changes. When their weight goal was met, another juncture occurred and participants moved into the third and final stage--staying the course. In addition, two important influencing forces that traversed two stages were also identified: *headwinds* and *tailwinds*. They described the unique social milieu of each participant. Each stage, critical juncture, and influencing forces was described in the participants' own words.

Influence of the health care system in the participants' transformation was negligible. For the most part, they accomplished their goal without special diet foods, fancy equipment, or personal trainers. They were both helped and hindered by friends, families, and society. Participants did not approach the process in the same way and did not follow the same regimen. They became autonomous designers of a diet, exercise, and support system that fit them and their preferred lifestyle. The theory of Transforming Self describes an active, internally motivated process of weight reduction uniquely designed to a complete lifestyle transformation.

CHAPTER V

CONCLUSIONS AND DISCUSSION

Chronic disease affects over 45% of the population of the United States. Each year, millions are diagnosed with chronic conditions. Contributing to the increasing burden of chronic disease is obesity. Despite widespread accessibility of pharmacologic and nutrition aids, obesity rates continue to rise. Prevalence of weight loss maintenance is estimated at only 20% (Wing & Phelan, 2005). The reasons most dieters are unable to maintain weight loss are not completely understood. Furthermore, existing health behavior change models often emphasize active behavior change with less focus on maintenance. Given the lack of well-established maintenance models and a pressing societal need to address the obesity epidemic, this study set out to use grounded theory methodology to (a) advance knowledge in the area of health behavior change, specifically weight loss maintenance, utilizing perspectives from successful individuals; and (b) develop a substantive theory of successful weight loss maintenance in adults.

Classical grounded theory methodology (Glaser, 1978; Glaser & Strauss, 1967) was used in this study to investigate successful weight loss maintenance in adults. The theory of Transforming Self emerged from the data. Categories and subcategories were identified and relationships among them analyzed. While the original intent of the study was to examine weight loss maintenance, it was identified that the participant's main concern was really a basic social process of self-transformation, with weight loss at its

core, but also included associated life changes. The theory of Transforming Self has three stages: (a) Increasing Discontent, (b) Climbing the Hill, And (c) Staying the Course. Movement between stages is marked by critical junctures. In addition, contextual elements that impact weight loss success transcend stages called Tailwinds and Headwinds.

The newly developed theory reflected how over long periods of time, perhaps years or decades, overweight or obese adults transformed their lives to support weight loss and maintenance. The first stage, Increasing Discontent, described a pre-weight loss period characterized by increasing dissatisfaction with weight and lifestyle. Feelings of diminished self-worth, poor self-image, personal embarrassment with weight, and a sense of public invisibility were also revealed in this stage. In addition to these feelings, participants discussed family mores that strongly influenced food intake habits. Most had a long-standing history of being overweight with unsuccessful attempts to lose weight. The end of this stage was marked by a critical juncture in which participants made a change decision called committing. Committal prompts included comments made by friends or acquaintances, non-emergent medical conditions, and personal concerns such as clothing size changes or photographic images.

The next stage, Climbing the Hill, involved very significant changes in diet and exercise routines. This stage also was a time when participants began to seek information about health and nutrition and, even more significantly, actively experimented with designing their own personal weight loss regimen. As they began to lose weight, they started to look and feel better, which boosted self-confidence and propelled them to continue. Participants also discussed issues of balance with routines adjusted to their

own lifestyle, tempered by self-tolerance of lapses, and included food and non-food rewards. Several participants warned that undue self-denial threatened maintenance. This stage continued for months or years; one participant was in this stage for four years.

When their weight loss goal was reached there was a transition to the next stage: Staying the Course. This stage marked the beginning of an endless journey of maintenance. Participants accepted the need for maintaining lifestyle changes and the necessity of regular monitoring and adjustment. A strong sense of commitment and self-confidence was noted. For some, these changes supported a basic personal aspiration of leading a long and healthy life, and a realization that although there were factors outside their control, a healthy lifestyle was within their control, and they were "doing their part to be healthy." Also noted was an altruistic desire to help others. Several described the satisfaction they received from inspiring others.

Two other contextual elements spanned Stages 2 and 3: Tailwinds and Headwinds. Participants spoke with gratitude about the significant support and encouragement they experienced from spouses, friends, children, support groups, the work environment, and even their pets. These supports were described as Tailwinds. An opposite force, Headwinds, was also identified. Headwinds are forces you have to fight or withstand. These included non-supporting behaviors of friends and co-workers, significant others, families (particularly mothers), work place food, and social pressures.

Transforming Self and Behavior Change Theories

For purposes of placing the theory of Transforming Self in the current literature, it was compared with theories described in depth in Chapter II including several associated with health protective behaviors (The Health Belief Model, Theory of Planned Behavior,

Health Decision Model, and the Protection Motivation Theory). Protection motivation theory, social cognitive theory, the self-regulation theory, and the transtheoretical model are considered separately. Behavior maintenance theories (relapse prevention, and behavior maintenance theory) follow, ending with a consideration of nursing theories (theory of self-care, health promotion model, and health as expanding consciousness).

Health Protective Behavior Theories and Transforming Self

In general, these theories postulate that health behavior change depends on the value an individual places on a particular goal and their estimate of the likelihood that a given action will achieve the goal, in essence a sort of cost-benefit analysis. These theories acknowledge the role of perceived competency to overcome barriers and the impact of social norms in making change.

In Transforming Self, although not explicitly stated by participants, there could be an assumption that during the pre-change stage of Increasing Discontent, a weighing of current and desired state occurred and contributed to the change decision. Health protective theories acknowledge the impact of significant others. Most participants described the support of significant others and, in several cases, significant others joined them on the journey. The health decision model also acknowledged the importance of incorporating patient preferences into healthcare decision-making, clearly reflected in the Transforming Self theory.

This group of theories acknowledges the importance of external influences. While the theory of Transforming Self also recognizes external influences, it clearly describes a very strong internal locus of control capable of overcoming social pressures. The theory of planned behavior describes factors within and outside of personal control

and their impact on the ability to undertake behavior change. In the Transforming Self theory, individuals actively modify their environment to increase control to maintain desired behaviors. None of the health protective theories consider maintenance separately.

Protection motivation theory and transforming self. The protection motivation theory is also a health protection theory but is considered separately because of its focus on the effects of fear. This theory hypothesizes that increased levels of fear result in greater likelihood of adopting behavior change to protect from the negative outcomes of a perceived threat. In the theory of Transforming Self, fear is not a significant impetus to health behavior change; in fact, the word "fear" was only mentioned once by one participant and not in conjunction with urgent health issues prompting change.

