

AN ABSTRACT OF THE THESIS OF

Diane E. Whaley for the degree of Doctor of Philosophy in Human Performance presented on October 30, 1997. Title: An Investigation of Possible Selves Across Stages of Exercise Involvement with Middle-aged Women.

Redacted for Privacy

Abstract approved: _____

Dr. Vicki Ebbeck

In order to develop effective interventions designed to encourage more middle-aged individuals to engage in regular exercise, there is a need to further understand the mechanisms involved in the decision to exercise. One appropriate conceptual framework involves future-oriented self-conceptions, or possible selves (Markus & Nurius, 1986). Possible selves, both hoped-for and feared, have been shown to vary over the lifespan in content and number (Cross & Markus, 1991), and to be predictive of future health behaviors (Hooker & Kaus, 1992,1994). The role of possible selves in the exercise context can be explored using the Stage of Change Model (Prochaska & DiClemente, 1983), which identifies participation as a process consisting of five identifiable stages. The purpose of this study was to examine the number and content of possible selves generated by individuals across stages of exercise behavior, in order to determine whether possible selves can differentiate those stages and be predictive of exercise-related behavior.

Participants were 204 middle-aged women employed at a university in the U.S. Pacific Northwest. Results indicated that differences in the number

and content of open-ended possible selves across stage of exercise were relatively few, although differences that did exist held potential for future interventions. Of particular interest was the significant finding of possible selves related to body image, which differed by stage for both hoped-for and feared selves. Responses to focused possible selves directly related to exercise behavior showed a number of differences between stage of exercise, providing support for previous literature as well as for the methodology employed in the present study. Individuals whose self-efficacy and outcome expectancy associated with a particular possible self related to exercise was high, were most likely to engage in exercise behavior. Finally, when the strongest predictor of exercise behavior was combined with exercise self-efficacy, the variance accounted for by the possible self was negligible. Findings support the conclusion that possible selves are worthy of future research in the exercise domain, including the role of possible selves as an antecedent to exercise self-efficacy. Results are discussed in terms of past research, practical applications, and future research directions.

©Copyright by Diane E. Whaley
October 30, 1997
All Rights Reserved

An Investigation of Possible Selves
Across Stages of Exercise Involvement
with Middle-aged Women

by

Diane E. Whaley

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Presentation Date: October 30, 1997
Commencement Date: June 1998

Doctor of Philosophy thesis of Diane E. Whaley presented on October 30, 1997

APPROVED:

Redacted for Privacy

Major Professor, representing Exercise and Sport Science

Redacted for Privacy

Chairman, Graduate School

Redacted for Privacy

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Redacted for Privacy

Diane E. Whaley, Author

ACKNOWLEDGMENTS

I would like to extend my sincere and warm appreciation to the members of my committee, Dr. Vicki Ebbeck, Dr. Becky Warner, Dr. Karen Hooker, Dr. Douglas Collier, and Dr. Jodi Engel. You have all contributed in significant ways to this project and my learning process, for which I am grateful. I would like to acknowledge the work of my co-researcher, Robin Blais, whose insights and moral support were critical during all phases of this study, as well as Heather Schatz and Karen Swanger for their help with data entry. My family and friends have been a source of emotional and social support throughout the last four years, particularly my Mom and Dad, Jean and Ed Whaley, Moira Stuart, Kathryn McNannay, and Janet Boytano. Thanks to each of you for your patience, understanding, and unerring support. I have been fortunate to have mentors who have helped me in numerous ways, particularly Dr.'s Janet Lee and Maureen Weiss. From you I have learned that it is possible to do meaningful research that challenges existing beliefs and contributes to the knowledge base. Finally, I'd like to thank the women of Oregon State University who chose to participate in this study, without whose support I would still be collecting data.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
Statement of the Problem.....	5
Research Questions.....	6
Operational Definitions.....	7
Assumptions.....	8
Limitations.....	8
Delimitations.....	9
REVIEW OF LITERATURE.....	10
Self-efficacy and Exercise.....	11
The Self-Concept.....	13
Self-Schemata.....	16
Possible Selves.....	21
The Stages of Change Model.....	29
Summary.....	34
METHODS AND PROCEDURES.....	36
Description of Participants.....	36
Instrumentation.....	39
Stage of Exercise Scale.....	39
Possible Selves Instrument.....	40
Exercise Self-efficacy Scale.....	41
Demographic Assessment.....	42
Procedures.....	42
Pilot Studies.....	44
Data Analysis.....	45
RESULTS.....	47
Descriptive Statistics.....	47
Manipulation Check.....	49
Research Questions.....	51
Number of Possible Selves by Stage.....	51
Coding of Possible Selves.....	52
Categories of Possible Selves by Stage.....	56
Exercise-related Possible Selves.....	59
Self-regulatory variables.....	62
Exercise Self-efficacy.....	65

TABLE OF CONTENTS (CONTINUED)

DISCUSSION.....	68
Number and Categories of Possible Selves	
Across Stages of Exercise.....	68
Exercise-related Possible Selves.....	76
Self-regulatory Variables	80
Exercise Self-efficacy.....	83
Conclusions and Future Research Directions.....	87
REFERENCES.....	93
APPENDICES	100

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1 Description of Participants	50
2 Average Number of Hoped-for and Feared Selves by Stage	52
3 Categories of Hoped-for and Feared Selves	54
4 Means and Standard Deviations for Hoped-for and Feared Self Categories by Stage	59
5 Exercise-related Hoped-for and Feared Selves by Stage	63
6 Summary of Linear Regression Analyses for Self-regulatory Variables	65
7 Summary of Linear Regression for Self-regulatory Variables and Exercise Self-efficacy	67

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
A Informed Consent Document.....	101
B Stages of Exercise Scale	102
C Possible Selves Instrument	103
D Self-efficacy Scale.....	111
E Demographic Questionnaire.....	112
F Cover letter to Participants	113

AN INVESTIGATION OF POSSIBLE SELVES ACROSS STAGES OF EXERCISE INVOLVEMENT WITH MIDDLE-AGED WOMEN

CHAPTER 1 INTRODUCTION

There is a curious paradox confronting researchers and practitioners who work with adults in the exercise context. Exercise and other forms of physical activity have been linked to psychological, physiological, and social benefits (Berger, Owen, Dunbar, Gardiner-Parks & Michielli, 1994; Fournier & Fine, 1990; McAuley & Rudolph, 1995; O'Brien Cousins & Burgess, 1992). Few adults, however, choose to participate in physical activity on a regular basis. The proportion of adults who report they "never exercise" doubles after age 55, from 19% to 36% (O'Brien & Vertinsky, 1991), and even conservative epidemiological estimates suggest that over 40% of adults are sedentary (McAuley & Rudolph, 1995). The recently released report of the Surgeon General on Physical Activity and Health (U.S. Department of Health and Human Services, 1996) states that 60% of adults do not achieve the recommended amount of regular physical activity. Of individuals who do become involved in an exercise program, approximately half drop out during the first three to six months of the program (Dishman, 1990).

Based on these statistics, it would appear to be useful to more thoroughly understand the processes that contribute to the decision of whether or not to exercise, particularly as it pertains to motivating middle-aged women. Participation in regular activity declines beyond young adulthood, with participation rates even lower for women than men (Marcus, Dubbert, King, & Pinto, 1995). Of the information that does exist

regarding middle-aged adults, most of the research concerns exercisers, not the larger number of nonexercisers (Biddle, 1995). Thus, there is a need to more thoroughly understand exercise behavior from the perspective of both exercisers and nonexercisers.

Although significant research has addressed the issue of barriers or constraints to exercise (see for example King et al., 1992), the underlying mechanisms responsible for the lack of motivation to exercise remain largely unidentified. In the exercise context, researchers have utilized self-efficacy theory (Bandura, 1977) as an appropriate theoretical model for examining exercise behavior in adults. Self-efficacy theory (SET) includes the belief that a given behavior will lead to certain outcomes (outcome expectancy), and the individual is capable of successfully executing the behavior (self-efficacy). A number of researchers (Desharnais, Bouillon, & Godin, 1986; Marcus, Selby, Niaura, & Rossi, 1992; Rodgers & Brawley, 1991) have shown the utility of self-efficacy and outcome expectancy in predicting and mediating exercise behavior. Empirical studies have shown exercise self-efficacy to be an important indicator of current and future exercise behavior (Marcus, Eaton, Rossi, & Harlow, 1994), but it is not clear whether the exercise results in increased self-efficacy, or if increases in one's level of self-efficacy result in higher levels of exercise.

Another conceptual framework appropriate for examining behavior emanates from how an individual views or represents her/himself. One such representation of the self, self-schemas or "cognitive structures about the self" (Markus, 1977), represents a possible window through which we might view behavior. Kendzierski (1988, 1990), for example, has shown how individuals with a self-schemata for exercise are likely to participate in physical activity and to have strategies to help them remain active.

Although self-schemas generally represent one's current behavior, they can also represent what may be possible in the future (Markus & Herzog, 1992). Possible selves, as described by Markus and Nurius (1986), are self-knowledges describing how individuals think about their potential and their future. They are cognitive manifestations of goals, motives, fears, and threats. These possible selves, both hoped for and feared, have been used to assess the motivational status of adults at various ages (Hooker, 1992; Hooker & Kaus, 1992, 1994). For example, Hooker and Kaus (1994) found that how capable a person felt of avoiding a feared health-related possible self predicted health behaviors in middle-aged adults (40-59 years).

Possible selves are postulated to be associated with behavior in a variety of ways. It might be expected that an individual with a hoped-for self involving a high level of fitness would be more likely to exercise than one without this self-conception. Additionally, an individual with a feared self involving a serious medical condition (i.e., heart disease) may also be more likely to exercise in order to avoid the realization of that feared self, or it may inhibit exercise simply because of the fear of injuring him/herself.

Associated with possible selves are a variety of self-regulatory mechanisms described by Hooker and Kaus (1994) as "action plans set in motion to achieve one's goals" (p. 127). These self-regulatory mechanisms include cognitive issues such as the degree of confidence one has for attaining a given goal (self-efficacy), and the belief that goal can be accomplished (outcome expectancy). Research indicates that the stronger the self-regulatory processes associated with a given goal, the more likely that goal will be accomplished (Cross & Markus, 1991; Hooker, 1992; Hooker & Kaus, 1994).

The dynamic of exercise participation has been found to be more complicated than merely participating or not participating. Prochaska and

DiClemente (1983) originally developed a framework called the Stages of Change Model (SCM), to describe the different phases involved in the acquisition and maintenance of various health behaviors. Marcus and her colleagues have extended this model to the physical domain (Marcus, Banspach, et al., 1992; Marcus, Rossi, et al., 1992; Marcus, Selby, et al., 1992; Marcus & Simkin, 1994). Five stages have been identified: Precontemplation (do not exercise and do not intend to start), contemplation (do not exercise but intend to start), preparation (exercise some but not regularly), action (exercising regularly but for less than six months), and maintenance (exercising regularly for at least six months). Movement through the stages of change is related to an increased level of self-efficacy (situation-specific self-confidence) and decisional balance, such that the pros of exercise outweigh the cons as exercise behavior becomes a reality. The SCM model allows a convenient and reliable categorization tool from which we might examine the construct of possible selves across levels of exercise behavior.

Stage-specific interventions based on processes of change (Prochaska & DiClemente, 1983) have been successful in moving individual's from inactivity to activity (i.e., contemplation to preparation) and from short-term (action) to longer-term exercise (maintenance). These processes of change represent a variety of activities that are initiated or experienced by an individual in modifying affect, behavior, cognitions, or relationships (Prochaska & DiClemente, 1986). Within each of the ten identified processes a variety of techniques can be used by the individual. For example, for the process of self-reevaluation, which entails a cognitive reappraisal of values by the individual (Marcus, Rossi, Selby, Niaura, & Abrams, 1992), one might imagine an individual using strategies such as redefining goals or observing others. Thus, this framework for viewing exercise behavior provides the

opportunity to design effective interventions targeted to an individual's needs, both cognitive and behavioral. Before any interventions are designed, however, it was important to ascertain whether individuals at various levels of exercise behavior differed in the possible selves they reported.

Statement of the Problem

Possible selves would appear to be a legitimate strategy for a variety of the processes of change. Given that "possible selves enable the person to focus attention on specific, task-relevant thoughts and feelings and to organize action" (Cross & Markus, 1994, p. 424), elucidation of the possible selves identified by individuals across the spectrum of exercise behaviors should provide an opportunity to better understand the cognitive mechanisms underlying participation in each of the stages of exercise involvement. Thus, it was important to examine the possible selves of individuals at various stages of exercise behavior, and to see if the number and/or content of hoped-for and feared possible selves helped to differentiate those stages of exercise behavior. In addition, it was of interest to see if the self-regulatory processes of self-efficacy and outcome expectancy associated with specific focused possible selves were predictive of exercise behavior.

The purpose of this study was to examine the construct of possible selves identified by female middle-aged adults at different stages of exercise involvement. In particular, the ability of both hoped-for and feared possible selves to differentiate participants in the stages of precontemplation, contemplation, preparation, action, and maintenance was explored. It was also of interest to explore the self-regulatory processes of self-efficacy and

outcome expectancy associated with the most important, exercise-related (possible self most closely related to their present level of exercise behavior), and exercise specific (a general exercise-related self elicited from pilot studies) hoped-for and feared possible selves as predictors of exercise behavior. Finally, the strongest predictor of exercise behavior was compared with the established predictor of exercise self-efficacy in order to examine the relative strength of these constructs in predicting exercise behavior.

Research Questions

In order to explore the role of possible selves on exercise behavior, the following questions were posed:

1. Do the number and categories of open-ended hoped-for possible selves vary across stages of change?
2. Does the category of the hoped-for possible self most closely related to exercise vary across stage of change?
3. Do the self-regulatory processes (self-efficacy, outcome expectancy) for the three focused hoped-for possible selves (most important possible self, possible self most closely related to exercise, and exercise-specific possible self) differentially predict exercise behavior, and if so, which one of these three is the strongest predictor?
4. How does the best set of self-regulatory predictors from question (3) compare to exercise self-efficacy in predicting exercise behavior?
5. Do the number and categories of open-ended feared possible selves vary across stages of change?

6. Does the category of the feared possible self most closely related to exercise vary across stage of change?
7. Do the self-regulatory processes for the three focused feared possible selves (most important possible self, possible self most closely related to exercise, and exercise-specific possible self) differentially predict exercise behavior, and if so, which one of these three is the strongest predictor?
8. How does the best set of self-regulatory predictors from question (7) compare to exercise self-efficacy in predicting exercise behavior?

Operational Definitions

The following terms were operationalized as follows:

Exercise was defined as any planned activity in which the participant engages for the purpose of maintaining or increasing health or fitness, such as walking, swimming, dancing, aerobics, or bicycling (adopted from Courneya, 1995).

Regular exercise was defined as participating in this type of activity at least three times per week, thirty minutes total or more per day (consecutively or cumulatively at a moderate intensity; Report of the Surgeon General, 1996).

Possible selves are future-oriented self-conceptions (Markus & Nurius, 1986) identified by participants. Possible selves were measured utilizing the instrument developed by Markus (1986).

Stage of change is one of the five stages of health-related behavior originally defined by Prochaska and DiClemente (1983), and extended to the exercise domain by Marcus, Banspach, et al., (1992). These stages are:

precontemplation (not exercising, not thinking about exercising), contemplation (not exercising, but some thought about doing it), preparation (some exercise, but no routine established), action (exercising regularly for less than six months), and maintenance (exercising regularly for six months or more). Stage of change will be measured using the Stage of Exercise Scale (Cardinal, 1995).

Assumptions

Any study has inherent in it certain assumptions which cannot be readily observed but are nonetheless expected. In this study, participants were expected to answer all questionnaires truthfully, and to be honest and thorough regarding the possible selves they imagine for themselves. In addition, they were expected to accurately report their level of exercise activity on the Stage of Exercise Scale.

Limitations

A possible limitation of this study is the fact that possible selves were assessed via a self-report questionnaire as opposed to a one-on-one interview. It is also possible that there was a bias toward exercise-related possible selves, since participants were informed that the study was concerned with how people think about exercise. As a result, the possible selves described may not be completely comprehensive. In addition, it was important to recognize the effect of changing societal expectations regarding women and physical

activity, and the ramifications of these expectations on how women perceive their bodies.

Delimitations

Although every effort was made to be inclusive in the selection of participants with regard to ethnicity and socioeconomic indicators, the sample was relatively homogenous by virtue of the location of the study. Socioeconomic and educational differences were maximized by using a broad spectrum of university employees and their spouses/partners, but racial and ethnic diversity was extremely limited. Secondly, although the use of women only in this study was legitimate for a variety of reasons (lack of studies utilizing women, large percentage of women presently sedentary), it does by its nature limit the generalizability of the findings. The generalizability of the findings are also limited by the age restrictions for the study, which is delimited to middle-aged adult women 35 years to 59 years. The age range utilized by Cross & Markus (1991), in their study of possible selves across the lifespan was 40-59; this range was expanded in the present study in order to capture a larger sample in an effort to reach the goal of 50 participants per activity stage).

CHAPTER 2 REVIEW OF LITERATURE

The self-concept, and more specifically self-representations, have become an important focus in attempting to understand behavior across the lifespan (Harter, 1990; Markus & Herzog, 1992). How an individual frames a given event, whether or not significance is attached to it, what priority it is given, and what role it has in enhancing or detracting from an individual's self-view, are all believed to have important ramifications on subsequent behavior. This functional role for self-representations is a relatively recent phenomenon. No longer is the self seen as merely a correlate to behavior, but is instead increasingly considered to be a mediator or direct cause (Harter, 1990). Researchers in the field of exercise and sport science have begun to apply this knowledge to better their understanding of participation and adherence in the exercise context (Dishman, 1994; Kendzierski, 1988). The transtheoretical model, or stages of change model (SCM; Prochaska & DiClemente, 1983, 1985) has proven to more accurately describe the process of participation in exercise as more than merely exercising or not exercising. The SCM provides a framework from which we can examine individuals along a continuum of exercise behavior.

