

PHYSICAL ACTIVITY EVOLUTION:
A GROUNDED THEORY STUDY WITH AFRICAN AMERICAN WOMEN

DISSERTATION

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ABSTRACT

The sedentary lifestyle prevalent among many women has manifested itself as a serious public health problem. Inactive lifestyle has been linked to obesity and chronic disease, both serious health care issues for women today, and a disproportionate burden from these conditions is borne by African American women. Despite all that has been learned from the application of behavioral change theories to physical activity, long-term success of interventions to initiate and maintain a physically active lifestyle among African American women has not been realized. This study aimed to contribute to further theory development and to inform future investigations of the most effective ways to assist inactive African American women in maintaining an active lifestyle.

Interviews were conducted with 15 African American women between the ages of 25-45 who were physically active at nationally recommended levels for one year or more. Interview questions were open-ended and designed to elicit lengthy accounts from the women using their own words to describe their experiences with physical activity. Focus groups were held at the conclusion of the interviews to gather feedback on the findings from the participants. Grounded theory was used to guide the data collection and analysis process. Data derived inductively from the interviews and focus groups guided the development of a process theory of physical activity evolution.

The Physical Activity Evolution process theory identifies three key phases in the adoption and maintenance process: Initiation, Transition, and Integration. The dynamic nature of long-term physical activity participation is exemplified by modification and cessation loops. Important context and conditions within which this process takes place also emerged from the study including planning methods, social support, benefits, and the influence of African American race/culture.

This study has made an important contribution to knowledge of the evolution of physical activity participation among African American women. The concept of investigating health behaviors in context and among people who have successfully incorporated those behaviors into their daily lives should be further utilized in research studies. By studying women who have successfully adopted a behavior, strategies to overcome known barriers can be elucidated and applied to intervention planning for other women.

Dedicated to the women who participated in this study, for making it possible

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CHAPTER 1

BACKGROUND

Sedentary lifestyle has become a health issue of great concern in recent years. According to the first ever Report of the Surgeon General on Physical Activity and Health (USDHHS, 1996), more than 60% of American adults do not get the recommended amount of regular physical activity. Further, about 25% get no physical activity at all (USDHHS, 1996). Not only does this lack of activity contribute to the rising obesity rates in the United States (U.S.), but it also directly contributes to the risk for several chronic diseases such as heart disease which remains one the nation's leading cause of death (USDHHS, 1996).

The Surgeon General's Report (1996) also links regular physical activity to the prevention or reduction of the burden from other common ailments including high blood pressure, Type 2 diabetes, and colon cancer. The report also discusses the importance of physical activity to the health of bones and joints. In addition, regular physical activity is linked to a reduction in the risk of dying prematurely in general and improved psychological well-being (Sallis & Owen, 1999; USDHHS, 1996).

While lack of physical activity is of concern to the entire U.S. population, it is of particular concern to certain subgroups. Sedentary lifestyle is more common among women than men with more than 60% of women not engaging in the recommended

amount of physical activity (USDHHS, 1996). A large study by Brownson and colleagues (2000) showed that of the 2,912 women in their sample, only 11% met recommendations for regular physical activity and nearly 37% reported no leisure time physical activity. Based on the multiple roles required by many women's lives, this subgroup may be particularly predisposed to a sedentary lifestyle.

Another subgroup of the U.S. population whose lack of activity is of particular concern is African Americans. This concern is two-fold. African Americans are less physically active than their White counterparts (CDC, 2003; NCHS, 2004) and they also have suffered an unequal burden of morbidity and mortality from chronic diseases (Myers, Kagawa-Singer, Kumanyika, Lex, & Markides, 1995). Further, African American women are particularly sedentary (CDC, 2003; NCHS, 2004). In the same Brownson and colleagues study (2000) of 2,912 women, the proportion of African American women reporting recommended levels of regular physical activity was 8.4%, the lowest rate of the four groups of women (White, African American, American Indian, Hispanic). A larger proportion of the African American women also reported no leisure time physical activity (37.2%) than the White (31.7%) or Hispanic (32.5%) women. Other studies have shown this difference in activity level as well (Folsom et al., 1991; Myers et al., 1995; Wing et al., 1989). Paired with higher cardiovascular disease death rates than other groups of women (Malarcher et al., 2001), higher obesity rates (USDHHS, 2001), and higher rates of Type 2 diabetes (CDC, 2002), physical inactivity among African American women is especially important to address.

Due to the low levels of physical activity among Americans, the importance of physical activity in preventing and reducing chronic disease, the disproportionate burden

that women and African Americans bear from these diseases, and the lower levels of physical activity in these subgroups, this study will focus on physical activity adoption and maintenance among African American women.

This chapter provides background to the study in several areas including a brief overview of the evidence related to physical activity as an important health promoting behavior, physical activity participation rates in the United States by gender and race, a review of patterns and determinants for physical activity behavior among African American women, and a presentation of physical activity interventions undertaken among African American women. The chapter concludes with the purpose of the study and the guiding research questions.

Definitions

The following section defines several key terms important in the physical activity literature and for this qualitative study.

Body Mass Index: A tool for indicating weight status among adults calculated by [weight in pounds/height in inches squared] x 703 (Garrow & Webster, 1985).

Overweight: Defined as a body mass index (BMI) of 25.0 – 29.9.

Obesity: Defined as a BMI \geq 30.

Physical Activity: Any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen, Powell, & Christenson, 1985).

Exercise: A subset of physical activity defined as planned, structured, and repetitive bodily movement done to improve or maintain physical fitness (Caspersen et al., 1985).

Grounded Theory: A general methodology for developing theory that is grounded in data

systematically gathered and analyzed (Glaser & Strauss, 1967). The conceptualization of grounded theory espoused by Strauss and Corbin (1998) will be the framework for the methodology of this study.

Physical Activity and Health Promotion

Physical activity has moved beyond a leisure time pursuit to an important health promoting behavior. In their book, *Physical Activity & Behavioral Medicine*, Sallis and Owen (1999) review the literature on the relationship of physical activity to various health conditions. Evidence for physical activity as a protective behavior is summarized in Table 1.1.

Health Outcome	Summary of Association ¹
Longevity	+++
Insulin Sensitivity	++
HDL Cholesterol	++
LDL Cholesterol	0
Breast Cancer	-
Colon Cancer	--
Body Fat	--
Central Body Fat	--
Blood Pressure	--
Coronary Heart Disease	---
Type 2 Diabetes	---

¹ +++ Indicates strong evidence that physical activity increases this variable, ++ moderate evidence, + some evidence, 0 indicates no association, --- indicates strong evidence that physical activity decreases this variable, -- moderate evidence, - some evidence

Table 1.1: Summary of association between physical activity and various health outcomes (Sallis & Owen, 1999)

According to the review, physical activity is linked to longevity, obesity, heart disease, diabetes and certain cancers. The disease protection evidence is moderate for obesity and strongest for heart disease and diabetes, thus these conditions will be considered further here.

Obesity

As presented in Table 1.1, there is moderate evidence that physical activity is associated with a decrease in both body fat in general and central body fat, an important cardiovascular disease risk factor. The evidence is more consistent for the reduction of central body fat and thus waist-to-hip ratio, another marker of cardiovascular disease risk (Sallis & Owen, 1999). Interestingly, some of the strongest evidence linking physical activity to obesity is in the maintenance of weight loss, in fact, physical activity is considered the best predictor of weight loss maintenance (Sallis & Owen, 1999). Overall, it is clear that participation in physical activity impacts susceptibility for obesity.

Obesity, while not a disease, is an important condition associated both with premature death and increased risk of chronic diseases such as heart disease, type 2 diabetes and certain cancers (USDHHS, 2001). Obesity can also exacerbate hypertension, a leading risk factor for stroke, and high cholesterol (USDHHS, 2001). Not only is obesity related to the development of these diseases, it can cause disability, social stigma, and increased health care costs as well. In 2000, the total cost of obesity was \$117 billion, an increase from \$99 billion in 1995 (USDHHS, 2001).

Further, the rates of obesity for Americans continue to rise. According to the Behavioral Risk Factor Surveillance System (BRFSS) data for 2000 (CDC, 2000), total obesity has increased from 12% of the population in 1991 to 19.8% in 2000. This rise in

obesity was even more pronounced by race. Whites saw a 7.2% increase from 1991 to 2000 while African Americans saw a 10% increase. The National Health and Nutrition Examination Survey (NHANES) data, collected using measured heights and weights as opposed to the self-report data from the BRFSS, supports this trend as well. Among adults aged 20-74, NHANES data have shown a significant increase ($p < 0.001$) in obesity from 22.9% in the 1988-1994 study to 30.5% in the 1999-2000 study (Flegal, Carroll, Ogden, & Johnson, 2002). Therefore, the rates of obesity were even higher when measured heights and weights were used. Further, the 1999-2000 data show that more than half of the U. S. population (64.5%) is overweight, also representing a significant increase ($p < 0.001$) from the 1988-1994 study (Flegal et al., 2002). Since 2000, the rise appears to have leveled off, although a significant proportion of Americans remain in the overweight and obesity categories. According to 2003 BRFSS data (CDC, 2003), overweight has remained level from 36.7% in 2000 to 37.0% in 2002. Obesity rates increased slightly from 20.1% in 2000 to 22.1% in 2002. Taken together, around 58% of Americans were classified as overweight or obese in 2002 according to BRFSS data.

While obesity is clearly a problem for all groups of Americans, certain subgroups bear more of the burden than others. According to 2003 data from the BRFSS, 64.1% of African Americans were at risk for health problems related to being overweight compared to 58.5% of Whites. Considering the NHANES data, there was a non-significant trend for African American women to have higher increases in obesity than all the other gender-race groups from the 1988-1994 study to the 1999-2000 study (Flegal et al., 2002). Further, when analyzed by age, African American women had significantly higher ($p < 0.05$) prevalence of both overweight and obesity in all age groups than White

women (Flegal et al., 2002). According to these data, more than 80% of African American women over 40 years old were overweight and more than 60% were obese.

Chronic Disease

Table 1.1 also indicates that while physical activity not only affects weight, which is related to a number of chronic diseases, it can also affect certain chronic diseases directly. Strong evidence was found for the link between physical activity and longevity, coronary heart disease, and diabetes. Further, moderate evidence was found for the link between physical activity and some chronic disease markers such as insulin sensitivity, HDL cholesterol, and blood pressure as well as for the link between physical activity and colon cancer.

Seven out of every ten Americans who die each year, die from these chronic diseases (CDC, 2002). Further, chronic conditions cause major limitations in activity for over one in every ten Americans (CDC, 2002). Heart disease remains the condition that claims the most lives in the U.S. each year, about 950,000 (CDC, 2002). More than half of these deaths are among women and while heart disease is the leading cause of death for all racial groups, the rates of death for African American adults was 30% higher compared to White adults in 1998 according to CDC data (2002). Further, a paper by Malarcher and colleagues (2001) discussing disparities in cardiovascular disease stated that African American women have the highest mortality rates for both heart disease and stroke. While mortality for heart disease has been declining over the past couple decades, the decline among African American women has been slower than the decline among White women (Malarcher et al., 2001).

Diabetes is the sixth leading cause of death in the U.S. and is also on the rise (CDC, 2002). According to the CDC (2002), diagnosed diabetes has risen 49% from 1990 to 2000. Type 2 diabetes, linked to obesity and inactivity, is the kind that 90-95% of diabetics have. Similar to other conditions, diabetes' impact is differential by gender and race. Type 2 diabetes affects more women than men and African Americans are twice as likely to be diagnosed compared to Whites (CDC, 2002). According to National Health Interview Survey (NHIS) data, African American females have higher prevalence rates for diabetes at all age ranges than White or Hispanic women (NCHS, 2002).

Clearly obesity and chronic disease are health concerns in the U.S., however women and African Americans appear to be at increased risk for developing these conditions. While this issue is undoubtedly multi-factorial, physical activity behavior is both directly linked to chronic disease development and indirectly linked to chronic disease through obesity. There is also evidence that physical activity provides mental health benefits in addition to the well-known physical health benefits (Sallis & Owen, 1999; USDHHS, 1996).

Despite its many positive health associations, most Americans do not get the recommended amounts of physical activity to reap these benefits. In 2001, the CDC reported that about 25% of American adults get recommended levels of physical activity (moderate intensity activity ≥ 5 times per week for ≥ 30 minutes each time, vigorous intensity activity ≥ 3 times per week for ≥ 20 minutes each time, or both), 46% get an insufficient level of activity, and 29% report no activity at all (CDC, 2001). Further, women are typically less active than men and African American women are usually found to be less active than White women (King & Kiernan, 1997; Sallis & Owen, 1999).

According to 2003 BRFSS data (CDC, 2003), 32.2% of African American women reported recommended levels of physical activity versus 47.7% of White women. Males from all race/ethnicity groups reported higher prevalence of recommended physical activity than African American women (41.4-50.6%). Further, 27.3% of African American women reported that they participated in less than 10 minutes per week of physical activity compared to 12.6% of White females. This pattern of physical activity participation will be discussed further in the next section.

Based on the important health promoting effects of regular physical activity, low participation is of special concern among African American women considering their increased rates of obesity, diabetes, and cardiovascular disease death. Further examining the state of physical activity participation specific to African American women, including types of participation, determinants, and success of interventions lends important perspective to understanding the scope of this problem.

Physical Activity among African American Women

While there is not extensive literature in this topic area, there is certainly a growing body of research. Interestingly, very few studies could be found related to the epidemiology of physical activity and health in minority women. One study by Ainsworth and colleagues (1991) investigated the link between physical activity and hypertension in African American women. The study showed that hypertension was significantly higher in sedentary women compared to active women. Further, these findings persisted after controlling for age, BMI, waist-to-hip ratio, and alcohol consumption. Clearly more work needs to be done investigating the specific responses to physical activity in various racial/ethnic/gender groups.

Patterns of Physical Activity

While findings related to patterns of physical activity participation from major, national studies have already been presented, there is more that can be learned related to patterns of physical activity for African American women through smaller investigations. Young and Voorhees (2003) assessed physical activity participation among 234 urban, African American women through the Women and Physical Activity Survey. Only 21% met recommendations for regular physical activity. Sixty-one percent were underactive (participation in some activity but not to recommended levels) and 18% were inactive. These findings were similar to the overall data reported by the CDC (2001).

Other studies have compared groups of women from different racial/ethnic backgrounds. In the Cross-Cultural Activity Participation Study, African American women were compared to Native American women for physical activity levels over 6 months (Ainsworth, Irwin, Addy, Whitt, & Stolarczyk, 1999). This study used a longitudinal design (three data collection rounds over 6 months) with criteria sampling to investigate 111 African American women and 107 Native American women aged 40 and older. Native American women spent more time in physical activity than African American women over the course of the study. Further, more Native American women met physical activity recommendations than African American women at all three data collection points. In another study comparing four racial/ethnic groups of women also aged 40 and over, Brownson and colleagues (2000) completed a telephone survey with 2,912 women. They measured a variety of physical activity indicators including regular physical activity (150 minutes/week), vigorous physical activity (60 minutes/week), occupational and household physical activity (300 minutes/week) and a physical activity

composite variable where a woman was coded as active if she met the criteria in at least one of the above categories. African American women ranked lowest or second lowest in percentage meeting the criteria in any of the physical activity categories including the household and occupational categories. African American women also scored second highest in likelihood of being completely inactive behind only the American Indian/Alaskan Native women.

Another study also compared women in four racial/ethnic groups, though the focus included a wider age range (20-65 years) (Sternfeld, Ainsworth, & Quesenberry, 1999). This study mailed surveys to 2,636 women in the Kaiser Permanente Medical Care Program to investigate leisure-time, household, occupational, and exercise physical activity. Findings included a negative association with the likelihood of a high exercise physical activity index for African American women (OR=0.51) as well as for women from the other two minority groups (Asian and Hispanic) compared to White women. Further, African American women were the least likely to have a high leisure-time, household, or occupational physical activity index. These findings were from the multivariate analysis which controlled for several potential confounding variables.

Two older studies comparing only White and African American women found African American women to expend fewer calories through physical activity than their White counterparts. In the Minnesota Heart Survey, Folsom and colleagues (1991) explored levels of leisure time physical activity (LTPA) among 685 White and African American women. They found that White women expended significantly more energy in LTPA overall and in the 35-44 year old age group. Similarly, a study by Wing and colleagues (1989) of 538 women participating in the Pittsburgh Healthy Women Study,

found that White women expended significantly more calories in both the previous week and the previous year than African American women. These relationships were somewhat attenuated after adjusting for education. However, only 9% of the women in this study were African American.

While there appears to be a clear trend toward lower physical activity levels among African American women, one study was found that reported no difference between groups of racially/ethnically diverse women (Ransdell & Wells, 1998). This study used in-person surveys with 521 White, African American, and Mexican-American women to investigate strenuous, moderate, and mild physical activity. While African American women reported the lowest percentage of participation in recommended levels of physical activity (8%), no significant differences were found between groups for total physical activity 24-hour energy expenditure or for leisure time physical activity 24-hour energy expenditure. It should be noted that of the 521 women included, only 14% were African American.

It is clear from these studies that physical inactivity is prevalent among women, especially among African American women. Further, this finding is true even when considering a variety of types of physical activity, including household and occupational activity. Understanding important reasons for this non-participation can shed light on the physical activity experience for African American women.

Determinants of Physical Activity

The body of literature on patterns of physical activity among African American women is closely related to the literature on determinants of physical activity although more studies are available for review. One study investigated participation in different

types of physical activity as well as total, family, and friend social support. Eyler and colleagues (1999) employed a cross-sectional telephone survey design (n=2912) for this investigation. Of the four groups of women in the study (American Indian/Alaskan Natives, African American, Hispanic, White), the African American women reported the lowest percentage of participation in regular exercise (leisure-time activity at least 150 minutes/week), lifestyle activity (household and occupational activity at least 300 minutes/week), and cumulative activity (150 minutes/week of some kind of physical activity). Further, the African American women ranked third for percentage of women scoring 'high' on total social support for physical activity and family social support for physical activity. They did have the second highest proportion of women scoring 'high' on friend social support for physical activity. Significant differences were found among the racial/ethnic groups for total, family, and friend physical activity social support.

Another interesting study by King and colleagues (2000) investigated the same sample of women (2,912 women from Eyler and colleagues study above) for various determinants of physical activity. They included sociodemographic, psychosocial, and physical and social environmental variables in the study. The significant determinants of behavior were different for each group of women. Interestingly, the African American women had the most environmental determinants including frequency of observing others exercising and presence of unattended dogs in the neighborhood. Also, the other significant predictor for African American women was role related, which was care giving duties (higher rating predicting lower activity levels).

There were also several qualitative studies looking at determinants of physical activity across groups of women. While it is not possible to assess significance of the

differences between the groups, some interesting findings can be discovered. As part of the Cross-Cultural Activity Participation Study, Henderson and Ainsworth (2000) interviewed 30 African American and 26 American Indian women, mean ages of 57 years and 56 years respectively, regarding motivations and constraints for physical activity. Both groups of women expressed that the multiple roles required of the women inhibited their activity levels. African American women expressed a history of racial oppression (e.g., no place to swim where they felt comfortable) and lack of integrated recreational facilities as exercise constraints. They also cited their hair type as a barrier to activity since their styles get ruined when they get wet and cannot be washed daily.

Overall, these studies seem to indicate that some determinants of physical activity vary across groups of women. However, one study of 226 women found no differences between White and African American women in frequency of exercise or reported barriers to exercise between the two groups (Johnson, Corrigan, Dubbert, & Gramling, 1990). This study used an in-person survey design with women recruited at two shopping malls.

Other qualitative studies either considered a diverse group of women as one group (e.g., minority women) or only investigated one group of women instead of comparing groups of women. A focus group study by Eyler and colleagues (1998) investigated barriers and enablers to physical activity as well as perceived benefits in a diverse group of women aged 40 years and older. This study included four racial/ethnic groups (African American, Asian American, American Indian, and Hispanic) in a series of 10 racially homogenous focus groups, but most of the findings were reported for the entire sample without comparisons of racial/ethnic differences. Personal barriers were cited twice as

often as environmental barriers. The most commonly cited personal barriers were lack of time, health concerns, lack of self-motivation, and lack of social network. The most commonly cited environmental barriers were safety, lack of available programs, and cost. The most important personal enabler included social support from spouse, family, and friends. Most of the environmental enablers were access related such as worksite exercise facilities and culturally appropriate exercise programs.

Working with African American women only, Carter-Nolan and colleagues (1996) used focus groups to investigate reasons for not exercising and incentives and barriers to physical activity (n=57). They categorized their results into two age groups, under 45 years and 45 years and over. Important reasons for not exercising in the older group included not wanting to sweat or mess up hair, being busy taking care of family, and not having enough time. Younger women echoed concerns about sweating and messing up hair but differed in their other reasons for not exercising which included cost, lack of knowledge and enjoyment, and the belief that they would have to join a health club. Barriers to exercise included disability, lack of motivation, age, and procrastination for the older women. Younger women cited money, time, transportation, and child care. When asked about incentives for exercise, older women discussed child care, presence of desirable men, convenience, affordability, and a buddy system. Younger women mentioned bonuses or incentives at work, free programs and facilities, child care, and health benefits. The most cited issues appeared to differ by age group, at least in the priority level of the determinant, for example sweating/messing up hair was discussed in both groups but was a higher priority barrier for older women. Although this is a more

homogenous group of women, many of the determinants have been seen in the other studies including time, incompatibility with hair type, role competition, social support, accessibility, and cost.

There were several other studies that included African American women in their examination of barriers and facilitators for physical activity (Heesch, Brown, & Blanton, 2000; Nies, Vollman, & Cook, 1999; Wilbur, Chandler, Dancy, & Lee, 2003; Wilcox, Richter, Henderson, Greaney, & Ainsworth, 2002; Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001; Young, He, Harris, & Mabry, 2002). These studies used a variety of methods but investigation through focus groups predominated. Table 1.2 provides a summary of barriers and facilitators found in these studies synthesized with the findings of those studies already described in the text. Because many studies focused on a particular age group or reported findings by age group, Table 1.2 is sorted by women under 40 years old and women 40 and over.