The self-regulation model versus transforming self. The self-regulation model sees individuals as active problem solvers, selecting strategies to manage threats, and always using feedback to alter strategies in response to new information. These tenets of the self-regulation model are very similar with those of Transforming Self. In Transforming Self, participants are not only actively problem solving to manage threats, they are creating a strategy uniquely developed for their lifestyle to achieve their weight loss and maintenance objectives.

These two theories differ in the perceived influence of the health care system. The self-regulation model highlights the importance of the physician-patient relationship and suggests that clear information from practitioners enhances behavior change. In Transforming Self, influence of the health care system is lacking, exerting little influence of any type-- positive or negative.

Social cognitive theory versus transforming self. In 1986, Albert Bandura began developing social cognitive theory, which attempts to explain and predict behavior change through inter-relationships among the key constructs of incentives, outcome expectations, and self-efficacy for change. Individuals choose to make changes based on their expectations about whether the behavior change would actually lead to the desired outcome and their perceived ability to be successful in making the change. A key construct of this theory is self-efficacy, not as an innate trait but one that is heavily dependent on contextual factors. These constructs would seem to be consistent with Transforming Self except in the area of learned efficacy expectations. Social cognitive theory describes the sources of self-efficacy in order of importance: (1a) previous experience with mastery over a difficult or feared task, (b) observation of others' successes as they overcame difficult, (c) verbal persuasion, and (d) individual perceived physiologic distress when facing difficult challenges. Interestingly, in Transforming Self, participants were able to lose and maintain significant weight loss, despite a previous history of unsuccessful weight loss attempts, without identifying encouraging role models, without verbal persuasion from others, and without significant physiologic distress not consistent with social cognitive theory.

Transtheoretical model versus transforming self. One of the most frequently cited models to describe and predict behavior change is the transtheoretical model. It is called transtheoretical because it forms a model that melds stages, processes of change, and core constructs as a framework for integration of several major theories. This model has seven stages of change: precontemplation, contemplation, preparation, action,

maintenance, continuation of change, and termination. Latter stages have been added in recent years.

Both the transtheoretical model and Transforming Self have stage(s) that precede actual behavior change. The first three stages of the transtheoretical model all describe processes that occur before taking action. Participants in Transforming Self described antecedent events such as unsuccessful diet attempts, long-standing history of being overweight, and feelings of low self-esteem or poor self-worth that could potentially map to transtheoretical model pre-change stages. Previous unsuccessful diet attempts match movement into action with subsequent regression into earlier stages, common in the transtheoretical model (Prochaska et al., 1992). Key descriptors of the transtheoretical model pre-action stages, however, did not emerge from participants.

The transtheoretical model identifies the action stage in which observable change occurs as lasting from one day to six months. Transforming Self participants remained in this stage until their goal was reached, often for a prolonged period--up to four years in one case. The transtheoretical model identifies three post-action stages: maintenance (working to prevent relapse and consolidate gains), continuation of change lasting six months to about five years, and termination--a stage in which individuals have zero temptation and 100% self-efficacy. Transforming Self identified one endless stage of Staying the Course. Participants clearly identified that weight loss maintenance challenges would persist for the rest of their lives; thus, Transforming Self does not have a termination stage. The transtheoretical model does not specifically address the never-ending monitoring and adjustment that occurs during the final stage of Transforming Self. The closest match between the transtheoretical model and Transforming Self

appears to be with the 10 processes of change, a non-stage based part of the transtheoretical model, that includes counter-conditioning (learning to exhibit healthier behaviors as a substitute or problem behaviors), stimulus control (removal of cues for unhealthy habits), contingency management (provision of consequences for taking steps in a particular direction including rewards or punishments), and helping relationships (social support emphasizing caring, trust, acceptance and support of new behaviors). These processes could certainly be mapped to strategies undertaken by participants to both lose and maintain weight loss in Transforming Self.

Behavior Maintenance Theories

Relapse prevention model versus transforming self. The relapse prevention model describes a framework for understanding the concept of lapse and relapse as a dynamic process. This model explores both immediate precipitants (high risk situations, emotional states, interpersonal events) and covert antecedents (day to day life balance, pleasurable activities, and a sense of deprivation) that increase the risk of return to old behaviors. These concepts were discussed by all participants in relation to both action and maintenance stages of Transforming Self. Individuals discussed ways to avoid high risk situations, such as avoiding work place food or having only healthy food in the house. They also discussed the need to step back at times and ask themselves if they wanted to eat because they were hungry or because there was something else going on. Many also discussed the pleasurable activities they did to maintain exercise including new activities they had not tried before their weight loss journey. They also discussed the importance of finding pleasurable activities that fit into their schedule and the importance of avoiding feelings of self-denial through small food and non-food rewards, and

allowing themselves to eat foods they loved through active adjustment of food intake and exercise. The relapse prevention model also views a lapse in desired behavior as a temporary setback and an opportunity to learn. This is consistent with Transforming Self; participants were able to easily identify times they had lapsed but also able to describe strategies they used for return to desired behaviors.

Behavior maintenance theory versus transforming self. The behavior maintenance theory differentiates personal forces that support initiation of behavior change from those that support maintenance. The theory asserts that individuals change their behavior when expectations of the outcome of the change are more positive than what they are experiencing with their current behavior--an "approach-based" self-regulatory system. In contrast, maintenance relies on satisfaction with outcomes achieved--an "avoidance-based" system. The tenets of the behavior maintenance theory are consistent with Transforming Self. In the pre-action stage of Increasing Discontent, participants did not describe unduly optimistic expectations for their life post-weight loss. Some set lower goals than what they actually were able to achieve; none mentioned expectations of significant life change. However, in the maintenance phase of Staying the Course, participants clearly expressed high levels of satisfaction with their new reality. This included concepts around being able to be more active, feeling healthier, increased self-confidence, and pleasure associated with appearance. They also expressed a strong desire not to return to their pre-action state and were willing to continue with or modify their current regimen as necessary in order to maintain. Thus, not having overly optimistic expectations during initiation of change might have actually supported their satisfaction as they transitioned into maintenance.

Nursing Theories

Theory of self-care versus transforming self. Beginning in the 1950s, Dorothea Orem (Renpenning & Taylor, 2003) began to distinguish the nurse's role in assisting patients to achieve health and recovery from the patient's role in self-care. Orem described "self-care" as the continuous performance of sets of related actions by older children and adults that bring about the conditions that facilitate regulation of their own functioning and development. Self-care is performed in a social context and requires skills, knowledge, and understanding to manage health conditions. Her theory emphasizes that self-care has to be incorporated into daily life and that the more burdensome the care regimen, the more difficult it is to incorporate. Orem's theory has three stages. In the first stage--estimative, the individual seeks information regarding the conditions necessary for health care. The second stage (transitional) is one in which the individual engages in a decision- making process and determines a course of action. In the final stage--productive, individuals prepare themselves and their environment for performing and regulating self-care, monitoring for results, and reflecting upon the adequacy of results and whether action should be continued. Orem also recognized several conditions that support self-care: development of patient-determined goals, allowing sufficient time to develop action plans, use of reflection in the chosen behavior, support for patient-centered goals, and the recognition that when a person "owns" his actions to attain a goal, it becomes part of the person's self-image or self-concept.