This chapter will examine the role of possible selves across stages of exercise involvement. The chapter will be organized around the following sections: a) a discussion of exercise self-efficacy, a construct that has been well researched in the exercise literature as both a mediator and outcome of exercise behavior; b) an explanation and description of the self-concept and self-representations, with emphasis on the role of the self-concept in

behavioral research; c) an analysis of Markus' (1977) self-schemata, including its application in the exercise domain (Kendzierski, 1988, 1990); d) an exploration of self-schemata as it pertains to future-oriented self-conceptions, or possible selves (Markus & Nurius, 1986); and e) a discussion of the stages of change model (Prochaska & DiClemente, 1983, 1985), as well as its utility in the exercise context (Barke & Nicholas, 1990; Gorely & Gordon, 1995; Marcus et al., 1992).

Self-efficacy and Exercise

Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Research has shown a link between self-efficacy and a variety of health behavior outcomes, from smoking cessation to career choices and athletic performance (Schunk, 1995). Bandura (1977) hypothesized that self-efficacy is learned in a variety of ways, from personal experiences to modeling by others. In order for self-efficacy to impact behavior, the individual must have the requisite skill and incentive to perform the behavior. Perceived self-efficacy affects choice, effort, and persistence at a task even in the face of obstacles. Self-efficacy theory (SET; Bandura, 1977) distinguishes between expectations of efficacy and outcome (Godin, 1994). Outcome expectancy involves a person's belief that a behavior will lead to a particular outcome regardless of whether the person is capable of performing the behavior (Rodgers & Brawley, 1991). Self-efficacy (SE) and outcome expectancy (OE) are related in that efficacious learners expect and usually receive positive outcomes for their actions (Schunk, 1995). In this

context SE and OE exist together in the individual's mind prior to the behavior being attempted.

A number of researchers have shown the utility of SET in the exercise context. McAuley (1992) reviewed the research that has examined self-efficacy and exercise in terms of primary prevention (using self-efficacy to alter problematic behaviors and/or preventing them from developing), and secondary prevention (adopting behaviors once morbidity exists). Among the studies that support self-efficacy as a significant predictor of exercise behavior are Sallis, Haskell, Fortmann, Taylor, and Solomon (1986), and Desharnais, Bouillon, and Godin (1986). In addition, McAuley and Jacobson (1991) found that self-efficacy to overcome barriers to exercise significantly predicted exercise behavior in sedentary adult women. McAuley summarizes the research in primary prevention as supporting self-efficacy theory, even though definitions of exercise differ, measurement remains an issue, and populations in the studies varied.

In terms of secondary prevention (primarily with cardiac rehabilitation programs), there is empirical evidence that perceptions of physical capability is a more accurate predictor of subsequent physiological functioning than actual physical capabilities (Ewart et al., 1986). Also, McAuley, Duncan, Wraith, and Lettunich (1991) showed positive effects of efficacy cognitions on aerobic exercise performance in middle-aged men and women.

In sum, SET has been shown to significantly predict participation, with high levels of self-efficacy for exercise associated with more regular participation patterns. Few authors, however, have measured the predictive power of self-efficacy against other theoretical constructs (Godin, 1994). Several researchers (Feltz, 1992; McAuley, 1992) have thus recommended that self-efficacy be combined with other models in order to most effectively

capture the relationship between cognitions and behavior. One conceptual framework that could be studied in conjunction with exercise efficacy is the self-concept.

The Self-Concept

Early theorists such as Coopersmith (1967) described the self-concept as a unidimensional construct with various aspects of the self contained under one large umbrella. This conceptualization failed to take into account any variations in the relationships between and among elements making up the self-concept (Fox, 1990). Shavelson presented and tested the first explicitly stated multifaceted, hierarchical model of the self-concept (Shavelson & Bolus, 1982; Shavelson, Hubner, & Stanton, 1976). This general conception, with refinements, is the one widely supported today. Harter (1985), however, concluded that the hierarchical nature of the model was perhaps too simplistic and of more benefit to the researcher than a true reflection of the individual. Regardless, this multidimensional model of the self-concept supported the notion that individuals may have varying conceptions of their competencies dependent upon the particular achievement area. For example, while an individual may have a high regard for their competence in the sport or exercise domain, they may have a lower opinion of their ability in the artistic or musical domain. Individuals who see themselves more multidimensionally, valuing a variety of achievement areas, are more likely to maintain an overall image of themselves which is positive than a person who defines him or herself in a more narrow context, such as "athlete" (Fox, 1990).

A multidimensional perspective allows individuals an overall view of the self which is both stable and dynamic. Although an individual may have a stable "core self" (Markus & Nurius, 1986), there are aspects of the self which are subject to change and adaptation depending on factors such as the presence or absence of social support, a significant life event (i.e., retirement, widowhood), or other social antecedents (gender, race, health status). This select collection of an individual's universe of self-representations is known as the working self-concept (Ruvolo & Markus, 1992), and represents only one of a number of possible combinations of self-representations the individual may employ.

The self-concept is defined as a framework for integrating an individual's life experiences (Markus & Herzog, 1992). It is used in the social sciences to refer to the overall, dynamic view individuals have of themselves, incorporating both psychological and sociological components (McCrae & Costa, 1988). Social components include factors such as health status, gender, and historical/life events (Markus & Herzog, 1992). This suggests that perceptions of the self differ between men and women, particularly as they relate to the body, for which the social construction of the body differs markedly (Hall, 1996). The self-concept is "centrally implicated in all aspects of psychological experience - in emotion, well-being, and coping; in goal setting, striving, motivation, and control; and in ability, efficacy, and competence" (Markus & Herzog, 1992, p. 110). Interestingly, however, the study of cognitions and their link to behavior has been relatively slow in coming. Harter (1990) suggests the reason for this delay is due to the mistaken belief that cognitions are unobservable and therefore unmeasurable. However, many researchers including Harter maintain that although cognitions are unobservable, measurement is indeed possible, and that we

must continue to develop operational definitions for self-constructs and specific measurement instruments.

Historically, the role of the self-system in motivated behavior has been implicated by several theorists, but usually indirectly (Markus & Ruvolo, 1989). For example, concepts such as "volition" and "will" involve the combination of self and motivation in making a deliberate choice regarding one's actions. Early theorists such as James (1890) and Lewin (1948) recognized the link between thought and action, and therefore the self and goal-directed behavior. Later, this concept of will became synonymous with agency, where individuals were seen as causally responsible for their actions in the environment. Terms such as effectance motivation (Harter, 1978) and intrinsic motivation (Deci, 1975; Deci & Ryan, 1980) were used to describe what an individual could accomplish on their own.

Markus (1990) views the cognitive components of the self-system as interacting with but separate from affect, motivation, and behavior. Others (Bandura, 1977; Harter, 1986; Weiner, 1985) postulate that cognitions are causally connected to affective, motivational, and behavioral systems, or that a reciprocal relationship exists between cognitions and affect. Markus and Herzog's (1992) model of the dynamic self-concept includes the content of the self (past, current, and possible), the social antecedents which may affect that content, the functions of the self, and finally, the consequences of that content area such as self-esteem and activity choices. It is clear from the research that the self-concept is a fruitful area from which to study motivation toward exercise, particularly when combined with the social context in which cognitions occur. Although a number of self-systems have been described in the psychological literature, it seems reasonable to start our examination by

exploring a process believed to coordinate the mass of data which enters our consciousness.

Self-Schemata

It is apparent that with the enormous amount of information available to individuals at any given time, there must be mechanisms that help decipher, code, and organize that information. Because individuals attend to specific portions of the endless amount of information available to them, it is assumed that this selection process is deliberate. Markus (1977) hypothesized internal cognitive structures, or schemata, which allow individuals to encode and represent information. Interestingly, much of the information individuals process is concerned in some way with the self, and thus these are referred to as self-schemata, or "cognitive structures about the self" (Markus, 1977). These structures are formed as a result of past experiences, creating representations that deal with both specific events and general behaviors that occur over time. For example, a specific event might be "last week I was at first afraid to join the exercise class because I thought they were all better than me, but I did and afterward I was glad because several people came up and thanked me for joining" while a general behavior might be represented by the statement, "I am a good athlete," or in the case above, "I am a good member of the exercise class." The concept of self-schemata has been empirically tested, and there is considerable support for the supposition that individuals process information about the self differentially (Cross & Markus, 1994; Markus, 1977). Self-schemas represent a diverse collection of representations about the self, including the good me, the bad me, the

possible me, and the shared me (Markus, 1991). They are seen as rather resilient representations, not readily accessible to change.

In her influential article regarding the processing of information about the self, Markus (1977) began collecting evidence for the construct validity of self-schemata. This was accomplished in several ways, first by showing that there were individual differences in representations about the self. Based on the belief that differences in past experiences would result in differences in schematas in various domains, Markus gave college students a number of self-rating scales where participants were asked to decide which of two identifiers more appropriately described them (i.e., extrovert-introvert). These scales served to differentiate the participants into different behavioral domains. She chose one of the items, independence-dependence, for further testing, since this scale most clearly showed the schematic-nonschematic pattern. Individuals who scored at the highest end of the scale and who also rated that dimension as "very important" were labeled "schematic" for independence. Those at the opposite end of the scale who also rated this dimension as important were termed "non-schematic." Those who rated themselves in the middle of the scales and who fell at the lower end of the importance scale were labeled as "aschematic," which represents individuals who do not appear to have a schema in this particular dimension.

The three groups of schematic, nonschematic, and aschematic were then given a battery of tests designed to compare their performance on a variety of cognitive tasks, such as speed of processing. It was hypothesized that individuals with a schemata for that domain would be more likely to make judgments about the self in that domain, be more capable of predicting his/her own future behavior in that domain, and resist information contrary to the self-schemata in that domain. These results were in fact supported in

this study, with schematics (independents) and non-schematics (dependents) differing markedly from aschematic individuals in that the groups with a specific orientation for independence/dependence were more certain of how they would behave in a particular setting. Schematics and non-schematics were also more likely to reject incongruent information about their expected behavior in a particular domain than aschematics. Thus, the results supported the contention that individuals form cognitive structures about the self in particular domains, and these structures appear to mediate cognitive processing in particular directions.

Several studies have since supported the existence of self-schemata in a variety of domains, such as body weight (Markus, Hamill, & Sentis, 1987) and Type A and Type B behavior patterns (Strube et al., 1986). However, although Markus (1977) believed that self-schemata had an effect on behavior, there has been little empirical evidence of that connection (Kendzierski, 1994). An exception to this has been the work of Kendzierski (1988, 1990), who explored the issue of self-schemata in the exercise domain. Kendzierski (1988) gave college students three statements regarding exercise behavior (e.g., "I am someone who exercises regularly"), and asked the students to indicate how accurately they thought these statements described them, as well as how important each statement was to the image they had of themselves. Using scales adapted from Markus' work, individuals who scored highly on the three exercise scales (8-11 on the 11-point scale) and who deemed the statements as very important (8-11) were labeled as schematic for exercise, those who scored low on the exercise scales and high on the importance scale were deemed non-schematic for exercise, and those who scored in the mid-range on the scales and low on the importance of these terms for the image they had of themselves were considered aschematic for exercise. A fourth

group, made up of individuals who did not fit into any of the above categories, were not included in any further analyses.

In an effort to link self-schemata with behavioral correlates, individuals were then given a second survey which dealt with their specific exercise behavior, as well as "tricks" or strategies they might use to help them continue exercising. Results indicated that those with an exercise self-schemata were more likely than the other groups to be actively engaged in exercise, and exercising more days per week than nonexerciser schematics and aschematics. In addition, exerciser schematics made more plans to help them exercise, and used more strategies to keep them active than either of the other two groups, although these findings were only marginally significant statistically.

These findings support the idea that self-schemata not only affect processing of information but also guide behavior (Kendzierski, 1988). Individuals who were schematic for exercise were most likely to participate in physical activity, to have an interest in doing so, and to have strategies to help them remain active. Aschematics were next in likelihood, and those schematic for not exercising were least likely to be active. However, given that the questionnaires were administered at the same time, there remained the question of whether these findings represented a situation where having an exerciser self-schemata made individuals more likely to exercise, or whether individuals who exercised were more likely to develop an exerciser self-schemata. In addition, the author noted that it is important to identify ways in which one might cultivate an exercise self-schemata in order to move past description and on to intervention. Some suggestions were made concerning how this might occur, such as encouraging individuals to focus on the exercise itself as a positive instead of dwelling on possible

shortcomings, (i.e., "I only ran 30 minutes today..."), but that idea remained to be tested in future studies.

Kendzierski's 1990 study attempted to address the processing of information by individuals with particular schematas, and to pursue the specific issue of directionality of the relationship between exercise self-schemata and subsequent exercise behavior. In this study she ventured to show that college-age exerciser schematics would process information related to themselves as an exerciser faster, would relate more to exercise-specific terminology, would recall more instances of past exercise behavior, and would predict that they would likely engage in future exercise activity more readily than individuals without an exercise schemata. Aschematic individuals would fall between those groups (Kendzierski, 1990). Results supported these hypotheses, providing further construct validity for self-schemata in the exercise domain. Secondly, participants who had been identified as schematic, aschematic, or non-schematic for exercise the semester before were contacted again and asked to participate in a survey regarding exercise behavior. Individuals were asked if they had begun any type of program, and if so, when, what type of exercise, how often, and whether they were currently exercising. Questionnaire return rates were comparable for the three groups (between 68% and 70%). Results indicated that exerciser schematics were more likely to be participating in an exercise program than aschematics or non-exerciser schematics. Given the prospective nature of this study, this was considered stronger support for the previous findings linking self-schemata with exercise behavior.

Importantly, Kendzierski (1990) discussed the issue of experience with regard to its relevance in exercise behavior. According to self-schemata theory, both experience and perceived importance, or relevance, is necessary

for future behavior. Markus (1977) believes that both of these dimensions must be present in order to have a schemata for exercise; the presence of experience alone may result in an individual aschematic in that domain, while the presence of importance alone generally leads to a non-schematic individual. In general, the relationship between past history and exercise adherence remains cloudy, with conflicting findings the rule (Dishman, 1994). Kendzierski (1990) suggested that "the self-schema concept might provide a means of resolving such conflicting findings by emphasizing not just prior experience, but also the importance of such experience to the individual" (p. 80).

According to Cross and Markus (1994), being schematic for exercise would best predict future behavior in that domain. In this way, schematas serve as the foundation for cognitive representations of oneself in the future. Cognitive representations in the future are known as possible selves, and could represent the next level in understanding the dynamics of the self-perception/behavior relationship.

Possible Selves

Markus and Nurius (1986) first introduced the concept of possible selves, describing it as self-knowledge pertaining to how individuals think about their potential and their future. Possible selves can be either positive images of oneself in the future, called hoped-for selves, or negative, feared selves the individual works actively to avoid. These self-conceptions can range from "the lottery winning self, or the trim, in-shape self to the fat, out-of-shape self, or the aggressive self" (Cross & Markus, 1991, p. 231).

Representations can be visual, semantic, symbolic, and kinesthetic (Nurius, 1991). Thus, they can carry significant emotional weight without being deemed likely by the individual of being realized (i.e., myself as a homeless person). Possible selves are described as the "personal embodiment of one's life goals...they are inherently malleable and thus useful for those who view development as personally guided, dynamic, and contextually sensitive" (Hooker & Kaus, 1994, p. 126). Nurius (1991) adds that the "ability to construct, invoke, and sustain possible selves may be one critical determinant of actual goal achievement" (p. 243).

Although possible selves are similar to goals, Sheldon and Emmons (1995) believe there are significant differences. They describe the goal construct of "personal strivings" (Emmons, 1989) as what people do in the course of their everyday lives, and as such represent "behavioral traits stated in intentional terms" (p. 40). An example of this might be an individual who wants to "find ways to become active." In contrast, a possible self may have similar content (i.e., "me as an active individual"), but the representation is on a desired future state, which may or may not be being acted upon. In addition, general goals rarely indicate actions or pathways toward completion of the goal, nor do they vary in emotional weight or value as possible selves do (Nurius, 1991). The crucial element of a goal, according to Markus and Ruvolo (1989), is the ability of the individual to be involved in the process, both in approaching the goal and realizing it. These are characteristics of possible selves, and as such their importance lies in their potential to motivate current behavior (Markus & Nurius, 1986). In this way, possible selves provide a means to achieving goals, and represent a mechanism by which we might pursue the issues of exercise intention and behavior suggested by Kendzierski (1988, 1990).

Markus and Nurius (1986) suggested several important roles for possible selves in adult development. As the cognitive manifestation of one's enduring goals, aspirations, fears, and motives, they provide "meaning, organization, and direction to these dynamics" (p. 945). Cross and Markus (1994) explored this role through two functions: the role of possible selves as motivators, functioning as incentives for future behavior, and the role of possible selves in evaluating and interpreting an individual's current view of self. As a motivator, possible selves present the opportunity to "test out" a given role or opportunity. For example, if an adult has a possible self as "exerciser," that may provide the motivation to attend a given exercise class, even when the individual may have reasons not to attend (i.e., a sore hip). In time, that individual may relate more and more to the label of "exerciser" and further focus his/her actions. Cross and Markus (1994) described this as the "blueprints for personal change and growth across the lifespan" (p. 232), and noted that it could include the adaptation to new roles, such as the self as "volunteer."

In terms of the current self, possible selves were thought to serve as standards of comparison or evaluation (Markus & Nurius, 1986). Hoped-for or feared selves could be used to decrease or increase the discrepancy with a current self, such as when an individual hopes to be "in good shape" but perceives him/herself as overweight. In this scenario, the discrepancy between the desired and current self can motivate the individual to begin exercise. If such a discrepancy persists, however, the individual may need to change their current self or to adjust their possible selves (Cross & Markus, 1994).