Based on these findings, knowledge has been gained in understanding why African American women do not participate in physical activity. However, these studies did not aim to understand why African American women are physically active. Due to the dearth of information on physically active African American women, this question remains largely unanswered. There have been efforts to move African American women from inactivity to activity. Examining the success of these programs adds another piece to the puzzle of physical activity promotion among African American women.

Barriers/Reasons for Not Exercising	Under 40 Years of Age	40 Years of Age and Older
Age		X
Availability of racially integrated facilities		X
Bad weather		X
Care-giving duties		X
Cost	X	X
Disability/Health concerns		X
Embarrassment		X
Equipment	X	
Fatigue		X
Fear of injury		X
History of racial oppression		X
Lack of available programs	X	X
Lack of childcare facilities	X	X
Lack of enjoyment	X	
Lack of knowledge	X	
Lack of motivation		X
Lack of social network	X	X
Procrastination		X
Safety	X	X
Sweating/Messing up hair	X	X
Time	X	X
Transportation	X	
Would have to join health club	X	
<hr/>		
Facilitators for Exercise		
Accessibility/Affordability	X	X
Buddy system		X
Childcare	X	X
Commitment		X
Culturally appropriate programs		X
Enjoyment	X	X
Free programs/facilities	X	
Health promoting effects	X	X
Knowledge of usefulness		X
Presence of desirable men		X
Weight loss/Improved appearance		X
Work incentives/facilities	X	X

Table 1.2: Summary of barriers and facilitators for physical activity among African American women

Physical Activity Interventions

In an effort to increase the low levels of physical activity among African American women, some researchers have developed interventions to help them become

more active. The Black American Lifestyle Intervention attempted to increase time spent exercising (primarily walking) among 67 African American women through weekly group sessions using a behavioral modification format (Kanders et al., 1994). At the end of the 10-week program, they found significant within person weight loss and significant within person increases in time spent exercising. There was no follow-up data reported.

Also using a behavioral modification method, Kumanyika and Charleston (1992) targeted physical activity behavior among 184 African American women and three White women in a church-based intervention. While they targeted physical activity, the main outcome of interest was weight loss. After the 8-week program, they found significant within person changes for both weight loss and blood pressure. During 6-month follow-up (40% program participants were included in the follow-up analysis), 65% had maintained or exceeded their original weight loss.

Another study, the Community Health Assessment and Promotion Project by Lasco and colleagues (1989), also targeted African American women. However, in this study all the women were obese. This 10-week program focused on two weekly sessions combining health education with group activity. Seventy percent of the women attended ten or more sessions (ten sessions were half of the program sessions). Forty-one percent of the women lost between 3 and 20 pounds. Significant changes in blood pressure were also reported. No physical activity outcome variables were reported. There was a three-month follow-up with 62 of 70 women participating. More than half of the women weighed less than their pre-intervention weight at follow-up.

The Bootheel Heart Health Project targeted six counties in Southeast Missouri with a community-based intervention implemented by community coalitions (Brownson

et al., 1996). The target variable for this study was physical inactivity (no leisure-time physical activity). Intervention activities were chosen by the community coalitions in the target areas and included walking clubs, exercise classes, blood pressure screenings, and community events. No significant changes in physical inactivity were found for the counties overall from the beginning to the end of the intervention. However, there were significant differences post-intervention when comparing communities with coalitions to those without.

Other studies further illustrate this trend of modest success for either physical activity or body weight outcome variables (Chen et al., 1998; McNabb, Quinn, & Rosing, 1993; Wilbur, Miller, Chandler, & McDevitt, 2003). Table 1.3 summarizes these three studies in addition to the studies discussed in text.

Study	Sample	Design	Physical Activity Target	Intervention Features	Post-test Results	Follow-up Results
Center Based Program for Black-American Families (Baranowski et al., 1990)	94 Black-American families	Random assignment to experimental (50 families) or control group (44 families); pre-post measurement	Increase aerobic activity	90-min weekly education session + 2 fitness center sessions/week; 14 weeks	Significant increases ($p < 0.01$) in calories expended from pre to post in both adult groups; Non-participation issues (20% last 8 weeks of program)	None
The Bootheel Heart Health Project (Brownson et al., 1996)	6 counties in Southeast Missouri; largest African American population in state	Cross-sectional; random sampling; baseline (n=1006) and post (n=1510) telephone survey	Decrease in physical inactivity	Coalition chosen intervention activities included walking clubs, exercise classes, blood pressure screenings, community events	No significant changes in physical inactivity for overall sample ($p > .10$), significant decrease in physical inactivity rates for intervention communities ($p=.03$)	None
Project WALK (Chen et al., 1998)	125 Ethnic minority women (41% African American)	Random assignment to experimental (n=62) or control group (n=63); pre-post test design	Increase time spent walking	6 telephone sessions + mailed materials; 8 weeks	Both groups reported significantly more minutes walking at post-test compared to baseline	5-Months: Both groups reported significantly more minutes walking at follow-up compared to baseline

Continued

Table 1.3: Summary of physical activity interventions among African American women

Table 1.3 continued

	Black American Lifestyle Intervention (Kanders et al., 1994)	67 African-American women; 40-64 years old	Pre-post test design with complete data only (n=61); no control group	Increase time spent exercising	Weekly 1-hour group sessions; 10 weeks	Self-reported exercise increased from 64 to 132 minutes (p <.05), n=58 for exercise analysis	None
	Lose Weight and Win (Kumanyika & Charleston, 1992)	184 African American women, 3 White women; mean age=51 years	Convenience sample, pre-post data for weight and blood pressure; weekly physical activity records	Increase time spent in physical activity	Weekly group sessions; 8 weeks	Significant weight loss (within person: p <.005); significant change in blood pressure (within person: p <.005); physical activity changes not reported	6-Months: 40% of program participants in follow-up; 65% maintained or exceeded post weight measurement
21	Community Health Assessment and Promotion Project (Lasco et al., 1989)	70 African American women; 18-59 years old; clinically obese	Convenience sample; pre-post test design	Increase time spent exercising	Two hour sessions, twice per week; 10 weeks	Physical activity changes not reported; significant weight change from pre to post (p <.01); significant changes in blood pressure reported (p <0.01)	3-Months: 55% weighed less than pre-intervention weight; 47% had lower diastolic, 56% had lower systolic blood pressure (no significance levels given)
	PATHWAYS (McNabb et al., 1993)	13 obese, African American women; Type 2 diabetics	Pre-post test design; comparison group	Increase time spent walking	Weekly sessions; 18 weeks	Significant decreases in weight and BMI from baseline (p <.05); physical activity changes not reported	1-Year: Significant decreases in weight and BMI from baseline (p <.05); significant difference in weight change from comparison group (p <.01)

Continued

Table 1.3 Continued

Home-Based Walking Program (Wilbur et al., 2003)	153 mid-life women (33% African American)	Baseline measurements; Daily heart rate monitoring and exercise log	Increase walking to 20-30 minutes, 4 times/week	Biweekly session; 24 weeks	Women completed an average of 66.5% of the 96 expected walks; adherence significantly higher for the White women (p=.001)	None
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While it is encouraging that there are a growing number of interventions targeting African American women, it is challenging to make comparisons. Some of them clearly have had modest success. However, many of the studies were focused on weight and did not measure physical activity variables at multiple time points to analyze change. Further, those that did include physical activity change analysis conceptualized the behavior in a variety of ways. It is evident that more studies are needed that include in-depth follow-up and expanded evaluation of physical activity outcome variables. Also, further analysis around which intervention features are effective would be helpful for understanding critical intervention design elements.

Overall, there have been some promising studies with African American women exploring physical activity behavior. However, at this time the mechanisms by which physical activity is adopted and maintained have not been thoroughly elucidated in this population. The evidence is clear that African American women are largely inactive, that there are several barriers to physical activity among African American women, and that the behavior can be increased through intervention activities, at least to a modest degree in the short-term. What have not been found in the literature are studies investigating the development of a long-term active lifestyle, the integration of activity into the lifestyle, or the aspects of activity that predispose its long-term adoption. It is in the investigation of these ideas through the development of a process theory explaining physical activity evolution among African American women that this study will make its contribution.

Purpose of the Study

Despite all that is known about physical activity behavior, clearly the issue of how to maintain the behavior has not been resolved. According to King and Kiernan (1997),

“researchers are dangerously ignorant of the most effective methods of reliably increasing regular physical activity in the 75% or more of American women who are underactive” (p. 138). They go on to state that,

“Despite the relatively large number of potentially important variables that have been identified, little is known about how these variables inter-relate, the nature of the pathways linking them with subsequent exercise behavior, and the most effective methods for incorporating them into intervention programs to enhance both physical activity adoption and maintenance” (King & Kiernan, 1997, p. 141)

Because of this lack of knowledge regarding the specific constructs and variable relationships that comprise the process of physical activity behavior adoption and maintenance, a qualitative grounded theory approach (Strauss & Corbin, 1998) was taken in this project. Grounded theory is a well-established and influential qualitative research method developed in the 1960’s (Glaser & Strauss, 1967). It allows for discovery of important variables and themes not previously understood or even revealed. This method is used to develop theoretical explanations of human behavior grounded in data collected from those exhibiting that behavior.

In this study, the grounded theory approach will be used to develop a theory of the process by which physical activity is adopted and maintained among African American women. The study seeks to understand the important factors and construct relationships that influence the process from behavioral adoption to behavioral persistence. Through understanding the process that women who have successfully integrated physical activity into their lives have experienced, knowledge will be gained that could inform future studies investigating the most effective ways to assist underactive women in adopting and maintaining an active lifestyle.

Research Questions

The grounded theory approach requires entering the data collection phase with a broad research question and allowing the theory to develop from the data. The primary research question for this study is:

What is the process of becoming physically active for African American women?

Sub-questions include:

- How is being ‘physically active’ perceived?
 - How does it fit into life?
- What factors/events/people are involved in becoming a physically active woman?
- What are the relationships among the important factors?

The structure for the remainder of this document will be as follows: Chapter Two will further address the choice of grounded theory as the appropriate methodology for this investigation as well as delineate the methods of the study. Chapter Three will present the results of the study. Chapter Four will incorporate further review of the physical activity literature and a synthesis of that literature with the findings of this study. This structure for the document follows the implementation of the grounded theory method in that the literature reviewed in this chapter was limited to the illustration of the importance of this investigation in the field of physical activity behavior. However, due to the need in grounded theory to enter data collection without *a priori* hypotheses regarding the specific factors and factor relationships key to physical activity adoption and maintenance, that area of the literature will be reserved for synthesis after the findings are presented (Strauss & Corbin, 1998). Chapter Four will also present important implications, limitations, and conclusions of the study.

CHAPTER 2

METHODS

Because of the lack of knowledge regarding the specific constructs and variable relationships that comprise the process of physical activity adoption and maintenance discussed in the previous chapter, this study was designed to investigate the process of developing long-term physical activity participation among African American women. The limited literature addressing the development of a long-term active lifestyle, the integration of physical activity into daily life, and the aspects of physical activity that predispose its long-term adoption, especially among African American women, indicated that a qualitative approach fit this investigation particularly well. In exploring which qualitative methodology was most appropriate, two options stood out, grounded theory and phenomenology.

While both methods are well-established qualitative traditions, they emerged from different fields. Grounded theory was developed in the 1960's by two sociologists (Glaser & Strauss, 1967). It is a method used to develop theoretical explanations of human behavior grounded in data collected from those exhibiting that behavior. Phenomenology dates back to an early 20th century mathematician and has its roots in philosophy and psychology (Creswell, 1998; Moustakas, 1994). Phenomenology is used to explore the meaning of a lived experience among a group of individuals who have

familiarity with the phenomena of interest. Based on this study's research question, it seemed natural that to understand the process of becoming physically active, data would need to be collected from women who had experienced the process. Both of these methods allow for investigation of a behavior from the perspective of people who exhibit that behavior. In addition, both methods give voice to women in describing their life experiences in their own words.

The purpose of this research study provided the crucial reason for selecting the method. Phenomenology aims to describe the meaning and essence of an experience while grounded theory aims to "unravel the elements of an experience" (Moustakas, 1994, p. 4) and create a framework for understanding how those elements fit together to embody the process of undergoing that experience. The grounded theory method of unraveling and explaining the process was especially relevant to the research question for this study as it was the process of becoming physically active rather than the meaning of being physically active that was the focus of this study. It was the process of becoming physically active that was being explored.

Based on this reasoning, the grounded theory approach was chosen to guide a study design aimed at development of a theory of the process by which physical activity is adopted and maintained among African American women. The study sought to understand the important factors and construct relationships that influenced the process from behavioral adoption to behavioral persistence. Grounded theory has evolved in several different directions since its introduction in 1967 by Glaser and Strauss (Glaser & Strauss, 1967). This study was guided by the method described by Strauss and Corbin (1998).

Researcher Perspective

A unique feature of qualitative inquiry is the role of investigator as both data collection instrument and data analyst. In order to ensure accurate, valid and reliable data collection and analysis, the investigator must be trained and prepared for the task (Patton, 1990; Strauss & Corbin, 1998). The researcher must be skilled in guarding against undue introduction of bias while maintaining acute sensitivity to the data. Part of that training and preparation is in formal and field training in qualitative theory and practice. The primary researcher is a doctoral candidate in the Health Behavior & Health Promotion Division of The Ohio State University School of Public Health. The theory and practice of qualitative research was an important component of her curriculum. Extensive reading on theory and published studies using grounded theory and other methods was completed in a series of qualitative methods courses, both traditional and independent study. The researcher also had experience conducting interviews and focus groups and analyzing qualitative data through her experience assisting with various research projects. Her qualifications for conducting this study also included extensive reading and study in the area of physical activity behavior through her minor curriculum requirements for the doctoral program.

Another important aspect of the training is in the reflexivity, or self-awareness, that is required by the dual role of the researcher in qualitative inquiry (Creswell, 1998; Strauss & Corbin, 1998). One aspect of this self-awareness is acknowledging the set of philosophical assumptions, or paradigm, guiding the study (Creswell, 1998). The design and analysis of this study was guided by the constructivist paradigm. Use of the constructivist paradigm indicates a belief in the assumptions of multiple social realities

and a mutual construction of findings linked to the investigator and participant (Charmaz, 2000; Guba & Lincoln, 1994). Thus there may potentially be other ‘truths’ as constructed by other researchers and their participants. Also, based on the assumptions of this paradigm, the meaning of the findings are an “interpretive understanding” (Charmaz, 2000, p. 510) by the investigator. This paradigm was chosen based on the researcher’s belief in the purpose and possibilities of empirical inquiry as well as its relevance to the grounded theory tradition. Further, based on the researcher’s background (Caucasian of Western European descent) and the participants’ background (African American), it was imperative to acknowledge the possibility of different social realities and that a unique construction of meaning could occur between this researcher and these participants.

This belief in the mutual construction of findings is integral to the researcher’s view of the women in the study as true participants in the process rather than subjects on whom research is conducted. Elements of the women’s participation can be seen throughout the study design including the inclusion of African American women in the development of recruitment materials and methods and review of the interview guide for cultural appropriateness, construction of the interview guide to ensure the women’s perspective was provided in their own words, presentation of findings to the women for their feedback, and the planned distribution of a study summary to all participants at the close of the project. Each of these aspects was included to maximize the potential for the women, not just the researcher, to be enriched from their participation in the study.

The final aspect of the preparation is acknowledging personal perspectives and preconceived notions related to the proposed phenomena and setting those aside as much as possible during the data collection and analysis process (Creswell, 1998; Strauss &

Corbin, 1998). To facilitate this requirement, a limited literature review was employed in the design phase of the project to ensure the study was not a duplication of previous work and represented a useful contribution to the current body of knowledge. However, the preconceived ideas and theories developed from the literature were then set aside by creating a conceptual map hypothesizing possible factors and relationships in the process under investigation and filing that map away until data analysis was complete. From that point forward, personal observations, hunches, and ideas were demarcated from the data using brackets or through the memo process (Scrimshaw & Hurtado, 1987; Strauss & Corbin, 1998). This open-mindedness towards the study data maximized the potential to address the ideas that arose from the data without searching for constructs that had been found in other studies. Further measures to manage bias from personal perspective are discussed in the section on reliability and validity.

This process of using a cursory literature review at the beginning of the study for design purposes then setting aside that knowledge during data collection and analysis exemplifies the unique role of literature in grounded theory inquiry. While any study worth conducting must begin from the knowledge that it is both necessary and contributory, the use of information gleaned from the findings of previous studies varies depending on the method of inquiry. In grounded theory studies, theory is not used at the front end of the study to inform design and suggest perspectives, rather it is used at the back end of the study to inform results and place these results in context with the relevant body of knowledge (Creswell, 1998). In other words, a theory is not generated from the literature and hypotheses developed to be tested in the study, rather a theory is generated from the data and compared and contrasted to findings from other studies in the literature

(Creswell, 1998). It is due to this unique process, that only a brief presentation of the literature occurs at the beginning of this document, enough to understand the problem and ensure that the answers have not been previously unearthed. The more substantial literature discussion occurs after the results have been formulated in an effort to better understand and situate them in the current body of knowledge on adoption and maintenance of physical activity behavior. The structure of this document thus reflects this process.

Since the researcher was guided throughout the study design and implementation process by her Dissertation Committee, their preparation and training were also paramount to the quality of the study. Committee members were chosen to serve as a panel of experts on various aspects of the study including health behavior, theory development, physical activity, qualitative methods, women's health and research among African Americans. The Dissertation Committee was chaired by two faculty members in the School of Public Health, Catherine A. Heaney, Ph.D., M.P.H. and Mira L. Katz, Ph.D., M.P.H. Dr. Heaney has extensive experience in the field of health behavior and the use and application of health behavior theories. Further, she has considerable experience mentoring students through the dissertation process. Dr. Katz has done both qualitative and quantitative work in the areas of cancer prevention and control and health communications. Sharla K. Willis, Dr.P.H., M.A. is an adjunct faculty member in the School of Public Health at Ohio State University and has had extensive training and practice in the areas of qualitative research methods, including grounded theory, and women's health. Much of her work has been conducted with Latina and African American women. Janet Buckworth, Ph.D., F.A.C.S.M. is an associate professor in the

School of Physical Activity and Educational Services and an expert in the field of physical activity behavior. She has conducted research on physical activity behavior change and the application of behavioral theories to exercise. The final committee member, Angela Odoms-Young, Ph.D., an assistant professor at Northern Illinois University, completed her doctoral training in nutrition. She is an African American researcher with experience employing qualitative methods and grounded theory with African American women.

Sampling

In qualitative research, information-rich cases are the basis for the logic and power of the method (Patton, 1990). Purposeful sampling was used in this study to gather information-rich cases. Two purposeful sampling methods were employed: Criterion sampling and theoretical sampling.

Throughout the study, criterion sampling was used to select participants (Patton, 1990). Criterion sampling refers to picking cases that meet some pre-specified criterion. For this study inclusion criteria were female, African American, 25–45 years of age, completion of at least some college or technical school beyond high school, currently physically active at nationally recommended levels for at least one year, and committed to physical activity. All eligibility criteria were assessed by the researcher by phone or in person. If women met the study criteria they were asked to participate in the study (see Appendix A for the phone script used to describe the study to potential participants and assess the general eligibility criteria).

Due to the passing of Title IX in 1972, the age range was limited to 25-45 years. This legislation afforded women the opportunity to participate in many new physical

activity organizations. Women 25–45 years of age would have been 15 years old or younger when Title IX passed and thus would be considered post-Title IX throughout high school and college.

Becoming a physically active individual is a complex process that may be further complicated by the experience of living in poverty or as the working poor. Since this study sought to elucidate the basic process, it was necessary to include a measure to increase the homogeneity of the sample in terms of socioeconomic status (SES). Women in this study were required to have completed at least some college or post-high school training as a proxy for SES. Because it was felt that asking a stranger in the study screening context for their income was too personal, education was chosen as a less personal, albeit imprecise, measure of SES.

Since this study focused on the process of adopting and incorporating physical activity into the lifestyle, only women who have experienced this process were included. Women had to be currently active at recommended levels, specifically 150 minutes per week of moderate activity (3 – 6 METS) or 60 minutes per week of vigorous activity (greater than 6 METS) (CDC, 2001). An option of 300 minutes per week of mild activity (less than 3 METS) was added in order to address a more comprehensive spectrum of physical activity domains (Brownson et al., 2000). Physical activity minutes could also be obtained through a combination of mild, moderate and vigorous activity. An adapted Godin Leisure-Time Exercise Questionnaire was used to evaluate women's eligibility (Godin & Shephard, 1985). This questionnaire contains four questions, one for each type of physical activity and one sweat question and took approximately five minutes to administer (Appendix B).

Occasionally women might be physically active but only due to circumstances beyond their control such as occupational or household responsibilities. As such, they would not be committed to maintaining an active lifestyle should their life circumstances change. Though few women might fit this category, commitment to physical activity was used as an inclusion criterion to assure that participants were committed to physical activity as a lifestyle. An adapted Commitment to Physical Activity Scale was used to assess this criterion (Corbin, Nielsen, Bordsdorf, & Laurie, 1987). Women needed to score above the midpoint (neutral) to be included in the study. The tool has 11 items with five response choices ranging from strongly agree to strongly disagree and took approximately 5–7 minutes to administer (Appendix C).

Exclusion criteria were based on conditions that might affect the experience with physical activity, for example a woman with an eating disorder would have a different perception of physical activity and thus a different experience in becoming active. Exclusion criteria for this study included having difficulty walking or moving around, recent diagnosis with an eating disorder, or diagnosis with a terminal illness. Exclusion criteria also included having participated in varsity athletics in college or on a professional athletic team because athletes likely have a different perception of their skills and abilities for physical activity compared to non-athletes. Assessment for exclusion criteria was included in the general screening tool (Appendix A).