Although the stages of the self-care theory do not correlate directly with those of Transforming Self, many of the tenets posited do. For instance, Orem's emphasis on patient-directed self-care fits closely with study findings that successful weight loss

maintainers designed their own lifestyle changes. The stages of the self-care theory emphasize information seeking, choice of a patient-directed course of action, and preparation of self and environment for change. In addition, the self-care theory productive stage emphasizes monitoring, reflecting on results, and evaluation. These constructs are well described in Transforming Self. Both the self-care theory and Transforming Self recognize the difficulty of incorporating changes into life patterns. Transforming Self participants actively sought ways to reduce the burden of lifestyle changes through activities such as incorporating movement into daily routines and active meal planning. Transforming Self participants "own" their own actions. They have clearly been incorporated into the participants' self-image.

Health promotion model vs. transforming self. The health promotion model developed by Pender and others (2006) is an "approach-oriented" model that stresses change for its beneficial effects rather than change to avoid fear or threat. Authors believe that reliance on imminent threat to motivate change is not effective in promoting healthy lifestyles, especially for individuals free of serious health conditions. The health promotion model stresses the interaction among individual characteristics and experiences and behavior-specific cognitions and affect. Together, these factors lead to behavioral outcomes. Individual characteristics include prior related behavior. Behavior-specific cognitions and affect include perceived benefits and barriers to action, self-efficacy, activity-related affect, norms and support, and situational differences. Pender also acknowledges that behavioral changes are influenced by competing demands (beyond control), preferences (within control), and commitment to a plan of action. In

the health promotion model, commitment is fundamental to both initiation and maintenance of behavior change.

The health promotion model is primarily concerned with events leading to a change decision and the change itself. The construct of maintenance is not explored. However, the health promotion model has many similarities with the pre-action and action stages of Transforming Self. Consistent with the health promotion model, participants in Transforming Self did not identify imminent threat as a motivator; clearly, they were seeking to "approach" a healthier lifestyle rather than "avoid" a threat. The construct of "commitment" was so foundational in Transforming Self that the critical juncture leading to action bears its name. Unlike the health promotion model, commitment was also an important part of both Transforming Self action stages. Like the health promotion model, Transforming Self also identified that individual characteristics, such as prior related behavior (previous weight loss attempts), contributed to the pre-action stage of Increasing Discontent. Behavior-specific cognitions and affect impacted participants throughout all stages of Transforming Self. Participants identified examples in which they exerted control over competing preferences in order to effect change. As changes were made, self-efficacy and activity-related affect improved. Health promoting behavior is the action outcome of the health promotion model; even though maintenance is not addressed specifically, it suggests an open time frame for completion. Transforming Self identified that Staying the Course consisted of an endless stage of healthy eating, exercise, weight monitoring, and lifestyle adjustments.

Health as expanding consciousness versus transforming self. In the health as expanding consciousness theory, Margaret Newman (1986) described a view of health

and illness in which transformation could occur by using a reflective process to understand one's own life pattern. The health as expanding consciousness theory views the interaction between human beings and the environment as a unitary process, rejecting the view of health and illness as dichotomous states, and rather seeing them as "permutations of order and disorder" (Newman, 1990, p. 39). This pattern provides insights into the total pattern of the person, acknowledging that the pattern might manifest itself as pathology, but it is the pattern that exists prior to the pathology. Therefore, eliminating the pathology without addressing the pattern does not address the issues of the whole. Newman also incorporated Young's (1976) theory of human evolution to provide a graphic portrayal of stages of human development, moving from potential freedom and reliance on external influences to a pivot point of movement (choice point) in which a person seeks to gain power for themselves and break other-control and finally moving to a stage of increasing self-determinism. Newman (1990) noted that as an individual identifies aspects of their life that are not working, opportunity for change and transformation occurs. The health as expanding consciousness theory does not identify stages of change nor conceptualize maintenance as a construct. Maintaining weight loss would likely be just one aspect of the journey of life--ascending toward the goal of absolute consciousness and real freedom.

The Transforming Self model also would view humans as a unitary whole. Obesity would not be viewed as a condition separate from the self but as part of a unitary pattern of the person. In fact, participants described the behavioral patterns that resulted in their situation. Several grew up in homes where overeating or reliance on fast food was tied to adult overeating behavior. Others described the connection between affect

and eating and the conscious use of food to impact mood. One clearly made the connection between pattern and pathology when she noted concerns regarding bariatric surgery for weight loss: "I don't care what you have cut, sewn, manipulated mechanically if I didn't change the behavior component…I don't feel it would have worked."

Transforming Self and Select Weight Loss Literature

The researcher also sought to determine if the primary constructs of the theory that emerged were comparable to findings of similar research studies. As such, selected literature was reviewed to compare and contrast findings with pre-existing literature and to weave findings of the current study into the body of existing knowledge.

Increasing discomfort. Kearney and Sullivan (2003) used a grounded theory approach to synthesize behavior change studies with the goal of identifying turning points and pathways to change. This study noted that individuals contemplating behavior change became aware of dissonance between their current state and their long-standing values and goals. This incongruity was viewed as being distressing enough to prompt a critical self-appraisal. This self-appraisal could occur suddenly or over time, but the self-appraisal itself was viewed as an event or a significant change in perception that laid the foundation for change. This was consistent with findings of Transforming Self. Participants described their personal history of being overweight or obese and distress they experienced over time. In addition, most were able to recall a particular event, comment, or realization that enabled them to move forward and committing to change.

Critical juncture: Commitment. Several studies identified motivating triggers that appeared to be associated with weight loss. These triggers included medical triggers, critical comments, photographs, stepping on the scale, and personal preference. Wing

and Phelan (2005) identified medical triggers, such as diagnosis of significant disease, as being associated with greater initial weight loss and less weight regain. These were more often associated with men than women (Brink & Ferguson, 1998; Colvin & Olson, 1983). Of the Transforming Self participants, 25% identified non-urgent medical triggers (i.e., high blood pressure or cholesterol) as significant to their weight loss decision. This was comparable to findings of Wing and Phelan (2005) who identified this phenomenon 23% of the time. Notably absent from both the evidence reviewed and Transforming Self were references to health care provider directives to lose weight. Allan (1989) noted that contact with the health care system in general was not perceived as important in successful weight maintenance.