With regard to the issue of perceptions of the body, feminist theory has documented how women's body images are shaped by social constructs such

that a sense of inferiority and vulnerability are common (Guthrie & Castelnuovo, 1994). Perhaps in this respect, possible selves represent an opportunity to challenge prevailing expectations of exercise behavior in a "safe" environment. For example, a woman who has just begun strength training might have a possible self of "myself as a body builder." Regardless of whether this is a likely outcome, the existence of this possible self might provide an opportunity to "try out" this image of herself without the social prescriptions which for some women might prevent them from not only becoming a body builder but doing strength activities of any sort. Thus, "myself as a mountain climber" becomes both motivational in terms of exercise behavior and in terms of overall confidence in oneself, regardless of what others may think of the behavior.

In order to explore the existence of possible selves across the lifespan, Cross and Markus (1991) examined the hoped-for and feared selves of individuals ranging in age from 18 to 86 years old, representing young adulthood, maturity, middle-aged, and old age. These four age groups (18-24, 25-39, 40-59, and 60 and older) differed in the categories of selves most frequently mentioned, with young adults mentioning hoped-for selves in the physical category (i.e., to be healthy, to be 15 pounds lighter) less often than the other three groups, young and middle-aged adults mentioning the most family-related hoped-for selves (i.e., marrying the right person, seeing children graduate from college), and older adults mentioning hoped-for selves in the domain of lifestyle (i.e., living somewhere with a moderate climate) more often than any other age category. With regard to feared selves, all four groups mentioned physically-related feared selves most often, but there were also differences between age groups. Categories like family, occupation, physical, and material differed according to age, with middle-aged

adults more frequently citing material fears (i.e., not having sufficient money for retirement) than members of other groups, and older adults primarily indicating feared selves in the physical or personal categories (i.e., being unable to physically take care of myself). In general, the number of total possible selves decreased with age. This consolidation of possible selves suggests that possible selves may serve a greater motivational role as one gets older (Cross & Markus, 1994). In addition, the hoped-for selves of middle-aged and older adults seemed to reflect a desire to continue on with what they were already doing, such as "staying healthy" or "being active." Their ideal selves were more closely tied to their current selves, and thus may have been more motivationally significant (Cross & Markus, 1991).

The role of possible selves in the health behaviors of older adults has been studied by Hooker and her colleagues (Hooker, 1992; Hooker & Kaus, 1992, 1994). In order to explore motivational aspects of the self, Hooker (1992) first examined the difference between older adults and college students in their health-related possible selves. It was predicted that older adults would have more health-related possible selves than college-age individuals, and that those older adults with health-related possible selves would have positive relationships between perceived health behaviors and self-regulatory processes, such as perceived self-efficacy and outcome expectancy. A measure of possible selves was created specific to older adults (based on Markus' early work), involving face-to-face interviews. This procedure was preferred over a written questionnaire in order to increase the reliability of responses. Respondents were asked to discuss all of their possible selves ("selves we hope to become in the future"), and then indicate their most important hoped-for self. In relation to this most important self, respondents were then asked to answer questions designed to assess self-regulatory processes. This

process was then repeated with feared selves. A similar process was also undertaken with college-age individuals, although the paper-and-pencil instrument used by Markus and her colleagues was employed for this age group. To increase consistency between groups, the experimenter read from a script just as she did with the older adults, and followed the same format.

Results of this study showed that possible selves offer an opportunity to explore the goals and plans individuals had for themselves, both good and bad. This was true of both younger individuals and older adults, although as predicted, older adults were more likely to address health-related possible selves than younger persons. A possible explanation for this is that older adults become increasingly concerned with health-related issues as they age, and therefore they may be more motivated to engage in health protective behaviors. With regard to self-regulatory processes, for older adults whose most important hoped-for possible self was related to health, over half the variance in perceived health behaviors was explained by perceived self-efficacy, outcome expectancy, and time spent thinking about their most important hoped-for possible self. This was not the case for feared selves, where none of the self-regulatory variables were associated with health-related behaviors.

Although the same comparisons could not be made with young adults because so few chose health-related hoped-for or feared possible selves, a comparison of the two samples (young vs. old) indicated a number of differences between age groups. Specifically, older adults had higher scores on the Health Value scale, indicating and younger adults generated more hoped-for and feared selves, and spent more time thinking about their most important selves.

Two follow-up studies by Hooker and Kaus (1992, 1994) examined in more detail health behaviors, possible selves, and self-regulatory processes. In the first, health behaviors such as smoking, exercising, and stress management were compared with self-regulatory variables associated with possible selves. It was found that self-regulatory variables were actually better predictors of health behaviors than global health values, providing evidence that it was not merely valuing health more highly than younger adults that resulted in the relationship between health behaviors and possible selves. Thus, this study provided additional evidence for the uniqueness, or divergent validity, of health-related possible selves.

A second study by Hooker and Kaus (1994) further explored the relationship between aging and the onset of health-related possible selves, looking at what point in adulthood health-related possible selves begin to dominate. In addition, they wished to examine the link between hoped-for and feared selves and health behaviors. Results showed that although 87% of middle-aged adults had health-related possible selves, only about one third of young adults did. What was not anticipated was the fact that both young and middle-aged adults were more likely to have feared selves than hoped-for selves in the health domain, indicating that both groups were more likely to have a negative image about their health in the future than a positive one. Hooker and Kaus (1994) offered as a possible explanation for the salience of negative emotion the link between negative perceptions of aging and common stereotypes of aging prevalent in our culture. This study also provided information regarding the mechanisms by which health-related possible selves regulate behavior. The self-regulatory processes of goal-oriented activities and self-efficacy were stronger predictors than age or global health values. Somewhat surprisingly, outcome expectancy, or the belief of

the relative attainability of an outcome, was not a predictor of health behaviors. This may be due to the fact that health behaviors (i.e., deciding not to smoke because of a fear of lung cancer) are often not viewed by individuals as completely under their own control (i.e., some people will get cancer even if they've never smoked, while others who have smoked all their lives will live to 100). It is of interest to see if this is the case with exercise-related behaviors as well.

In sum, the literature supports the view that possible selves exist and can be measured (Nurius, 1991), that they are developmental in nature, and appear to change over the lifespan (Cross & Markus, 1994). These possible selves can be both positive (hoped-for) or negative (feared or dreaded selves), and there appears to be a link between possible selves, self-regulatory processes, and behavior in the associated domain (Hooker, 1992; Hooker & Kaus, 1992, 1994; Nurius, 1991). Although previous research has dealt with possible selves in the context of health behaviors, no research to this point has examined the possible selves of middle-aged women involved in exercise and other forms of physical activity. It seems plausible this construct could be helpful in ascertaining motivations to exercise. In fact, possible selves might better explain exercise behavior than established antecedents of exercise patterns such as exercise self-efficacy. However, a context needs to be provided whereby we can identify individuals at various stages of exercise readiness, assess individuals' possible selves at those stages, and explore any patterns in possible selves that might exist across stages. Such a context can be found using the transtheoretical, or stages of change, model.

The Stages of Change Model

In an effort to integrate the knowledge regarding the processes people go through in terminating a variety of negative health behaviors, Prochaska and DiClemente (1983) developed what they termed an "integrative model of change." This model, called the Stages of Change Model (SCM), was designed to deal with the complexity of intervening as a therapist with addictive health behaviors, from maximum interventions at advanced stages of abuse to minimal interventions, such as self-help manuals for problem drinkers (Prochaska & DiClemente, 1985). It was also designed to deal with a broad range of behaviors, and to address the full course of change, from the time someone becomes aware that a problem exists to the time the problem ends. Their original model, based on a study of smokers involved in a well-known treatment program (DiClemente & Prochaska, 1982), posited a linear progression of stages of change, such that individuals undergoing successful change progressed from precontemplation (no intentions or behaviors that are change-related) to contemplation (persons cognitively considering change behaviors, expressing intentions about behavior, but not demonstrating them), action (change behaviors initiated and person is actively modifying behaviors), and finally maintenance (new behaviors have become integrated into the person's routine). However, the treatment of addictive behaviors rarely progresses in a linear fashion. Instead, relapse and skipping stages is actually the rule, making a cyclical or revolving-door model a more accurate representation (Prochaska & DiClemente, 1986).

Since individuals with various problem behaviors might be anywhere along the continuum, it was expected that persons at different stages would be more likely to respond to particular interventions, or processes of change.

These processes represented types of activities that would be initiated or experienced by individuals in modifying affect, behavior, cognitions, or relationships (Prochaska & DiClemente, 1985). Ten such processes were identified: consciousness-raising, self-liberation, social liberation, counterconditioning, stimulus control, self-reevaluation, environmental reevaluation, contingency management, dramatic relief, and helping relationships. For each of these ten processes, an individual could utilize a number of different strategies. Specific processes appeared to come into play at specific points along the stages of behavior. For example, individuals were likely to use consciousness-raising interventions at the contemplation stage, whereas individuals at the action stage would use the process of self-liberation, whereby they would work to believe that they had the capacity to change their lives in important ways.

One of the first studies to utilize the SCM in the exercise context was conducted by Barke and Nicholas (1990). They were interested in learning more about the characteristics and processes that influenced the initiation, acquisition, and maintenance of physical activity in older adults. The authors hypothesized that although societal stereotypes of older adults labeled them as unwilling or unable to change their exercise behavior, older adults were in fact interested in their level of physical activity. Using the Stages of Change Scale (SOC; McConaughy, Prochaska, & Velicer, 1983), they found older adults (59 to 80) represented in all four stages of exercise activity level. In addition, older adults scored higher on the action, maintenance, and contemplation scales than on precontemplation. This indicated that these individuals were indeed thinking about their exercise levels, and in many cases doing something about it. Participants who labeled themselves as active scored higher on the action and maintenance stages, and sedentary adults

scored highest on the precontemplation scale, lending content validity to the model.

This study was followed by a line of research by Marcus and her colleagues (Marcus, Eaton, Rossi, & Harlow, 1994; Marcus, Rossi, Selby, & Abrams, 1992; Marcus, Selby, Niaura, & Rossi, 1992). In this series of studies, the stages and processes of change were studied utilizing a worksite sample of middle-aged participants. The first step (Marcus, Rossi, et al., 1992) consisted of developing an exercise-specific instrument which could classify individuals at a particular stage. As a result of this process, a fifth level or stage was discovered. This "preparation stage" was described as consisting of individuals who had taken some steps toward beginning an exercise program, but who had not begun a consistent program, and fell between contemplation (thinking about doing it) and action (actively engaged in the behavior). The resulting instrument was refined with an additional subject pool, and its test-retest reliability measured over a two week period ($r = .78$). Further, the percentage of individuals falling in the action and maintenance stages were similar to those found by the Centers for Disease Control at comparable exercise levels, lending content validity to the instrument.

In addition to the instrument development, the Marcus, Rossi, et al. study looked at the link between stage of change and exercise self-efficacy. It was found that individuals at higher levels of exercise behavior had higher levels of self-efficacy for exercise, further suggesting the benefit of using stage-specific interventions. The costs and benefits of exercise have also been shown to be related to exercise behavior, mediated by stage of readiness (Marcus, Eaton, Rossi, & Harlow, 1994). Decisional balance, as described by Janis and Mann (1968), involves the assessment of benefits (pros) and costs (cons) of behaviors to self and others. In the context of exercise behavior,

Prochaska et al. (1994) found that relative values of pros and cons varied by stage. At precontemplation, the cons outweighed the pros, and remained so until the preparation stage, when they were equal. In the action and maintenance stage, the pros outnumbered the cons. These results suggested that strategies should be tailored in order to increase pros of exercise early, and decrease cons once exercise behavior is evidenced.

The issue of stage-specific interventions was directly tested in another study (Marcus, Selby, et al., 1992) in which over 1100 worksite participants were recruited to participate in a program whereby their stage of change was assessed, and then an intervention program based on the processes of change was administered appropriate to each level of exercise behavior. The study provided further evidence of the model's validity in the domain of exercise behavior, and examined the validity of the Processes of Change Questionnaire (PCQ). Results indicated that participants utilized all ten processes of change in their attempt to change their exercise behavior, and did so in a pattern similar to that found by Prochaska and DiClemente (1983) in that various processes were more likely to be utilized at specific stages. However, the use of these processes of change were not as widespread in a more recent study by Gorely and Gordon (1995). In this study, only 5 of the 10 processes were utilized by the Australian older adult participants, although the processes did fluctuate across stages. This may indicate that processes of change are themselves age and/or culture specific. Nevertheless, the findings of Gorely and Gordon support most of the findings of Marcus and her colleagues in that individuals were seen at all stages of the model, and specific processes of change could bring about changes in exercise behavior such that individuals could progress from an 'earlier' stage (i.e., contemplation) to a 'later' stage (i.e., action).

One criticism of the SCM is the lack of validity established for the SOC instrument. This issue was recently addressed by Cardinal (1995) in a study of female adults between the ages of 22 and 66 years. Cardinal developed and tested an instrument theoretically-based on the transtheoretical model, which assumes that exercise behavior patterns should successfully differentiate participants into the five stages of exercise behavior. These stages were compared to scores on three separate valid and reliable physiological indicators (exercise energy expenditure, physical activity energy expenditure, and maximum oxygen uptake). Results indicated that classification by stage of exercise was consistent with the physiological indicators, providing additional construct validity for the stage of exercise scale. The Stage of Exercise Scale (SOES) created represents a legitimate step forward in instrumentation, and will be utilized in this study with a similar (female, middle-aged) population.

In sum, the stages of change model has been shown to be appropriate to the exercise context, where it differentiates exercise behavior into five categories. Research has shown that individuals use a variety of cognitive and behavioral processes in modifying behavior, and that these processes differ depending on that individual's stage of behavior. Given that Prochaska and DiClemente's (1985) conception of processes of change was broad ("activities that are initiated or experienced by individuals in modifying affect, behavior, cognitions, or relationships" p. 7), and that possible selves have been linked to factors such as affect, behavior, and cognitions, it seems reasonable to hypothesize that possible selves might function as effective strategies for various processes of change in a given domain. Thus, the intent of this study will be to explore the possible selves (hoped-for and feared) of

individuals across the five stages of change, and to explore how these exercise stages might be differentiated by the possible selves described by participants.

Summary

There is considerable evidence that self-conceptions play a significant role in the organization of life experiences (Markus & Herzog, 1992). Schematas are thought to be internal cognitive structures which allow individuals to encode and represent the vast array of information available to individuals at any given time. Most of the schematas formed by individuals have to do with the self, and are thus termed self-schematas, or "cognitive structures about the self" (Markus, 1977). These self-schematas differ between individuals for any given domain such that individuals can be schematic, non-schematic, or aschematic, and have been found to be associated with behavior in that domain. For example, Kendzierski found that individuals with a self-schemata for exercise were more likely to actively engage in exercise (Kendzierski, 1988, 1990). When addressing conceptions of the self in the future, these schemata are referred to as possible selves (Markus & Nurius, 1986). Possible selves can be either hoped-for or feared selves, and are believed to have a significant effect on current behavior through their role as both a motivator of future behaviors and/or an evaluative mechanism for an individual's current view of self.

The role of possible selves in the context of exercise participation can be explored through the SCM (Prochaska & DiClemente, 1983), which identifies participation in health behaviors as a more complicated process than merely being active or inactive. The SCM explains participation as a process whereby

an individual at any particular time might be in a stage of precontemplation, contemplation, preparation, action, or maintenance. These stages have been shown to be easily identifiable (Cardinal, 1995; Marcus, Selby, et al., 1992), and subject to change as a result of specifically targeted interventions utilizing various processes of change. These processes utilize a variety of strategies in order to influence cognitions and affect, thus stimulating participation (Prochaska & DiClemente, 1985). At various stages, particular processes are more likely to be utilized by participants to help move them to the next level of behavior. Possible selves can logically be considered a process of change, such as a mechanism for self-reevaluation. Hoped-for and feared selves can facilitate behavior when these selves are accompanied by action plans for achieving them, known as self-regulatory mechanisms. Thus, there is a need to explore possible selves across the different stages of change, and to compare the utility of the construct to established predictors of exercise patterns (such as exercise self-efficacy) in explaining exercise behavior.

CHAPTER 3 METHODS AND PROCEDURES

This study was designed to examine possible selves across stages of exercise involvement with middle-aged women. Chapter 3 is subdivided into the following sections: (a) description of participants, (b) instrumentation, (c) procedures, (d) pilot studies, (e) experimental design, and (f) data analysis.

Description of Participants

All participants recruited for the study were female middle-aged adults between 35 and 59 years of age who were presently employed, either full or part time, by Oregon State University, or were a spouse/partner of a university employee. Because of the lack of representation of women in studies of aging adults (Calasanti, 1992), the fact that into the next century women will greatly outnumber men in the older adult population (Hartman, 1990), and the inclination of women not to engage in exercise (Vertinsky, 1991; O'Brien Cousins, 1996), this study focused on the exercise behavior of women. In addition, based on their research, Markus and Oyserman (1989) believe that how men and women construct self-structures differs, and as a consequence their thought processes may be different in both content and form. This is believed to be a result of different patterns of social interaction and interpersonal experiences. Notable is the difference, particularly in western culture, of how the body is conceptualized with regard to sport for

men and women (Hall, 1996). Thus, although conclusive evidence remains to be gathered, it is prudent at this time when examining possible selves in the exercise domain to analyze results separately by gender.

Middle-aged adults were selected for a variety of reasons. They represent an age group where the time spent exercising continues to decrease with age (Marcus et al., 1995). This may be due in part to competing obligations of work and family, relegating exercise and physical activity to lesser importance. Thus, if we can identify in this group successful motivators for participation, this information will be beneficial in designing more effective interventions for middle-aged adults. Dishman (1994) reports that physical activity during adulthood predicts future activity, and so interventions targeted at middle-aged adults may hold the added bonus of carrying over to older adult years. This is no small issue, since the cohort of middle-aged individuals today will represent the largest numbers of older adults our country has ever witnessed. Through a better understanding of individuals at middle age, perhaps we can establish good habits and subsequent increases in life quality for their futures.