In addition to criterion sampling, theoretical sampling was employed once the first set of data had been analyzed. Theoretical sampling is defined by Strauss and Corbin (1998) as follows:

“Data gathering driven by concepts derived from the evolving theory and based on the concept of ‘making comparisons’, whose purpose is to go to places, people, or events that will maximize opportunities to discover variations among concepts and to densify categories in terms of their properties and dimensions.” (p. 201)

In other words, cases were sought that helped to further the theory development. In this study, theoretical sampling was specifically used to ensure that the women who participated in the study had adequately experienced the phenomenon to provide rich description.

In qualitative research there is no formula that can render an appropriate number for sample size. However, decisions can be made in the beginning of the project based on the sampling theory. Since the study population was fairly well defined, the variation of experiences in the group was less than that of a more loosely defined population. The objective was to describe the range of experiences in the population and to capture the variability of responses. Patton (1990) recommends specifying a minimum sample size based on expected coverage of the phenomenon, which can be modified if needed. According to Strauss and Corbin (1998), microscopic inspection of ten high-quality interviews can usually provide the skeleton for a theoretical structure. Since the population and area of interest were well-defined, this rule of thumb provided a reasonable starting point. To maximize the potential for adequate topic coverage, the starting point was increased by 50% for a minimum sample size equal to fifteen.

In grounded theory, however, the ultimate criterion for the final sample size is theoretical saturation (Strauss & Corbin, 1998). Theoretical saturation employs the general rule that when building theory, data should be gathered until each category (or theme) is saturated. Saturated here means that no new information is emerging in that

category and that the category is well developed in terms of its properties and dimensions demonstrating variation. The relationships among the categories should also be well established (Strauss & Corbin, 1998). Therefore, a sample size of 15 women was used as a baseline and theoretical saturation was employed to determine the final sample size. Because the determination of the sample size evolved as the study progressed and was ultimately finalized during the analysis phase, this discussion can be found in Chapter Three.

Study Recruitment

Participants were recruited with the help of African American women in the community. Prior to study commencement the researcher met with African American women employed as researchers and diversity specialists at the Ohio State University Comprehensive Cancer Center to plan recruitment efforts and review recruitment materials. Flyers for recruitment (Appendix D) were modified per the suggestions of this group. Names and phone numbers for contacts at possible locations to post study flyers were also provided to the researcher. Flyers were posted at the downtown Columbus location of the YMCA, the Columbus Health Department, AfroRhythms Dance Studio, the East Central Health Clinic, The Ohio State University School of Public Health, and the website of the Black Women's Health Project. Interested women were instructed to call the researcher for more information. After explaining the study, if a woman expressed interest in participating, the screening process was initiated.

The main recruitment contacts for the study were local women at two African American sorority alumni associations- Delta Sigma Theta and Alpha Kappa Alpha. This avenue of recruitment was particularly suitable due to the educational requirement for the

study. The researcher met with the contacts at each sorority and identified meetings or other events where information about the study could be presented. For Delta Sigma Theta, the researcher participated in a health fair sponsored by the sorority. The researcher provided an educational booth for the sorority function while a colleague screened interested women for the study. For Alpha Kappa Alpha, a chapter meeting was attended where a sign-up sheet requesting interested women's names and phone numbers was circulated (Appendix E). Follow-up phone calls were made for screening purposes after the meeting was over.

Other fortuitous avenues for recruitment were also utilized. Women were screened for the study who called at the advice of a friend or family member as well as women who had heard about the study from a participant. Further, circulating flyers around the city resulted in an invitation to attend a health fair at the Columbus Africentric School and screen women attending the event. Similar to the final sample size determination, recruitment procedures evolved as the study progressed as did the employment of theoretical sampling. Because of these emergent design features, further details of study recruitment will be presented in Chapter Three.

Data Collection

Data were collected by conducting one-on-one, in-depth interviews with the participants in the location of their choice. These interviews were guided by the research questions but were unstructured enough to allow the discovery of new ideas and themes. Each interview required approximately 45 minutes–90 minutes. Women received a \$15 gift card to a local grocery store as a token of appreciation for their time.

Field notes were taken during and directly after each interview. These notes focused on the interview environment, participant demeanor and body language, and any interruptions or other factors that may have influenced the investigator's interview technique or the participant's responses. Field notes also summarized conversations that took place after the formal interview was over. Recording these types of additional information provided a more comprehensive interview record.

A semi-structured interview guide was utilized for the data collection. The interview question development was guided by Spradley's (1979) descriptive question matrix technique ensuring that known factors related to physical activity adoption from the literature could be addressed while allowing for the discovery of unknown factors. The guide was designed to elicit lengthy description from the women using their own words to describe their perceptions of themselves and their activity patterns.

The interview guide was pilot tested through three interviews for clarity and cultural appropriateness prior to its use. The first two pilot interviews were conducted with women who met all the study criteria but were not African American. These two interviews were used for question refinement. The third interview was with an African American woman who had experience with physical activity but would not qualify for the study due to recent foot surgery. This interview was used primarily for cultural appropriateness. Changes were made to the guide after each pilot interview.

The guide was modified as data collection proceeded to further refine questions that were not eliciting the intended information and to reflect the categories and concepts

that required further development (Spradley, 1979; Strauss & Corbin, 1998). The interview guide underwent three of these revisions. The initial interview guide and the final version can be reviewed in Appendix F.

When the interviews and the preliminary data analysis were complete, two focus groups of the study participants were held. The purpose of these groups was to disseminate the preliminary findings from the study and to gather feedback from the participants to ensure the findings reflected their experience with physical activity. The focus group guide (Appendix G) was developed with open-ended questions requesting participant feedback and exploring further the consideration of race as an important factor in physical activity evolution. A discussion of the desired format for written dissemination of study findings to the participants was also incorporated. Refreshments were served at the focus groups and women received a parking voucher and a \$25 gift card to a local grocery store as a token of appreciation for their time. Data from the focus groups were incorporated into the analysis for further theory refinement.

Data Management

All interviews and focus groups were tape recorded with the permission of the participants and transcribed verbatim. Transcribed interviews were then reviewed by the researcher for accuracy and references to participants' names were removed. Field notes were incorporated into the transcripts which were then entered into the ATLAS.ti qualitative data analysis program for analysis (Muhr, 1994).

Protection of Human Subjects

Prior to study commencement, the Ohio State University Institutional Review Board (IRB) granted approval for the study. Informed consent (Appendix H) was obtained from each woman who agreed to participate.

All interview information was kept confidential. The majority of the findings were given in aggregate terms. Individual women were not identified by name or by other identifiers that would single them out. The report contains representative quotations; however the individual's name or unique combinations of identifiers were not used. Throughout the study all interview materials (transcripts, tapes, field notes and memos) were kept in a secure location. For five years following the end of the study, materials will be kept in a secure location and then destroyed.

Data Analysis

The basic principles of grounded theory data analysis as described by Strauss and Corbin (1998) guided the analysis of the data from this study. An important feature of grounded theory analysis is that it does not wait to begin until after data collection ends. Analysis begins after the very first data collection experience. In fact, data needs to be analyzed before the next collection experience to properly employ the method of theoretical sampling and revise the interview guide. Thus, in this study, data analysis began when the first transcript was received and continued throughout the data collection process. Analysis included writing field notes and memos, reviewing transcripts and coding interviews. However, due to unforeseen transcriptionist turnover and delay, an optimal schedule of analyzing each interview prior to the next interview could not be

maintained. Thus, cursory analysis was employed by reviewing field notes and initial transcripts or tapes prior to subsequent interviews with review of final transcripts and coding taking place every three to four interviews.

Microanalysis was used for all of the interviews. Microanalysis requires meticulous examination and interpretation of data. It is the detailed line-by-line analysis necessary to generate initial categories and to suggest relationships among categories (Strauss & Corbin, 1998). In this study, microanalysis was utilized for all of the interviews to ensure no important ideas or constructs were overlooked. Each interview was reviewed, searching for ideas in every line and passage. With each new idea, a new code was created and attached to the corresponding lines of text. The codes were then named and described using the codebook feature of ATLAS.ti. This codebook was used and modified throughout the process. The processes of microanalysis and code generation flowed naturally into the next stage of analysis, open coding, and at times they were employed concurrently.

Open coding involves the analytic process through which concepts are identified and their properties and dimensions are discovered in the data (Strauss & Corbin, 1998). Themes that are found to be conceptually similar in nature or related in meaning were grouped together as concepts and named. Once the codebook development was underway from the microanalysis process, codes from early interviews were used to identify similar concepts in subsequent interviews. This process allowed for the ability to review the codebook and understand which concepts were unique to certain interviews and which ones were more global.

After the open coding process was underway, axial coding began by grouping codes into larger, more abstract categories. The purpose of axial coding is to begin the process of reassembling data that were fractured, or split into small chunks, during open coding (Strauss & Corbin, 1998). The properties and dimensions of these categories then began to be uncovered and compared across categories. Although the axial coding process took place within the text, the linking of categories to subcategories took place at the conceptual level using memos to track ideas and thoughts during the process. To facilitate this process, codes and their corresponding quotations were reviewed for similarities and relationships to create code families or Super Codes (an umbrella code created to house a group of related codes).

Once the open and axial coding processes were completed, data cleaning procedures took place. Each category's quotations were reviewed for context and appropriateness to the category. Codes and categories that were not used in a noted series of interviews resulted in transcript review to ensure that relevant information had not been overlooked. Further, memos were used to track initial ideas across interviews for the categories.

Selective coding is the process of integrating and refining the theory. It is not until the major categories are integrated to form a larger theoretical scheme that the research findings take the form of theory or process (Strauss & Corbin, 1998). An important step in the analysis was to create a framework for the overall process. The framework explains the main point of the data as well as accounts for variation. The main framework, as well as the sub-frameworks, was developed by reviewing the categories created in the axial coding process. For each essential idea, a master list of quotations was compiled for the

corresponding group of codes. Using this list of quotations, a diagram or flow chart was developed by walking through the experience of each woman, one by one, adding her unique experience to the overall depiction. Once this process was complete, the overall diagram was reviewed for refinement and logic as well as incorporation of other related categories. Data were often exported into Microsoft Excel to facilitate this process.

The next step was to present the process model to the participants for feedback. After the focus group data were collected, a brief *a priori* codebook was developed based on the focus group guide questions for analysis purposes. Both focus groups were coded using this *a priori* codebook while allowing for the creation of new codes to identify important emerging categories as necessary. These codes were then queried in ATLAS.ti and the resulting quotations reviewed and summarized in Microsoft Word. Special attention was paid during the quotation review to suggested changes for the process model and further insights into the influence of racial background on physical activity participation. The process model and other relevant findings were then modified based on this analysis.

The proposed processes and frameworks were further refined through a comparison to the related literature. Articles were sought that both supported and disputed the conclusions of the study. Where necessary, the raw data was re-addressed to confirm or deny parallels to the existing literature.

Reliability and Validity Criteria

While the traditional scientific cannons of quantitative inquiry cannot be applied to this study, Lincoln and Guba (1985) provided the structure for considering reliability and validity that guided the study design to maximize the credibility, transferability,

dependability, and confirmability of the study findings. Credibility, the qualitative parallel to internal validity, is a measure of how likely it is that the study will produce trustworthy or plausible (as related to the data) findings. Peer debriefing, raw data verification and member checking were used to ensure the credibility of the findings. Peer debriefing is the process of presenting analysis to a peer to explore meanings, interpretations, bias and inconsistencies (Lincoln & Guba, 1985). Peer debriefing was employed by presenting various segments of the analysis to two of the members of the dissertation committee throughout the analytical process. Segments would be prepared and submitted and a meeting would be held for the researcher to further explain both the process of arriving at the findings as well as the meaning of the findings themselves. Feedback would then be garnered from the committee member and incorporated into the analysis.

Raw data verification refers to the process of going back and comparing the theory against the raw data (Strauss & Corbin, 1998). For example, once the framework was deemed complete, it needed to be compared back to a series of interview transcripts to verify that it indeed reflected the data. The selected interviews were reviewed, documenting how the process was reflected in the women's experiences through passages of text and quotations. The theory was then confirmed according to these comparisons.

Member checking is the process of presenting findings, interpretations and conclusions to the participants and confirming the representativeness of these findings in their experience (Lincoln & Guba, 1985). Lincoln (1985) states that it is the "most crucial

technique for establishing credibility” (p. 314). Member checking occurred through the two focus groups described above that were designed to present the preliminary findings to the participants.

Transferability is sometimes considered the qualitative parallel to external validity and is described as the extent to which the conclusions of the study can be applied in other contexts or have any larger import. Methods to ensure transferability included clearly and adequately defining the sample through the inclusion and exclusion criteria and thoroughly describing the sample characteristics. Another method used to maximize transferability is providing rich description of the phenomena being investigated. An effort to collect deep, or thick, description was undertaken in the construction of the interview guide using open-ended questions designed to elicit examples and lengthy, contextual answers. The guide was also revised over the course of the interviews to modify questions that were not resulting in detailed answers. Interview style was also reviewed by the investigator and committee members through tapes and transcripts to ensure the data collection procedures were effective in obtaining the necessary quality of data.

Dependability, or reliability as a similar concept is known in quantitative research, is described as the extent to which the research process is consistent over time. Dependability can, in part, be established through the credibility of the researcher (Lincoln & Guba, 1985). Further efforts to maximize dependability were to carefully document each stage of the data collection and analysis process through field notes and memos in order to construct an ‘audit trail’ of the research process available for review

by the dissertation committee as necessary. Also, the data cleaning procedures described in the previous section assisted in ensuring that codes were applied consistently throughout the data analysis process

Confirmability, also known as neutrality, requires that the conclusions of a study are based on the participants' experiences and the data they provide rather than the researcher and the filters through which she is conducting the study. One method of ensuring confirmability was through the creation of the audit trail described above for dependability. Another method employed in this study and mentioned throughout this section was to keep a reflexive journal through field notes and memos documenting not only study logistics and methodology but also personal feelings and insights that arose through involvement in the study. This process provided a document the researcher could review to ensure that the findings were based on the data and not her feelings and suppositions.

The purpose of these iterative processes of data collection, analysis and literature review was to produce a credible framework, grounded in the data, describing the process of becoming physically active as it is experienced by African American women. This process and the important related factors will be presented in the next chapter.

CHAPTER 3

RESULTS: EMERGENT DESIGN ELEMENTS AND FINDINGS

Through the careful recruitment and interviewing of study participants, rich and descriptive data were obtained illustrating the process by which African American women integrated regular physical activity into their lifestyle. The analyses of these data revealed the main process women experienced, called Physical Activity Evolution, as well as the context in which this process occurred and the conditions that facilitated movement through the process. The important contextual element that emerged was the influence of racial/cultural background. Conditions associated with women's movement through the process included planning methods, physical activity companions, and types of benefits experienced.

This chapter begins with a description of the details of recruitment, sampling procedures and sample size. The Physical Activity Evolution process model will then be presented along with the contextual features enumerated above. Results from the focus groups where the process model was presented to the participants have been integrated into the findings.

Recruitment and Sampling Procedures

Several avenues were utilized to recruit women to the study. The recruitment planning meetings at The Ohio State University with African American researchers and

diversity specialists resulted in a list of several potential contacts for identifying eligible women including local African American churches and dance studios. Each of these locations was contacted via telephone to assess their interest in participating in study recruitment. Repeated efforts at leaving voice mail messages were made with successful contact occurring at only one location, a local dance studio. The owner of the studio agreed to post flyers at her location and at the downtown YMCA. The flyer was also posted on the website of the Black Women's Health Project.

Other local women known to the researcher offered to distribute study materials in Columbus locations including the Columbus Health Department, the East Central Health Clinic, and the HBHP 720 course in the School of Public Health at The Ohio State University. These contacts also forwarded study information to women in their social network who they thought might be interested in participating.

The most formal recruitment efforts were through the local African American sororities. The researcher was invited to participate in a health fair for the Delta Sigma Theta National Day of Health. In exchange for an opportunity to screen women for the study on site, the researcher held a nutrition booth at the health fair. The researcher also attended a chapter meeting of the Alpha Kappa Alpha organization. At this meeting, women were provided with study information and signed up to be contacted for study screening if they were interested. Participating in these two events led to the researcher being invited to hold a booth at a health fair at the Columbus Africentric School for the purpose of study recruitment. Finally, study participants forwarded information to friends and family they thought might be interested.

Thirty women were screened either in person or via phone for the study. Of those, seventeen women were eligible. Recruitment sources of the seventeen women are summarized in Table 3.1.

Recruitment Source	Number of Participants
Direct Contact	2
Flyer- Downtown YMCA	1
Flyer- Columbus Health Department	3
Alpha Kappa Alpha	1
Delta Sigma Theta	6
HBHP 720	1
Columbus Africentric School Health Fair	1
Participant Referral	2

Table 3.1: Summary of recruitment sources

Fifteen of the seventeen women participated in the study. The other two women did not return phone calls from the researcher for interview scheduling.

There were several reasons for women being screened out of the study. The most common reason was participation in varsity college sports (n=6). Other reasons included age (n=3), education (n=2), and length of time in regular physical activity (n=1). One woman was screened out of the study due to additional guidelines put in place in the employment of theoretical sampling. As the study progressed, it became apparent to the researcher that life experience and participation in formal exercise were crucial to the

participant's ability to articulate her experience in integrating physical activity into her daily life. Women who had been interviewed at the low end of the age range (less than 30 years old), often had not had enough time out of college and with life's obstacles to know how they might handle certain challenges such as health issues, children, and job change. These younger women mentioned that they were not sure what their physical activity patterns might be like in the face of such issues.

One 25 year-old participant stated,

“I know that once I have kids and a family and stuff, it won't be as...I probably won't be able to get to it as much, so I am going to try to still continue it throughout my life hopefully.”

Since some of the richness of the data was in the participant's experience of overcoming these challenges, after three such interviews the lower parameter of the age range was increased to 30 years.

Along the same vein, after several interviews, it was clear that the women were traditional exercisers and were reflecting the process of adopting and maintaining traditional exercise activities such as aerobics, running and exercise videos. While some of the women did consciously participate in lifestyle activities, they were not their sole source of exercise. The developing theory was clearly describing participation in traditional exercise. In order to maintain homogeneity of the sample, towards the end of the sampling phase women were required to participate in at least some type of formal exercise in a typical 7-day period. One woman was thus screened out whose only exercise was walking around the shop she owned as part of her occupational tasks on a daily basis.

Sample Characteristics

As mentioned previously, the objective of sampling in qualitative studies is to describe the range of experiences in the population and to capture the variability of their responses (Patton, 1990). Based on the screening criteria, the women in this study composed a well-defined group but demonstrated a range of experiences as physically active women. It was the in-depth investigation of those experiences that was tantamount to the success of this study. The strength of the analysis was not in the cursory description of the experiences of a broad range of women but in the fine detail analysis of a defined group of women who exhibit some variation in their experience of one particular phenomenon.

The 15 women recruited for the initial interviews represented a homogenous sample across the following characteristics. All the women were African American, between the ages of 25 and 45, and had obtained some post high school education. None of the women had participated in varsity college or professional sports, had recently been diagnosed with an eating disorder, or lived with mobility problems or terminal illness. All the women resided in the metropolitan Columbus, Ohio area at the time of their interview. They all exceeded the pre-specified study acceptance level for physical activity and commitment to physical activity.

Within this well-defined group of women, a range of life experiences was captured. Actual ages ranged from 25 to 45 years with an average age of 34.5 years (± 6.9) and a median age of 33 years. Marital status was split evenly between married and single, with one divorced participant. The sample included women with no children, stepchildren, biological children, and one woman who was pregnant. The sample was

primarily composed of non-smoking women with two daily smokers. Professions varied from unemployed to student to dedicated career woman. Six of the women worked within the scope of the health professions including two nurses, one sexual health outreach coordinator, one public health data coordinator, one sports medicine specialist, and one food scientist. The two students in the study were enrolled in degree programs in the health professions. Women with jobs outside the health professions included business managers, an engineer, an accountant, and a teacher.

The women in the sample represented a range of body weight levels from 94% of ideal body weight based on height to 153% of ideal body weight (mean=121%±25%; median=116%) and body mass index (BMI) ranging from 19.4 to 39.7 (mean=25.1±5.3; median=23.4). Many of the women in the study were much more active than the minimum study criteria with activity ranging from 120% to 1305% of minimum activity level (mean=520%±320%; median=470%). Women performed a variety of exercise activities including various group fitness classes, dancing, weight training, running, walking, and home fitness videos such as Tae Bo. The women had been physically active anywhere from one year to over 20 years. Further, while everyone demonstrated a minimum level of commitment to physical activity (minimum eligible score=33, range of possible values=11-55), scores ranged from 40 to 55 with an average of 46.3 (±4.7). Appendix I contains a summary of participant characteristics.

Sample Size

According to Lincoln and Guba (1985), informational redundancy is an important criterion to be used when determining the appropriate point to stop sampling. Using this criterion indicates that sampling is stopped when no new information is gathered from

further data collection (Lincoln & Guba, 1985; Patton, 1990). Lincoln and Guba (1985) also state, “In interviewing members of some particular group it is usual to find that a dozen or so interviews, if properly collected, will exhaust most available information” (p. 235). The concept of informational redundancy parallels the concept of theoretical saturation from Strauss and Corbin (1998). In theoretical saturation, sampling is ceased when no new information is emerging in relevant categories and adequate information exists in each relevant category to conduct in-depth analysis (Strauss & Corbin, 1998).

In order to invoke these principles to determine the appropriate sample size for the initial interviews, careful documentation was employed at each stage of the analysis process. Microanalysis began with the first interview; in this study, microanalysis was employed in a line-by-line coding method creating new codes for every concept or idea present in the data. As each new code was created a code definition and date of creation was recorded as well. Line-by-line coding was used during the open coding process for all 15 interviews. This process evolved into simultaneously searching for new concepts and creating the appropriate codes while also attending to the development of those concepts in the data. As the list of codes grew, it became necessary to consider the relationships between the developing codes and refine the code list accordingly. Careful documentation was kept of this process.