Several studies identified personal comments about weight and appearance-related concerns, such as purchasing larger size clothing, as significant triggers (Berry, 2004; Brink & Ferguson, 1998, Colvin & Olson, 1983). Studies identified that some of the triggers had great emotional significance; others were memorable but less emotionally charged, which was consistent with Transforming Self. Appearance-related concerns were mentioned by nearly all (92%) of the participants in Transforming Self.

Climbing the hill. Lifestyle changes made to successfully lose weight were noted in several research studies and were very consistent with those mentioned by participants of Transforming Self. Hindle and Carpenter (2011) noted the importance of avoiding a dieting mentality, emphasizing that what was being undertaken was permanent lifestyle change and not a short-term diet. Teixeira, Silva, Mata, Palmeira, and Markland (2012) contrasted implications of an outcome versus process focus in the maintenance of weight loss. They highlighted the difficulty in maintaining motivation with an

overemphasis on weight only. Instead, they linked successful long-term maintenance with the cultivation of a sense of enjoyment and development of preference for a healthier lifestyle. While Transforming Self participants did not state this specifically, they did comment that exercise had become enjoyable for them--something they looked forward to rather than something done because they had to do. They also shared that implemented dietary changes helped them feel better and feeling better in turn became a motivator for them to maintain their food strategy.

Consistent with Transforming Self, several studies (Barnes & Kimbro, 2012; Colvin & Olson, 1983; Hindle & Carpenter, 2011; Kayman et al., 1990) emphasized that successful food strategies were self-devised with little reliance on proprietary diets or packaged foods. Specific dietary changes were quite consistent with participants across studies; most described dietary changes that included a reduced intake of fat, refined sugar, and processed food, and a higher reliance on fruits, vegetables, water, and portion control. Diets allowed for controlled intake of favorite foods, noting small treats helped avoid feelings of deprivation that sometimes led to overeating (Kayman et al., 1990). Also important was recognition that episodes of lapse were not viewed as failure but an opportunity to learn how to respond to instances of overeating (Johnson, 1990). Colvin and Olson (1983) found that weight loss strategies for women frequently included dietary changes only without vigorous exercise. This was not consistent with Transforming Self; all female participants identified some type of exercise and several were involved in vigorous exercise routines and training for competition. This difference might reflect a change in societal patterns over the past 30 years since publication of the Colvin and

Olson study. Similar to Transforming Self, the importance of learning about nutrition was noted in several studies.

Staying the course. There was remarkable similarity among core concepts of maintenance in studies reviewed and Transforming Self. One significant consistency was the importance of individual autonomy, control, and self-determination of both the process for and maintenance of lifestyle change. Allan (1989) noted that this emphasis on personal design and responsibility was more frequently associated with success than when individuals sought change that was more externally directed. While strategies were fairly consistent (e.g., incorporation of regular exercise), the process by which they played out in people's lives differed and were tailored to fit other lifestyle factors. Allan described a "series of personally constructed self-care activities or new cultural routines for coping with weight" (pp. 664-665). A sense of self-responsibility and self-efficacy was also identified as fundamental by Elfhag and Rössner (2005). The concept of "commitment" that emerged strongly in Transforming Self was not specifically described in literature reviewed; however related concepts such as autonomy, ownership, and lifelong change were discussed.

Several studies mentioned issues around affect and eating. Byrne et al. (2003) and Berry (2004) noted the connection between eating and emotion and the importance of developing alternative coping strategies. The notion that emotional self-awareness as a lifelong challenge was purported by Kearney and O'Sullivan (2003) similar to participants in Transforming Self.

Hindle and Carpenter (2011) described the lack of positive reinforcement that occurs in the weight maintenance phase, even though the effort required for maintenance

is similar to that required for weight loss. In their study, compensation for this reduction in positive reinforcement resulted in creation of new roles, e.g., becoming a role model for others or developing various healthy lifestyle groups or activities. This emerged as important to participants in Transforming Self, however, but was not noted in other literature reviewed.

Influencing forces. Social support from friends, families, and support groups was described as a key factor in successful weight maintenance in several studies (Berry, 2004; Hindle & Carpenter, 2011; Johnson, 1990; Kayman et al., 1990, Shay, 2008). Social support validated and reinforced the behavior change, helped individuals face challenges, and served to integrate a new self-image into pre-existing relationships and contexts. In some instances, significant others joined in the lifestyle change activities. This was consistent for participants in Transforming Self and was conceptualized as Tailwinds.

Challenges, or Headwinds in Transforming Self, were mentioned in several studies. Hindle and Carpenter (2011) noted the presence of "saboteurs" among friends or family. Kayman et al. (1990) indicated that more than 50% of women described husbands as being non-supportive. Johnson (1990) noted daily social pressures and contradictory messages to be thin often led to fad diets and unsuccessful weight loss attempts. However, none of the studies called attention to the level of significance identified by participants in Transforming Self. Several participants described a much higher degree of resistance to their new self-image and permanent lifestyle changes from families and significant others, which resulted in severing relationships or acquiring an ability to persevere in the face of continual conflict. Mothers were mentioned

specifically by several participants as the focus of conflict. Ubiquitous work place food was not mentioned in any study reviewed but seen as a constant challenge for all working participants. Studies also did not specifically discuss restaurant food or other social pressures to consume as being significant but did emerge as particularly challenging in Transforming Self.

In summary, a high degree of congruence among constructs emerged in Transforming Self and those described in other pertinent research studies were identified. The concept of commitment was not specifically drawn out in other studies; however, related concepts were described. The influence of headwinds or forces resistive to lifestyle change, though mentioned in several studies, did not emerge from the literature at the level of prominence identified in Transforming Self.

Researcher's General Comments

The theory of Transforming Self was developed as a basic social process with three stages. This model was suggested by participants' description of events happening over time and the progressive nature of self-transformation. It was based on the conceptualization of a linear progression; the final stage was marked by lifelong maintenance of lifestyle changes, continual monitoring, and adjustment. Selective sampling techniques insured that all participants were presently in the maintenance stage. However, it was unclear if the progression was truly linear through stages or if participants, in fact, cycled between stages two and three. Upon closer review, it was apparent that even after participants moved into the final stage of maintenance, they were faced with instances in which lapses occurred and varying amounts of weight gain were experienced. This process of backward regression and forward progression was one of

the tenets of several models and the researcher suspected it would also apply in Transforming Self.

Limitations

Grounded theory is difficult to conduct well and requires strict attention to ensure that researcher bias is not introduced into theory development (Houser, 2008). Grounded theory research is not intended to be generalizable to populations or settings. Background data provide a context for the study but it does not hold that the theory can be generalized to similar settings or populations (Cooney, 2011). However, grounded theory research is transferable, i.e., if the problem is similar and pertinent to another setting, then the theory should be applicable in that setting.