Middle-aged adults also represent a large percentage of the workforce population of the university from which this sample was drawn. Thus, a secondary reason for selecting this population was one of practicality, so that we had the best opportunity to capture individuals across all five stages of change in sufficient numbers to examine potential differences in possible selves. To date, limited research has focused on precontemplators and contemplators, and less yet has compared the self-structures of exercisers and non-exercisers. It was hoped that this specific population would allow a more detailed characterization of the mediators of exercise behavior in middle-aged adult women, so that future studies might more effectively

design intervention programs intended to get inactive individuals active and enable active individuals to continue their participation patterns. Although the sample was expected to include a range of education, age, and activity levels, it was inevitable it would be overwhelmingly caucasian and middle class, reflecting the community from which the sample was taken.

Out of a pool of 1800 women faculty and staff at Oregon State University, approximately 70% are between 35 and 59 years, leaving over 1200 women faculty and staff eligible to participate in the study. Although a mass mailing to all eligible women might have produced a larger sample, it was feared that the response would yield uneven groups which had many more participants than would be needed for this preliminary study. It was decided instead to widely publicize the study through a variety of channels (explained in the procedures section) and hope that these recruitment procedures would result in more manageable and even numbers of participants in the five stages of exercise behavior. Two previous studies provided us with information regarding the expected percentages of individuals in the five stages of exercise behavior. In the first, Marcus, Rossi, et al. (1992) surveyed 1172 male and female employees from two worksites. Their sample included 24% precontemplators, 33% contemplators, 9.5% in preparation, 11% in action, and 22% in maintenance. Out of a final sample of 583 male and female older adults, Gorely and Gordon (1995) found maintenance to be the most frequently cited stage (37%). Precontemplators accounted for 15%, contemplators 9.6%, preparation 29%, and action 9.4%. Based on these findings, 9% appeared to be a safe minimum percentage to expect for any one stage. In the proposed study, that would have resulted in a subsample of 58 participants per group, more than sufficient to run the analyses indicated by the research questions. In the possible selves literature, sample sizes have

ranged from 55 (Oyserman, Gant, & Ager, 1995) to fifteen hundred participants (Cross & Markus, 1994). Thus, the target subsample was set at 50 individuals per group for a total sample of 250.

Instrumentation

Stage of Exercise Scale (SOES)

The SOES (Cardinal, 1995) is specific to exercise and theoretically grounded. It was shown to significantly and meaningfully differentiate between individuals in the five stages of exercise behavior in terms of three physiological measures. Cardinal (1995) established test-retest reliability over three days (Spearman's rho = 1.00), as well as concurrent validity with the three physiological measures ($r = .36 - .40$). The sample used by Cardinal consisted of women employed as clerical/support staff at an urban university. The instrument is composed of five statements arranged like the rungs of a ladder, each of which represent one of the stages of change. Participants are asked to choose which item best represents their current exercise status (0 = precontemplation, 4 = maintenance). For example, participants who choose "I presently get some exercise, but not regularly" would be placed in the preparation stage (Rung 2). In this manner, individuals are easily placed into one of the five categories - precontemplation (not currently exercising and not intending to exercise in the next six months), contemplation (thinking about exercise, but no action steps taken), preparation (has participated in some exercise, but not on a regular basis for any period of time), action (actively

exercising in a consistent manner), or maintenance (actively exercising for a period of at least 6 months). A copy of the SOES can be found in Appendix B.

Possible Selves Instrument (PSI)

The instrument used for this study was similar to one used by Hooker and Kaus (1994), which is an adaptation of that used by Cross and Markus (1991). After going through a structured introductory statement where "possible self" is defined, participants are asked to list all of their hoped-for possible selves. In order to facilitate this process, prompts are provided (i.e., examples of likely and unlikely possible selves, example of what is and isn't a possible self). On the next page, participants were then asked to identify their most important hoped-for self and then answer a series of Likert-scale questions that assessed self-regulatory processes associated with that self. These questions dealt with perceived self-efficacy ("how capable do you feel of accomplishing your hoped-for self"), and outcome expectancy ("how likely do you think it is for your possible self to come true?"). A third question dealt with the perceived importance of the possible self ("how important to you is it to achieve this possible self?"). Importance has been shown to be associated with the translation of intention to action, particularly when viewed with social support (Nurius, 1991). The importance scale acted as a manipulation check of the possible self selected as most important. Hooker and Kaus (1992) found this to be a reliable indicator that there was a "most important" choice, even if this was relative (i.e., the most important possible self might still only be rated 4 on a 7-point scale). In the Hooker and Kaus (1992) study, 87% of respondents circled a 6 or 7, indicating congruence between the possible self they chose as most important and the how they rated it's relative importance. Additionally, the importance question helped in the coding of possible selves

(described in the data analysis section to follow). Each of these responses were recorded on a 7-point likert-type scale, where 1 = not at all capable/likely/important and 7 = extremely capable/likely/important.

Next, in order to specifically explore the relationship between possible selves and exercise behavior, each respondent was asked to choose the possible self from their list which was most closely associated with their current level of exercise behavior. It was expected that the possible self selected may not deal specifically with exercise or physical activity (i.e., it may be related to occupation or family). Because of this, respondents were asked to describe how this hoped-for self is related to their present level of exercise behavior. Again, this follow-up question helped facilitate coding of responses into the appropriate category. For this hoped-for self, the same three likert-scale questions described above were then completed. Finally, in order to ensure that each participant explored at least one possible self in the physical activity domain, the final sheet in this series provided an exercise-specific hoped-for self. For this focused possible self the participant again responded to the same series of likert-scale questions. The specific content of this statement came from a pilot study where a similar population was asked to describe hoped-for selves in the exercise domain.

This entire process was then repeated with regard to feared selves, except that follow-up questions centered on how the individual planned to avoid these feared selves. The PSI has been shown to have adequate test-retest reliability (Oyserman & Markus, 1990), and can be found in Appendix C.

Exercise Self-efficacy Scale

A general exercise self-efficacy scale developed by Marcus, Selby, et al. (1992) was utilized. This instrument was designed specifically to be used to

examine efficacy for exercising under various conditions (i.e., raining, tired, on vacation). Test-retest reliability over a two-week period was found to be .90 ($n = 20$), and internal consistency was .76. The items included represented areas found to be important by other exercise researchers, lending external validity to the measure (Marcus, Selby, et al., 1992). The scale consists of five statements on an 11-point scale, with 1 indicating "not at all confident" and 11 "very confident." A composite score was then calculated by adding the five items, giving a possible score between 5 and 55. The self-efficacy scale can be found in Appendix D.

Demographic Assessment

Demographic information was collected from all participants, and included age, educational level (highest level completed), job classification (teaching faculty, professional faculty [previously known as no-rank faculty; these are non-teaching, non-research positions which often have administrative responsibilities], or classified staff), race/ethnicity, marital status, and current living situation. A copy of the demographic instrument can be found in Appendix E.

Procedures

All participants were employees of Oregon State University or a spouse/partner of an Oregon State University employee. They were informed of the pending study through postings in the campus newsletter, over e-mail lists chosen specifically to target women faculty and staff, and via

flyers posted in strategic locations around campus such as the Women Studies office, the Women's Center, the Recreation Center, and offices with large concentrations of women such as the administration building and health services. Women fitting the criterion for inclusion (35 to 59 years) were asked to respond either by e-mail or by phone to the researcher stating their interest. At that point, the participant's name and campus address was recorded, and the questionnaire packet sent to them (through campus mail whenever possible). The packet consisted of a cover letter explaining the study (see Appendix F), the SOES (Cardinal, 1995), the PSI (Cross & Markus, 1991), the Exercise Self-efficacy Scale (Marcus, Selby, et al., 1992), and a demographic instrument including a self-report of physical activity questionnaire (to be used as part of a parallel study examining maintenance level exercisers only). All participants were asked to read and sign the informed consent document before participation began, as required by the OSU Institutional Review Board for the Protection of Human Subjects. A copy of the informed consent document can be found in Appendix A.

The packet included a return address label and instructions to return the completed survey in the envelope provided at their earliest convenience. As instruments were returned, the respondent's name was marked off the list of participants. After two weeks, a follow-up note was sent to anyone who had not returned her packet. In addition, an e-mail reminder message was sent to the same lists as the original postings. These protocols for distribution of questionnaires were consistent with those outlined by Babbie (1992), although they were adapted for use with electronic mail capabilities. This procedure resulted in a 90% return rate of questionnaires for individuals who requested the packet be sent to them. However, the sample was lacking in non-exercisers (particularly those that were not contemplating starting to

exercise within the next six months), as well as individuals who had been exercising regularly but for less than 6 months. In an effort to increase these numbers, a second posting on e-mail networks and on flyers around campus soliciting individuals for the study, particularly those that were presently not exercising, was conducted. In addition, a random mailing to 120 women faculty and staff (chosen randomly from the staff/faculty directory) was undertaken. The random mailing resulted in a response rate of 30%, or 36 additional participants, making the final sample 204 women.

Participants were instructed to answer the questionnaires as thoroughly and honestly as possible. Based on pilot administration, they were given an approximate time they could expect to spend on the instruments (20 - 30 minutes), and given a phone number and e-mail address of individuals to contact if they had questions. Although a number of inquiries about details of the study were received in the process of recruitment, once the materials were sent to participants there were no inquiries regarding the instructions or content of the study.

Pilot Studies

Pilot studies were conducted in order to develop a list of possible selves (hoped-for and feared) in the exercise domain. Ten women who worked in a comparable university setting and were representative of a range of exercise behavior were sent a modified PSI specific to the exercise domain. They were asked to list all of their possible selves, both hoped-for and feared, in the exercise domain. A list of these possible selves were then compiled and shared with a second group of ten women in order to ascertain the possible

selves considered "most representative of women like them." They chose their top three hoped-for and feared selves from these lists. These results were tallied and the most commonly cited possible selves specific to the exercise domain used in the final instrument. A third group of five individuals were then administered the entire packet of questionnaires, in order to provide feedback on the clarity of instructions, as well as an approximate time needed to complete the entire packet. This pilot was also conducted with similarly-aged women recruited from another university in the area. Only minor changes in instructions (i.e., putting in bold certain sentences in the instructions) were made before the full study began.

Data Analysis

All questionnaire packets were screened for completeness, and incomplete surveys returned to the respondent. Data were entered and analyzed using SPSS 7.5 for Windows. Descriptive statistics were reported for the demographic variables of interest (i.e., percentages of faculty and staff, percentage of participants in each of the five stages of change, as well as distribution on the basis of age, ethnicity, and education).

In order to examine group differences between the stages of exercise behavior in both the number and categories of possible selves, analysis of variance procedures were conducted. For the number of possible selves by stage of exercise, a one way analysis of variance (ANOVA) with stage as the independent variable and number of possible selves the dependent variable was utilized. To test differences by category of possible self across stages of exercise, a multivariate analysis of variance (MANOVA) was conducted with

the independent variable being stage of exercise and the dependent variables the mean number of possible selves selected by participants in each of the nine categories. This procedure was conducted separately for hoped-for and feared possible selves.

A comparison was then made of the focused possible self most closely related to exercise behavior and stage of exercise for hoped-for and feared selves. MANOVA was not appropriate because of the low cell frequencies for some categories across stages, the data was nominal, and not normally distributed. Instead, each category was inspected via the use of cross tabulations (exercise-related self category by stage of exercise), in order to see trends in the data.

In order to statistically examine the relationships between the self-regulatory processes for the three focused hoped-for and feared possible selves and exercise behavior (Research Questions 3 and 7), three linear regression analyses were conducted. For most important, exercise-specific, and exercise-related possible selves, self-efficacy and outcome expectancy served as the set of predictor variables and the 5 stages of change the dependent variable. Analyses were conducted separately for hoped-for and feared selves.

Finally, Research Questions 4 and 8 were tested by comparing the best set of self-regulatory predictors (found via the previous regression analyses) with exercise self-efficacy. The exercise self-efficacy scale was assigned a composite score, and this score compared in a regression with the self-regulatory predictors in order to see the relative power of each to predict exercise behavior. This procedure was conducted for both hoped-for and feared possible selves.

CHAPTER 4 RESULTS

The purpose of this study was to examine the possible selves of middle-aged women across stages of exercise behavior. Results will be reported beginning with descriptive information and then addressing each of the four research questions, examining hoped-for and feared selves for each question. Specifically, the first research question addressed whether or not differences exist in the number and/or categories of open-ended possible selves across stages of exercise behavior. Secondly, differences in the focused possible self most closely related to the individual's current level of exercise behavior was examined across levels of exercise. The third question explored the ability of self-regulatory variables associated with the focused possible selves (most important, exercise-related, and exercise-specific selves) to predict exercise behavior. Finally, the strongest predictor of exercise behavior from the focused possible selves was compared to exercise self-efficacy, in order to ascertain the relative contribution possible selves make to exercise behavior.

Descriptive Statistics

Although every effort was made to reach the target sample of 50 for each stage of exercise behavior (see Methods section for detailed information on recruitment), it proved very difficult to fill all five categories. After two phases of recruitment, the final sample consisted of 7 precontemplators

(3.4%), 28 contemplators (14%), 57 individuals in preparation (28%), 21 in the action stage (10%), and 91 in maintenance (45%), for a total of 204 women.

Because of the low numbers of individuals in the precontemplation, contemplation, and action stages, the decision was made to collapse the five groups to four, thus allowing for more powerful statistical analyses while maintaining as much division among stages of exercise as possible.

Specifically, precontemplators (not exercising, not thinking about starting) and contemplators (not exercising, considering starting within six months) were collapsed and recoded as non-exercisers. In addition, the action stage (exercising regularly for less than six months) was expanded to include individuals from maintenance who had been exercising regularly for 18 months or less (recent exercisers). This seemed an appropriate cutoff, since individuals reported exercising regularly from 7 months to 20 years (240 months), and based on frequencies there was a natural break between 18 months and the next grouping (24 months). This expansion did not appreciably alter the makeup of action stage participants. For example, the mean number of hoped-for and feared selves for the two groups (original action stage and expanded action stage) was nearly identical ($M = 4.00/4.05$ hoped-for, $3.86/3.87$ feared). The final sample thus consisted of 17% non-exercisers ($n = 35$), 28% preparation ($n = 57$), 16% action ($n = 31$), and 39% maintenance ($n = 81$) participants. All subsequent analyses used these four levels of exercise behavior.

Average age for the participants was 46.7 years ($SD = 6.7$), with a range of 35 to 60 years. The sample was overwhelmingly white (95%), highly educated (47.6% holding a master's degree or Ph.D. and only about 3% without some college education), and primarily married or partnered (66.7%). There was a fairly even split in work status, with the largest group made up of full-time professional faculty (39%), followed by full-time classified staff (29%) and full-time teaching faculty (17%). Because the University has recently changed job titles for many individuals with administrative responsibilities, there was some confusion over job classification. As a result, it is possible that the number of professional faculty is inflated while the teaching faculty total is underestimated. Table 1 displays the number of participants and associated demographic variables of interest.

Manipulation Check

Before proceeding on to the research questions, a manipulation check was conducted in order to measure the degree the focused hoped-for and feared selves were considered to be important to the individual. Across the three focused hoped-for selves, the average importance score (maximum of 7) ranged from 6.5 (most important self) to 6.04 (self most closely related to exercise). The exercise-specific hoped-for self had an average importance score of 6.06. Importance scores for the focused feared selves were even higher, with an average score of 6.8 for the most important self, 6.7 for the self most closely related to exercise, and 6.6 for the exercise-specific self.

Table 1
Description of Participants

Variable	N	Percentage*
Education		
High school	6	2.9
Some college	43	21.1
College degree	58	28.4
Master's degree	56	27.5
Ph.D.	41	20.1
Ethnicity		
White	194	95.1
Black/Non-hispanic	4	2.0
Asian/Pacific Islander	2	1.0
Latina	2	1.0
American Indian	1	.5
Current Living Status		
Single	34	16.7
Married/partnered	136	66.7
Divorced	25	12.3
Widowed	3	1.5
Employee Status (part time and full time combined)		
Teaching Faculty	37	18.2
Professional Faculty	90	45.1
Classified Staff	70	34.3
Dependent	7	3.4

Note: Percentages are rounded to nearest tenth and current living status had missing data ($n = 6$); therefore columns may not equal 100%.

Given that the hoped-for and feared exercise-specific possible selves (hoped-for = "to be an attractive, healthy, older women" and feared = "not able to enjoy later life to the fullest") were solicited from a similar sample (women in a university setting), perhaps these high importance scores should not be surprising. However, particularly for the hoped-for self, a number of

comments were written directly onto the questionnaire such as, "I've never been attractive" or ""Attractive is so subjective." Regardless of these comments, the most important selves were considered quite important to these individuals, as were the other focused hoped-for and feared selves.

Research Questions

Number of Possible Selves by Stage

The first research question examined the total number of hoped-for and feared possible selves elicited by participants in response to an open-ended question. It was of interest to determine whether differences existed by stage of exercise behavior. The average number of hoped-for selves elicited in the open-ended question was 5.5 (range = 1-23), and the average number of feared selves was 4.1 (range = 1-14). Across the four stages of exercise behavior, there was no statistical difference for either the hoped-for selves [$F(3, 200) = .557, p = .64$] or the feared selves [$F(3, 199) = .477, p = .70$]. Table 2 shows the average number of hoped-for and feared possible selves across the four stages of exercise behavior.

Although not statistically significant, it is interesting to note that across the four stages the average number of hoped-for selves tended to increase with increasing levels of exercise behavior. Although there was little change between individuals who exercise occasionally compared to the recent regular

exercisers, there is a difference of approximately $\pm .5$ possible selves between non-exercisers and those that have exercised regularly for more than 18 months (long-term exercisers). Feared selves decreased progressively as exercise behavior increased and became longer term. Thus, while for non-exercisers the difference between the mean number of hoped-for and feared selves was slightly less than one (.91), the difference for long-term exercisers was nearly two possible selves (1.93).