It became apparent after the line-by-line coding of the first 13 interviews, that many of the same ideas were being described by the women, albeit in various incarnations. Further, fewer codes were being developed with each new interview. Because of this repetition of themes as well as the volume and depth of the data in the first 13 interviews, the decision was made to use the 14th and 15th interviews as test cases

for data saturation or informational redundancy. Analysis of the 14th and 15th interviews proceeded in the same manner as the first 13 interviews with line-by-line analysis to uncover new ideas and develop current ideas. Documentation specific to the 14th and 15th interviews serving as test cases was kept.

The analysis of the line-by-line coding of these two interviews revealed that while there was some slight variation within categories, new categories were not emerging. No additional codes for newly discovered themes were created during the coding of these interviews. Instances of variation were seen in three areas. In interview 15, the participant discussed physical activity as a safe activity for children, a way to keep them out of trouble. This concept was a variation of a theme heard from other participants who wanted to instill the habit of physical activity in their children for different reasons. She also discussed the challenges of maintaining physical activity during a high-risk pregnancy. While she was the only pregnant participant, this situation was a variation of the theme heard from other participants of maintaining physical activity while dealing with health issues. The women participating in interviews 14 and 15 exhibited a variation on the issue of external influence for physical activity. They both had family members who exerted pressure to maintain a certain body type while a previous participant had felt this pressure from a friend.

Further, categories that had emerged as key factors in the process of physical activity evolution including physical activity companions, motivators and stages in the adoption and maintenance process, results and benefits from physical activity, and planning physical activity each had scores of quotations within the 15 interviews. These categories and others also exhibited variation of experience. For example, within

motivators for adoption of physical activity, women were included ranging from those for whom body weight was the primary motivation for exercise to those who scarcely mentioned it. Based on the depth of the data provided by the 15 women, the scarcity of new information emerging from the last two interviews, and the importance of analyzing the rich experiences of the women in the study in great depth and detail in order to unearth the important structure of a very specific process, sampling for the interviews was completed with 15 women.

Fourteen of the 15 women who participated in the interviews responded to the focus group solicitation. The one woman who did not respond was contacted multiple times with no results. Two of the remaining 14 women had since moved out of state. All of the remaining 12 women scheduled themselves for one of the focus groups. Nine women attended the two focus groups, four in one group and five in the other group. Three of the women ended up either sick themselves or with sick children during the week of the focus groups and could not attend.

The Process: Physical Activity Evolution

The women's rich and illustrative descriptions provided the basis for a process theory explaining the adoption and maintenance of physical activity. The process of physical activity evolution that emerged from the data explains the psychological and behavioral changes women experienced over time as they strived to become physically active. The creation of this model began with the first interview and proceeded numerically through the 15th interview. Beginning with the first woman's experience, a chronological map was developed of her procession from adopting physical activity as an adult through the time of the interview based on the data contained in her quotes. The

resulting chart was then filled in with each woman's journey, adding to and modifying the chart as needed with her unique experiences. By the time the analysis had reached the 11th interview, no new information was being added to the flow chart. After the review of each woman's experience was complete, the chart was organized and condensed to represent a parsimonious and logical flow of the process.

The model, Physical Activity Evolution, presents the experience African American women undergo from the time physical activity is adopted as an adult through integration into daily life. The model indicates a main flow through which women progress as well as two alternative loops, the modification loop and the cessation loop. Flow through the process is characterized by three phases, the Initiation Phase, Transition Phase, and Integration Phase. Each pivotal psychological or behavioral change is indicated by a box. Arrows direct movement from one box to another, into, and out of the loops. An important feature of the process is that it exists within the context of the women's lives. In this case, the important context that emerged was African American race/culture and its impact on physical activity participation. Further, certain conditions emerged as important for helping women progress through the physical activity evolution process including planning methods, physical activity companions, and types of benefits experienced. These features are represented by the 'physical activity context and conditions' box surrounding the model. The model presented reflects the integration of the feedback from the women who participated in the focus groups. Each step of the process is described in the following discussion using quotations from the women where illustrative. The Physical Activity Evolution process model is presented in Figure 3.1

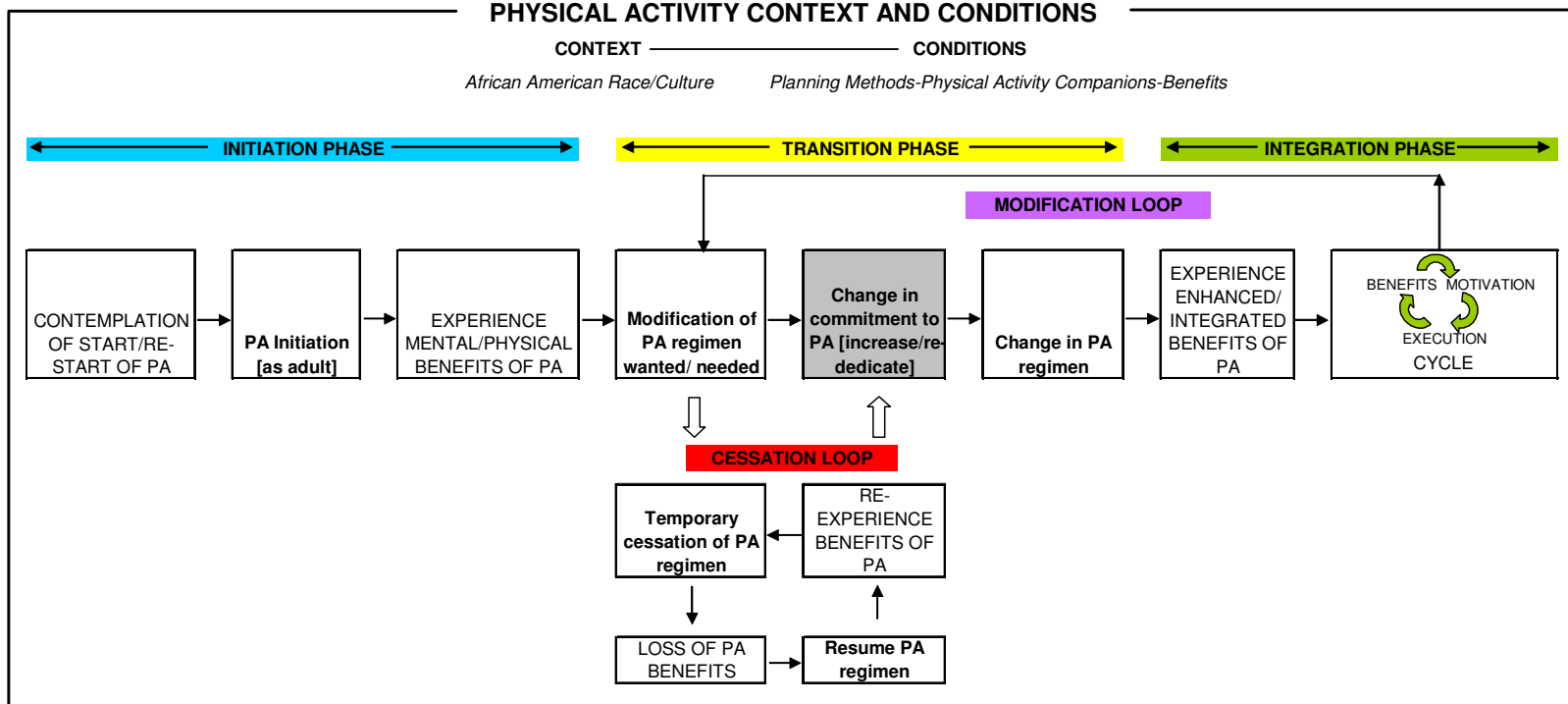


Figure 3.1: Physical Activity Evolution process model

Main Flow

Initiation Phase

The first phase of the process is characterized by the early decision making and initiation behaviors of the women. In this first phase, women were experimenting with physical activity and beginning to experience some of the benefits associated with physical activity participation.

Contemplation of start/restart of physical activity. The women entered the process by contemplating the start or restart of physical activity. Although some women had never been physically active prior to adulthood, others had been physically active as children and teenagers. Women who had been physically active, however, experienced a lapse in physical activity sometime during their transition from school to professional life. Reasons described by the women for wanting to start physical activity included medical advice or diagnosis, wanting to meet people or get to know a new city, wanting to lose weight, needing something to do to fill time, and having been active growing up and feeling that something was now missing. One woman said of her desire to start a physical activity regimen again,

“I stepped away from it and I didn’t exercise for like a year, anything towards effort for a year. Then I started saying to myself, that is really ridiculous that I used to be really in shape. So you need to start doing something. That’s when the Tae Bo came in initially.”

Another woman stated of her motivation to start a regimen, “My doctor told me I needed to start doing things.” Finally, many of the women cited body weight as their impetus to begin a program. For example, one woman said of her efforts to change her sporadic exercise into a regular routine,

“It evolved because baby fat does not go away. So the first baby- I retained ten pounds and I looked okay. The second baby- I retained about thirty pounds and I didn’t look okay. And so, the ten pounds though was the issue for me because after the first baby is when I really started working out.”

Physical activity initiation [as adult]. Once the decision was made to begin physical activity, regimens took on a variety of forms. Many women just started taking a class or two for fun, others began with walking, and some coordinated a program with a friend or boyfriend. One woman described starting a program with her husband,

“My husband and I both decided we were going to enter as a couple. It was like a big thing. My mother and father did it together so we were going to do it together and it was just something new...It was just we were all going to do it and then we started working out together.”

Another woman explained that when she first started, she participated sporadically,

“I may have started with 2 days a week for just maybe 20 minutes or a half hour or an hour. It wasn't everyday. It wasn't every week. I felt like if I jumped rope for 20 minutes I was doing something.”

A few women began their participation with thoroughly planned physical activity regimens (e.g., comprehensive regimens including cardiovascular and weight lifting activities with minimum frequency based on nationally recommended levels of physical activity). It was during this stage of the process that women began to learn which activities they enjoyed, how well different activities fit into their schedules, and which ones might meet the needs that prompted physical activity participation.

Experience mental/physical benefits of physical activity. Shortly after engaging in some form of physical activity, the women started experiencing benefits. Women discussed mental benefits such as feeling good, relieving stress, feeling more alert, and feeling like they were taking time for themselves or taking care of themselves. Other

benefits were the discovery of activities that brought them enjoyment or enabled them to do other things during their exercise sessions such as reading or praying. While mental benefits dominated the discussions of early exercise experiences, physical benefits were certainly anticipated by many of the women. Some of the women did experience some physical benefits early in their physical activity experience such as initial weight loss, though the majority of these benefits occurred later in the process. Other important benefits experienced during the Initiation Phase included having more energy and sleeping better. One of the women said of some of the benefits she was experiencing,

“This is something that I need to do because it makes me feel good and it relieves stress...even though I’m hot and sweaty and stinky, mentally I feel more alert...my body feels more alert...I feel more energetic.”

As many of the women were juggling careers and family, time out for themselves was an important benefit of physical activity. One woman explained, “I had a little time for me. I started enjoying it, I started liking it.”

Transition Phase

After the initial stages of deciding to adopt physical activity, initiating participation, and starting to experience some benefits, women moved into the Transition Phase. The time it took to progress to this phase varied. Once women reached the Transition Phase, they were refining their physical activity regimens and committing to physical activity as a lifestyle rather than a behavior engaged in for only the period of time required to meet a particular goal.

Modification of physical activity regimen is wanted/needed. At some point in the early phases of physical activity adoption, the women became aware that a modification

of their regimen was needed. This need arose from a number of situations including having scheduling problems, not seeing expected benefits, not enjoying chosen routines, or experiencing increased fitness or skill requiring more challenging activities.

Experiencing the desire or necessity for change characterized the first stage of the Transition Phase. Women needed to start doing physical activity and experiment to learn a bit during the Initiation Phase and then restructure their regimens to fit their lifestyle or desired benefits better during the Transition Phase. One woman said of her need to increase the intensity of her program,

“But one thing I’ve realized is that if you’re doing 60 minutes of walking a week and you’ve done it for a year it’s good, it’s better than nothing, but it’s not really giving you all the benefit that you anticipate. That’s what I mean when I say I’ve changed my commitment. Now I’m at the point, okay you’re doing it, but now you have to change the way you do it, because I’ve never focused on the intensity portion before.”

Change in commitment to physical activity [increase/rededicate]. Once the women realized that their regimens needed modification, they needed to commit to their pursuit of a physically active lifestyle and make the necessary changes. For some of the women, this commitment was a reprioritization of physical activity or an increase in their dedication to physically active lifestyle. For others, it was a reaffirmation of previous commitment. This box is shaded grey because it marks a pivotal point in the process. It serves as the bridge through the Transition Phase. Without this conscious commitment to physical activity, the women would not have moved further along in the process, becoming more experienced with, and dedicated to a lifetime of physical activity. Some women spoke about this point using words such as “breakthrough” or “light clicking on”. For example, one woman said, “So then the light clicked on that I needed to make a

change. It is a lifestyle change.” Another woman explained, “...but it was different that time because I realized it wasn’t a choice anymore. It wasn’t a choice as to whether to exercise or not. It wasn’t like [I could] just not do it.”

Women talked about realizing that physical activity was something that they would have to do for the rest of their lives. They finally understood that they could not exercise until they reached a short-term goal, then quit and expect to maintain that success. One of the women who had been sporadically exercising in the past for weight control purposes realized,

“I have to keep remembering that all these changes are lifestyle changes so I know I am in it for the long haul, like it is not when I get to my goal weight I am done working out. I know I have to keep working out forever and so sometimes I am a little disenchanted like I got to get up every morning for the rest of my life, but then sometimes I enjoy it. I like the time by myself on the treadmill at the gym with no kids, no husband, so sometimes it’s just like freedom.”

Interestingly, this quotation was presented during the focus groups and one woman stated, “I know that’s me!”, when in fact it was another participant. As mentioned previously, the notion of physical activity as a source of personal time or freedom from other obligations was an important benefit for these busy women.

The discussion related to commitment continued during the focus groups when the women were asked to reflect further on their commitment to physical activity as represented by the grey box in the process model. There seemed to be almost unanimous agreement that physical activity had to be viewed as a long-term commitment and integrated into the lifestyle, albeit with periodic reevaluation and rededication. Some of the comments from the focus groups illustrating this commitment included, “So I think I

like that box (grey box in process model) because it reminds me that this is my time to take care of myself. This is how I have to do it” and

“I was having a pity party so I stayed there (not exercising) longer than what I should have. Then I realized I am just going to show all that negative-ness that I had experienced, that I am better, and again I just commit, reaffirm it to myself. I made a commitment to myself that, ‘You used to be this and you still can be. You are just going to have to do the work’, and so I did. So recognizing how I used to be with (physical activity), I do have big hips and a butt, but it is like you can minimize that, but you are going to have to work.”

Another woman explained,

“...you know you have to increase your exercise, so you know it’s just as you go through, your age and your activity from day to day you just have to make that change, increase, rededicate. It’s a continual thing.”

Finally, one woman described her goal-oriented perspective on commitment saying,

“Our goal is (her emphasis) to prolong our lives the best that we can...to have a quality of life, a better quality- physical quality of life and we already know that. So that is our goal. We get to that goal by increasing and rededicating to the commitment of doing it. That is what it is. You see, it is that goal that we are looking at.”

It was clear from the feedback garnered from the women when presented with this stage of the process, that commitment and its periodic renewal was an important aspect of their experience.

Change in physical activity regimen. Once the experience of needing a modification to the physical activity regimen and committing to the modification(s) was realized, the final point in the series bridging the Initiation Phase and Integration Phases was the action, or actually making the modification(s). As evident in the variety ways in which the women discussed their physical activity regimens, these changes ranged from

intensity, frequency, location, and type to with whom and why. In every case, the changes were designed to incorporate activity into daily life more easily or to increase the potential for achieving desired benefits.

Integration Phase

The Integration Phase represents the last phase of the main flow of the process. At this point in the model, women were experiencing significant benefits from their participation in physical activity. These benefits were acting as motivators for continued participation, and that continued involvement in physical activity was sustaining those benefits. It was during this phase that physical activity became integrated into daily life.

Experience enhanced/integrated benefits of physical activity. Once the women had recommitted to physical activity and had gained further time and experience with their regimens, they began to see some of the enhanced results of their efforts and the results that took longer to realize. Many of these results were the physical benefits that the women started physical activity to achieve such as weight loss, weight maintenance, or muscle toning. These benefits also included health benefits such as blood pressure or diabetes control or prevention of other lifestyle conditions. They were more integrated into life or transcendent of the exercise experience such as the formation of a new social network or the opportunity to serve as a role model for other women who were trying to become physically active. One woman said the following while describing her enhanced benefits, “Over the course of a year, I started sculpting my body. I used to have a case of tendonitis that doesn’t even bother me anymore.” Another woman’s personal standard of progress was her body weight, however in exercising to lose weight she noticed an unexpected health benefit,

“This is the smallest I have been since...my youngest is three and a half and so since four years ago...and it is really, just since February so this is the most weight I have lost and kept off in four years...This is really strange, but I have asthma and I told my doctor one time...‘I swear that the more weight I have the harder it is for me to breathe’, and not that I have ever been really fat...but I said, ‘When my stomach is real big it is so hard for me to breathe’ and so now that I am smaller I haven’t even used my inhaler.”

Creates Benefit-Motivation-Execution cycle. After realizing some of the enhanced or integrated benefits of physical activity, motivation was reinforced for continuing physical activity. Women wanted to maintain the changes they had achieved. Here the concept of the benefit-motivation-execution cycle is introduced. Once an appropriate (e.g., frequency and intensity) and successful (e.g., consistent) physical activity regimen was planned and executed, enhanced benefits were noticed and these benefits provided motivation to continue. For example, women often commented about having lost weight through physical activity and gaining it back when they stopped. Now that they had achieved those benefits again through re-starting physical activity, they wanted to maintain them for life. This motivation to continue resulted in further execution of their physical activity regimens which resulted in further enhanced or maintained benefits and so on creating a circular cycle. It is important to note the reason for the cycle occurring at the end of the flow is that long-term, significant benefits from physical activity took time and energy to achieve. Many of the desired benefits including markers of reduced disease risk, long-term weight loss and weight maintenance, and body shaping were not immediate benefits. As it took time to achieve these benefits, it took time to experience the benefit-motivation-execution cycle. One woman commented about her experience with physical activity benefits creating motivation,

“But once you actually learn and try to get some benefits from it and it makes you feel better...outside of the other health benefits that you know exercise can play. You just want to do it. Sort of like you want to go shopping- you just want to exercise after awhile.”

Experiencing the cycle of enhanced benefits, motivation for physical activity, and continued execution of a regimen led women to feel that physical activity had become integrated into their lives. While they still had to work on maintaining the behavior, some of the early efforts could be relaxed because physical activity had become part of their usual routine. Women described this feeling of integration in a variety of ways including, “It was just kind of something that was engrained in me”, “I think it frustrates me not to go. Like something’s missing. I’m at that point”, and “It’s something that’s routine, like you get up in the morning and you brush your teeth.” Another woman provided an example of how planning her regimen had become routine saying,

“Now it is so engrained that I really don’t (write down my regimen). I used to write in my notebook- the whole week- Monday through Friday. ‘What was I going to do? Upper body or lower body? What day was I going to do cardio and everything’ and I would plan that out. And now it is kind of just routine.”

Modification Loop

While the benefit-motivation-execution cycle and lifestyle integration appear as the final boxes in the process, there was an important dynamic component to even the most successful exercise regimens. The dynamic nature of women’s physical activity regimens was expressed in each of the interviews, of course uniquely in the context of each woman’s life. After experiencing the cycle and integration, women found themselves having to modify their regimens as depicted by the feedback arrows at the top of the chart labeled modification loop. For the women in this study, physical activity

regimens were dynamic and flexible. They had to adapt to fit with changes in lifestyles and goals over time. With experience, women learned to change their regimens as needed for reasons that included change in job or school schedule/responsibilities, dealing with a health problem or injury, or change in child care. A key feature of a successful regimen was its ability to adapt to these life changes. This process began with the realization that a change to the regimen was wanted or needed. For example, one woman said of her need for modification,

“It used to be up until last week that I got to work at about 10:30-11:00 (a.m.). But now one of (my colleagues) is on maternity leave so I am her until the end of the year. In the mornings I used to take my daughter to the bus stop and then I would workout at the Y. But now I have to get up at 6:30, workout, take her to the bus stop and go straight to (work) so it has been a juggle. I wake up at 6:30. We have a gym in our basement so I have been working out in the basement. She has to wake herself up. I set her alarm. I’m working out. By 7:45 I have to be leaving my house- so it has been working.”

At this point, the woman needed to decide if she would continue her commitment to physical activity and make the required changes. This woman decided to do exactly that and said the following about the changes she made to her regimen,

“...I just figured how would I fit the existing kind (of activity) into the schedule. And that is when I said, ‘Well, how much earlier would I have to wake up in order to do it?’ and then I realized I wouldn’t be able to go to the gym and get to work on time so that is when I had to go into the basement so now I am limited to just doing the cross trainer instead of alternating my cardio. So I still alternated, but not being able to do the treadmill.”

Thus by choosing to modify her program and stick with physical activity, she set herself

up to continue to see results and to feel that she successfully navigated a life change. In doing so, she also furthered her experience with the cycle of benefits, motivation, and continued execution of her physical activity regimen.

Cessation Loop

An important aspect of the dynamic nature of the physical activity regimen is the cessation loop. It became apparent in the analysis that there were times when women temporarily could not maintain their physical activity regimens. This loop represents an alternative flow that exits the main flow at *Modification of physical activity regimen is wanted/needed* and rejoins at *Change in commitment to physical activity*. It should be noted, as the arrows indicate, that it is possible to experience the cessation loop the first time through the process, after reaching the benefit-motivation-execution cycle (through the modification loop), or both.