Additional questions were raised by the fact that based on the study's original intent, participants were selectively sampled to be in a weight loss maintenance phase. As the study evolved to reflect stages of change, it meant that developing theory tenets were based on participant recollection of historical events, which were in some cases years in the past. Participant perceptions and recollections might not be consistent with actual events. In addition, study design did not address the many genetic and physiologic factors that might be related to long-term weight loss maintenance or control or a variety of other factors that might have impacted their success including personality, intrinsic coping skills, or other processes.

Implications for Nursing Practice

Unprecedented growth in the prevalence of obesity is dramatically impacting the health of Americans. Currently more than 68% of adults and nearly 32% of children are considered overweight or obese. Given the strong connection between obesity and

chronic disease, findings of this study challenge our current paradigm of care delivery. First, this study clearly demonstrated that the influence of the health care system as a whole was negligible. This is despite the fact that participants lost from 25-140 pounds to move into a normal range. Even at that weight, only 25% of the participants even mentioned interaction with a healthcare provider. One indicated that a healthcare provider had brought up his weight, recommending that he not gain more weight; three others had conversations that centered on medications proposed to control blood pressure or cholesterol but not weight control. Nurses were not mentioned. The current health care system is predicated on a model of prescribing actions to address pathology and often does not function in a way to actively engage individuals in the solution or consider the needs of the person as a whole.

This study demonstrated that comments of significant others impacted behavior and though this impact might not be immediate, it might still be life changing. Healthcare providers could have a significant impact. A challenge for nurses and other health care professionals is finding uplifting and encouraging ways to initiate conversations about weight and then supporting individuals as they seek solutions. Nursing, along with other health professions, has a long-standing tradition of conveying instructions and information to patients from a position of authority. This tradition needs to be re-examined to place a much greater emphasis on partnership with patients and supporting their self-management. Use of motivational interviewing and other more engaging communication styles have proven helpful in several studies. This would be an area to consider for incorporation into nursing programs and continuing education for practicing nurses.

Another important concept that was noted by Transforming Self, as well as other studies, is the importance of focus on the process of lifestyle change rather than merely the outcome of weight loss. The nurse or other healthcare provider could better support the patient by helping them identify and focus on pleasurable aspects of regular exercise, healthy eating habits, and learning how to separate hunger from other emotional needs or responses. In addition, supporting patients in learning about nutrition and modifying intake without reliance on packaged foods or fad diets appear to be much more successful and sustainable.

Recognition of maintenance of healthy weight is also an area to consider. Healthcare providers should recognize individuals as they maintain their lifestyle changes, not solely during the weight loss period. In addition, how can the health provider tap into the motivational aspects of successful maintainers working with others initiating lifestyle changes? Participants in Transforming Self had identified ways to share their stories in multiple venues; however, these opportunities were not initiated by healthcare providers.

Upon further reflection, the researcher was still faced with questions regarding the absence of influence from health care providers in general, even with participants who were very obese. Vickers, Kircher, Smith, Petersen, and Rasmussen (2007) sought to examine the relatively low rate of health behavior change counseling that occurred in primary care settings by physicians and nurses. Researchers noted two areas that appeared to impact counseling activities. First, 31% of providers surveyed reported difficulty counseling patients on behaviors they struggled with themselves. Significance was also noted between perceived education and training in behavior change and

counseling and confidence to counsel. This would seem to indicate that primary care health providers need additional development and education in the area of health counseling. They also need to examine their own personal actions and beliefs regarding health and wellness and how those beliefs and actions impact patient interactions.

Lastly, as the largest group of healthcare providers, nursing has the ability to influence social change. As a discipline, nursing should advocate for social policies that support healthy lifestyles.

Recommendations for Future Research

The current study started out with the intent to fill at least part of the gap in knowledge related to behavior change maintenance, specifically weight loss maintenance in adults. Results of the current study would suggest a need to widen the scope by considering aspects of the entire basic social process rather than maintenance alone.

One of the first steps in continuing the developing of the theory of Transforming Self is to re-examine its structure. As discussed above, it is very possible that the structure is not stepwise and linear. Possible models worth exploring include further evaluation of the theory of into a non-staged process model, recognizing factors related to progression and regression in all stages--pre-action, action, and maintenance. This could be accomplished through focused study of individuals considered to be in each of these stages, followed longitudinally, examining progression/non-progression from stage to stage, critical junctures and triggers, and strategies to successfully persevere in the face of social and personal challenges. Also, it would be worthwhile revisiting in more detail the literature of other emerging theories that could contribute to an integrated model of health behavior change, which more comprehensively addresses maintenance. Emerging

theories further explore related areas such as personal transformation, self-responsibility, self-determination, and self-regulation. Considering findings of Transforming Self in conjunction with these theories might further illuminate behavior change.

Another potential area of focus could be further examination of the factors surrounding weight loss or health behavior change counseling in primary care practices. Identification and testing of interventions designed to promote patient activation and further evaluation of effectiveness of recommendations for healthy lifestyle changes prior to medication prescriptions for non-urgent medical conditions should be undertaken. The current study also called to question the current provider agenda related to specific tasks, behavioral expectations, and "dieting," i.e., prescriptions for change in favor of a more generalized approach to lifetime behaviors that support a healthy weight.

In addition, Wing and Phelan (2005) identified that for some people, medical urgencies present an effective trigger for change. Further identification and evaluation of situations in which health care providers can appropriately use the presence of medical triggers as positive catalyst for change should be undertaken.

Lastly, there seems to be a need for additional focus on positive social messaging for individuals who are attempting or maintaining weight loss. Hindle and Carpenter (2011) discussed the presence of saboteurs among friends, family, and other social acquaintances as being non-malicious. Participants in Transforming Self did not identify behaviors among friends as being intentionally sabotaging. However, clearly they had significant impact on individuals. Behaviors ranged from no response (almost as if the weight loss was unnoticed) to continual questioning value of change. Additional research with families and friends of individuals who have undergone weight loss to probe the

rationale for their responses would be of interest. In addition, qualitative studies exploring positive affirmation from the eyes of successful weight loss maintainers could help identify helpful responses utilized by well-meaning support persons.

Conclusions

The prevalence of obesity is dramatically impacting the health of Americans. Today, 68% of adults and nearly 32% of children and adolescents are either overweight or obese. The average American adult female is 15.4 pounds heavier and the adult male is 17.1 pounds heavier than they would have been in 1988. Obesity is a major contributor to rising rates of more than 20 chronic conditions and is now considered to be one of the most serious health problems facing the United States. Obesity is also a significant factor in lost productivity and health care costs. It is estimated that obesity is linked to an annual cost of $73 billion in lost productivity and more than $150 billion on obesity-linked health care costs. Commonly used health behavior change models emphasize adoption of health behavior change, not maintenance. To successfully reduce and maintain weight, individuals need to make lifetime changes in diet, exercise, and non-food responses to emotional triggers. There is a critical need to increase our understanding of weight loss maintenance in adults.