Table 2
Average Number of Hoped-for and Feared Selves by Stage

Stage	N	Hoped-for		Feared	
		Mean	SD	Mean	SD
No exercise	35	5.17	2.2	4.26	2.5
Exercise					
Occasionally	57	5.40	2.3	4.11	1.7
Exercise regularly less than 18 months	31	5.34	2.1	4.00	1.2
Exercise regularly more than 18 months	81	5.79	3.2	3.86	1.6
Total	204	5.50	2.6	4.02	1.8

Coding of Possible Selves

The first research question also dealt with the categories of possible selves most often cited by participants across the stages of exercise behavior. The initial step in the analysis was therefore coding all responses into appropriate domains or categories. After examining the pilot data, Cross and

Markus' (1991) categories (personal, physical, education, life-style, family, relationships, occupation, material, and leisure) were amended to the following: Health, physical, body image, personal/spiritual, dependence/independence, occupation/education, family/relationships, personal projects, and retirement/financial. The two researchers involved in the coding process chose to separate out body image from the physical (dealing primarily with activity levels) and health (concerned with medical or psychological issues) categories. This decision was based on the importance of body image in the lives of women, particularly in the domain of physical activity. Responses included in the body image category dealt with weight and attractiveness. The independence/dependence category is most like Cross and Markus' (1991) lifestyle category, being distinct from (but associated with) the health category and encompassing possible selves dealing with being totally incapacitated and/or requiring care. Thus, this category dealt with the effect of health on relationships between the respondent and others (i.e., my children having to care for me), whereas the health category dealt with outcomes (i.e., getting cancer). The other category that differed from Cross and Markus' list was personal projects. We felt the need to have a more encompassing term than leisure or hobbies, since this category also included such projects as becoming a writer, volunteering on a regional/national level, or becoming more politically active. These categories appeared to best represent the data collected, being both inclusive of all responses and relatively exclusive with regard to overlap between responses. The final nine categories were mutually agreed upon by the two researchers involved in the project, both of whom were extremely familiar with the previous literature on possible selves as well as the responses elicited in the pilot studies and the

main study. Table 3 provides examples of hoped-for and feared selves in each of the nine categories used to classify the responses of participants.

Table 3
Categories of Hoped-for and Feared Selves

Category	Hoped-for Self	Feared Self
(1) Health	"To feel healthy again"	"To have a long, lingering disease"
(2) Physical	"To always be an active person"	"To lose mobility and strength"
(3) Body Image	"To be a trimmer me"	"Becoming very overweight"
(4) Personal/ Spiritual	"Have a lifestyle including more peace and serenity"	"Becoming someone full of regrets"
(5) Independence/ Dependence	"To be an independently living person"	"Being a burden on my family"
(6) Occupation/ Education	"To be a holder of an advanced degree"	"To be unable to work"
(7) Family/ Relationships	"To be a more involved parent"	"To lose family and friends - to be alone"
(8) Personal Projects	"To learn more about gardening"	"Failing to do art"
(9) Retirement/ Financial	"Realizing financial stability"	"Someone who can't afford to retire"

The actual coding of survey responses to the open-ended questions, "write all of the hoped for/feared possible selves which are currently important to you..." was conducted independently by the two researchers who had established the categories, and then the two met and compared their results. Rules were formed in order to facilitate this process. The researchers were blind to the stage and level of exercise behavior when coding individual

responses, so as to minimize any potential biases or expectancies associated with activity level.

The first step in the coding process was to determine the number of hoped-for and feared selves. When respondents listed their possible selves numerically this was a simple process. However, on some occasions possible selves were written in paragraph form, and a determination had to be made of where to divide up these responses. The rule was to first look for the key words which defined the categories and code the response accordingly, then to divide the remaining responses into appropriate categories. If a participant stated a general possible self followed immediately by an example of that same self ("I hope to have more culture in my life, the kind that I relate to...good conversation with friends"), that was coded as one response.

It was common in the coding process to have individuals who had multiple possible selves in any given category (i.e., two or more health-related possible selves). No response was rejected; in other words, any response written on the hoped-for list was considered a hoped-for self, and any response on the feared self list considered a feared self. On three different occasions over approximately a week-long period of coding, random samples of 20 questionnaires each yielded an interrater reliability (measured in percent agreement) between 92% and 100%. Any discrepancies were discussed until consensus was reached, yielding a final agreement of 100%. The question of how this possible self was related to exercise was used in order to add clarity to the responses and proved helpful in the coding process.

Categories of Possible Selves by Stage

In order to examine differences between stages of exercise as a function of the categories of possible selves, a multivariate analysis of variance (MANOVA) using a general linear model (GLM) procedure was employed. The advantage of the GLM procedure over a standard MANOVA is its flexibility with regard to categorical and continuous predictor variables, as well as the ability to handle data that contains empty cells (SPSS Advanced Statistics manual, 1997). The nine possible self categories served as the set of dependent variables and the four levels of exercise behavior served as the independent variable. Inspection of correlations between the dependent variables indicated no multicollinearity ($r < .70$), providing evidence for the distinctiveness of the nine categories.

For hoped-for selves, the overall relationship was significant, Wilks' lambda = .79, $F(27,561) = 1.7$, $p < .016$. The significant finding indicates that differences did exist between the categories of hoped-for selves and stages of exercise. The GLM procedure utilizes univariate follow-up analyses in order to test for between-subject effects, thus indicating which dependent variables contributed the most to the relationship. These analyses indicated that the body image category was significant, $F(3, 203) = 4.13$, $p = .007$. The observed power for the F test was .85, indicating a strong ability to detect differences between the groups. Post-hoc analysis utilizing the Student-Newman-Keuls procedure (SNK) showed that individuals in the no exercise group had significantly more possible selves in this domain ($M = .40$) than those who

had exercised occasionally ($M = .25$), recent regular exercisers ($M = .23$), and long-term exercisers ($M = .11$). In other words, for every two non-exercisers a hoped-for self associated with body image was described, compared to one in ten for long-term exercisers. In addition, long-term exercisers had a significantly higher mean number of hoped-for selves related to body image than the other three groups. The category of family/relationships was also significant, $F(3, 203) = 3.73$, $p = .012$, with an observed power of .80. The SNK post-hoc test, however, did not indicate differences by stage, although the means suggested that the no exercise group and the long-term exercising group were similar ($M = .88$ and $.89$, respectively), while the exercise occasionally and recent exercisers were also similar ($M = .46$ and $.42$, respectively).

Although not statistically significant ($p > .28$, observed power = .34), the mean for hoped-for selves in the physical category increased from .40 in non-exercisers to greater than .68 in each of the three exercise stages. The categories which included personal/spiritual issues as well as personal projects also differed between non-exercisers and their exercising counterparts, with non-exercisers choosing hoped-for selves related to these categories less often than their exercising peers, regardless of level of exercise behavior. Each of these categories also had relatively low observed power ratings (.43 and .24 respectively), which helps to explain why significant differences may not have been observed. Table 4 contains means and

standard deviations for all hoped-for categories across stages of exercise behavior.

For feared selves, the overall relationship was significant, Wilks' $\lambda = .81$, $F(27,558) = 1.6$, $p < .03$. In the tests of between-subject effects, the body image category was again significant, $F(3, 203) = 6.02$, $p = .001$. The observed power to detect differences was also high at .96. SNK post-hoc comparisons showed the no exercise group ($M = .54$) was significantly different from the long-term exerciser group ($M = .10$), the recent exerciser group ($M = .16$), and the exercise occasionally group ($M = .23$), and that the three exercising groups were not statistically different from each other. Again, the results indicate that for any two non-exercisers a body image self was described, whereas for long-term exercisers this category was described by only one in ten women. No other category showed statistically significant differences between stages, although both the dependence/independence category and personal projects approached significance at $p = .080$ and $.077$ respectively. For these variables, the observed power ratings were .57 and .58. The mean number of feared selves for the dependence/independence category increased from .20 to .51 across the stages of exercise. In the case of the personal projects category, it appears that any differences were due to one respondent, who listed 7 of the 9 feared selves in that category. Without this individual, there would be no differences between the groups. Table 4 presents means and standard deviations for categories of feared possible selves across stages of exercise behavior.

Table 4
Means and (Standard Deviations) for Hoped-for and
Feared Self Categories by Stage

Category	Stage of Exercise				Total
	No Exercise	Exercise Occasionally	Exercise < 18 months	Exercise > 18 months	
Hoped-for Selves					
Health	.34 (.64)	.37 (.49)	.38 (.61)	.47 (.55)	.41 (.56)
Physical	.40 (.60)	.70 (.92)	.72 (.81)	.67 (.82)	.64 (.82)
Body Image*	.40 (.50)	.24 (.43)	.22 (.42)	.11 (.35)	.21 (.42)
Personal	.34 (.64)	.70 (.94)	.59 (.84)	.76 (1.06)	.65 (.94)
Indep/Dep	.03 (.17)	.04 (.18)	.06 (.24)	.11 (.32)	.07 (.25)
Occu/Educ	1.06 (1.37)	.77 (.93)	1.09 (1.09)	.89 (1.13)	.91 (1.10)
Fam/Relat*	.89 (1.43)	.46 (.71)	.44 (.62)	.89 (.93)	.70 (.96)
Pers Proj's	1.09 (1.20)	1.56 (1.67)	1.34 (1.31)	1.47 (1.57)	1.41 (1.50)
Retir/Fin	.63 (.77)	.56 (.80)	.50 (.62)	.40 (.61)	.50 (.69)
Feared Selves					
Health	1.09 (1.03)	1.17 (1.05)	1.06 (.93)	1.00 (.82)	1.10 (.94)
Physical	.20 (.40)	.10 (.31)	.19 (.39)	.23 (.45)	.18 (.40)
Body Image*	.54 (.95)	.23 (.46)	.16 (.30)	.10 (.30)	.22 (.54)
Personal	.40 (.81)	.63 (.99)	.59 (.98)	.62 (.99)	.58 (.96)
Indep/Dep	.20 (.47)	.35 (.55)	.50 (.62)	.49 (.69)	.40 (.61)
Occup/Educ	.23 (.43)	.12 (.33)	.16 (.37)	.16 (.37)	.16 (.37)
Fam/Relat	.83 (.95)	1.00 (1.00)	.78 (.71)	.91 (.86)	.90 (.90)
Pers Proj's	.26 (1.20)	.02 (.13)	.03 (.17)	.00 (.00)	.05 (.51)
Retir/Finan	.51 (.61)	.47 (.60)	.53 (.62)	.34 (.50)	.44 (.57)

* Indicates statistical significance at $p < .05$

Exercise-related Possible Selves

The second issue of interest was to examine the hoped-for and feared selves most closely associated with the participant's current level of exercise, and see if the categories represented differed by stage of exercise behavior.

Remember that participants were first asked to list all of their hoped-for and

feared selves important to them. They were then asked to choose from those lists which hoped-for and which feared self was most closely associated with their current level of exercise.

Responses were coded by the researchers to represent one and only one category of hoped-for and feared self. If responses included more than one response, it was coded as the category first mentioned by the respondent. Thus, if an individual stated their hoped-for self as "being a healthy, interesting, alert woman" it was coded as a health-related possible self.

In limited cases where the meaning of a possible self was unclear, the coders examined the response to the questions "why/how is this possible self important/related..." This follow-up question effectively clarified any ambiguous responses. The category for each response was entered into the database, and a cross tabulation table comparing each of the categories of exercise-related hoped-for and feared selves across the four stages of exercise was examined in order to explore the relationships between category of possible self and exercise behavior.

For hoped-for selves, the physical category was most frequently cited as being most closely related to exercise, accounting for 32% of the responses. This was followed by health-related hoped-for selves (22%), and personal projects (11%). All nine categories were represented, with dependence/independence the least common with 2 responses. Feared selves most closely related to exercise followed a different pattern. Almost half (46%) of the responses were related to health, with the second most

common category being body image (15%) followed by dependence/independence with 10% of the responses. The categories of personal projects and retirement/financial were not cited by any respondents as being related to their level of exercise behavior.

Across the four stages of exercise behavior, more differences in the frequency with which respondents chose particular categories were apparent. With regard to hoped-for selves, cross tabulations for categories of hoped-for selves by stage of exercise showed that non-exercisers were at least half as likely to name a hoped-for self in the category of physical than the other three stages. While only 15% of non-exercisers believed that issues in the physical domain were most closely related to their current level of exercise, 31% of occasional exercisers, 34% of long-term exercisers, and 45% of recent exercisers selected a hoped-for self in this category. Long-term exercisers were nearly twice as likely as the other three groups to choose a health-related self as the one most closely related to their current level of exercise behavior (33% vs. 13, 16, and 18%). The third most frequently cited category, personal projects, did not show dramatic differences by stage, although long-term exercisers were less likely than the other three categories to select a possible self in this category as most closely related to their current level of exercise (8% vs. an average of 14%). Interestingly, the occupation/education category, having the fourth highest frequency (18 responses), was almost entirely comprised of the first three exercise stages. Only 3% of participants in the long-term exercise group considered this the most important factor regarding their current level

of exercise, while 11% of occasional exercisers and 18% of the non-exercisers believed this to be an important factor. Body image accounted for 21% of responses in the no exercise group, while accounting for no more than 7% in any of the exercise groups. Table 5 presents the exercise-related selves by stage of exercise.

With regard to feared selves, the responses pertaining to the health category were fairly evenly distributed across the first 3 stages of exercise. However, there was a sizable difference between response percentages for individuals who had exercised regularly for less (33%) and more (59%) than 18 months. Within the second most frequently cited category of body image, the percentage of responses decreased across the stages, with non-exercisers citing a response related to body image 27% of the time, occasional exercisers 20%, recent exercisers 10%, and long term exercisers 9% of the time. Dependence/independence issues were not mentioned by any non-exercisers, but accounted for 11% to 14% of responses in the three exercise stages. The family/relationships category was more likely to be cited in earlier stages of exercise than later (12 and 13% for non-exercisers and occasional exercisers, and 3% for both short and long-term regular exercisers). Frequencies for the nine hoped-for and feared categories by stage can be found in Table 5.

Self-regulatory Variables

The next research question explored the relationship between the self-regulatory variables of capability to achieve (or avoid) a possible self and the

likelihood the possible self would occur (or be avoided) with exercise behavior. These were examined across three different focused possible selves (most important, exercise-related, and exercise-specific). Individuals were asked to answer a series of likert-scale questions that dealt with the individuals' thoughts regarding the importance, capability and likelihood for achieving or avoiding each of the three focused hoped-for and feared selves.

Table 5
Frequencies and Percentages of Exercise-related Hoped-for and Feared Selves
by Stage

Category	Stage of Exercise				Total
	No Exercise	Exercise Occasionally	Exercise < 18 months	Exercise > 18 months	
Hoped-for Selves					
Health	6/18%	9/16%	4/13%	26/33%	45/23%
Physical	5/15%	17/31%	14/45%	27/34%	63/32%
Body Image	7/21%	4/ 7%	1/ 3%	5/ 6%	17/ 9%
Personal	3/ 9%	4/ 7%	1/ 3%	6/ 8%	14/ 7%
Indep/Dep	0/ 0%	0/ 0%	2/ 6%	2/ 1%	2/ 1%
Occup/Educ	6/18%	6/11%	4/13%	2/ 3%	18/ 9%
Fam/Relat	3/ 9%	3/ 6%	0/ 0%	3/ 4%	9/ 5%
Pers Proj's	4/12%	8/15%	5/16%	6/ 8%	23/12%
Retir/Finan	0/ 0%	4/ 7%	0/ 0%	4/ 5%	8/ 4%
Feared Selves					
Health	12/36%	25/46%	10/33%	47/59%	94/48%
Physical	3/ 9%	3/ 6%	5/17%	7/ 9%	18/ 9%
Body Image	9/27%	11/20%	3/10%	7/ 9%	30/15%
Personal	3/ 9%	3/ 6%	5/17%	5/ 6%	16/ 8%
Indep/Dep	0/ 0%	6/11%	4/13%	11/14%	21/11%
Occup/Educ	2/ 6%	0/ 0%	2/ 7%	1/ 1%	5/ 3%
Fam/Relat	4/12%	7/13%	1/ 3%	2/ 3%	14/ 7%
Pers Proj's	0/ 0%	0/ 0%	0/ 0%	0/ 0%	0/ 0%
Retir/Finan	0/ 0%	0/ 0%	0/ 0%	0/ 0%	0/ 0%

Preliminary inspection of bivariate correlations indicated that multicollinearity existed (Pearson correlation $>.70$) between the capability and likelihood responses. These correlations differed slightly across the three focused hoped-for selves, with $r = .75$ for the most important hoped-for self, $r = 1.00$ for the exercise-related hoped-for self, and $r = .99$ for the exercise-specific hoped-for self. For feared selves, the correlation between the capability and likelihood variables was $r = .99$ for the most important feared self, $r = 1.00$ for the exercise-related feared self, and $r = .82$ for the exercise-specific feared self. Because of this redundancy, the capability and likelihood variables were collapsed to create new variables for each of the focused hoped-for and feared selves. The newly created self-regulatory variables met tests of normality (skewness and kurtosis), and had means ranging from 5.27 (most important feared self) to 5.63 (most important hoped-for self) on a 7-point likert scale.

In order to answer the question, which focused hoped-for and feared self-regulatory variable best predicts exercise behavior, separate linear regression analyses were conducted for hoped-for and feared selves on the three composite self-regulatory variables (representing the most important, exercise related, and exercise-specific selves), using stage of exercise as the dependent variable. For the hoped-for selves, all three regressions were significant at $p < .0001$. The exercise-related and exercise-specific variables were the best predictors of exercise behavior, with identical adjusted R square values of .16. Thus, 16% of the variance in exercise behavior was related to self-regulatory variables associated with either a particular exercise-related or

exercise-specific hoped-for self. For the self-regulatory variables attendant with focused feared selves, all three regressions were statistically significant at $p < .0001$. The exercise-specific feared self was most predictive of exercise behavior, although a smaller amount of variance was accounted for (7% of the variance) compared to the hoped-for selves. Values for R, adjusted R square, and standard errors for the self-regulatory variables (hoped-for and feared) can be found in Table 6.