This loop accommodates the situation revealed in almost all of the women's lives where regular physical activity had to be temporarily ceased for a number of reasons which paralleled the reasons outlined above for the need to modify the regimen including job or school demands and family demands. Further, when women fell into this loop early in their experience with physical activity it was sometimes due to having reached their goals. They thought their mission was accomplished and ceased regular participation. Of course, for the women in this study, physical activity was always resumed. Key to the resumption of physical activity was the loss of benefits from the previous level of involvement. The women knew what they could achieve so they were aware of what they were missing and wanted to get it back. Thus, even though they were not regularly active at this point in the process, they were different from when they had

first adopted the behavior. They now had a frame of reference for what physical activity could provide in their lives. For example, one woman experienced the cessation loop after years of regular physical activity. She was finishing her Bachelor's degree while working full-time and described the following experience,

“As far as exercise goes, that was still a priority too. Near the end though, I did have to sacrifice not doing that for awhile as consistently as I would like to be because there were deadlines to meet in finishing.”

After a period of not exercising regularly, she experienced a loss of physical activity benefits. In her experience, she lost the benefit of weight control. She explained,

“So that was that thing where you wake up one morning and you can't fit into your jeans- you're just too big. And that actually happened to me...So I hated that so it was a really good incentive for me to get back into my routine of incorporating exercise back into life.”

She then starts exercising again and regained the benefits, losing the weight, saying,

“Without it I know I would be 10 pounds heavier. I just know I would be because when I gave it up for four to five months, that's what I gained.”

Some women, such as the woman described above, fell into this loop after progressing through main flow and the modification loop. Others experienced the Integration Phase and fell immediately into this loop after entering the Transition Phase, often having lost some weight and thinking they could return to their old habits. The number of times the cessation loop was experienced as well as the length of time in the loop varied with each woman. However, it was apparent that temporary hiatus from regular physical activity was a normal part of integrating physical activity into daily life

and navigating potential interruptions was something that needed to be learned. Indeed the experience of overcoming such challenges improved a woman's belief that she could overcome the next challenge, perhaps without falling into the cessation loop.

When this model was presented to the women in the focus groups, the cessation loop especially resonated with them. Women again talked about experiencing the cessation of regular physical activity characterized by the cessation loop due to hectic or changing schedules, school deadlines, injury, and children. They also reiterated the loss of physical activity benefits when in the cessation loop. Another concept that came up during this discussion was the necessity to modify their regimen to fit desired or expected benefits. This concept fits well with both the modifications that occur to the regimen while remaining in the main flow of the process model as well as the modifications that sometimes occurred when women were re-entering the main flow from the cessation loop.

When asked in the focus group what factors brought them out of the cessation loop, responses mirrored data from the interviews including feeling tired or sluggish, weight gain, knowing that she was not taking care of herself, and needing to relieve stress. These factors were a listing of the specific benefits being lost from not engaging in physical activity. Other factors cited for re-initiating physical activity were removal of the barrier that caused the lapse (e.g., schedule restraint, illness) and knowing that she had been successful before. The idea of knowing that she was physically active before and that knowledge serving as a motivator came up in the interviews as a concept named 'physical activity frame of reference'. This concept represented the need to recommit to physical activity based on the previous experience of successfully incorporating it into

the lifestyle and achieving some desired benefits. It was discussed as something that had been achieved and then lost and that loss served as the motivator to realize those achievements again.

While this aspect of the model resonated overall with the women in the focus groups, there was a suggested change from the first focus group. The suggestion centered on confusion between a transient decrease in physical activity regimen (e.g., unable to workout for one week due to having contracted the flu) and a longer-term, more substantial decrease or termination of physical activity. The former would result in the woman remaining in the main flow of the process model while the latter would result in her movement into the cessation loop. While the researcher felt there was no ambiguity in the data used to develop the model, women either talked about themselves on hiatus from physical activity or not, this area was reworded to improve clarity and ensure the model reflected the experiences the women were describing. Specifically, the wording was changed from ‘temporarily stop/decrease physical activity’ to the more illustrative ‘temporarily cease physical activity regimen’.

Overall, the women were quite engaged when learning about the process model during the focus group. They asked several questions about the model and its intended usage. They talked quite a bit about how the model fit their experience as well as more broadly about their exercise experiences. In general, the women found the model to fit their experience with physical activity. They reiterated several of the important concepts that emerged from the interviews and verified that the process model was grounded in the data. One participant stated,

“I think that because I know the pattern to be true in my own lifestyle with this theory ... so I really know where I fit and know that it does really apply in my particular situation.”

In comparing this process model to the initial conceptual map created during the design phase, the additional insight provided by the present study was evident. In the initial map, the process itself could not be specified, merely the potential factors involved in the process as understood from the literature. While not all these factors emerged as important for the women in the present study, the Physical Activity Evolution process model provides understanding of the transition from physical activity initiation through integration into daily life that could not be garnered from the literature.

Context and Conditions

The process of physical activity evolution occurred within the context of the women’s lives as represented by the box surrounding the process model. Some of the important conditions that emerged were planning methods, physical activity companions, and types of benefits. These conditions impacted successful movement through the process. The most important context that women described was the influence of being an African American woman on physical activity participation.

Planning Methods

One of the conditions most integral to movement through the process model and interwoven into the women’s experiences was their planning practices for physical activity. Further analysis was completed on this topic by grouping themes from relevant codes into two main categories: Scheduling Physical Activity and Planning Alternates for Missed Sessions. The concept of ‘Planning with Flexibility’ transcended the categories and described the practices of every woman in the study. Regardless of how they

scheduled their regimens, the overall plan for the physical activity sessions had to be flexible and remain dynamic in response to interruptions in daily life. A diagram of the key concepts related to planning methods is provided in Figure 3.2.

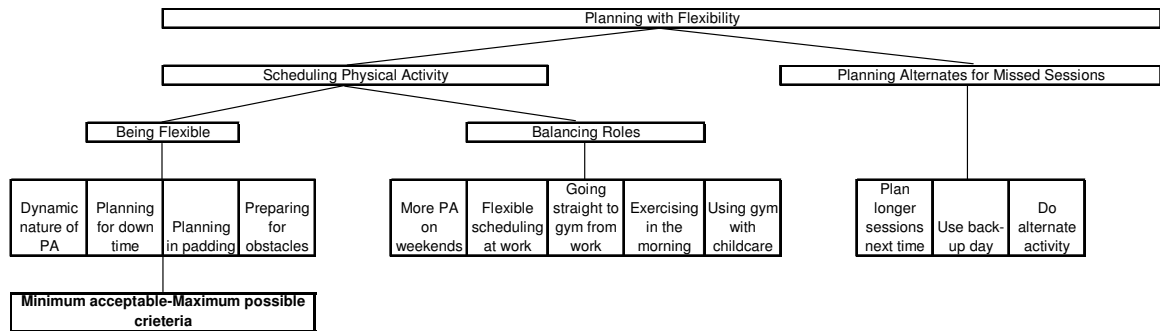


Figure 3.2: Diagram of planning methods

Scheduling physical activity. Women used a variety of methods to schedule their physical activity sessions. Some women planned each week of sessions beforehand either with exact days or times or planned days and tentative times. Other women used a day-by-day planning system based on incorporating a certain amount of activity by the end of the week. Finally, a popular way to plan was through a combination system of sketching out the skeleton of a weekly regimen and filling in exact times and activities on a daily basis. This method provided structure while allowing for the desired flexibility to adapt the weekly regimen to variance in daily life. Women also varied in whether they wrote down their schedule for the week or planned it in their heads. Women seemed to learn whether writing down the regimen was helpful and motivating or presented a barrier because it felt like a chore. Overall, all the women planned their sessions using some type

of tailored method. Some women planned from the very beginning, others were more haphazard during the Initiation Phase and incorporated planning as they worked through their change in commitment and transitioned to the Integration Phase.

While the women varied in the way they planned their physical activity sessions, being flexible and balancing roles both emerged as important techniques to successful scheduling. Since successful scheduling was paramount to successfully completing their regimens, learning these skills was important to each woman's experience. Being flexible encompassed four main ideas: understanding the dynamic nature of a physical activity regimen, planning in 'padding', realizing down time was necessary, and preparing for obstacles.

It was important for women to come to realize that their physical activity regimen was dynamic and ever-changing. The regimen needed to adapt to changes in goals and life situations as well as accommodate small everyday changes in schedule. In order to remain effective and relevant, the regimen had to be re-evaluated and re-adjusted regularly. Further, it had to allow for back-up options when the planned sessions were absolutely not going to fit into the week's activities such as hand weights or exercise videos at home or using part of the lunch hour for walking or doing the stairs. Once women began to conceptualize their regimens as dynamic, they acquired their own personal tricks for fitting in their planned or alternate sessions during the week. One woman explained, "You have to find out what works for you basically."

Women also learned to plan their regimens with a little padding so in the event that a session was missed early in the week there would still be an opportunity to make their weekly goal. For example, some women left weekend days free from planned

activity. Using this method, they could either have a break from exercise or use those days as back-up days if necessary. Other women planned an ideal number of sessions for the week, a maximum, but also set a minimum number of sessions that had to be completed. This ‘minimum acceptable-maximum possible’ conceptualization of the regimen allowed women to shoot for their highest goal while ensuring they did not fall below a pre-specified minimum. Some of the women discussed this method in terms of planning for the best case scenario but being prepared for the worst case scenario.

Realizing that down time was essential to a successful regimen also emerged as an important aspect of being flexible. Women understood that while physical activity was a priority, it was also important to allow the body to recover. Women discussed recovery in terms of preventing injury and following advice they had heard from health professionals about not weight training on consecutive days. Further, scheduling of down time or off days allowed them to attend to other obligations or interests such as social time and family time or other hobbies.

The fourth main idea of being flexible that encompassed each of the other aspects was preparing to overcome future obstacles. Women were aware that while incorporating physical activity might be smooth sailing today that might not be the case tomorrow. In order to maintain a lifetime of physical activity, this possibility had to be expected and skills developed to overcome whatever barrier might arise. One woman described her perspective on this aspect of being flexible,

“You never to get to a point in your life where you are not going to have a hump. Whether it's having a kid, moving to a new place where you get acclimated, school, whatever, you get to a place sometimes where you get a rut and you have to make yourself get out of it and start over or whatever. So, any exercise person that

says, 'I have been working out all my life.' Typically there's a point somewhere they can say, 'Oh yeah, I didn't workout during that time.' For me it was this past summer and I'm sure I have had other times and I'm sure I'll have some more. I think the goal is just to keep at it.”

Being flexible was paralleled by another facet of scheduling conceptualized as balancing roles. Balancing roles refers to the practice common to all the women in the study of having to balance their physical activity sessions with their other responsibilities such as children, husbands, job responsibilities and community activities. Some of the planning methods women devised were to engage in longer sessions on the weekends when they do not interfere with children’s homework or after school activities, taking advantage of flexible scheduling at work, or going to the session directly after work before going home to avoid getting wrapped in unexpected issues with other family members. Other methods of balancing roles included selecting a gym with childcare facilities or including a child or other family member in the exercise session. One method of balancing roles in physical activity planning was to schedule sessions in the morning, either when other family members were still asleep or before other responsibilities felt more pressing or urgent. One woman explained her reasoning for exercising before work while her children were still asleep,

“I always know I am going to workout first thing in the morning because if I don’t do it in the morning, by the time I get home my day is shot. So I can always plan to workout at night, but nine times out of ten I won't.”

Another woman described why she chose a morning routine,

“For me it’s convenient to do it in the morning before you even get started with your day. Because once the day gets going it’s like you are busy and I’ve gotta find time to just get up that extra half an hour earlier and get it over with.”

Every aspect of scheduling physical activity, including balancing sessions around other roles, invoked the necessity of planning with flexibility. As each woman's regimen was individualized to her goals and preferences, each woman's planning techniques and tricks were tailored to her needs. However, the need to be flexible was the common thread woven throughout each experience.

Planning alternates for missed sessions. The second aspect of planning methods was also imbued with the concept of flexibility. Similar to the idea of planning for future obstacles, women were quite aware that missing planned sessions of physical activity was a reality and while it did not happen very often among the women in the study, there had to be a plan for alternatives when it did happen. Conditions that sometimes resulted in missed sessions included work running late, not feeling well, other obligations arising, having a sick child, bad weather, or having to keep a new hair style looking fresh. While the women understood that things would occasionally come up and that they needed to remain flexible, they did experience negative emotions associated with missing a session. Women felt guilty or bad about missing the session. They worried about weight gain, decreased stamina or muscle loss. Some women did not sleep as well or felt sluggish the next morning. Others just felt that something was missing in their day and they did not feel as good mentally or physically. Despite some of these negative feelings, women remained committed to maintaining a physically active lifestyle by being flexible. One woman summed up her experience with missing sessions saying,

“So that is how I look at it. Yes, it might be something that will come up, but missing one or two workouts during the week isn't going to cause me to gain all that weight back. You have to be disciplined and again, a little flexibility. I mean I am not going to

get depressed and then go eat a bag of Oreos- okay I missed this and just go ahead. Perhaps there is something I can do, take a walk around the block or something like that in place of it or take the stairs...I try to do at least something.”

Perhaps in an effort to minimize some of these negative feelings, women actively planned alternates for their missed sessions. Most had a method of incorporating missed sessions back into the week so the allotted amount of activity would still be completed. Sometimes the alternate choice did not feel as worthwhile or effective as the usual routine but it was the best choice at that time and better than nothing. Women used methods parallel to those discussed previously in scheduling physical activity including planning a longer session for the next time, using a back-up day to make up the session or doing an alternative activity such as an exercise video. If the woman was using the minimum acceptable-maximum possible criteria, she may just skip the session if it would not cause her to fall below the pre-specified minimum criteria. One woman explained her perspective on missing sessions describing how housework could also be used as an alternate,

“How often do I miss a session of my exercising? (pause) Not too often. Like I said if I did miss a day, I would make it up on one of my off days and I give myself Friday or Saturday as an off day, but to be honest with you on Fridays- that is my clean up day around the house and cleaning up is a form of exercising too. So while I am vacuuming the steps I am also holding my stomach in.”

While planning methods seems like a very simple condition associated with integration of physical activity into daily life, the overall concept of planning with flexibility was vital and interwoven throughout both main categories of scheduling physical activity and planning alternates for missed sessions. Further, it defined the method by which women incorporated the sessions into their lives and viewed the role of

physical activity within the context of their daily experience. Physical activity was a priority, but for it to remain a reality, it could not be viewed as static or prescriptive. It had to be dynamic, ever-changing, and constantly adaptable to the ups and downs of life both in terms of daily and long-term challenges.

The focus group discussions confirmed the importance of understanding the dynamic nature of the regimen and the flexibility of planning in the process model. A participant in the first focus group stated,

“Well a lot of the things I liked that you said that you viewed exercise as being dynamic and I think that is important and I think that people who have integrated physical activity into their lifestyle also find the time to have flexibility even though they are being active, they have managed to add some type of flexibility because life situations change. That was good.”

Women also discussed substituting activities where needed and changing around schedules even when the resulting regimen was not ideal, as they had in the interviews. Some of this discussion turned to the ideas of commitment and priority; that the reason a woman makes the effort to change things around and modify schedules is because of a commitment to herself for physical activity, specifically physical activity as a mechanism for taking care of herself. This commitment resulted in physical activity being scheduled as a high priority activity; as part of a lifestyle dedicated to self care. Women discussed some of the reasons that taking care of themselves had become a priority including seeing their parents suffer through preventable health problems and realizing the financial costs of medical care versus gym membership or fitness equipment. Overall, the focus group discussions confirmed the importance of the presence of planning methods in the Physical Activity Evolution process model.

Physical Activity Companions

It was obvious during the interview and analysis process that the presence of physical activity companions was woven throughout the physical activity adoption and maintenance experience. In order to understand the influence of these companions on the women's experience with physical activity, further analysis was conducted on these data. This analysis began by reviewing all the related quotations, which resulted in the emergence of seven companion types: Church, Co-Worker, Exercise Group, Family, Friend, Husband, and Trainer. Quotations were then reviewed within each type of companion for the purpose of understanding the types of support they provided. Through this analysis four role types emerged that transcended the companion types. In other words, companions were functioning in four main roles with various companion types performing each role. The four resulting role types were Motivational, Social, Facilitation, and Instructional. The data associated with the role types were then examined to understand the different things people in these roles were doing to support physical activity. The supportive behaviors associated with each role type were defined as role functions. A taxonomy was then created by linking each role type with its role functions and the companions who performed those functions. Some role types were associated with more role functions than others. This relationship was represented in the taxonomy by the role type with the most functions being presented first and the subsequent role types being ordered by descending number of associated role functions. The Physical Activity Companions taxonomy is presented in Figure 3.3.

TYPES OF ROLES		ROLE FUNCTIONS	TYPES OF COMPANIONS
MOTIVATIONAL	FORMAL	Creates accountability for participant	Trainer
		Encourages trainee	Trainer
		Motivates trainee - Pushes trainee to train harder - Tracks progress	Trainer
		Providing structured exercise environment	Trainer Exercise Group
		Acts as role model	Trainer Exercise Group
	INFORMAL	Encouraging each other - Positive comments - Discussing barriers - Discussing diet/healthy lifestyle	Co-Worker Exercise Group Family Friend
		Meeting goals together	Exercise Group Friend
		Motivating each other - Helping each other get to workout - Helping each other complete workout - Pushing each other to do better	Exercise Group Friend Husband
		Creating accountability for each other	Exercise Group Family Friend
		Staving off boredom	Friend Husband
SOCIAL	EXISTING SOCIAL TIES	Keeping each other company - Exercise as part of a social activity - Way to spend time together - Part of dating	Family Husband Friend Co-Worker Exercise Group
		Enjoying exercise	Family Husband Friend Exercise Group
	DEVELOPING SOCIAL TIES	Developing friendships	Exercise Group Friend Church
		Socializing outside of exercise	Exercise Group
		Keeps trainee company	Trainer
FACILITATION		Creating opportunities for other PA/Leisure PA - New activities/teams - Providing safety in numbers to perform outdoor/night-time activities	Exercise Group Friend Husband Trainer Church
		Creating opportunities for career advancement	Exercise Group Friend
INSTRUCTIONAL		Helping with exercise technique/regimens - Teaches proper technique - Helps plan alternate routines	Friend Husband Family Trainer

Figure 3.3: Physical Activity Companions taxonomy

This taxonomy shows four main role types with various role functions being performed by seven types of companions. As previously described, the roles are associated with a number of unique role functions. Each of the main role types represents a distinct type of support for the women in their adherence to their physical activity regimen. It is important to note that women varied by the types of companions they had in their lives, the number of companions, and what combination of the role types and functions were performed by these companions. What did not differ, was that every woman experienced at least one of the types of support reflected in this taxonomy. Further, descriptions of support for physical activity were woven throughout the evolution process. Companions were clearly involved in the adoption of physical activity, but many women also discussed companion involvement well into the Integration Phase.

Motivational role. The Motivational role type encompasses the various kinds of encouragement, accountability, and role modeling that aided in the women's continued pursuit of an active lifestyle. The role functions in this category were divided into two groups: formal and informal. Formal role functions refer to those performed by a trainer or fitness instructor. The primary reason for this division was due to the one-way nature of knowledge dissemination between the woman and her trainer. The trainer possessed the knowledge and skill that the woman was seeking and their interactions were characterized by the trainer providing that knowledge and skill, similar to a teacher-student relationship. While knowledge dissemination was not a function of the Motivational role, it structured the nature of the relationship between the woman and the companion. There was not the reciprocity evident in the interactions between the women and their exercise group or other members of their social network who acted as physical

activity companions in the Motivational role. In these cases, knowledge and skill were shared between the members depending on the situation. Thus, there was not the same inherent power/knowledge differential as with the trainer relationship. In a few cases, members of the exercise group were more experienced than the participant and thus acted in a more formal trainer role as depicted in the taxonomy. Informal role functions were those performed by other members of the social network including friends, family, husbands, co-workers, and exercise group members. These were people who acted as physical activity companions, and in all but the case of some exercise group members, also performed another social role in the woman's life.

Three role functions were common to both formal and informal types of motivational support. In these cases the difference between formal and informal support was in the direction of the relationship. For example, one of the common role functions was creating accountability. In the formal type, this meant the trainer created accountability for the participant. Women were expected at a session at a certain time and place and this expectation on the part of the trainer helped keep them on track. In the informal sense, this role function was exemplified by exercise partners creating accountability for each other. Either members of an exercise class would expect to see a woman attending at certain intervals or a friend or family member would expect to get together for a standing workout appointment. Again, this system added a layer of accountability to another person on the days when the women did not feel like completing their planned physical activity.

The two other common role functions were motivation and encouragement. Women found that their trainers enhanced their motivation through pushing them to train

harder and tracking their progress. One woman described her cardiovascular fitness session with her trainer using a piece of equipment she called the “moving staircase”. She stated that the moving staircase was very strenuous and that she would never use it unless her trainer incorporated it into their sessions. Essentially, she would not have pushed herself to use the harder of the cardiovascular machines and would have chosen an easier one to which she was more accustomed. In contrast, peer motivation took the form of helping each other to get to the workout through motivational comments, helping each other to finish the workout (seeing the other person striving to finish created motivation to try to finish as well), and pushing each other to train better/harder. Women felt that this helped them stick with their programs as well as get more benefits due to exerting more effort. One woman described how working with her exercise partners motivated her to work harder,

“...we kind of push each other. We push each other. Saying, ‘I think you should increase your weight right now [laughs]’. Yeah we do and that’s been pretty good. So that’s what happens at the gym two days a week when I workout with this group of ladies. We push each other and we only do weight training and then we do basically the cardio on our own.”

Another woman talked about how her friend helped her to get to her exercise session when she did not really feel like going,

“It keeps me going. It is motivating because sometimes I don’t want to workout or whatever and like my husband- he is wishy-washy. Sometimes he wants to workout and other times is so lazy and so if I mention something and I don’t get a good reception from him, I might not workout. But then she always kind of gives me that edge of, ‘You better go ahead and do it and forget about what they say’, or whatever. So the fact that she understands and had been there before keeps me on my toes.”

Women discussed the encouragement their trainers provided them, though they were more detailed about the encouragement other members of their social network provided through positive comments, discussion of barriers to active lifestyle, and discussion of diet and healthy lifestyle in general. One participant described her discussions with her exercise partner from the YMCA about trying to stay active and incorporate healthy diet,

“I try to have a partner at the Y to buddy with, she’s supportive. I guess the biggest thing is making sure that both of us get to workout and also that we’re eating properly, our weaknesses are cookies, so. We try to cut that down, cut it out [laughs].”