Although the theory of Transforming Self is in its infancy, it advances our understanding of weight loss and maintenance. The theory points out the importance of commitment to lifelong healthy eating and active lifestyles that are self-determined and self-regulated. It also highlights a need for additional knowledge about nutrition and health and brings to light the significant challenges and societal pressures faced by individuals as they maintain their commitment to healthy lifestyles. These concepts,

while consistent with previous research findings, stand in stark contrast to the strong messages that individuals hear and see daily regarding fad diets, weight loss remedies, and 10-minute routes to a toned body.

Results of the current study point to a need for a holistic response to weight loss and maintenance currently not addressed by our health care system. Given the ubiquitous marketing of weight loss products, it is even more important for health care providers to send forth a different message. A healthy weight should not be considered an outcome but a byproduct of living well, eating well, and being active. The current study challenges us to change direction in research, education, and practice.

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APPENDIX A

AUTHORIZATION FOR MAYO TO USE MEDICAL INFORMATION FOR MEDICAL RESEARCH

MAYO CLINIC

Mayo Clinic
200 First Street SW
Rochester, Minnesota 55905
507-293-3550

Authorization for Mayo to use Medical Information for Medical Research

As of January 1, 1997, Minnesota law requires Mayo to obtain your authorization before we release information from the medical record for research purposes.

We want patients to be informed about how medical information is used, and the benefits to everyone that come from medical research using anonymous information contained in medical records. If you allow the use of this information for research, Mayo will protect your privacy and confidentiality. Only group data are published in studies, not individual identities.

You also have the right to say no. This decision is an individual one, and in each case your wishes will be honored. Your decision will not affect the care you receive at Mayo in any way. If you do not return the form, this will be considered approval.

The future of quality medical care depends upon research using medical records. Consider the benefits to humanity, your loved ones and yourself provided by medical advances. By signing this form, you will be contributing to medical progress now, and for generations to come. If you have any questions or concerns about this authorization, please call us at 507-293-3550.

(Please mark an X in one of the boxes below. Use a dark black ball point pen.)

☐ I authorize Mayo to review medical records about me for medical research.
No information which will identify me as a patient or participant in any study will be published.

☐ I do not authorize Mayo to review medical records about me for medical research.

Please sign here and return: _____ _____

Patient or Authorized Representative *Date*

_____

Relationship to Patient (if not patient)

APPENDIX B

LETTER TO PRIMARY CARE PROVIDERS SEEKING POTENTIAL PARTICIPANT NAMES

January 15, 2012

Name
Address

Dear (place name here):

My name is Stephanie Witwer and I am a doctoral student in nursing education at the University of Northern Colorado. I am conducting a research study which has been approved by the Institutional Review Boards of both the Mayo Clinic and the University of Northern Colorado.

This study seeks to interview adult individuals with a history of being overweight or obese, who have intentionally lost at least 10% of their body weight, and maintained that weight loss for at least one year. Patients who have had bariatric surgery or are residents of long-term care facilities are excluded. This study will use grounded theory research methods to learn more about factors that promote weight loss maintenance.

In order to conduct this study, I would appreciate your help in two areas. The first area is in identification of potential research participants. As you think about the patients you care for, are there individuals that come to mind who meet these criteria? If so, please contact me at witwer.stephanie@mayo.edu. I will screen the EMR of patients identified as potential participants to determine whether they meet study criteria. Second, if they meet study criteria, I would request that you send a prepared letter to them informing them of the research study and asking them to contact me if they are interested in participating. I will supply that letter to you for any potential participants.

I am so appreciative for any assistance you can give me in this research and look forward to hearing from you.

Sincerely,

Stephanie G. Witwer, Ph.D.(c), RN
Nurse Administrator Employee and Community Health

Attachment: Appendix B

APPENDIX C

LETTER TO PATIENTS FROM PRIMARY CARE PROVIDERS INFORMING THEM OF RESEARCH OPPORTUNITY

January 15, 2012
Name
Address

Dear (place name here):

I would like to inform you of an opportunity to participate in an important research study. This study is being conducted by a Mayo Clinic employee and doctoral nursing student at the University of Northern Colorado, Ms. Stephanie Witwer, RN.

This study seeks to better understand how individuals are successful in being able to maintain weight loss over a long period of time. This research will help us learn what the important factors are that contribute to long-term weight loss, with the hope of helping other people.

Here's what you could expect if you would choose to participate in this study. This study involves one or more interviews that would last approximately 60 minutes each. The interviews would be held at a time and place mutually agreed upon by you and Ms. Witwer. The interviews would be audio-recorded in order to transcribe it to paper. Ms. Witwer would analyze your interviews and the interviews of other people looking for themes or trends that would help us identify common experiences among people who have maintained weight loss.

All materials associated with the interviews would be held confidential, kept in a locked and secure location, and destroyed upon completion of the study. Your anonymity will be protected. Participation is voluntary and you would be free to withdraw from the study at any time. Your decision will be respected and not affect your care in any way.

If you are willing to participate in this study, please contact Ms. Witwer at witwer.stephanie@mayo.edu or by telephone at 701-240-6208. Thank you for your consideration.

Sincerely,

Dr. Jane Johnson
Family Medicine

APPENDIX D

FLYER TO SOLICIT PARTICIPANTS FOR RESEARCH STUDY

Seeking Participants for Research Study

- Study Title: An In-Depth Exploration of Successful Weight Loss Maintenance
- Who: Seeking people who have lost 10% or more of body weight and maintained weight loss one year or more.
- This study would involve being interviewed one or more times to share your weight loss maintenance story
- After interviewing several people this study will identify themes or concepts common to weight loss maintenance experiences with the hope that this information could help others.
- For more information contact:
  - Ms. Stephanie Witwer, MS, RN, doctoral nursing student , University of Northern Colorado and Mayo Clinic RN
    - witwer.stephanie@mayo.edu
    - 701-240-6208
  - This study has been approved by the Institutional Review Boards of the University of Northern Colorado and Mayo Clinic.

APPENDIX E

MAYO CLINIC CONSENT FORM TO PARTICIPATE IN RESEARCH

MAYO CLINIC

Approval Date: **November 21, 2012**
Not to be used after: **June 18, 2013**

Name and Clinic Number

RESEARCH PARTICIPANT CONSENT AND PRIVACY AUTHORIZATION FORM

Study Title: An In-Depth Exploration of Successful Weight Loss Maintenance

IRB#: 12-001340

Principal Investigator: Stephanie Witwer, Ph.D. (c), RN and Colleagues

Please read this information carefully. It tells you important things about this research study. A member of our research team will talk to you about taking part in this research study. If you have questions at any time, please ask us.