Table 6
Summary of Linear Regression Analyses for the Self-regulatory Variables

Variable	R	Adjusted R Square	Std. Error of Estimate
Hoped-for Selves			
Most important self	.243	.054	1.12
Exercise-related self	.400	.156	1.05
Exercise-specific self	.401	.156	1.05
Feared Selves			
Most important self	.255	.065	1.11
Exercise-related self	.195	.038	1.13
Exercise-specific self	.270	.073	1.11

Exercise Self-efficacy

Finally, the strongest predictors of exercise behavior were compared to a measure of exercise self-efficacy in order to ascertain the relative contribution of possible selves (hoped-for and feared) to the prediction of exercise-behavior. Since in the case of hoped-for selves the adjusted R square

values for the exercise-related and exercise-specific self-regulatory variables were identical, the decision was made to use the exercise-specific variable in the regression with exercise self-efficacy. This was done for consistency, since for feared selves the exercise-specific self-regulatory variable accounted for the most variance. Correlations were computed between stage of exercise and exercise self-efficacy ($r = .70$), as well as between stage of exercise and the hoped-for ($r = .40$) and the feared ($r = .27$) self-regulatory variables. Correlations were also inspected between exercise self-efficacy and the exercise-specific hoped-for self ($r = .49$), and between exercise self-efficacy and the exercise-specific feared self ($r = .21$).

When stage of exercise was regressed against the self-regulatory variable for the hoped-for self specific to exercise and exercise self-efficacy, the regression was significant ($p < .0001$). However, although self-efficacy alone contributed 49% of the variance in exercise behavior, only an additional 1% was added with the inclusion of the self-regulatory variable. For the self-regulatory variable associated with the exercise-specific feared self, the regression was significant at $p < .0001$. There was a 1% change in variance resulting from the inclusion of this variable with exercise self-efficacy over and above exercise self-efficacy alone. Utilizing a step-wise procedure whereby the order of the variables in the regression was reversed did not change the amount of variance accounted for by the two variables. Regression data for these analyses can be found in Table 7.

Table 7
Summary of Linear Regression for the Self-regulatory
Variables and Exercise Self-efficacy

Model	R	Adjusted R Square	Std. Error of Estimate
Hoped- for selves			
1 Exercise self-efficacy	.700	.491	.82
2 Exercise-specific self	.708	.500	.82
Feared selves			
1 Exercise self-efficacy	.701	.491	.82
2 Exercise-specific self	.707	.498	.82

CHAPTER 5 DISCUSSION

The present study explored the construct of possible selves in middle-aged women across stages of exercise behavior. The findings for each of the research questions will be discussed in terms of previous research, theoretical implications, and practical applications. The chapter will conclude with final thoughts and suggestions for future research directions.

Number and Categories of Possible Selves Across Stages of Exercise

The women who participated in this study had no difficulty generating lists of hoped-for and feared selves, thus lending support for the use of a self-administered instrument. Instrumentation remains an important issue in possible selves research, since to this point there seems to be no consensus regarding the best method to use in gathering data. In the present study, there seemed to be no problem eliciting both open-ended and focused possible self responses. Given that self-administered instruments are more cost- and time-effective than interview formats, the positive response bodes well for future studies examining this construct. There were, however, a small number of individuals (approximately 7) who returned the survey without completing it, stating that they “had to think too much to fill this out.” This is an important point. The possible selves instrument is clearly different

from a typical survey in that it does require much more than merely checking boxes on a scale. For some, it took considerable thought to complete, while for others, it proved to be a simple exercise which took only a short time (some as little as ten minutes). Although beyond the scope of this study, it would be interesting to know if there were differences between individuals who had no trouble describing their possible selves versus those who took quite a bit longer, sometimes a few days to complete the instrument. In addition, it must be acknowledged that this was a highly educated sample. Although similar instrumentation has been used effectively on an inner-city middle-school sample (Oyserman, et al., 1995), in this instance it was an interview format. Future research should be mindful that completing this instrument may not be a simple process for all participants.

The women in this study described more hoped-for selves than feared selves, and the ratio between hoped-for and feared selves changed with increasing levels of exercise behavior. That is, non-exercisers on average had slightly fewer hoped-for selves than their long-term exercising peers, and slightly more feared selves than the long-term exercisers. The average number of possible selves found in this study (5.5 hoped-for, 4.0 feared) was comparable to the numbers found in the middle-aged group by Cross and Markus (1991) in their study of possible selves over the lifespan (6.1 hoped for, 4.0, 3.6 feared). This number represented an amount less than the younger group studied, but more than the older group, leading Cross and Markus (1991) to conclude that possible selves decrease over the lifespan. The

decrease in number may lead to an increase in the importance attached to the remaining possible selves, or what Markus and Herzog (1992) called a "consolidation of self-schemas" (p. 115).

In a middle-aged population such as the women in this study, the process of consolidation should have begun, and the possible selves listed should be of value and importance to the individual. This is supported by the high importance ratings assigned to the focused possible selves, although it is not known if the other possible selves listed in the open-ended responses were equally important. The number of hoped-for and feared selves was virtually the same between stages of exercise, and thus, at least with this sample, did not help to differentiate individuals along the stage of exercise scale.

Critical to examining the categories of possible selves was the system used to code responses to the open-ended and exercise-related possible selves questions. Although the categories used in this study were carefully considered and based on previous work by Cross and Markus (1991) as well as Hooker and Kaus (1994), comparisons between studies can be made in a general sense only.

The results of this investigation point to the importance of including an examination of body image as a distinct category of possible selves. It is quite likely that had the possible selves dealing with weight and attractiveness been included with the health or physical categories that the differences between stages might have been lost. Given the importance of

perceptions of the body in self-concept research (Markus & Herzog, 1992), particularly in the context of sport and physical activity (Hall, 1996), this is a critical area on which to focus if we are to move past description and on to using possible selves as tools for intervention programs. For example, this study found that non-exercisers were more likely than their exercising peers, particularly those that had been exercising regularly, to have hoped-for and feared selves that dealt with body image issues. These included such statements as, "becoming a trim and fit person" or "losing weight" for hoped-for selves, and "avoiding becoming obese" or "not getting excessively wrinkled" for feared selves. These statements were separate from (but often made in conjunction with) health issues such as "being a healthy adult" or "getting fit" for hoped-for selves, and "having a debilitating disease" or "getting cancer" for feared selves.

Perhaps the issue is who the individual wants to lose weight for: Herself, for health reasons, or for society, who says she should weigh a certain amount or look a certain way. These issues are much broader and deeper than merely a question of health, and need to be examined in light of the social construction of women's bodies in our society. This issue has been examined from a feminist perspective with regard to aerobics participation by women. Markula (1993) specifically speaks of the fragmentation within "...Aerobicizers' relationships to their selves...fragmented in attempts to conform with the societal ideal body image, but yet integrated in the enjoyment of the movement" (p. 98). From this perspective, it is clear that the

potential of possible selves to motivate exercise behavior must take into account both the role of exercise in health, and issues of personal empowerment versus conformity with societal expectations.

Other than body image, there were fewer statistical differences than anticipated between stages of exercise behavior in the categories of possible selves. Consistent with Cross and Markus (1991), hoped-for selves generally focused on “new beginnings or dramatic changes” (p. 241) such as “becoming a writer,” or “volunteering more.” In fact, the most frequently cited category for all but the non-exerciser group was personal projects, accounting for at least 25% of responses in those three groups. Clearly there is a focus on future events which would appear to be aided by good health and mobility. Interestingly, the most frequently cited category for the non-exercisers was occupation/education issues, totaling 28% of responses. With regard to intervention programs, this could be very useful information. If we have a better idea of what precisely is important to these individuals in the future, perhaps we can tailor programs to fit their needs which includes attention to issues related to work and education.

The similarity of responses and the categories most frequently mentioned with those found in the Cross and Markus (1991) study with a similarly aged sample is encouraging in that it appears that open-ended possible selves are rather consistent across groups of individuals. And although the Cross and Markus study looked at men and women, their sample included nearly three times as many women as men (34 men, 89

women total; no gender breakdown given for the 30 participants in the middle-aged group), making their sample rather similar (albeit smaller) to the present investigation.

Finally, there were a number of differences, although perhaps not dramatic, between the no exercise group and those that had been exercising for more than 18 months. Of the nine hoped-for categories, the percent change (increase or decrease) in the mean number of possible selves was 38%, with only one category (family/relationships) exhibiting no differences, and two having a difference of over 70% (independence/dependence and body image). This provides support for the contention that individuals differ in their possible selves based on their level of exercise behavior.

The topics expressed in the feared selves categories were also consistent with those found by Cross and Markus (1991), which they referred to as "losses and decrements commonly assumed to accompany aging" (p. 244). Across stages, health (averaging 27% of all responses) and family/relationship issues (approximately 23% of the total responses) were mentioned most frequently by all four groups. Theoretically, these issues should play a considerable role in motivating behavior, based on their perceived importance (Markus & Nurius, 1986). Health-related feared selves commonly included hopes of avoiding long-term illness or disease (i.e., cancer, osteoporosis, Alzheimers). These thoughts were expressed by individuals in all stages of exercise, but they resulted in a range of exercise-related behavior. Since exercise has the potential to help individuals avoid a number of these

diseases, we might wonder why a concern with osteoporosis, for example, does not result in regular exercise.

One possible explanation is that the *combination* of feared selves expressed by individuals influences their ultimate behavior. This is consistent with the idea of the working self-concept (Ruvolo & Markus, 1992), which is made up of a subset of all possible self-representations. The working self-concept is believed to enhance performance best when there are no competing or incongruent possible selves. For example, for non-exercisers body image issues were common (“not becoming obese”), while independence/dependence issues (“not becoming a burden to my children”) were relatively common in the long-term exercisers (72% change for both). Looked at from this perspective, feared selves related to health could result in different behavioral outcomes, depending on the other priorities in the working self-concept.

The differences in the three exercise groups were less than anticipated. For example, it was expected that individuals who had been exercising regularly for at least six months (short and long-term exercisers) would differ from occasional exercisers who had yet to make the commitment to a regular exercise schedule. In fact, this was not the case. Occasional exercisers were more similar to short-term exercisers in the possible selves they expressed than to non-exercisers. This suggests that actually participating, regardless of level of behavior, might be the defining step in converting a hoped-for self to action. It may be that individuals in the contemplation stage, even though

they report that they plan to start exercising some time soon, do not yet have a fully developed schema for exercise. Unfortunately, the small number of precontemplators recruited for this study did not allow for a thorough investigation of potential differences between precontemplators and contemplators, which might have yielded additional information regarding the process of exercise initiation. It may be that there are considerable differences between these non-exercising groups. Unfortunately, although there is a need to know more about the cognitions of non-exercisers, they are consistently the most difficult group to recruit for this type of investigation.

There are statistical explanations for the lack of differences between groups that deserve mention. Although the sample size was relatively large, the mean number of possible selves each individual listed was between four (feared) and just over five (hoped-for). These were then subdivided into nine distinct categories. This resulted in small means and in some cases empty cells which made statistical analysis difficult. In addition, it was often the case that the standard deviations were as large as the mean number of hoped-for and feared selves. This implies that the differences within groups could be as large as the differences between groups, thereby obscuring statistical differences across the groups. Because of the preliminary nature of this study, it was not appropriate to collapse any of the nine categories, which would have made statistical analysis more powerful. Instead the decision was made to explore in depth differences and similarities for each of the nine categories across levels of exercise behavior, however slight those differences might be.

Exercise-related Possible Selves

The second issue of interest in the present study was the responses to a focused question regarding hoped-for and feared selves. Specifically, participants were asked to select the hoped-for and feared self most closely associated with their current level of exercise behavior. Results of this question showed considerable differences between stages of exercise behavior, particularly for hoped-for selves. For example, non-exercisers chose body image in their open-ended responses 7% of the time. For the hoped-for self most closely associated with their current level of exercise, body image constituted 21% of responses. This represented the most frequently cited response for that group. This intriguing finding speaks to the importance of examining body image, particularly as it relates to non-exercising women. For the three exercising groups, body image was not nearly as significant a factor, accounting for an average of 5% of responses. Instead, exercisers chose hoped-for selves in the physical category most frequently (averaging approximately 40% across the three groups), and long-term exercisers attributed their current level of exercise behavior to health-related hoped-for selves much more frequently than any of the other groups (33% vs. an average of 16% in the other three groups).

The response differences between non-exercisers and exercisers can be classified as being other- versus me-focused. Specifically, while non-exercisers chose possible selves that reflected their concern with how others

viewed them (“avoiding looking fat”), exercisers saw their activity level as a way to do something for themselves (“learn a new activity”). This response difference is not unusual among women. In fact, Whaley and Ebbeck (1997) found that older adult women were likely to look positively on physical activity if it would benefit others. For example, although women felt that participating in a community garden would be valuable, doing aerobics did not make sense to them. It would be interesting to pursue this issue more closely in order to determine whether your perspective on exercise (for others vs. for you) influenced exercise behavior or if exercise behavior results in a change in perspective.

Similar to results reported by Hooker and Kaus (1994), health-related possible selves were common, and more likely to be feared than hoped-for. In fact, across stages of exercise, fully 48% of the feared selves related to exercise were in the category of health, and the percentage was greatest for long-term exercisers (59%). Thus, with regard to exercise, feared selves were most commonly related to negative perceptions of the individuals’ health status (“becoming seriously ill”; “to be permanently injured”), and exercise represented the way to avoid those feared selves from occurring.

There was an interesting relationship evident between health-related and physical hoped-for selves and stage of exercise. Across the four stages of exercise, when the two categories were combined there was an increase in the frequency of these responses (33% non-exercisers, 47% occasional exercisers, 58% short-term regular exercisers, and 67% long-term regular exercisers).

This suggests that as people become more active, health and physical issues (i.e., remaining fit, flexible, strong) represent the majority of the incentive for being active. For non-exercisers and even occasional exercisers, there are a number of other factors involved such as work and personal projects.

The differences across stages in individuals' perceptions of their relationship between their future self and their current level of exercise behavior could have ramifications for intervention strategies. For example, in addition to body image, the percentage of women relating their level of exercise to the occupation/education category differed markedly across stages of exercise behavior. Individuals in the no-exercise group related their current level of exercise to their job, work, or educational pursuits ("if I could quit work I would be cleaning house and working outside") more frequently than exercisers, particularly long-term exercisers (18% vs. 3 %). This may reflect a constraint to exercise perceived by non-exercisers which is not a constraint to others with similar work schedules. Whaley and Ebbeck (1997) found that time and work commitments were primary reasons why older individuals did not exercise regularly. This is consistent with the idea of possible selves acting as a way of evaluating and interpreting an individual's current view of self (Markus & Nurius, 1986). If non-exercisers attribute their level of inactivity to their view of themselves as unable to exercise because of work, it might diminish the sense of guilt associated with not being as active as they think they should be. In order to overcome this constraint, an individual might be asked to imagine ways to fit exercise into their existing

schedule, or how their job might be changed to allow time for physical activity.

The fact that more differences were found between stages of exercise behavior with regard to the focused possible selves argues for assessment of possible selves in a variety of formats, including open-ended and focused questions. This is consistent with the work of Cross and Markus (1994) who believe in the importance of a domain-specific exploration of schemas. The question remains, however, how best to elicit possible selves from participants. It is a delicate balance to elicit information with regard to a particular content area or domain without leading the participant down a designated path. By asking first open-ended and then focused responses, perhaps participants are better able to explore their possible selves.

Unlike the open-ended possible self responses where few differences between the three exercising groups were evident, differences between groups regarding the possible self most closely related to their present level of exercise behavior were more pronounced. For example, differences were found between individuals who had been exercising regularly but for a shorter period of time (less than 18 months) from those who had been exercising regularly for longer than 18 months. This suggests that thoughts about exercise behavior are dynamic, differing according to how long an individual participates, and perhaps capable of changing as individuals continue to participate.

Self-regulatory Variables

Overlap in the measurement of the self-regulatory variable of self-efficacy (the perceived capability to achieve or avoid a possible self), with the more general measure of exercise self-efficacy (how capable an individual is of exercising under a variety of circumstances) was considered possible.

Although this was not the case, extremely high correlations were found between the two self-regulatory variables of self-efficacy and outcome expectancy. In the present study, this resulted in a collapsing of the variables to form a composite self-regulatory variable for each of the three focused hoped-for and feared selves, one of which (exercise-specific hoped-for self) ultimately accounted for a quite respectable 16% of the variance in exercise behavior.

Previous studies have also examined the role of self-regulatory variables with possible selves. Cross and Markus (1991) examined both perceived self-efficacy and outcome expectancy associated with a most important hoped-for or feared self, but did not report correlations between the two variables. Hooker (1992) found perceived efficacy and outcome expectancy to be correlated at $r = .62$, with only outcome expectancy contributing to the prediction of perceived health when both were entered into the regression. In a follow-up study, Hooker and Kaus (1994) found that with regard to participants' most important health-related feared possible self, perceived self-efficacy but not outcome expectancy was a significant predictor in health

behavior scores. Thus, the effect of these self regulatory variables seem to vary depending on the research question as well as, perhaps, the target sample (which varied between young, middle-aged, and older adults).

In the present investigation, participants' level of perceived self-efficacy for achieving a possible self was comparable to how likely they thought that possible self would be achieved (outcome expectancy). Since the questionnaire format was identical to that used by Hooker and Kaus (1994), it is reasonable to look to the domain or the participants as possible explanations for this redundancy. Perhaps something about the exercise and physical activity domain encourages this association. That is, whereas health issues may be viewed as somewhat beyond your control, generally speaking if you are capable of achieving a possible self related to exercise, you may also think it quite likely that you will do so. Associated with this was the profile of the sample population, which was middle-aged, highly educated, and had relatively easy access to fitness facilities and programs. Because of this, the common barriers to exercise which might differentiate self-efficacy and outcome expectancy (such as money and other resources) were not significant factors in their decision to exercise.