Two role functions were unique to the formal motivational relationship. Providing a structured exercise environment was a function performed by both trainers and exercise group members which aided some of the women in completing their regimens week after week. Trainers and more experienced exercise group members also acted as role models which provided motivation for the women to continue on towards their fitness goals. These role models demonstrated desired fitness and body shape achievements as well as overall healthy lifestyle achievements. One woman described her experience with a group fitness instructor who provided role modeling for attaining a certain body shape, “It’s the most challenging class because one, the instructor is older and has a body by God somehow [laughs]. You know, you want to look like her.”

Two role functions were also unique to the informal motivational relationship. Meeting goals together was a role function performed by exercise group members and friends. Working toward a common purpose helped to create motivation for the women. Friends and husbands also functioned to help stave off boredom during workouts. Having

someone to go to the gym with, on a run with, or having someone to talk to while lifting weights prevented decreased desire to participate in an activity because it was perceived as boring. One woman described the reason behind searching for someone to workout with, “Trying to get someone to go with me, and that’s always fun because you are really not bored when you are working out with someone else.”

Overall, the Motivational role type was one of the most important to the women in their efforts to remain active. It encompassed six of the seven companion types and was the most diverse in its role functions. In the absence of someone in the woman’s social network providing this type of support, women turned to trainers and exercise participants on videos and DVD’s. These people, though ‘virtual,’ filled a necessary gap for the women in the pursuit of active lifestyle. They acted as role models, providers of encouragement, and motivators by pushing the viewers of their programs to work just a little bit harder. The observation that the Motivational role type was the only one sought out by women who did not have a network of physical activity companions indicated its essential nature in the adoption and maintenance of this behavior. One woman said of the encouragement provided by her virtual trainer,

“Some days I am tired when I exercise, but I keep going because the aerobics instructor on the tape is like, ‘Okay, you can do it!’ so that is my little subconscious telling me I can do it, I can do it!”

Social role. The Social role type also emerged as an important aspect of the physical activity companion presence. The role functions in this category were divided into two groups as well, social roles based on existing social ties and social roles based on developing new social ties. When members of the existing social network took on social physical activity companion roles it was often a method of blending exercising and

socializing. By working out together, women spent time with friends and family, went on dates, and enhanced friendships with co-workers. Incorporating social activity into physical activity also helped integrate exercise into the lifestyle. When women desired to spend their leisure time with an active companion, the time might be spent in an active pursuit including a typical exercise session, a sport, or a recreational activity. One woman described her experience going to the gym with her husband early in their relationship, "...my husband is a fitness fanatic and so while we were dating part of our dates would actually take place at Lifetime Fitness and the highlight was actually playing racquetball and working out, sitting in the hot tub."

Women also discussed the enjoyment of participating in their regular exercise sessions with a social companion. Enjoyment of the sessions served as a motivator to continue regular participation. One example included a woman who participated in group fitness at her place of employment. She was relatively new to the area and the job and enjoyed having co-workers with whom she had already initiated friendly relationships in the class as well as meeting new people working in the same building. She said of the class sessions, "...it just works great and it's a great bunch of people, networking and just exercising, meeting goals, so, it's like a social hour [laughing]." Another woman mentioned the following when describing why she scheduled much of her physical activity with her husband, co-workers, or friends from church, "And it helps that it's something that you enjoy and then you enjoy the people that you do it with. So that keeps you going."

The other aspect of the social role of physical activity companions was developing new social ties. For some of the women who began exercising with a group,

the friendships they developed enhanced their exercise experience and extended beyond it. Women would begin socializing with these new friends, sometimes developing a group of physically active friends which they had not had before. Further, sometimes these new friends would introduce women to other people, including in one instance, a future husband. Physical activity functioned through the companions to enhance the social network to include active people. One woman described her interactions with the exercise group her personal trainer put together,

“It’s become in its own kind of way, its own little social environment. You know because we’ll have picnics together, you know the other week some people went canoeing, I didn’t go. So it’s its own little social clique within itself. And it’s all people that exercise [pause]. So it’s a nice little clique [laughs].”

Another woman talked about the friendship development in the dance group she participated in twice weekly,

“(I) just met them at church and since we’re together two times a week you know it’s more like a little family type thing. We didn’t really know each other that well before we came together but because we’re together so often putting together dances and working close, in close proximity, some of us have become really close friends.”

Overall, the Social role type enhanced both the exercise experience itself as well as aided in the integration of physical activity into daily life. Activity became woven into the interactions with certain people in the social network. All seven companion types served in the Social role, although some of the role functions were more specialized to certain companion types, especially when considered by group (existing ties versus

developing ties). For example, the role functions for ‘existing social ties’ were performed by multiple companion types while two of the role functions for ‘developing social ties’ were specialized to a single type of companion.

Facilitation and Instructional roles. The remaining two role types, Facilitation and Instructional, were more focused and thus more limited in their scope. The Facilitation role type refers to physical activity companions facilitating new opportunities such as introduction to new activities or even opportunities for career advancement. Inherent in the social relationship enhancement described above is the opportunity for new experiences. While this aspect of the companion relationship was neither as pronounced nor as central to the physical activity experience, for some women it remained a notable role among companions. The Facilitation role was differentiated from the Social role in that it was characterized by facilitating new experiences, either related to physical activity or career advancement. The function of the Social role was characterized by the development of new relationships. One woman described the career networking that took place before and after her aerobics class in a worksite fitness program,

“...you have everyone working for (my company) and you kinda get the word, who’s on this committee, budget concerns, what jobs are opening, and so you meet other people from other departments ...you have those people in her class, I mean we’re in the locker rooms together and it’s like, ‘oh, did you know that we’re gonna get cut three hundred thousand dollars from the budget?’ So you kinda keep your ears open or, I hear your supervisor got promoted. You know, different networking things like that or there’s a job opening in so-and-so, you should apply, things like that...its to my advantage, ‘cause I’m not from here and I get to know who’s who as far as (my company) is concerned so it’s really to my advantage to be around and get wind of a lot of the conversations.”

Another woman described being introduced to different types of physical activity by her physical activity companion,

“My partner again invited me to the kickboxing class because prior to the kickboxing...I would either run or do a run/walk on the treadmill or just walk, and I wasn’t finding any benefit from that...She asked me was I coming the next day and I told her ‘yeah’. Then I told her what I usually do and she said, ‘well, why don’t you try the kickboxing class you’d really like it.’ And I said, ‘well I don’t know, I’m not really good at it, I’ve had a class before.’ And she said, ‘just please just try it.’ And I came and now you can’t stop me from going.”

The Instructional role type was concerned primarily with the teaching of exercise techniques and the formulation of exercise regimens. Some physical activity companions were more knowledgeable and experienced than the study participants, including their trainers, thus part of the relationship revolved around skill building. This skill development interaction occurred in both formal settings with trainers and informal settings with friends and family members. The Instructional role type could be associated with the Motivational role type, however it differs in its underlying purpose. In the Instructional role, the purpose was knowledge and skill dissemination. This instruction did not necessarily imply motivational support on the part of the companion. In the Motivational role, the primary purpose was motivating the women to complete their exercise sessions even though this function may have been performed by the same person performing the Instructional role.

Overall, companions were important to the development of regular physical activity among the participants. Through filling different roles and performing different functions, companions enhanced motivation, enjoyment, and benefits attainment. Each of these resulting features of the companion relationship assisted in moving women toward

the benefit-motivation-execution cycle. Development of virtual companions through the trainers and exercise participants on videos and DVDs confirmed the importance of physical activity companions to the evolution of physical activity behavior. Women sought at least a minimal level of companionship for their participation. These virtual relationships centered around the Motivational role type which emerged as the most pronounced, one of the most global across companion types, and most multi-faceted of the role types.

Types of Benefits

Benefits played an integral role in movement through the process model. In part, their role is evidenced by their placement in multiple locations of the model. Women experienced some benefits early on in the Initiation Phase and then realized some of the more significant benefits later in the Integration Phase. The substantial benefits realized as they gained experience with physical activity helped move them into the benefit-motivation-execution cycle, which was indicative of integration of physical activity into the lifestyle. Further, as they cycled through the cessation loop they experienced a loss of benefits, which provided motivation to return to their active lifestyle.

During the Initiation Phase, benefits also served as the primary motivator for the adoption of physical activity. Many women described the reasons for wanting to try to incorporate physical activity into the lifestyle and these reasons often revolved around known benefits of active lifestyle such as weight loss and weight maintenance, reduced blood pressure, reduced risk of adult-onset diabetes, reduced body fat, and improved blood lipid profile. What emerged related to these desired benefits was that they took time to be realized and a whole host of other benefits, some unexpected, were realized

much more quickly. These benefits included better stress management, improved sleeping patterns, more energy, feeling of having time for oneself and taking care of oneself, and enjoyment of an activity. In some cases, women came to value these benefits as much as or more than their original intended benefits, most often weight control. One woman described the importance of continuing physical activity despite her realization that she had not yet lost any weight, “I did at one point see some inches go away but I haven’t lost any weight. And I don’t care (her emphasis). At this point, I feel good. I want to stay as healthy as I possibly can.”

Another important aspect of benefits realization was that the planned regimen had to fit the expected benefits. During the Transition Phase and modification loop some of the women realized that they were not achieving desired results and had to adapt their regimens accordingly. Sometimes these modifications were small and manifested as a minor decision on the part of the woman, perhaps a change in selection of group fitness class or type of cardiovascular fitness equipment used. Other times women made conscious decisions related to very specific benefits they desired. One woman described such a situation where she was not seeing results in an area she wanted to tone and thus made a change in her regimen,

“So I decided to select the cycling on a stationary bike. Again, this is something I never did before, but again because I want to tone my hips and my caboose I said let me give that a try. I tried it and didn’t like it, but again I researched it and found out that this was going to give me the results that I needed. So again, being the focused type person that I am, I decided I am not doing this because I liked to. *I am doing this because it is going to give me some results that I want* [italics added]. So I have been doing that on Fridays and again, I have noticed my hips have...I mean I look at myself when I am naked and I can see the difference from where I was about a year ago. And my hips- they have gone down.”

Another example of needing to find the right regimen was a woman who began using the treadmill as a way to spend time with her husband. However, once he quit and she continued on her own, she found it a bit boring until she discovered reading during her treadmill session. Through reading, she felt she was able to leave her workday behind and reduce her stress. Further, she was able to reconnect with her love of reading. These benefits, paired with the weight control and fitness benefits she desired fueled her motivation to continue, helping her progress to the benefit-motivation-execution cycle in the Integration Phase. Had she selected weight training, for example, instead of treadmill she would not have been able to read and thus would not have realized some of the valued physical activity benefits she enjoyed until she modified her regimen. She commented about her experience,

“I would get on that treadmill with my book and I’m telling you it would just wipe away that stress. I would feel so much better even physically because you know you get that anxiety that comes with being pissed off or being upset about something and all that would go away. I would feel so much better and feel calmer.”

It became apparent that part of the Initiation and Transition Phases was uncovering the regimen that matched with the desired benefits. Once the right regimen was discovered, it fostered movement into the benefit-motivation-execution cycle by fulfilling the first step of the cycle, achieving significant and desired benefits. The benefits women experienced were grouped into four broad categories: physical, mental, psychological, and social. Women described physical benefits that fell into four groups: appearance, fitness, health, and general. Appearance benefits encompassed all of the weight related results women desired as well as muscle toning and clothing fit. The fitness benefits were related to appearance and included increased muscle strength and endurance and improved

performance. Health benefits included actual improvements in blood pressure and blood lipids as well as perceived risk reduction for chronic diseases. General physical benefits were varied and included improved sleeping patterns, a commonly cited benefit, and improved ability to complete activities of daily life. Mental benefits were described by many of the women as discussed previously. These benefits included having more energy, feeling more alert, feeling calmer, and feeling rejuvenated. Psychological benefits differed from mental benefits in that the mental benefits encompassed improvements in alertness and general mental functioning while the psychological benefits were related to specific constructs such as stress, self-esteem, and mood. Finally, social benefits related directly to the impact of physical activity companions on participation such as enhanced social network, increased opportunities, and improvement in current relationships. A summary of the categories and their subcategories is presented in Table 3.2. The presence of benefit attainment throughout the evolution process confirms the importance of considering what women are receiving for the time and energy they devote to activity participation and how that impacts continued participation. Further, the broad spectrum of benefits, experienced by different women at different times in the process, relates to the dynamic nature of the physical activity experience.

Type of Benefit	Categories	Examples
Physical	Appearance	Weight loss Weight maintenance Loss of inches Increased muscle mass/toning Improved clothing fit
	Fitness	Increased strength Increased stamina/endurance Skill development Improved performance in exercise activities Improvements in body composition
	Health	Resolution of health issues Improvements in blood lipid profile Improvement in blood pressure Perception of reduced risk for chronic disease
	General	Improved sleeping patterns Improved ability to complete activities of daily life Improvement in eating patterns Feel good/better
Mental		Feeling rejuvenated Feeling calmer Increased energy Increased alertness Improved problem solving Feelings of enjoyment
Psychological	Stress Reduction	More effective stress management Reduced tendency to transfer job stress to home environment Increased ability to choose reaction to stressors
	Self-Esteem	Reconnection with self emotionally/spiritually Sense of accomplishment Feeling empowered Feeling of taking care of self/valuing self Taking time for self
	Mood Improvement	Reduction in depressive symptoms Feel better

Continued

Table 3.2: Summary of physical activity benefits

Table 3.2 continued

Social	Enhanced Social Network	
	Increased Activity Opportunities	Introduction to new activities through new social network of physically active people Trying new things
	Improvement in Current Relationships	Managing interactions more effectively due to decreased stress Spending time with members of social network during physical activity
	Opportunity to Act as Role Model	
	Positive Feedback from Others	

Influence of African American Racial/Cultural Background

The influence of being an African American woman on physical activity participation was not explicitly addressed during the interviews. The topic was allowed to emerge or not, and when it did the women were probed for additional information related to race and culture. Not all of the women brought up the influence of their background on their physical activity experience. However, those that did bring it up discussed a wide range of influences from distinct barriers such as hair type to complex social issues such as the impact of slavery on the obesity and sedentary lifestyle issues among the African American community today.

The most common reference to racial background and its impact on exercise participation was to hair type as a barrier. Women discussed the difficulty of paying for a hairstyle then messing it up shortly thereafter by sweating at the gym. They had devised a number of methods to deal with this barrier, though some of them admitted that their

solution was a concession. They were essentially choosing between their health and their appearance. Some of the women commented about this choice saying, "...you have to make a choice if it's going to be the body or the hair" and

"...usually I just let it go straight during the day. Again, I have my personal cosmetics where I can touch that up and stuff like that and go back to work. But I have gotten over (pause) trying to look cute versus I am worrying about this for my health."

Some of the solutions women employed were to wear a bandana during exercise to absorb some of the sweat or to wear their hair in a style less susceptible to deterioration such as braids or a "natural" style. Finally, some women planned their salon days just before the off days in their regimen to provide a window for enjoying their new hair style.

Another issue discussed by a select group of the women was the opportunity that being physically active provided in serving as a role model. Women mentioned the lack of African American female role models for physical activity. They felt filling this role was important both for other African American adult women trying to become physically active and for the younger generations. They discussed wanting to "break the cycle" and socialize young, African American girls to physical activity unlike their own socialization process which excluded physical activity, sometimes explicitly. They also discussed their disappointment at the lack of African American women they see at the gym and how this situation made finding an exercise partner of the same background very difficult.

Other areas where being an African American woman influenced physical activity participation that were mentioned, albeit not widely, were the consideration of the African American body type, balancing roles, and the impact of slavery. Women felt that

it was important to try to find a trainer or instructor that understood the difference in the African American body type. They felt if they could locate an African American trainer they would know to emphasize the hips and backside to accommodate the needs of African American women. For those women who used exercise videos, Billy Blanks was mentioned quite often as a top choice as well as Donna Richardson. Women also felt that balancing roles was especially difficult for African American because of the perceived high percentage of single mothers and the cultural expectation for women to serve as the backbone of the family, rarely taking time for themselves. Finally, two women discussed the impact of slavery on the current state of obesity in the African American community today. They both discussed their ancestors having to adopt food selections that were not native to them and perhaps not aligned with their metabolism. Further, they discussed their ancestors having to use low quality foods and learning to season with bacon and salt which persists as a cultural preference today.

The concepts that emerged related to the impact of race and culture on physical activity participation were compelling but disparate. Because of the wide range of concepts introduced and the limited discussions around this topic during the interviews, further data were collected during the focus groups to learn more about the potential importance of issues such as hair type, lack of role models, history of slavery, and African American culture in general on physical activity participation.

The discussion in both focus groups about the influence of race on physical activity participation was more fruitful than in most of the interviews. It is important to note that much of the discussion in the interviews about the influence of race occurred after the tape recorder was turned off. When probed during the interviews, some women

offered little further detail and then after the formal interview was over, women would offer additional insights into the topic. Perhaps the more fruitful discussion during the focus groups was because they were among a group of African American women and it was more comfortable to discuss this sensitive issue in that environment. Further, they were not asked directly about the influence of race/culture during the interviews, only probed for further information if the topic was brought up. Thus, being asked direct questions and/or having additional time to think about their answer may have influenced the depth of the data collected.

While the discussion was more fruitful during the focus groups, this topic still seemed to resonate with some of the women and not with others. Some were able to answer readily while others seemed to have difficulty teasing out the influence of race from the influence of other factors such as gender, parental patterns of physical activity, and support for physical activity. Comments on this topic during the focus groups covered three main areas: hair type as a barrier to physical activity, impact of low physical activity participation among African American women, and the cultural mindset of the African American community towards healthy lifestyle habits.

Hair type as a barrier to physical activity. Almost immediately when the topic of race came up, hair type was mentioned as one of the challenges African American women face. Women did comment that the impact of this barrier might vary over time depending on trends, as a 'natural style' is more fashionable now and presents less of a problem for maintenance during physical activity. It was evident that hair type did continue to be an issue for some of the women in the study. They discussed having to make a conscious decision to sacrifice their hairstyle for the sake of exercise. It required

another step of planning, either what kind of style can she get that will be most amenable to exercise or how can she minimize the damage to her current style (e.g., use of bandanas to absorb sweat or a ponytail). One of the women with a shorter hairstyle reiterated what she had mentioned in her interview,

“I pay forty bucks, I’m not going to go and sweat my hair out and, yet, dare to shower and wash it. No, I got to wear that style at least two or three days before I let water touch it. But that does, you know other people come and it’s not, the hair’s not the issue for them. So I have to wear a bandana or some type of absorbent material to help minimize the sweat so I don’t mess up the ‘do too much.”

Impact of low physical activity participation among African American women.

The impact over time of low physical activity participation among African American women manifested itself in several ways. One issue women discussed was not being active growing up. Their family members were not exercisers, particularly their mothers and grandmothers. The women discussed that their mothers and grandmothers did not exercise because their jobs required physical labor but women today have jobs where they sit all day, making exercise all the more important. This historical shift has resulted in African American women today trying to become active without having many modeling experiences or community role models. More globally, some of the women felt that not only are African American women not exposed to other physically active African American women, they are just not exposed to the actual activities enough for them to even consider all the options available for a physical activity regimen.

Another result of low physical activity participation among African American women was the experience of being the only African American woman in an exercise group. Some of the women discussed this experience, although for them it obviously was

not enough of a barrier to prevent adoption of an active lifestyle. This discussion turned to the idea that there are a lot more opportunities for African American women to participate in physical activity today than there were years ago. One woman stated,

“But I think there are more now, African American women’s groups, who are focusing on that kind of thing. [all nod] ... there’s a Black Women’s Health Project, like you were talking about, cycling groups and I play golf. There are a couple of African American women’s golf leagues. Skiing, there are all these things that in the past were not in place at all (her emphasis), period. Let alone even thinking about it, you couldn’t even go to the places that did it. So now, it’s so much more open. I mean, I’m sure at a certain point in time, I’m not knowing this for a fact, but I’m sure African American females or African Americans period probably didn’t go to any Y’s but the Eldermore Eastside Y. They just even didn’t go.”

Finally, the women felt a desire to fill this gap and act as a role model for other African American women who were trying to get active. They discussed the importance of encouraging and supporting other African American women in their efforts and often used the word ‘educate’ to describe the process they use to inform other women about the necessity and benefits of physical activity beyond weight loss. The necessity they felt related to physically active lifestyle was associated in part with their knowledge of the health risks of the African American community. They discussed being bombarded with information on the increased risks for certain diseases that African American women face and considering physical activity as an important measure to reduce those risks. Some of the women brought up, as they had in their interviews, family members who were suffering from various chronic conditions and their desire to prevent those outcomes for themselves.

Cultural mindset of the African American community towards healthy lifestyle habits. The impact of the African American culture on physical activity participation came up in a variety of ways. One concept that came up in both focus groups was the importance of the African American woman as the caregiver in the family, particularly for older generations. Women talked about being raised to believe that once they have a husband and start a family that their entire focus should be on the other members of the family's needs and that their needs, health and otherwise, took a back seat. This idea mirrors a concept discussed in the second focus group of the women garnering disapproval from their mothers for their commitment to physical activity. Specifically, women described perceiving some resistance from their mothers about taking time out for physical activity. Mothers felt their daughters should be outwardly focused and concentrating on their children and husbands. Taking time for physical activity was considered by their mothers to represent an inward focus which was thought of as being selfish. The women attributed this dissonance to be generational and something to be listened to but not heeded. However, this segment of the discussion was not focused on racial/cultural issues and it cannot be ascertained whether the women felt that this was a product of being raised in the African American culture or the result of another factor or combination of factors.