Take your time to decide. Feel free to discuss the study with your family, friends, and healthcare provider before you make your decision.

To help you decide if you want to take part in this study, you should know:

- Taking part in this study is completely voluntary.
- You can choose not to participate.
- You are free to change your mind at any time if you choose to participate.
- Your decision won't cause any penalties or loss of benefits to which you're otherwise entitled.
- Your decision won't change the access to medical care you get at Mayo Clinic now or in the future if you choose not to participate or discontinue your participation.

If you decide to take part in this research study, you will sign this consent form to show that you want to take part. We will give you a copy of this form to keep.

MAYO CLINIC

Approval Date: **November 21, 2012**
Not to be used after: **June 18, 2013**

Name and Clinic Number

CONTACT INFORMATION

You can contact …	At …	If you have questions or about …
Principal Investigator(s): Stephanie Witwer, Ph.D(c), RN	**Phone:** (701) 240-6208	▪ Study tests and procedures ▪ Research-related injuries or emergencies ▪ Any research-related concerns or complaints ▪ Withdrawing from the research study ▪ Materials you receive ▪ Research related appointments
Mayo Clinic Institutional Review Board (IRB)	**Phone:** (507) 266-4000 **Toll-Free:** (866) 273-4681	▪ Rights of a research participant
Research Subject Advocate (The RSA is independent of the Study Team)	**Phone:** (507) 266-9372 **Toll-Free:** (866) 273-4681 **E-mail:** researchsubjectadvocate@mayo.edu	▪ Rights of a research participant ▪ Any research-related concerns or complaints ▪ Use of your Protected Health Information ▪ Stopping your authorization to use your Protected Health Information
Research Billing	**Rochester:** (507) 266-5670	▪ Billing or insurance related to this research study

MAYO CLINIC

Approval Date: **November 21, 2012**
Not to be used after: **June 18, 2013**

Name and Clinic Number

1. Why are you being asked to take part in this research study?

You have been identified as a potential participant in this research study because you have successfully maintained a significant weight loss for one year or more.

2. Why is this research study being done?

This study seeks to learn more about how some people can successfully maintain weight loss for a long period of time. Since many people struggle with maintaining weight loss, information obtained in this research may help us understand how to support other people.

3. How long will you be in this research study?

Participation in this study is expected to include one or more interviews about your perceptions about your successful weight loss. Today's interview may be your only participation. If a follow-up interview is requested, it is likely to occur within three months.

4. What will happen to you while you are in this research study?

As a participant in this research, you will be asked to be interviewed one or more times. Interviews are estimated to last an hour. The interviews will be audio recorded and transcribed at a later time. In this type of research, the investigator will be seeking to learn themes or trends related to long-term weight loss across interviews with several different participants. It is possible your actual words may be used to give an example of a concept, but most often the final research will not contain specific descriptions of your personal experiences. Interviews will be conducted at a time and place mutually agreed upon between you the research investigator.

MAYO CLINIC

Approval Date: **November 21, 2012**
Not to be used after: **June 18, 2013**

Name and Clinic Number

In addition to the interview(s) you will be asked to complete a one-time short demographic questionnaire. This will be used only to determine if certain responses appear to occur in particular groups of participants.

5. What are the possible risks or discomforts from being in this research study?

Risks to you are minimal. It is possible, that discussing your weight loss experience may cause discomfort or anxiety. It is not expected that information discussed during this interview will pose any legal, social or economic risks for you if you decide to participate.

6. Are there reasons you might leave this research study early?

This study may or may not involve follow-up interview(s). The investigator will contact you if additional follow-up interviews are indicated by the study.

7. What are the possible benefits from being in this research study?

Information obtained from this study may contribute to society's knowledge about successful weight loss maintenance, and help others who struggle with this condition.

8. What alternative do you have if you choose not to participate in this research study?

This study is only being done to gather information. You may choose not to take part in this study.

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9. What tests or procedures will you need to pay for if you take part in this research study?

Costs would include only your time and transportation to the interview.

10. Will you be paid for taking part in this research study?

You will not be paid for taking part in this research study, however a small gift will be offered to thank you for your participation.

11. How will your privacy and the confidentiality of your records be protected?

Mayo Clinic is committed to protecting the confidentiality of information obtained about you in connection with this research study. Because this study is part of the requirements of an academic nursing education program, participant names will be shared with the investigator's advisor as described below.

During the interview process, three types of information or documents will be created. First the consent form. This form will be scanned and uploaded to a password protected computer file accessible only to the investigator and her primary academic advisor. Paper forms will be stored in a locked file cabinet in the investigator's private office.

Demographic forms are the second type of information. These will be stored in the locked file cabinet in the investigator's office.

Lastly, audio recordings of interviews will be transcribed. Typed transcriptions and summaries or notes made by the investigator will be stored in electronic form in a password protected computer file accessible by the investigator and academic RN committee members who are assisting with data analysis. Only a code will identify these documents, your name will not be included. Only the investigator could potentially connect your name to the information. Only the investigator will have access to audio recordings.

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All materials will be destroyed three years after study completion.

During this research, information about your health will be collected. Under Federal law called the Privacy Rule, health information is private. However, there are exceptions to this rule, and you should know who may be able to see, use and share your health information for research and why they may need to do so. Information about you and your health cannot be used in this research study without your written permission. If you sign this form, it will provide that permission.

Health information may be collected about you from:

- Past and present medical records.
- Research interviews and questionnaires.

Why will this information be used and/or given to others?

- To do the research.
- To report the results.
- To see if the research was done correctly.

If the results of this study are made public, information that identifies you will not be used.

Who may use or share your health information?

- Mayo Clinic staff involved in this study.
- University of Northern Colorado School of Nursing Committee Members

With whom may your health information be shared?

- The Mayo Clinic Institutional Review Board that oversees the research.
- Researchers involved in this study at the University of Northern Colorado.
- Federal and State agencies (such as the Food and Drug Administration, the Department of Health and Human Services, the National Institutes of Health and other US or government agencies in other countries) that oversee or review research.
- A group that oversees the data (study information) and safety of this research.

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Is your health information protected after it has been shared with others?

Mayo Clinic asks anyone who receives your health information from us to protect your privacy, however once your information is shared outside Mayo Clinic we cannot promise that it will remain private and it may no longer be protected by the Privacy Rule.

Your Privacy Rights

You do not have to sign this form, but if you do not, you cannot take part in this research study.

If you cancel your permission to use or share your health information, your participation in this study will end and no more information about you will be collected; however, information already collected about you in the study may continue to be used.

If you choose not to take part or if you withdraw from this study, it will not harm your relationship with your own doctors or with Mayo Clinic.