When the composite self-regulatory variables for the three focused hoped-for and feared selves were compared with respect to their ability to predict exercise behavior, the results varied by focused possible selves and between hoped-for and feared selves. For hoped-for selves, the self-regulatory variable associated with the exercise-specific self ("To be an attractive, healthy,

older woman”) was equal to the exercise-related self in variance accounted for (16%). This hoped-for self was viewed as slightly higher than “somewhat descriptive of me now” ($M = 4.9$ on a 7 point scale), and very important to achieve ($M = 6.1$). The regression showed that how capable (self-efficacy) and how likely (outcome expectancy) an individual thought it might be to achieve a specific exercise-related possible self (either one of their choosing or one ascribed to the individual) can add to our understanding of exercise behavior.

With regard to focused feared selves, again the self-regulatory variable associated with the exercise-specific self (“not able to enjoy later life to the fullest”) contributed the most variance to exercise behavior. However, it accounted for a smaller 7.3% of the variance. This may be attributable to the feared self chosen, although the pilot work showed this response to be very representative. In fact, when eleven similarly aged and employed women were shown a list of 23 feared selves identified by a previous group and asked to pick their top three responses they believed to be most representative of women their age (35-49), it was chosen three times more often than any other on the list.

The smaller percentage of variance in exercise behavior captured by the self-regulatory variable associated with the feared self was consistent with Hooker (1992). In that study, a large percentage of variance in perceived health was accounted for by self-regulatory variables associated with hoped-for selves (47% adjusted), but minimal variance with feared selves (11% adjusted). It would be tempting, based on these findings, to suggest that

efforts to change exercise behavior should focus on hoped-for selves rather than feared selves. However, this would be premature because of the differences in the sample populations and the difference between perceived health and health behaviors. Instead, this is an area worthy of future research consideration. That is, should interventions focus on the adoption of hoped-for possible selves, or the avoidance of feared selves?

Exercise Self-efficacy

Possible selves is a relatively new construct in the field of exercise and sport psychology. For this reason, it was of interest to measure this construct against a recognized and consistent predictor of exercise behavior, exercise self-efficacy. In the present study, when stage of exercise was regressed against the measure of exercise self-efficacy, it accounted for fully 49% of the variance in exercise behavior. The mean sum score for individuals across stages (maximum = 55) was 35.3, which indicates a moderate level of self-efficacy for engaging in regular exercise under adverse conditions (i.e., when tired, no time, raining, or snowing). Self-efficacy scores increased linearly with stage of exercise, with the lowest mean scores associated with non-exercisers ($M = 24.4$) and the highest mean scores with long-term exercisers ($M = 44.8$). Thus, how confident you are in your ability to exercise is highly related to your stage of exercise. This is consistent with research examining exercise self-efficacy and stages of change (Marcus, Eaton, Rossi, & Harlow, 1994), where self-

efficacy scores were found to be an important indicator of current and future exercise behavior.

The minimal amount of variance contributed to the regression by the self-regulatory variables was disappointing. It appeared that the 16% variance evident in the relationship between the exercise-specific self and exercise behavior was shared with exercise self-efficacy such that only a small amount (1%) was unique. There are several plausible explanations for this finding. It may be that possible selves do not contribute anything unique to exercise behavior. This does not seem likely, given the amount of variance captured in each of the three regressions where self-efficacy was not included. In addition, the ease with which individuals described hoped-for and feared selves, the importance they attached to these possible selves, and the ability of possible selves to differentiate, at least to a limited extent, stages of exercise behavior suggests the construct is valuable and pertinent.

A second possibility involves the appropriateness of the stages of change model as the indicator of exercise behavior. Although this was a very effective classifier of exercise behavior with exercise self-efficacy, it may be that the differences between the stages (particularly as they were adapted for this study) were not sensitive enough to pick up differences with a more dispositional variable such as possible selves and its associated self-regulatory processes. The stages of change model has been shown to be a strong predictor of exercise behavior (Marcus et al., 1994), and the differences that

were found in this study between exerciser groups provide evidence for multiple stages of exercise behavior.

Correlations among stage of exercise, exercise self-efficacy, and the hoped-for and feared self-regulatory variables may also have affected the regressions. Stage of exercise was highly correlated with exercise self-efficacy (Pearson Correlation [r] = .70), but correlated only moderately with the exercise-specific hoped-for self-regulatory variable (r = .40) and weakly with the exercise-specific feared self-regulatory variable (r = .27). For the exercise-specific hoped-for self and exercise self-efficacy, the correlation was r = .49, and for the most important feared self and exercise self-efficacy, the correlation was r = .21. In a regression, it is desirable to have the independent variables highly related to the dependent variable but not very related to each other (Vincent, 1995). This is rarely the case in practice, and is not the case here with regard to the self-regulatory variables and stage of exercise. The resulting low correlation between dependent and independent variable leads to a poor prediction equation, and a higher correlation between the two independent variables (i.e., hoped-for self-regulatory variable and exercise self-efficacy) results in reduced effectiveness of one or the other adding to the prediction. In the present study, it is likely that given the much higher correlation between stage of exercise and exercise self-efficacy, a better prediction equation was possible than with the self-regulatory variables, and then exercise self-efficacy masked the effect of the exercise-specific self-regulatory variables in the regression equation.

Alternatively, the reason for this low association is not the result of instrumentation or measurement but rather is conceptual in nature. Harter (1990) contends that self-representations (of which possible selves are but one of a number of theoretical constructs) serve as mediators of behavior. However, Ruvolo and Markus (1992) suggest that general assessments of one's ability (i.e., self-efficacy) "are anchored in specific mental models of the self in action, either in the past, future, or both" (p. 97). This suggests that possible selves might be antecedents of self-efficacy, which in turn mediate behavior. In this framework, possible selves represent the affective, action-oriented component to one's skills and abilities, converting what might be (motivation) into what will be (behavior). Self-efficacy is related to possible selves as the consequence of the content and function of a set of possible selves, which together form the working self-concept (Markus & Herzog, 1992). Important in this model of the dynamic self are also social antecedents such as gender or culture, which influence the makeup of past, current, and possible selves. Finally, levels of self-efficacy influence behaviors such as current and future exercise behavior (Marcus et al., 1994). Thus, possible selves can be an important component of intervention programs designed to initiate exercise behavior, as long as social factors (i.e., constraints) are also taken into account. In sum, it may not be a question of which is the best predictor, but instead how possible selves might be utilized to increase levels of exercise self-efficacy and thereby promote physical activity.

It should be noted that although there is considerable support for the view that feelings of competence or ability are pivotal for future exercise behavior (see for example Biddle, 1997), it is plausible the direction of the relationship is from exercise behavior to self-efficacy and then possible selves. That is, individuals who engage in physical activity are likely to have higher levels of self-efficacy, which in turn lead to appropriate possible selves related to exercise. This is consistent with the skill development view of self-esteem development (Soenstrom & Morgan, 1989), which posits that actual participation results in changes in self-views. In fact, recently the *reflexivity* of self-perceptions and behavior have been of primary interest; that is, the importance of examining this relationship from both directions (Fox, 1997). In order to ascertain the most appropriate and best-fitting model of the relationship among the antecedents to possible selves, possible selves, and constructs such as exercise self-efficacy, an appropriate technique such as structural equation modeling will need to be employed.

Conclusions and Future Research Directions

As a result of this investigation, our understanding of possible selves in the domain of exercise has been greatly enhanced. It is evident that individuals are able not only to list their hoped-for and feared selves in a general sense, but to clearly express their hopes for the future as it pertains to

exercise and physical activity (i.e., naming hoped-for and feared selves related to exercise). Importantly, they were able to respond to focused possible selves not of their own choosing but provided for them. The methodology employed in this study proved effective in providing specific information related to possible selves in the exercise domain. In particular, the combination of open-ended and focused possible selves given in survey form resulted in comparable results with interview formats which are less time and cost effective. Although not as many differences may have been elicited between stages of exercise as might have been anticipated, there were a number of significant and interesting findings. Support was found for previous studies which examined possible selves in a similar age group (Cross & Markus, 1991), and with regard to health behaviors (Hooker & Kaus, 1994). Finally, our understanding of exercise self-efficacy has been expanded by comparing this established construct with possible selves. As a result of this investigation, a number of future research directions can be recommended.

Further research is needed that solidifies the methods most effective in eliciting possible selves from participants. Although the questionnaire format used in this study was effective, some procedural changes might be helpful which could further clarify the distinctiveness of the possible self construct. There has been a theoretical distinction made between possible selves and goals, but that distinction may be lost when respondents are asked to list in an open-ended fashion their hoped-for and feared selves. Is it

sufficient to give people examples of what a hoped-for and feared self is (and isn't), and then code all responses accordingly? Or should the researcher determine from that list what is and what isn't a possible self? In the present study, all responses listed by participants as possible selves were coded as such. This question requires both empirical investigation and theoretical discussion. According to Oyserman and Markus (1990), the more vivid and well-elaborated possible selves are, the more likely they are to result in behavior. This may be another way to look at possible selves and exercise behavior, and could help the researcher differentiate possible selves from goals.

Another aspect of instrumentation involves going past "what" to more thoroughly explore "why" a particular possible self is important to an individual. In the present study, respondents were asked why their most important self was important, and how their possible self listed as most closely related to their present level of exercise was related, in order to facilitate appropriate coding of the response. Future research should focus on these explanations via the use of qualitative designs in order to more fully understand the process of forming a possible self.

Given the support for domain-specific exploration of schemas (Cross & Markus, 1994) found in this study, it would be worthwhile to explore whether it is necessary to include the open-ended responses before going directly to questions related to focused possible selves. Although going through the exercise of listing all possible selves may enable the respondent to more

effectively answer questions related to a specific domain, it also represents a significant time commitment on the part of the participant. Future research should compare these techniques in order to determine the relative benefits of the various protocols and collection techniques.

The coding process is another area deserving research attention. Is it appropriate or useful to have standard categories across investigations, or should they be specific to the research question? It was clear to these investigators that the categories developed by Cross & Markus (1991) were not entirely exhaustive for an investigation of exercise and physical activity behavior. Although standardized categories would facilitate relating studies across sample populations, the cost might be a loss of information specific to the research question. A compromise to this could be a standardized coding process, whereby researchers use similar "rules" (e.g., how to split up possible selves written as text rather than listed numerically) for coding responses. Future research might pursue this issue specifically, including both content of categories and the methods by which those categories are decided upon by investigators.

The intent of this preliminary study was to begin to explore the utility of using possible selves as a tool for eventual intervention studies. Although some research has addressed this issue (i.e., Ruvolo & Markus, 1992), some questions in the exercise context need to be addressed. For example, it is critical to know how durable and/or malleable possible selves are over time. That is, although there is evidence that cognitions are adaptable via the

working self concept (Markus & Nurius, 1986), we do not know how readily possible selves in a particular content domain (i.e., physical) can be changed or adapted. If they can be changed, then soliciting exercise-related possible selves from current exercisers might be extremely useful in designing intervention programs. Longitudinal studies are needed in order to establish changes in possible selves over time, looking at a variety of contexts and time periods.

With regard to possible selves as a potential antecedent of self-efficacy and ultimately behavior, empirical testing is needed in order to clarify the precise relationships among possible selves, self-regulatory mechanisms, antecedents to possible selves, and affective and motivational correlates. A number of self-regulatory mechanisms have been found to be effective indicators of the action plans individuals use in order to accomplish a possible self (i.e., number of goal-oriented activities), but self-efficacy and outcome expectancy have been used as standard measures in this important aspect of possible selves research. In the present study combining these variables served to create a more general measure of a self-regulatory process which might be of value in future investigations. Other studies have shown the value of examining the two variables separately (Hooker & Kaus, 1994). More research is needed that compares and contrasts various self-regulatory mechanisms in a variety of domains.

In addition, much has been written regarding the role of antecedents to possible selves (Harter, 1990; Markus & Herzog, 1992). In the present

investigation, body image was an issue important to a number of women. There is no doubt that cultural factors contribute to women's perceptions of their bodies, possibly extending to how they see themselves in the future. We need to better understand the role of social influences on the construction of the self. Oyserman, Gant, and Ager (1995), in their work with African American adolescents, commented that future research was needed that focused on the specific ways the social context makes a difference in identity construction. They believe that African American youths must create a positive sense of themselves, often in the face of contradictory or negative perceptions from outside (social) sources. These issues may be quite similar for women who have not been exercising, particularly individuals who view themselves as overweight and thus not conforming to societal expectations of the "attractive, healthy, older woman."

In conclusion, possible selves is an important construct with direct implications for exercise behavior. As such, it has the potential to contribute significantly to the field of sport and exercise psychology, particularly as it relates to exercise participation and adherence. This research project has created more questions than it has answered, but provides a basis from which to further explore the role of possible selves in the cognitions - behavior relationship. Importantly, the construct includes attention to social and cultural antecedents to behavior, and thus represents a social-psychological approach to better understanding exercise behavior in the future.

REFERENCES

- Babbie, E. (1992). The practice of social research (6th ed.). Belmont, CA: Wadsworth, Inc.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, *84*, 191-215.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.
- Barke, C.R., & Nicholas, D.R. (1990). Physical activity in older adults: The stages of change. The Journal of Applied Gerontology, *9* (2), 216-223.
- Berger, B., Owen, D., Dubar, C., Gardiner-Parks, L., & Michielli, D. (1994). Mood benefits after exercise in elderly women. Presentation at the 1994 AAASP National Conference, Lake Tahoe, Nevada.
- Biddle, S. (1995). Exercise and psychosocial health. Research Quarterly for Exercise and Sport, *66* (4), 292-297.
- Calasanti, T. (1992). Theorizing about gender and aging: Beginning with the voices of women. The Gerontologist, *32* (2), 280-282.
- Cardinal, B.J. (1995). The stages of exercise scale and stages of exercise behavior in female adults. Journal of Sports Medicine and Physical Fitness, *35* (2), 87-92.
- Coopersmith, S. (1967). The antecedents of self-esteem. San Francisco: Freeman.
- Courneya, K.S. (1995). Understanding readiness for regular physical activity in older individuals: An application of the theory of planned behavior. Health Psychology, *14* (1), 80-87.
- Cross, S.E., & Markus, H. (1991). Possible selves across the life span. Human Development, *34*, 230-255.
- Cross, S.E., & Markus, H. (1994). Self-schemas, possible selves, and competent performance. Journal of Educational Psychology, *86* (3), 423-438.
- Deci, E.L. (1975). Intrinsic motivation. New York: Plenum Press.

- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Desharnais, R., Bouillon, J., & Godin, G. (1986). Self-efficacy and outcome expectations as determinants of exercise adherence. *Psychological Reports*, 59, 1155-1159.
- Dishman, R.K. (1990). Determinants of participation in physical activity. In C. Bouchard, R.J. Shepard, T. Stephens, J.R. Sutton, & B.D. McPherson (Eds.), *Exercise, fitness and health* (pp. 75-102). Champaign, IL: Human Kinetics.
- Dishman, R.K. (1994). Consensus, problems, and prospects. In R.K. Dishman (Ed.), *Advances in exercise adherence* (pp. 1-27). Champaign, IL: Human Kinetics.
- Emmons, R.A. (1989). Personal striving differentiation and affective reactivity. *Journal of Personality and Social Psychology*, 56, 478-484.
- Feltz, D.L. (1992). Understanding motivation in sport: A self-efficacy perspective. In G. Roberts (Ed.), *Motivation in sport and exercise* (pp. 93-105). Champaign, IL: Human Kinetics.
- Fournier, S., & Fine, G. (1990). Jumping grannies: Exercise as a buffer against becoming "old." *Play & Culture*, 3, 337-342.
- Fox, K. (1990). *Manual for the self-perception profile*. Illinois: University of Illinois.
- Fox, K. (1997). Let's get physical. In K. Fox (Ed.), *The physical self: From motivation to well-being* (pp. Vi - xiii). Champaign, IL: Human Kinetics.
- Gecas, V. (1991). The self-concept as a basis for a theory of motivation. In J. Howard and P. Callero (Eds.), *The self-society dynamic: Cognition, emotion, and action*. (pp. 171-187). Cambridge University Press.
- Godin, G. (1994). Social-cognitive models. In R. K. Dishman (Ed.), *Advances in exercise adherence* (pp. 113-136). Champaign, IL: Human Kinetics.
- Gorely, T., & Gordon, S. (1995). An examination of the transtheoretical model and exercise behavior in older adults. *Journal of Sport and Exercise Psychology*, 17, 312-324.

Guthrie, S.R. & Castelnovo, S. (1994). The significance of body image in psychosocial development and in embodying feminist perspective. In D.M. Costa & S. R. Guthrie (Eds.), Women and sport: Interdisciplinary perspectives. (pp. 307-322). Champaign, IL: Human Kinetics.

Hall, M.A. (1996). Feminism and sporting bodies. Champaign, IL: Human Kinetics.

Harter, S. (1978). Effectance motivation reconsidered: Toward a developmental model. Human Development, 21, 34-64.

Harter, S. (1990). Developmental differences in the nature of self-representations: Implications for the understanding, assessment, and treatment of maladaptive behavior. Cognitive Therapy and Research, 14 (2), 113-142.

Hartman, A. (1990). Aging as a feminist issue. Social Work, 35 (5), 387-388.

Hooker, K. (1992). Possible selves and perceived health in older adults and college students. Journal of Gerontology: Psychological Sciences, 47 (2), 85-95.

Hooker, K., & Kaus, C.R. (1992). Possible selves and health behaviors in later life. Journal of Aging and Health, 4 (3), 390-411.

Hooker, K., & Kaus, C.R. (1994). Health-related possible selves in young and middle adulthood. Psychology and Aging, 9 (1), 126-133.

Janus, I.L., & Mann, L. (1977). Decision making: A psychological analysis of conflict, choice, and commitment. London: Cassel & Collier Macmillan.

Kendzierski, D. (1988). Self-schemata and exercise. Basic and Applied Social Psychology, 9 (1), 45-59.

Kendzierski, D. (1990). Exercise self-schemata: Cognitive and behavioral correlates. Health Psychology, 9 (1), 69-82.

Kendzierski, D. (1994). Schema theory: An information processing focus. In Dishman, R.K. (Ed.), Advances in exercise adherence (pp. 137-160). Human Kinetics, Champaign, IL.