Another concept that emerged was related to the reasons that women might exercise. The women reported that African American people associate exercising with body fat, so when slim people say they are going to go workout they get negative feedback. Since a few of the women in focus groups were of slim stature, they really

seemed to connect with the difficulty of dealing with this mindset. One woman in the first focus group said,

“A lot of times African American people associate exercising with body fat, how fat you are. So if I say I am going to workout people are like, ‘You don’t need to workout girl! You slim! You small!’ [Participant 3: I get that too.] People tell me that all the time. You don’t need to workout, so sometimes in my mind I have to say...I mean because if you look in the mirror and you are not trying to lose weight, you don’t have no problems with weight, but you will hear a lot of times from your friends and family, ‘You don’t need to workout!’ ... So it becomes easy for you to justify missing or not going because you are not, you don’t need to go per se. So I think the mindset of needing to go and the whole reason why people exercise most of the time which is to lose weight or to change their physical appearance can have an affect on African Americans.”

Another woman in the same group responded with,

“I think she is right on the money! The way it is described is so true of most African American women that it has been my experience ... Their main goal was to lose weight. While mine was just like, ‘It feels good. I want to do this’, but I can remember two of my girlfriends, that was their main purpose for going to exercise and one of the things I hate is when other African American women tell me, ‘Well girl, you don’t need to exercise!’ and it just drives me crazy because then I feel like I have to educate them. Like it is not about necessarily losing the weight. It is not necessarily about this. It is about keeping my heart, my lungs and then they say, ‘Oh, okay.’ So, I get that too and it just burns me up.”

This same idea resonated with the women in the second focus group. One participant stated,

“...when I first became a vegetarian I dropped twenty (pounds) like that! Over a six month period I went from like one forty-five down to one twenty-five. Then my family was just like, ‘Are you on crack or something?’ [all laughing] I mean people were just rude. I mean they would say whatever. They would rather see you I think as a big person than as a thin person, [Participant 2: Oh yeah. Oh yeah]. Because people are just like, ‘You look crazy!’ I am

like, ‘Are you kidding?’ [Participant 2: Yeah, I understand and I think it just all part of society too.] [Participant 5: They expect African American women to be big.]”

A related idea that the women discussed was the impact of desirable body shape on physical activity participation. The women talked about African American people having a different sense of a desirable body shape than Whites in the United States. In African American culture, larger body sizes and more ample curves are appreciated and not seen as markers of being overweight. As one of the women mentioned during the focus groups, since many women are motivated to exercise by what they see in the mirror, if they don’t see a problem they won’t want to exercise and you cannot see health problems in the mirror. This woman went on to say, “...in the African American community being quote unquote ‘thick’, or having, just larger in certain areas- curves, that type of thing. That is not viewed as a negative [Participant 4: Oh no]. [All nodding.]”

This concept goes hand in hand with another mechanism for the impact of African American culture on physical activity participation which was the influence of Southern heritage brought up in the second focus group. The women talked about the norms of people eating more, eating different foods, and it not being viewed as negatively to be overweight. In fact being slim was sometimes viewed as a negative. One woman explained, “...the last time I went down South they said, you need to get some meat on your bones!” Women thought this might be attributed to bigger size historically being associated with affluence.

Another idea that came up related to Southern heritage was the impact of hospitality on eating habits. The women felt that when they went down South to visit relatives, they were pressured to overeat and eat foods that were outside of their normal

dietary plan. They felt that not participating in the eating would be “breaking tradition” and offensive. Certain foods were tied to certain occasions and emotions and feeding family was a way of giving. One woman remembered the recent holiday saying,

“...that Southern thing because it’s the same thing with my mom. I mean I left from Thanksgiving and she called me and said, ‘You didn’t take any food!’ So I think it is that whole Southern thing, meat and potatoes, and my mother was always telling the world when I didn’t walk out with a big old container or something.”

This conversation evolved into the need to change tradition. One woman had gone horseback riding after Thanksgiving dinner with 14 of her relatives. The others were shocked that people were willing to go and lamented that their families would never do that but that it would be nice to focus family activity away from food and toward activity. They talked about how such a shift would constitute a break from tradition or a change in tradition.

Desired Format for Study Report

The final issue discussed in the focus groups was the format for the report of the study findings for each participant. The women seemed very interested in receiving a report on the study findings. The majority wanted the process model itself and any other charts created from the study as well as some brief text explaining the main findings. They also seemed very interested in the implications of the findings and asked that they be included in the report.

Closing

The data provided by the women supplied the foundation for the development of the process model describing the adoption and maintenance and physical activity. This process occurred within the context of the women’s lives including their social network,

cultural background, and elements of their personal experience with physical activity including benefits realized and their conceptualization of planning. The practical implications of these findings and their relationship to current knowledge and theory in the field will be presented in the following chapter.

CHAPTER 4

DISCUSSION

The findings of this study, as presented in the previous chapter, contribute to the scientific literature in the area of theory development, specifically understanding physical activity behavior change as a process and in the context of daily life. This chapter will begin by synthesizing the literature base with the significance of this study's findings in two areas of theory application: traditional variance theories addressing physical activity adoption and maintenance and process theories addressing physical activity adoption and maintenance. Further discussion will be presented around contextual factors influencing physical activity participation including social support and African American race/culture. This chapter will also include a discussion of study limitations and a presentation of the theoretical and practical implications of the study findings.

The significance of the findings related to racial/cultural background on physical activity participation will be woven into each section where possible. This chapter will include a special focus on studies applying theory among African American women. In the study of physical activity in the context of daily life, it is necessary to consider whose context is being studied. Many studies have investigated variation in physical activity patterns and determinants between different groups of people by gender and by race/culture and have found significant differences (Brownson et al., 2000; Eyster et al., 1999; Eyster et al., 2002; Heesch et al., 2000; King et al., 2000; Masse & Anderson,

2003). Thus, where possible, this study's findings will be discussed in the context of other studies investigating this behavior among African American women. Where there are not such studies available, studies investigating other groups of women will be presented with the necessary caveats. For some of the theories presented for the purposes of literature review, mixed gender studies will have to be considered in the absence of investigations among women.

Theory Application to Maintenance of Physical Activity Behavior

Behavioral theories can be classified by their purpose: to explain the variance in a particular behavior through a group of constructs or to explain the process by which a behavior is governed. These two types of theories are commonly called variance theories and process theories. Variance theories have dominated the health behavior literature through the application of such models as the Health Belief Model, the Theory of Reasoned Action, and the Theory of Planned Behavior among others. Process theories have been less common in this domain but the Transtheoretical Model and the PRECEDE-PROCEED model are examples. PRECEDE-PROCEED will not be considered here as its utility is in the program planning and evaluation arena as opposed to the explanation of behavioral acquisition.

There are distinct differences between variance and process theories. In his book on organizational behavior, Lawrence Mohr (1982) details these differences and the difficulties of considering one type through the assumptions of the other type. He begins by explaining the difference in their basis for explanation. In a variance theory the basis for explanation is causality or prediction. In other words, if a particular factor is present then an outcome occurs and conversely, if that factor is not present then the outcome does

not occur. By contrast, the basis for explanation in process theory is probabilistic rearrangement or the idea that a particular factor is a necessary condition for the outcome of interest to occur, but not sufficient. The important issue then becomes what are the necessary factors and how do they fit together to explain an outcome, and what are the important external influences on those factors to move through the theory toward that outcome. This difference relates directly to the type of causality implied by each model. In variance theory, the causality is driven by the independent variables (or factors), that is, they must be present and sufficient to result in the outcome. This kind of causality is called push-type causality, movement toward an outcome is being pushed by the independent variables. In turn, each of those variables has its separate and unique contribution to the outcome. In process theory, the causality actually stems from the outcome. Movement is pulled toward it through a series of conditions (or factors), each of which is necessary but not sufficient to result in that outcome. This causality is called pull-type causality. In this type, individual conditions do not have a separate and unique contribution to the outcome, together they form a temporal arrangement that explains it. The difference in causality points to another difference between variance and process theory which is the role of time ordering. While time ordering of the factors is usually critical to process theory explanation it is not important to their predictive value in variance theory. Finally, variance theory deals in variables while process theory deals in discrete states and events.

In light of the unique characteristics of each type of theory, it becomes obvious that the current framework falls within the boundaries of a process theory and, as such, is most easily and logically compared to other process theories. It also follows that process

theory is the most useful for explaining the evolution of a behavior due to its ability to demonstrate the temporal arrangement of factors and provide an “account of how the intervening events occur” (Mohr, 1982, p. 58). However, since variance theories dominate health behavior theory development, they must be considered in the review of theory application to physical activity.

Studies considering both variance and process theories have other attributes that determine their utility in understanding the evolution of physical activity behavior. Specifically, many of the studies available are descriptive in nature. These studies characterize a group of people at one point in time based on whether or not they exhibit beliefs or behaviors associated with various model constructs. Often groups are compared by how they vary across these constructs. While each of these designs can provide useful information, descriptive or cross-sectional studies are unable to elucidate how constructs vary over time or unearth any potential causal relationships. Longitudinal studies and intervention studies lend this particular strength to the literature. These designs have a temporal component, which are especially relevant to the study of process theory since the temporal arrangement of the factors is central to its explanatory power. Both types of studies will be considered in this review with particular attention paid to the latter, especially where available among African American women.

In their review of important theories in the field of exercise behavior, Biddle and Nigg (2000) cite the Theory of Planned Behavior, Self-Efficacy Theory, and the Transtheoretical Model as the most supported and promising in the exercise domain. Buckworth and Dishman’s (2002) review of important theories of behavior change for physical activity cites these theories as well. In addition, they discuss the relevance of

Social Cognitive Theory, Health Belief Model, and Habit Theory in this domain. Each of these theories will be addressed here in their use and utility in explaining physical activity behavior as well as some emerging theories from the literature. For this review and synthesis, Self-Efficacy Theory will be discussed primarily within the context of Social Cognitive Theory and the Transtheoretical Model. Some of the theories included in this chapter are variance theories and others are process theories. Since the present study resulted in the development of a process theory, special attention will be paid to that class of theories. Variance theories will be considered for significant constructs, application to African American women, and the ability to predict adoption or maintenance of physical activity behavior since they are not designed to explain the experience holistically.

Traditional Variance Theories Addressing Physical Activity Adoption and Maintenance

Variance theories addressed in this section include the classic behavioral theories in the public health field such as the Health Belief Model, Social Cognitive Theory, and the Theories of Reasoned Action and Planned Behavior. These theories have primarily been used empirically to investigate the adoption of physical activity behavior. For the purposes of a global understanding of the state of theory development in the exercise domain, adoption only studies will be considered in the absence of maintenance studies.

Health Belief Model (HBM)

The Health Belief Model (Rosenstock, 1960) is a widely used theoretical framework for predicting the likelihood of taking action through a risk reduction behavior. This model is a value expectancy theory initially developed to explain tuberculosis screening with the value aspect being the desire to prevent disease or get well and the expectation that a certain health behavior would meet that need (Strecher &

Rosenstock, 1997). The HBM posits that specified constructs explain the likelihood of behavior change including the perceived threat of a condition, the perceived benefits and barriers of the potential action, and cues to action or events that trigger action. Self-efficacy was later added which was defined as the belief that the behavior can be successfully executed as required to produce the outcome. Modifying factors such as age, sex, ethnicity, knowledge, and socioeconomic status are also included in the model.

In general, the HBM has not been supported for use in the exercise domain although there is little research on which to base this conclusion (Biddle & Nigg, 2000). A review (Janz & Becker, 1984) and a meta-analysis (Harrison, Mullen, & Green, 1992) of the HBM across a variety of health behaviors resulted in equivocal findings with the review concluding substantial support for the HBM and meta-analysis finding weak effects. Both of these papers examined a range of health behaviors including preventive behaviors like exercise, sick-role behaviors, clinic use, screening, and others. It can be presumed, by its nature, that the model is more applicable to disease preventive threat reduction behavior which physical activity may or not be depending on the individual and the disease. As such, the HBM should be considered within each group of behaviors rather than across them. Biddle and Nigg (2000) argue that the model may be more useful in predicting inactivity than activity participation.

Since few studies have applied the HBM to exercise behavior, only two applying it among African American women could be found. One study applied the HBM within the threat reduction domain by studying 31 African American women over age 50 with a diagnosis of Type 2 diabetes using exercise for improved glycemic control as the behavior of interest (Koch, 2002). Women were asked to complete a survey addressing

the HBM constructs as well as self-reported physical activity participation. Differences in HBM constructs were then compared for women classified as exercisers (n=17) and non-exercisers (n=14). The groups differed significantly on the barriers to and benefits of exercise constructs. They did not differ significantly related to perceived seriousness and perceived susceptibility to complications. Thus, the exercising women did not perceive the consequences of diabetes to be more serious or perceive themselves as more susceptible to complications than the non-exercising women. The study did show that barriers were lower for exercisers and benefits were higher. Self-efficacy and cues to action were not included in this study.

The second study attempted to apply the HBM to a younger, healthier group of women (Juniper, Oman, Hamm, & Kerby, 2004). Surveys were completed by 233 African American, college-age women addressing physical activity participation, stage of change, and HBM constructs. Active and inactive women were then compared for differences in the HBM constructs by collapsing those in the Precontemplation and Contemplation stages into the inactive group and those in the remaining stages into the active group. Significant differences were found between groups on perceived barriers, perceived severity, cues to action, and self-efficacy, all in the expected directions. These findings support those of Koch (2002) in that perceived barriers for activity differ between exercisers and non-exercisers. The relationship between perceived barriers and physical activity participation will be further addressed in the section about the Transtheoretical Model as related to the decisional balance construct in which barriers are conceptualized as cons for participation.

The two studies differed in their findings on perceived severity. It is interesting that the groups of younger, healthier women differed on this construct and not the older women already diagnosed with an illness. This could have something to do with the disease process of Type 2 diabetes which is largely asymptomatic in the early stages (i.e., there typically is no serious physical symptomology until years of high blood glucose have taken their toll) or could be related to flaws in study design.

One of the primary difficulties in comparing this model to one that explains the process of integrating physical activity into daily life is that the HBM describes why a behavior change might occur, not how it occurs. Further, by its nature, it is most relevant to the adoption of a behavior, not the long-term maintenance of it and for disease prevention, not the broader context of reasons in which physical activity behavior is initiated and maintained. With that caveat in mind, there are a couple parallels to the present study. The importance of perceived benefits as supported in the Koch study (2002) was an integral component of the physical activity evolution process that emerged from the present study. Benefits motivated both initial adoption of activity as well as long-term maintenance. A difficulty with considering benefits strictly to predict adoption is that some of the most sought after benefits are not apparent until extended time is spent as an active woman. Further, the benefits realized early on such as mental alertness, sleeping better, and reduced stress often are not salient to participants for disease prevention.

Women in the present study did cite perceived threat as a motivator for exercise, particularly avoidance of obesity, high blood pressure, and diabetes. This finding was supported only in the Juniper and colleagues study (2004), but perhaps warrants further

consideration as a construct that could be differential by race/cultural group. Women in the present study said that they were very aware of the increased threat of chronic disease to the African American community from obesity, sedentary lifestyle, and unhealthy eating habits. Perhaps this awareness increases perceived threat for African Americans differentially from other groups. While the model as a whole does not seem best suited for application to physical activity behavior, certain constructs warrant further consideration such as perceived barriers and benefits, self-efficacy, and perceived threat among certain groups.

Protection Motivation Theory. Based on the presence of perceived threat in the present study, Protection Motivation Theory (PMT) (Rogers, 1975), a model with some similarities to the HBM, holds some interest because of its focus on threat. This theory posits that certain aspects of a threat message lead to corresponding cognitive mediators which then result in protection motivation and subsequent intention to initiate a behavior (Witte, Meyer, & Martell, 2001). The cognitive mediators include perceived susceptibility and perceived threat as well as efficacy for performing the desired response.

A few studies have applied PMT to physical activity behavior. An early study examined four of the cognitive appraisal processes (perceived severity, perceived susceptibility, self-efficacy, and response efficacy) among 160 sedentary, undergraduate women (Wurtele & Maddux, 1987). Depending on group assignment, the women received messages with varying levels of the PMT constructs. Measurements were then taken on the PMT constructs and exercise behavior. Two weeks later exercise behavior was again assessed. Significant main effects on intention to exercise were found for

perceived susceptibility and self-efficacy. There was also an interaction between perceived susceptibility and response efficacy and self-efficacy indicating that at high levels of self-efficacy and low levels of vulnerability and response efficacy, women still had high intentions to perform the behavior.

Another study showed an interaction effect for response efficacy though it was with perceived severity (Courneya & Hellsten, 2001). This study also recruited undergraduate students (n=427) to complete questionnaires on PMT constructs related to colon cancer as a motivator for exercise. The only significant main effect was for perceived severity which was not significant in the previous study. The interaction effect indicated that those who believed that colon cancer was severe were more motivated to exercise if they had a high response efficacy for exercise. However, those who had low perceived severity for colon cancer did not exhibit differences in motivation to exercise based on response efficacy. This finding supports the tenet of PMT that people with high perceived severity will be more likely to act if they have high response efficacy. However, neither study provided support for PMT as a whole. Two other studies applying PMT to exercise behavior also resulted in equivocal findings (Milne, Orbell, & Sheeran, 2002; Plotnikoff & Higginbotham, 2002). None of these studies were conducted in the African American community and only one was conducted with a high risk population (Plotnikoff & Higginbotham, 2002). Thus it is difficult to determine whether threat is a concept differentially applicable to African Americans due to their awareness of the higher prevalence of conditions related to sedentary behavior in their community as was described by the women in the present study. Further work is needed to investigate this aspect of HBM and PMT.

Social Cognitive Theory (SCT)

Unlike the HBM, Social Cognitive Theory attempts to explain both the why and how of behavior change. Developed by Albert Bandura (1986), originally as Social Learning Theory, SCT represents an extensive framework of constructs designed to explain behavior through cognitions, social interactions, and environment. An important element of SCT is the interaction between person, environment (physical and social), and behavior called reciprocal determinism. This relationship is dynamic and represents the tenet that a change in any of the three factors carries implication for the other factors. A brief summary of other, selected key constructs of SCT is provided in Table 4.1 as adapted from Baranowski and colleagues (1997). Each of these constructs represents an avenue for manipulating behavior change. Taken together, they form a framework through which behavior change can be addressed.

Construct	Definition
Outcome expectations	Anticipated outcomes of a behavior
Outcome expectancies	Value placed on a particular behavioral outcome or incentive
Self-control	Personal regulation of goal-directed behavior
Observational learning	Behavioral acquisition through observing actions and outcomes of others
Reinforcements	Responses to behavior that increase or decrease likelihood of continuation
Self-efficacy	Confidence in ability to perform a certain behavior

Table 4.1: Summary of SCT constructs (Baranowski et al., 1997)

SCT has been applied in the exercise domain in a variety of studies. Several of these studies were designed to investigate the predictive properties of SCT constructs for physical activity participation. Some of these studies have utilized college students as their participants. While studies of predominately White, male and female college students have less than desirable application to the present study, these studies will be reviewed for overall understanding of SCT for physical activity behavior. In 1990, Dziewaltowski and colleagues published a study investigating SCT constructs along with Theory of Planned Behavior constructs and self-reported physical activity participation through a survey of 254 undergraduate students (Dziewaltowski, Noble, & Shaw, 1990). All constructs were measured in the baseline survey with self-reported physical activity also being assessed for the subsequent four weeks. Self-efficacy, self-evaluation

(satisfaction with amount of participation), and outcome expectations were included as SCT constructs. In the prediction of physical activity participation, self-efficacy and self-evaluation of the behavior emerged as significant constructs. In the prediction of future participation, self-efficacy was the only significant contributor. Details from the Theory of Planned Behavior investigation will be reviewed in the next section, however the authors did conclude that the SCT constructs were the stronger predictors.

Petosa and colleagues (2003) also investigated SCT constructs among 350 undergraduate students. This study focused on the prediction of vigorous physical activity through friend and family social support, self-regulation, outcome expectancy, self-efficacy, role identity, and positive exercise experience. Similar to the previous study, SCT constructs were measured at baseline with four subsequent weeks of recall of vigorous physical activity participation. Using hierarchical multiple regressions, the authors found that all of the SCT constructs included were significant predictors of days in vigorous physical activity. While these two studies used similar populations, only the significance of self-efficacy was common across the findings. Difficulties in comparing studies based on SCT are the wide variety of constructs available to include, the different measurement techniques used for those constructs, and the conceptualization and measurement of the physical activity behavior.

A study by Sallis and colleagues (1992) investigated SCT constructs for vigorous physical activity among a large community sample in California. Surveys were completed 24 months apart by 1,739 residents. Several SCT constructs were assessed at baseline. A subset of those constructs including self-efficacy, friend and family support, and benefits and barriers were measured at 24-months. Vigorous physical activity was

assessed at both time points. Using baseline SCT constructs to predict change in vigorous exercise over the 24-month time period, only self-efficacy was a significant predictor. Using change in SCT constructs to predict change in vigorous exercise, self-efficacy, barriers, and friend and family social support were significant predictors. Finally, self-efficacy, barriers, and neighborhood environment were significant predictors of number of months physically active in a 12-month period. Again, self-efficacy holds in this domain and similar to the Petosa study (2003), family and friend social support are significant constructs. The findings related to social support were mirrored in a study by Annesi (2004) investigating 178 adults for exercise adherence. This study found a significant correlation between length of time in moderate-to-vigorous exercise and the item cluster measuring social support.

Two studies were found that used SCT to address physical activity among women. Both studies were focused on older women though one included African American women in their investigation of SCT constructs (Wilcox, Bopp, Oberrecht, Kammermann, & McElmurray, 2003). In this study, surveys were completed by 102 rural-residing women over the age of 50 (41% African American) targeting individual and physical and social environment related SCT constructs. Self-reported physical activity participation was also collected. All statistical analyses except for sample characteristics were reported for the combined sample. In the bivariate analyses self-efficacy, greater benefits than barriers, social support, and perceived safety of neighborhood were all significantly associated with physical activity. However, in the

multivariate analysis, neither self-efficacy nor social support were significant contributors. The physical environmental factors and greater benefits than barriers remained significant. Further, race was not a significant factor in the model.