You can cancel your permission to use or share your health information at any time by sending a letter to the address below:

Mayo Clinic
Office for Human Research Protection
ATTN: Notice of Revocation of Authorization
200 1st Street SW
Rochester, MN 55905

Alternatively, you may cancel your permission by emailing the Mayo Clinic Research Subject Advocate at: researchsubjectadvocate@mayo.edu

Please be sure to include in your letter or email:

- The name of the Principal Investigator,
- The study IRB number, and /or study name, and
- Your contact information.

Your permission lasts until the end of this study, unless you cancel it. Because research is an ongoing process, we cannot give you an exact date when the study will end.

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Approval Date: **November 21, 2012**
Not to be used after: **June 18, 2013**

Name and Clinic Number

ENROLLMENT AND PERMISSION SIGNATURES:

Your signature documents your permission to take part in this research.

	/ /	: AM/PM
Printed Name	Date	Time

Signature

Person Obtaining Consent

- I have explained the research study to the participant.
- I have answered all questions about this research study to the best of my ability.

	/ /	: AM/PM
Printed Name	Date	Time

Signature

APPENDIX F

DEMOGRAPHIC FORM

UNIVERSITY of NORTHERN COLORADO

Project Title: An In-Depth Exploration of Successful Weight Loss Maintenance
Lead Investigator: Stephanie Witwer, MS, RN

DEMOGRAPHIC INFORMATION

1. What is your current age?
   - 18-29 _____
   - 30-49 _____
   - 50-69 _____
   - 70 and older _____

2. What is your gender
   - Female_____
   - Male_____

3. What is your educational level?
   - Did not graduate High School _____
   - High School _____
   - Some College _____
   - College Degree _____

4. What is your current employment status?
   - Not employed _____
   - Employed part-time _____
   - Employed full-time _____
   - Retired _____

5. With whom do you currently live?
   - Live alone_____
   - Lives with spouse/significant other _____
   - Lives with dependents (children, others) _____

APPENDIX G

UNSTRUCTURED INTERVIEW GUIDE

Initial Interview Questions

1. Would you please share with me your story of weight loss from when you decided to lose weight until the present time.
2. What were some of the challenges you faced in losing the weight? How did you overcome them?
3. How have you been able to be successful in keeping the weight off?
4. Since you have lost this weight, is your life different? How?
5. What do you anticipate in the future? What will your challenges be?

APPENDIX H

UNIVERSITY OF NORTHERN COLORADO INSTITUTIONAL REVIEW BOARD APPROVAL

See revisions attached S. Collins 7/20/12

UNIVERSITY of NORTHERN COLORADO
Institutional Review Board (IRB)

February 14, 2012

TO: Susan Collins
Gerontology

FROM: Gary Heise, Co-Chair GDH
UNC Institutional Review Board

RE: Expedited Review of Proposal, *An In-depth Exploration of Successful Weight Loss Maintenance,* submitted by Stephanie M. Witwer (Research Advisor: Melissa Henry)

First Consultant: The above proposal is being submitted to you for an expedited review. Please review the proposal in light of the Committee's charge and direct requests for changes directly to the researcher or researcher's advisor. If you have any unresolved concerns, please contact Gary Heise, School of Sport and Exercise Science, Campus Box 39, (x1738). When you are ready to recommend approval, sign this form and return to me.

I recommend approval as is. * Susan Collins 7/20/12
Signature of First Consultant Date

The above referenced prospectus has been reviewed for compliance with HHS guidelines for ethical principles in human subjects research. The decision of the Institutional Review Board is that the project is approved as proposed for a period of one year: 8-7-2012 to 8-7-2013.

Gary D. Heise 7 Aug 2012
Gary D. Heise, Co-Chair Date

Comments:
* See revised version, attached

APPENDIX I

MAYO CLINIC NURSING RESEARCH AND EVALUATION COMMITTEE APPROVAL

MAYO CLINIC

Memo

Diane E. Holland, Ph.D., R.N.
Department of Nursing
Division of Nursing Research
Eisenberg S-41
Extension 5-1036
E-mail: holland.diane@mayo.edu

Date: May 30, 2012

To: Stephanie Witwer, RN, PhD(c)

From: Diane E. Holland, PhD, RN
Chair, Nursing Research and Evaluation Committee

Re: Nursing Research Proposal

The following is an excerpt from the May 29, 2012 Nursing Research and Evaluation Committee minutes, regarding the proposal entitled *An In-Depth Exploration of Successful Weight Loss Maintenance*.

> Committee members reviewed and approved the proposal entitled *An In-Depth Exploration of Successful Weight Loss Maintenance*. Recommendations to strengthen the proposal will be shared with the investigator(s). Catherine Vanderboom, PhD, RN, abstained from voting, as she has served as an advisor throughout the proposal development.

The principal investigator is required to submit the proposal, with any changes that were suggested by NREC as appropriate, to the Mayo Clinic Institutional Review Board (IRB) using IRBe. We ask that you submit copies of any correspondence to the IRB and to the Division of Nursing Research so protocol files may be kept up to date.

You are encouraged to enter your study into the Mayo Clinic Nursing Central Project Registry (http://javaprod.mayo.edu/donkics/topic.html?t=125) to assist with providing a central access point for nurses to search, view and sort new and completed projects related to an area of interest.

Questions can be directed to Joel Pacyna (NREC secretary) at 6-7126 or pacyna.joel@mayo.edu.

DEH:jep

APPENDIX J

MAYO CLINIC INSTITUTIONAL REVIEW BOARD APPROVAL

Principal Investigator Notification:

From: Mayo Clinic IRB
To: Stephanie Witwer
CC: Stephanie Witwer

Re: **IRB Application #:** 12-001340
Title: An In-Depth Exploration of Successful Weight Loss Maintenance

IRBe Protocol Version: 0.01
IRBe Version Date: 6/10/2012 2:32 PM

IRB Approval Date: 6/19/2012
IRB Expiration Date: 6/18/2013

The above referenced application is approved by expedited review procedures (45 CFR 46.110, item 5, 6, and 7). The Reviewer conducted a risk-benefit analysis, and determined the study constitutes minimal risk research. The Reviewer determined that this research satisfies the requirements of 45 CFR 46.111.

The written consent form was reviewed and approved as written.

AS THE PRINCIPAL INVESTIGATOR OF THIS PROJECT, YOU ARE RESPONSIBLE FOR THE FOLLOWING RELATING TO THIS STUDY.
1) When applicable, use only IRB approved materials which are located under the documents tab of the IRBe workspace. Materials include consent forms, HIPAA, questionnaires, contact letters, advertisements, etc.
2) Submission to the IRB of any modifications to approved research along with any supporting documents for review and approval prior to initiation of the changes.
3) Submission to the IRB of all Unanticipated Problems Involving Risks to Subjects or Others (UPIRTSO).
4) Compliance with Mayo Clinic Institutional Policies.

Mayo Clinic Institutional Reviewer