King, A., Blair, S., Bild, D., Dishman, R., Dubbert, P., Marcus, B., Oldridge, N., Paffenbarger, R., Powell, K., & Yeager, K. (1992). Determinants

of physical activity and interventions in adults. Medicine and Science in Sports and Exercise, 24 (6), S221-S236.

Marcus, B.H., Banspach, S.W., Lefebvre, R.C., Rossi, J.S., Carleton, R.A., & Abrams, D.B. (1992). Using the stages of change model to increase the adoption of physical activity among community participants. American Journal of Health Promotion, 6 (6), 424-429.

Marcus, B.H., Dubbert, P.M., King, A.C., & Pinto, B.M. (1995). Physical activity in women: Current status and future directions. In A. Stanton & S. Gallant (Eds.), The psychology of women's health (pp. 349-379). Washington, D.C.: American Psychological Association.

Marcus, B.H., Eaton, C.A., Rossi, J.S., & Harlow, L.L. (1994). Self-efficacy, decision-making, and stages of change: An integrative model of physical exercise. Journal of Applied Social Psychology, 24 (6), 489-508.

Marcus, B.H., Rossi, J.S., Selby, V.C., Niaura, R.S., & Abrams, D.B. (1992). The stages and processes of exercise adoption and maintenance in a worksite sample. Health Psychology, 11 (6), 386-395.

Marcus, B.H., Selby, V.C., Niaura, R.S., & Rossi, J.S. (1992). Self-efficacy and the stages of exercise behavior change. Research Quarterly for Exercise and Sport, 63 (1), 60-66.

Marcus, B.H., & Simkin, L. (1994). The transtheoretical model: Applications to exercise behavior. Medicine and Science in Sports and Exercise, 26 (11), 1400-1404.

Markula, P. (1993). Looking good, feeling good: Strengthening mind and body in aerobics. In Hall, M.A., Feminism and sporting bodies (pp. 57). Champaign, IL: Human Kinetics.

Markus, H. (1977). Self-schemata and processing information about the self. Journal of Personality and Social Psychology, 35 (2), 63-78.

Markus, H. (1990). Unresolved issues of self-representation. Cognitive Therapy and Research, 14 (2), 241-253.

Markus, H., Hamill, R., & Sentis, K.P. (1987). Thinking fat: Self-schemas for body weight and the processing of weight relevant information. Journal of Applied Social Psychology, 17, 50-71.

Markus, H., & Herzog, A.R. (1992). The role of the self-concept in aging. In K.W. Schaie and M.P. Lawton (Eds.), Annual Review of Gerontology and Geriatrics, Vol. 11, (pp. 110-143). Springer Press, NY.

Markus, H., & Nurius, P. (1986). Possible selves. American Psychologist, 41 (9), 954-969.

Markus, H., & Oyserman, D. (1989). Gender and thought: The role of the self-concept. In M. Crawford & M. Gentry (Eds.), Gender and thought: Psychological perspectives. NY: Springer-Verlag.

Markus, H., & Ruvolo, A. (1989). Possible selves: Personalized representations of goals. In L.A. Pervin (Ed.), Goal concepts in personality and social psychology. (pp. 211-241). Hillsdale, NJ: Lawrence Erlbaum Associates.

McAuley, E. (1992). Understanding exercise behavior: A self-efficacy perspective. In G. Roberts (Ed.), Motivation in sport and exercise. (pp. 107-127). Champaign, IL: Human Kinetics.

McAuley, E., Duncan, T.E., & Wraith, S.C. (1989, June). Intrinsic motivation and exercise behavior: A confirmatory factor analysis. Paper presented at the meeting of the North American Society for the Psychology of Sport and Physical Activity, Knoxville, TN.

McAuley, E., & Jacobson, L. (1991). Self-efficacy and exercise participation in sedentary adult females. American Journal of Health Promotion, 5, 185-207.

McAuley, E., & Rudolph, D. (1995). Physical activity, aging, and psychological well-being. Journal of Aging and Physical Activity, 3, 67-96.

McCrae, R.R., & Costa, P. T. (1988). Age, personality, and the spontaneous self-concept. Journal of Gerontology: Social Sciences, 43 (6), S177-185.

Nurius, P. (1991). Possible selves and social support: Social cognitive resources for coping and striving. In J. Howard & P. Callero (Eds.), The self-society dynamic: Cognition, emotion, and action. Cambridge: Cambridge University Press.

O'Brien, S., & Vertinsky, P. (1991). Unfit survivors: Exercise as a resource for aging women. The Gerontologist, 31 (3), 347-357.

O'Brien Cousins, S. (1996). Exercise cognition among elderly women. Journal of Applied Sport Psychology, 8 (2), 131-145.

O'Brien Cousins, S., & Burgess, A. (1992). Perspectives on older adults in physical activity and sports. Educational Gerontology, 18, 461-481.

Oyserman, D., Gant, L., & Ager, J. (1995). A socially contextualized model of african-american identity: Possible selves and school persistence. Journal of Personality and Social Psychology, *69* (6), 1216-1232.

Oyserman, D., & Markus, H. (1990). Possible selves in balance: Implications for delinquency. Journal of Social Issues, *46*, 141-147.

Prochaska, J.O., & DiClemente, C.C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. Journal of Consulting and Clinical Psychology, *51*, 390-395.

Prochaska, J.O., & DiClemente, C.C. (1985). Toward a comprehensive model of change. In W.E. Miller, & N. Heather (Eds.), Treating addictive behaviors (pp. 3-27). New York: Plenum Press.

Prochaska, J.O., Velicer, W., Rossi, J., Goldstein, M., Marcus, B., Rakowski, W., Fiore, C., Harlow, L., Redding, C., Rosenbloom, D., & Rossi, S. (1994). Stages of change and decisional balance for 12 problem behaviors. Health Psychology, *13* (1), 39-46.

Rodgers, W., & Brawley, L. (1991). The role of outcome expectancies in participation motivation. Journal of Sport & Exercise Psychology, *13*, 411-427.

Ruvolo, A. & Markus, H. (1992). Possible selves and performance: The power of self-relevant imagery. Social Cognition, *10* (1), 95-124.

Sallis, J.F., Hovell, M.F., Hofstetter, C.R., Faucher, Pl, Elder, J.P., Blanchard, J., Casperson, C.J., Powell, K.E., & Christenson, G.H. (1989). A multivariate study of determinants of vigorous exercise in a community sample. Preventive Medicine, *18*, 20-34.

Schunk, D.H. (1995). Self-efficacy, motivation, and performance. Journal of Applied Sport Psychology, *7*, 112-137.

Shavelson, R.J., & Bolus, R. (1982). Self-concept: The interplay of theory and methods. Journal of Exercise Psychology, *74*, 3-17.

Shavelson, R.J., Hubner, J.J., & Stanton, J.C. (1976). Self-concept: Validation of construct interpretations. Review of Educational Research, *46*, 407-441.

Sheldon, K., & Emmons, R. Comparing differentiation and integration within personal goal systems. Personality and Individual Differences, *18* (1), 39-46.

Shephard, R.J. (1994). Determinants of exercise in people aged 65 years and older. In R.K. Dishman (Ed.), Advances in exercise adherence (pp. 343-360). Champaign, IL: Human Kinetics.

Soenstrom, R.J., & Morgan, W.P. (1989). Exercise and self-esteem: Recommendations for expository research. Quest, *33*, 124-139.

SPSS Advanced Statistics 7.5 Manual (1997). Chicago, IL: SPSS Inc.

Strube, M.J., Berry, J.M., Lott, C.L., Fogelman, R., Steinhart, G., Moergen, S., & Davison, L. (1986). Self-schematic representation of the type A and B behavior patterns. Journal of Personality and Social Psychology, *51*, 170-180.

Tabachnik, B., & Fidell, L. (1989). Using multivariate statistics (2nd ed.). New York: Harper Collins Publishers, Inc.

United States Department of Health and Human Services. (1996). Physical activity and health: A report of the Surgeon General. Atlanta, GA: U.S. Department of health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

Vertinsky, P. (1991). Old age, gender, and physical activity: The biomedicalization of aging. Journal of Sport History, *18* (1), 64-80.

Vincent, W.J. (1995). Statistics in kinesiology. pp. 87-114. Champaign, IL: Human Kinetics.

Weiner, B. (1985). An attributional theory of achievement motivation and emotions. Psychological Review, *92*, 548-573.

Whaley, D., and Ebbeck, V. (1997). Older adults' constraints to participation in structured exercise classes. Journal of Aging and Physical Activity, *5*, 190-212.

APPENDICES

APPENDIX A
Informed Consent Document

You are invited to participate in a research study examining people at different stages of exercise behavior, from none at all to exercising regularly. The information in this study will help expand our understanding of how women come to the decision of whether or not to exercise. If you decide to participate, you will be asked to respond to the questions enclosed in this packet. That you answer the questions as accurately and honestly as possible is all that is required of you for this study.

Your responses will remain confidential at all times. Once we receive your completed questionnaires, your name will be replaced with a code number and all information will be analyzed and reported using that code.

If you have any questions about the project, please call Dr. Vicki Ebbeck, Langton Hall, Oregon State University at (541) 737-6800. If you have any questions about your rights as a participant in a research project, please contact the OSU Research Office at (541) 737-3437.

Your signature below indicates you have read and understand the information provided above, that your participation is voluntary, and that you may withdraw your consent at any time and discontinue participation without penalty.

Signature: _____ Date: _____

____ At the conclusion of the study, I would like to receive a summary of the findings.

Print Name: _____ Campus Address: _____

APPENDIX B

Stage of Exercise Scale

Directions: Please CIRCLE the number on the ladder that best describes your present level of exercise behavior. "Regular exercise" is defined as participating in any planned activity for the purpose of maintaining or increasing health or fitness at least three days per week for 30 minutes or more each day (consecutively or cumulatively). Examples of planned activities include swimming, walking, jogging, bicycling, aerobics, and dancing.

4	---->	I presently exercise on a regular basis and have been doing so for longer than 6 months. How long have you maintained your present level of activity? _____ years _____ months
3	---->	I presently exercise on a regular basis, but I have only begun doing so within the past 6 months.
2	---->	I presently get some exercise, but not regularly.
1	---->	I presently do not exercise, but I have been thinking about starting to exercise within the next 6 months.
0	---->	I presently do not exercise and do not plan to start exercising in the next 6 months.

please continue on to the next page

APPENDIX C

Possible Selves Instrument

This questionnaire addresses how you see yourself in the future. We all think about our future to some extent. When doing so, we usually think about the kinds of experiences that are in store for us and the kinds of people we might possibly become. Sometimes we think about what we HOPE we will be like -- selves we hope to become in the future, or "HOPED-FOR POSSIBLE SELVES."

Some hoped-for possible selves seem quite likely, like becoming a homeowner, or achieving higher status at work. Other future selves seem quite far-fetched but are still possible; for example, winning the lottery. Things that we do are not possible selves, but are usually part of a possible self. For example, to write books is not a possible self; to be a writer is a possible self.

Please take a few minutes to think about all of your HOPED-FOR POSSIBLE SELVES. You may have just a few, or you may have many. Write all of the hoped-for possible selves which are currently important to you in the space provided, numbering each one.

****please continue on to the next page****

Now we would like you to look back at your list on the previous page, select the **MOST IMPORTANT** hoped-for possible self, and respond to the following questions:

The hoped-for possible self I consider most important is:

WHY is this hoped-for self important to you?

1. How important is it to you to achieve this possible self?

1	2	3	4	5	6	7
Not at all important			Somewhat important			Very important

2. How capable do you feel of achieving this possible self?

1	2	3	4	5	6	7
Not at all capable			Somewhat capable			Very capable

3. How likely do you think it is that this possible self will be achieved?

1	2	3	4	5	6	7
Not at all likely			Somewhat likely			Very likely

****please continue on to the next page****

Now we'd like you to go back to your original list, and see which of the hoped-for possible selves you identified is most closely related to your present level of exercise behavior. It might be directly or indirectly related - that's ok. For example, your hoped-for possible self most closely related to exercise might be "To learn to sail." Please write that possible self in the space below, and answer the same series of questions.

The hoped-for possible self that I consider most closely related to my present level of exercise behavior is:

HOW is this hoped-for self related to your present level of exercise behavior?

1. How important is it to you to achieve this possible self?

1	2	3	4	5	6	7
Not at all important			Somewhat important			Very important

2. How capable do you feel of achieving this possible self?

1	2	3	4	5	6	7
Not at all capable			Somewhat capable			Very capable

3. How likely do you think it is that this possible self will be achieved?

1	2	3	4	5	6	7
Not at all likely			Somewhat likely			Very likely

****please continue on to the next page****

Finally, we are interested in knowing to what degree the following hoped-for possible self might be applicable to you. Please read the following hoped-for possible self, and answer the questions that follow.

"TO BE AN ATTRACTIVE, HEALTHY, OLDER WOMAN"

1. To what extent does this possible self describe you now?

1	2	3	4	5	6	7
Not at all			Somewhat			Very Much

2. How important is it to you to achieve this possible self?

1	2	3	4	5	6	7
Not at all important			Somewhat important			Very important

3. How capable do you feel of achieving this possible self?

1	2	3	4	5	6	7
Not at all capable			Somewhat capable			Very capable

4. How likely do you think it is that this possible self will be achieved?

1	2	3	4	5	6	7
Not at all likely			Somewhat likely			Very likely

please continue on to the next page

In addition to having hoped-for possible selves, we may have images of ourselves in the future that we *fear, dread, or don't want to happen*. Some of these FEARED POSSIBLE SELVES may seem somewhat likely, like losing friends, while others may seem quite unlikely, for example, becoming a homeless person. Some of us may have a large number of feared possible selves in mind, while other may have only a few.

Please take a few minutes to think about all of your feared possible selves, and write them in the space provided below. Remember, they may be likely or unlikely, and you may have a few or more. Write any feared possible selves that are important to you now, numbering each one as you list it.

****please continue on to the next page****

As we did previously with the hoped-for selves, now we'd like you to look through your list and pick out the feared self that you consider MOST IMPORTANT to you. Write this in the space provided, and answer the following questions related to that feared self.

My most-important feared self is:

WHY is this feared self important to you?

1. How important is it to you to prevent the occurrence of this possible self?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
important				important		important

2. How capable do you feel of preventing this possible self?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
capable				capable		capable

3. How likely do you think this possible self will be prevented?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
likely				likely		likely

please continue on to the next page

Now, go back to your list of feared possible selves and see which of the feared selves you listed is most closely related to your present level of exercise behavior. As with hoped-for possible selves, it may be directly or indirectly related to your exercise behavior. An example might be, "Being alone in my last years." Write the feared possible self in the space below, and answer the questions that follow.

The feared self most closely related to my present level of exercise behavior is:

HOW is this feared self related to exercise behavior?

1. How important is it to you to prevent the occurrence of this possible self?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
important				important		important

2. How capable do you feel of preventing this possible self?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
capable				capable		capable

3. How likely do you think this possible self will be prevented?

1	2	3	4	5	6	7
Not at all				Somewhat		Very
likely				likely		likely

please continue on to the next page

Finally, we are interested in knowing to what degree the following feared possible self in the exercise domain might be applicable to you. Please read the following statement and answer the questions that follow it.

"NOT ABLE TO ENJOY LATER LIFE TO THE FULLEST"

1. To what extent does this possible self describe you now?

1	2	3	4	5	6	7
Not at all				Somewhat		Very much

2. How important is it to you to prevent the occurrence of this possible self?

1	2	3	4	5	6	7
Not at all important				Somewhat important		Very important

3. How capable do you feel of preventing this possible self?

1	2	3	4	5	6	7
Not at all capable				Somewhat capable		Very capable

4. How likely do you think this possible self will be prevented?

1	2	3	4	5	6	7
Not at all likely				Somewhat likely		Very likely

****please continue on to the next page****

APPENDIX D

Self-efficacy Scale

Please read the following statements, and decide for each to what degree you believe you can participate in regular exercise (1 = "not at all confident" 11 = "very confident"):

I am confident I can participate in regular exercise when:

I am tired.

1 2 3 4 5 6 7 8 9 10 11

I am in a bad mood.

1 2 3 4 5 6 7 8 9 10 11

I feel I don't have the time.

1 2 3 4 5 6 7 8 9 10 11

I am on vacation.

1 2 3 4 5 6 7 8 9 10 11

It is raining or snowing.

1 2 3 4 5 6 7 8 9 10 11

****please continue on to the next page****

APPENDIX E

Demographic Questionnaire

Age: _____ Name: _____
(please print)

Ethnic group (check one):

- American Indian or Alaskan Native Asian or Pacific Islander
 Black, Non-hispanic White, Non-hispanic Hispanic

Level of education completed:

- Some high school High school diploma
 Some college College degree Masters Doctorate

Current Living Situation:

- Single Married/Partnered Divorced Widowed

- Live with someone Live alone

Who? ___ spouse/partner
 ___ friend
 ___ relative

Employee Status (check all that apply):

- Teaching Faculty Professional Faculty Classified Staff
 Full-time Part-time

**** THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE
 RETURN THE ENTIRE PACKET IN THE ENVELOPE PROVIDED.**

APPENDIX F

Cover Letter to Participants

Dear Participant,

Thank you for consenting to be a part of this research study. I hope that as a result of participating, you will gain some insight into your thoughts and feelings regarding your perceptions of yourself in the future, particularly as they relate to exercise and physical activity. Enclosed you will find a number of questionnaires that I ask you to thoroughly and honestly complete. It is very important that you do the questionnaires in the order provided. Please resist the temptation to "look ahead," and instead complete the pages consecutively. I also ask you to refrain from discussing your responses with anyone else, particularly while you are working on the packet. Based on test administration, the entire packet should take you approximately 40 minutes. Please be sure you fill out all the pages, and then return the entire packet of questionnaires in the envelope provided. I would appreciate it if you returned these to me as soon as possible - you know what happens if you put this away "for later..." Thanks again, and please feel free to call me or e-mail if you have any questions or comments.

Sincerely,

737-6805

whaleyd@ucs.orst.edu