Wilcox and colleague's (2003) finding related to self-efficacy differs from the findings reported by the other study focusing on women (Conn, 1997). Conn's investigation of 225 women aged 65 to 92 required participants to complete a questionnaire designed to address SCT and its relationship to dietary and exercise behavior as well as stress management. SCT constructs included were self-efficacy and outcome expectancy. Self-efficacy was the strongest predictor of exercise behavior. Outcome expectancy ($p = 0.03$) was the fourth strongest out of five variables and not considered statistically significant by the author who used $p \leq 0.01$ as the significance criterion. Social support was not measured in this study.

The wide range of sample characteristics, selection of SCT variables, and conceptualization of physical activity have resulted in varied findings. Social support, both family and friend, was supported as an important SCT construct in most of these studies when measured. This concept parallels the findings in the present study with physical activity companions being present in every woman's experience with physical activity evolution. It should be considered, from the findings of Wilcox and colleagues (2003), that this presence may decrease with age. An important aspect of physical activity social support to be investigated would be whether the need for it is differential by age. Social support is considered further later in this chapter.

Clearly self-efficacy is an important predictor of exercise behavior. It is interesting that the one study including a significant proportion of African American

women did not retain self-efficacy in the final model (Wilcox et al., 2003). The authors suggest that this finding, and the lack of contribution from social support may be related to both variables association with age (Wilcox et al., 2003). Age was very strongly associated with physical activity in the study and strongly, negatively associated with both self-efficacy and social support. This may help explain why this study did not support the findings of the other studies in relation to the importance of self-efficacy or social support for physical activity behavior. In general, self-efficacy has emerged as one of the most important constructs in the exercise domain (McAuley & Blissmer, 2000). Future work should consider how the conceptualization and measurement of self-efficacy varies across health behavior theories and how the role of self-efficacy evolves from adoption through maintenance of physical activity. Studies applying the Transtheoretical Model will attempt to address this evolution.

It is difficult to ascertain how a construct like self-efficacy compares to findings from the present study. Self-efficacy is a research-based concept and was not directly asked about in the present study. Further, few instances of explicit discussion about confidence in ability were available for probing in this area. This could partly be related to self-efficacy not being salient to the women as typically operationalized in research studies. Some women did discuss increased confidence in performing physical activity behaviors, especially weightlifting. Others provided descriptions of how they positioned themselves in the back of the classroom and observed until they gained enough confidence in their skills to move forward. Women in the present study had also been active for a longer period of time than the people included in the other studies. Perhaps the salience of self-efficacy fades with increased time in the behavior. However, some

women clearly expressed the possibility of temporary relapse in the future which would indicate the temptation component of self-efficacy might remain influential longer. Also, with all of the women in the present study being physically active, there was no pool of participants who had been unable to gain enough confidence in their abilities to perform or continue the behavior to provide further insight into the role of self-efficacy.

SCT has also been utilized for the design of interventions aimed at increasing physical activity participation, some of which engaged African American women. Studies included here are those that specifically designed intervention activities to target SCT constructs among adult women. Project WALK (Chen et al., 1998) was a randomized controlled trial of 125 sedentary, female participants who were mostly Latina (45.6%) or African American (40.8%). Women in the intervention received mailed materials and six telephone counseling sessions based on the tenets of SCT to increase walking. Control arm women received basic educational information through the mail and one five-minute phone call. Measures included walking frequency and duration at baseline, two months, and five months. Both groups had a statistically significant increase in walking from baseline at both two and five month time points. Further, the control arm had significantly less decay in their walking levels over time compared to the intervention group. While these findings are encouraging for the development of minimal contact intervention programs for ethnic minority women, they do not provide support for use of the SCT to design interventions to increase walking among this population.

Another intervention among mothers and daughters resulted in minimal findings attributable to SCT (Ransdell, Dratt, Kennedy, O'Neill, & DeVoe, 2001). This study tested a 12-week intervention grounded in SCT for nine primarily Caucasian mother-

daughter(s) groups (20 total participants). Intervention activities were aimed at increasing lifestyle and traditional exercise both during intervention sessions and outside of them. Additional intervention activities were explicitly designed to tap SCT constructs. There were no significant increases in physical activity over time. There was a significant increase in a similar concept to self-efficacy called physical self-perception. Qualitative findings uncovered increased participation in physical activity and active leisure time pursuits as mother and daughter. The power of the study (statistically) or measurement issues could be contributing factors to the difference in findings. The only aspect of the findings attributable to SCT was the increase in physical self-perception.

One study had success in demonstrating utility of SCT for intervention design in the exercise domain though the participants were both male and female (Hallam & Petosa, 2004). Three SCT constructs, self-efficacy, outcome expectancy, and self-regulation were targeted in a two-week worksite intervention. Social support was included in the self-regulation scale. Data were collected at baseline, six weeks, six months, and twelve months. The intervention group increased days per week in exercise at all time points after baseline. There were also significant changes in all three SCT constructs in the intervention group. Using a mediation analysis technique (Baron & Kenny, 1986), only self-regulation was shown to mediate exercise participation.

It seems that where SCT constructs were measured in these three studies, they were impacted by intervention activities, however the corresponding change in behavior did not always occur or it occurred in both groups. The equivocal findings point to the complexity of implementing this model and as such comparing studies that have tried to do so. Selection of population, SCT constructs considered, and measurement and

conceptualization of physical activity all contribute to the differences in design, and thus findings, across studies. Clearly, self-efficacy and social support emerge as relevant constructs to exercise behavior and will be discussed further in this chapter relative to other behavioral theories.

Another strength of SCT is its view of behavior and behavior change as dynamic. The dynamic nature of physical activity participation can be clearly supported in the present study. While the specific elements of the dynamic nature of physical activity participation over time are portrayed in the findings of the present study, it remains a bit unclear in SCT. It is understood that the person interacts with the behavior and the environment in reciprocal relationships, but how that dynamic relationship influences participation in this specific behavior over time remains largely unknown. However, this interaction of person, behavior, and environment is clearly a strength of SCT as reciprocal determinism does allow for the cultural consideration crucial to understanding behavioral participation and thus positions SCT as a potentially useful tool for studying varied racial/cultural groups. At this time it appears that this aspect of the theory has not been investigated.

Relapse Prevention Model. A seldom applied model in the physical activity domain that was derived from Social Learning Theory but has obvious potential related to the findings of the present study is Marlatt and Gordon's Relapse-Prevention Model (1985). Buckworth and Dishman (2002) also mentioned this theoretical framework in their review of theories applied to exercise behavior. The model was originally derived to improve maintenance strategies for the cessation of addictive behaviors. It conceptualizes relapse as a phase of the cessation process not a failure of that process. In applying the

theory to the adoption process, relapse can be considered as cessation of a positive behavior. This manner of conceptualizing relapse is useful to the present study because temporary cessation of physical activity was common to the women at some point in their experience with the behavior. The important aspect of relapse was that it was temporary, as all of the women went back to their physically active lifestyles after a period of time. It becomes clear that an important aspect of this process is helping women successfully navigate potential temporary cessation of activity. Of course, it is important to note that the model was developed to address high-frequency, undesirable behaviors where physical activity is a lower-frequency, desirable behavior.

The model posits that there are various factors or situations that can precipitate a relapse (Larimer, Palmer, & Marlatt, 1999). These factors are divided into two categories, immediate determinants and covert antecedents. Immediate determinants include high-risk situations, coping behavior, outcome expectancies, and the abstinence violation effect. The most applicable of these to physical activity are high-risk situations such as celebrations, stressful days and social pressure that might initiate a break from physical activity, coping behavior for stressful situations, and outcome expectancies. Covert antecedents include lifestyle factors such as overall stress level and urges and cravings. Another important aspect of the model is the development of self-efficacy for dealing with potential relapse situations. Interventions based on this model typically deal with understanding the immediate and covert factors and planning for their successful navigation.

A few studies have applied this model to physical activity. Interestingly, these studies are 10 to 20 years old and more recent studies were not found. All four studies

were exercise interventions, two were mixed gender (Belisle, Roskies, & Levesque, 1987; Martin et al., 1984) and two were all female (King & Frederiksen, 1984; Marcus & Stanton, 1993). All of the studies had treatment and control groups with at least one treatment group focusing on the tenets of relapse prevention such as identifying high-risk situations and coping strategies. Two of the studies included a planned relapse where participants did not exercise for a week in the middle of the intervention (Marcus & Stanton, 1993; Martin et al., 1984). Neither of these studies showed any differences in participation in exercise sessions between treatment and control groups. The other two studies did show significant differences in session participation for the relapse prevention group (Belisle et al., 1987; King & Frederiksen, 1984).

It is plausible that the equivocal findings are attributable to planned relapse being an ineffective technique in the physical activity domain as included in the two unsuccessful studies. However, there was considerable variance in design, sample size, and measurement across the studies. In general, there appears to be some promise in the application of this model to the development of a physically active lifestyle as evidenced by the findings in the two successful studies. Further, women in the present study discovered their own techniques for identifying potential factors that could lead to exercise cessation and strategies for coping with those factors. Perhaps investigation into effective methods of teaching these strategies during interventions would enhance movement through the process of behavioral adoption and maintenance.

Another interesting finding from the Martin and colleagues study (1984) was a comparison of two groups on short-term adherence to an exercise program depending on whether they set flexible or fixed participation goals. The group that set flexible goals

had significantly higher adherence rates than the group that set fixed goals. While this phase of the study was very small (n=15), this finding lends support to the important themes that emerged in the present study related to planning physical activity with flexibility. Women had discovered that operating within a flexible framework of minimum acceptable-maximum possible participation was an effective method of setting weekly goals.

A related area of study is that of restructuring plans or the ability to adapt and change ineffective behavioral plans (Nies, Hepworth, Wallston, & Kershaw, 2001). This method was combined with the application of relapse prevention in the King and Frederiksen study (1984) and in a descriptive study by Nies and Kershaw (2002) which found that both restructuring plans and relapse prevention were related to physical activity level. This concept of restructuring plans relates both to the flexibility concept in the present study and the finding that physical activity regimens had to be modified over time to meet the needs of various life changes. Further, the right fit between desired benefits, lifestyle needs, and choice of regimen had to be found. While the concepts of the Relapse Prevention Model and restructuring plans have not been investigated thoroughly in the physical activity domain, they do appear to hold promise and draw support from parallel concepts that emerged in the present study.

Theories of Reasoned Action and Planned Behavior (TRA/TPB)

The Theory of Reasoned Action (Ajzen & Fishbein, 1980) was developed to understand the relationship between attitude and behavior. Ajzen and Fishbein postulate that attitude toward behavior and subjective norm comprise behavioral intention which is the immediate determinant of behavior (Montano, Kasprzyk, & Taplin, 1997). Attitude

toward the behavior is formed from the belief that a behavior is associated with certain outcomes (behavioral beliefs) and the value attached to those outcomes (evaluation). These concepts are related to outcome expectation and outcome expectancy in Social Cognitive Theory. Subjective norm is comprised of the perception that others approve or disprove of the behavior (normative belief) and the motivation to comply with the others beliefs (motivation to comply).

Ajzen later extended the TRA to include a construct called perceived behavioral control renaming the theory the Theory of Planned Behavior (Ajzen, 1991). Perceived behavioral control is determined by control beliefs which indicate the presence or absence of resources and barriers to performing the behavior and perceived power which is the perceived impact of each resource or barrier in facilitating or constraining behavioral performance (Montano et al., 1997). Unlike, attitude and subjective norm which influence behavior only through intention, perceived behavioral control is postulated to influence both intention and behavior directly. Perceived behavioral control has been likened to self-efficacy though it is a broader concept addressing not only personal perceptions of confidence and ability but also the impact of behavioral context. Both TRA and TPB have very specific instructions for the conceptualization and measurement of each of their constructs, although empirical investigations have not always followed these directives.

In 1997, Hausenblas and colleagues completed a meta-analysis of the TRA and TPB in applications to exercise behavior (Hausenblas, Carron, & Mack, 1997). Thirty-one studies were examined that used two or more TRA/TPB constructs among exercisers who could not be classified as athletes. Effect sizes were calculated for the measured

constructs and were reported for the sample as a whole due to low numbers of studies that reported on ethnicity (9.7%) and high numbers of studies that examined mixed gender participants (83.3%). Insufficient data were available to examine the models as a whole, thus constructs were examined individually which the authors felt likely overestimated the magnitude of their influence. In terms of the TRA, a large effect size (1.09) was shown for the relationship between intention and behavior. The effect size for attitude and intention was also large (1.22). The effect size for subjective norm was much smaller (0.56). Interestingly, there was also a relationship between attitude and behavior (effect size=0.84) even though this relationship is not postulated in the model. Perceived behavioral control was shown to have a large relationship with both intention (0.97) and behavior (1.01) thus indicating that the TPB extends the utility of the TRA in predicting exercise behavior. This finding supports the work reviewed in other sections of this chapter on the importance of self-efficacy in the physical activity domain. These findings also support the conclusions of an earlier review of these theories in physical activity studies (Godin, 1993).

In reference to the Dzewaltowski study (1990) reviewed in the section on Social Cognitive Theory, similar findings to the meta-analysis were reported. Attitude and perceived behavioral control were predictive of intention, and intention was predictive of exercise behavior. Subjective norm was not predictive of intention and in contrast to the meta-analysis, perceived behavioral control was not predictive of exercise behavior.

Later studies provide further support for the TPB in the physical activity domain (Blue, Wilbur, & Marston-Scott, 2001; Kerner, Grossman, & Kurrant, 2001; Smith & Biddle, 1999). Only two studies could be found that specifically focused on women. One

study investigated the TPB in a four week exercise and diet intervention among 69 overweight women of unspecified racial/cultural background (Gardner & Hausenblas, 2004). TPB constructs were assessed at baseline including intention, attitude, subjective norm, and perceived behavioral control. Exercise participation was assessed at baseline and over the four week intervention conceptualized as adherence to the program. There was no post-intervention measurement of exercise participation. Body composition was also assessed and showed significant decreases over the four weeks. Refuting previous findings, intention did not account for a significant amount of variance in exercise behavior. Further, attitude and subjective norm did not explain significant variation in intention and perceived behavioral control did not explain additional variance in exercise intention or exercise adherence.

The other study focusing on women provided stronger support for the use of the TPB (Conn, Tripp-Reimer, & Maas, 2003). Conn and colleagues investigated 225 older women in a cross-sectional survey of attitude, subjective norm, and perceived behavioral control on exercise intention and participation. Attitude, subjective norm, and perceived behavioral control were all significant predictors of exercise intention. Attitude and perceived behavioral control were also significant predictors of exercise behavior with perceived behavioral control being the stronger predictor as would be expected by the model specifications (attitude is not postulated to directly influence behavior). The impact of intention on behavior was not analyzed directly even though this tenet is central to the model.

The findings of most of these studies appear to provide support for the use of the TPB in the exercise domain. There were equivocal findings in the few studies focusing

on women, however. These differences could be due to design issues, one was a short, prospective study, the other cross-sectional. However, based on the limited by-group information, it is unknown whether there is an age or gender differential in the use of the TPB.

One study was found examining differences in TPB constructs between Caucasian (n=90) and African American (n=94) undergraduate students (mixed gender) (Blanchard et al., 2003). A survey was distributed assessing intention, attitude, subjective norm, and perceived behavioral control. Ethnicity and gender were found to interact by moderating the relationship between attitude and intention. No other significant relationship between ethnicity or gender and the TPB constructs were found. This finding is interesting in that findings from the present study would likely support a relationship between subjective norm and ethnicity or gender. Women in the present study discussed dissonance between family expectations and physically active lifestyle as well as negative feedback from community members for exercise when the woman was of slim stature. This difference could be related to a number of things including the generally unsupported relationship for subjective norm as a significant construct in TPB and the possibility that members of both Caucasian and African American communities experience unsupportive comments for physical activity.

Although TPB appears to hold for physical activity, more studies are needed among specific groups such as African American women. It seems plausible that factors including gender and racial/cultural background would impact constructs such as attitude, subjective norm, and perceived behavioral control. Further studies would also be useful investigating the model as a whole by analyzing the paths of behavior change as specified

by the model as well as designing studies prospectively with longer follow-up measures of exercise behavior. Without a more holistic and prospective design, it is not possible to go beyond analysis of which constructs are associated with intention and behavior to the effectiveness of the model as a system for predicting exercise adoption and its utility for intervention development. Intention will be further discussed in the habit formation section of this chapter.

Each of these variance theories, by its nature, was developed to explain the variance in a behavior among a sample of people. Thus, the ultimate test of their usefulness is in how much of that variance can be explained by the constructs that each model posits to be critical factors in behavior change. A common method of testing a model as a system for its utility in explaining behavior is R^2 . The R^2 value provides an indicator of the variance in behavior explained by the constructs included in the analysis. This value also provides a means of comparing the utility of different models. Considering the studies reviewed in this chapter, R^2 values are really only available for SCT and TRA/TPB. The Health Belief Model, Protection Motivation Theory, and Relapse Prevention Model are much less commonly used in the physical activity domain and as such, the studies are more descriptive in nature or focus on comparing groups across their constructs. The few regression models for which R^2 values are available either do not use behavior as their outcome of interest or are not strictly selecting model constructs as independent variables which results in higher R^2 values due to additional factors being in the statistical model.

Studies utilizing SCT that report R^2 values are available. The caveat to comparing these studies is in the constructs selected for testing and the outcome used. There are so

many potential constructs in SCT that studies typically have only a subset of these in their statistical models. Further, while each study used behavior as the outcome, different studies conceptualize exercise behavior in different ways. This variation, coupled with differences in study design, results in large variations of R^2 values across studies from 12.3% (Sallis et al., 1992) to 47.4% (Wilcox et al., 2003). Even considering the latter, there is still considerable variance in behavior left to explain.

Similar difficulties arise when attempting to compare R^2 values across TRA/TPB studies. An additional caveat to these studies is that intention is often used as the outcome rather than behavior. In general, R^2 values for intention are higher than those for behavior. This relationship could be analogous to the ease of influencing intention versus changing behavior. Further, studies testing the TPB with its perceived behavioral control construct report higher R^2 values than those testing the TRA. For example, Smith and Biddle (1999) report that the TRA model they tested explained 13.1% of the variance in exercise behavior while the two studies reporting R^2 values for the TPB using behavior as the outcome ranged from 47% (Conn et al., 2003) to 51% (Blue et al., 2001). As with the SCT studies, it is difficult to compare values both within and between models due to differences in constructs included, outcome used, and other study design elements. However, even when considering the highest R^2 values available, there remains substantial variance in behavior to be explained through refining measurement, study design, or the models themselves.

It is challenging to compare these variance theories to the findings from the present study, however certain constructs have considerable support in the physical activity domain. Self-efficacy and the related concept of perceived behavioral control

clearly play a role in exercise participation. Social support was a significant construct in a number of studies as well. Further, a few concepts seem especially relevant to the present study such as perceived threat among African American women and some of the concepts related to the Relapse Prevention Model. It is also clear from these studies that there is more work to be done in standardizing measurement of the constructs and investigating diverse groups of people. Further, more studies are needed analyzing the theories as a group of related constructs and considering their utility in explaining long-term physical activity behavior, not just the adoption of the behavior by sedentary people.

Process Theories Addressing Physical Activity Adoption and Maintenance

While the call for investigating physical activity behavior change as a process has been made (Dishman, 1987), few theories are available to accommodate this type of investigation. The Transtheoretical Model (Prochaska & DiClemente, 1983) is the most widely used process theory applied to exercise behavior. Although it was originally developed to explain the process of ceasing addictive behaviors it has been frequently adapted to the exercise domain, particularly related to adoption behavior. Habit formation is a less acknowledged process in the health behavior domain that has been adapted to physical activity behavior but not empirically tested. One positive feature of habit theory is the implicit recognition of maintenance behavior which has not been a strong focus in the theory-based physical activity literature. In the absence of a selection of process theories through which to study exercise behavior, substantive theories specific to physical activity, such as the one in the present study, have been developed but gone largely unnoticed. In many ways, these theories are most similar to the present theory and

at times provide very interesting parallels to one another. Each of these process theories will be reviewed in this section and compared to the current theory.

Emerging Theories

While few studies were available investigating physical activity behavior as a process, conceptualizing it contextually from adoption through maintenance, a dissertation was completed in 1996 that undertook a grounded theory study of the journey from non-exerciser to exerciser among a mixed gender and race group of 22 people (Medina, 1996). The purpose of the study was to use grounded theory methods to develop a process model explaining this journey. The resulting theory has not been published in a scientific journal. The study sample was actually quite heterogeneous, and different from the present study, with people ranging in age from their twenties to their seventies, mostly Caucasian (n=18) and male (n=13) with representation from four race/ethnicity groups.

The model Medina developed focused on the emergence of an exerciser identity (see Figure 4.1). This identity development progressed over three stages: Identity Appraisal, Identity Emergence/Reorganization and Identity Expansion. Identity Appraisal included self-examination prompting a dissonance in perceived self and desired self resulting in the impetus to begin exercise. This self-examination was followed by a “mental set of commitment to change”. The commitment to change signified a re-prioritization of exercise necessary to initiate the behavior. After the commitment to change was realized, the Identity Emergence/Reorganization phase was entered. This phase included four stages: Experimentation, Evaluation, Confirmation and Identification and two important conditions, “personal fit” and “perception of rewards”. The

Experimentation stage was indicative of searching and exploring different facets of physical activity (e.g., activities, schedules, companions) to find the right fit to personal lifestyle. The Evaluation phase was characterized by weighing the costs and benefits of their chosen regimen in terms of goals and rewards attained. In the Confirmation phase, exercise became self-reinforcing and integrated into daily life. At this point, exercise was missed when not included in the daily activities. After experiencing Identity Emergence/Reorganization, exercisers were considered to have developed an exerciser identity and continued to participate in order to achieve desired benefits and were, in turn, motivated by these benefits. At this time, some people advanced into the Identity Expansion phase which was comprised of four attributes: becoming more proficient in their chosen activity, increasing involvement in the culture of their chosen activity (e.g., learning lingo, buying gear), changing other lifestyle habits, and sharing their experience with others. Once the main process was experienced, it was possible to cycle back through from the beginning which was “existing identity”.

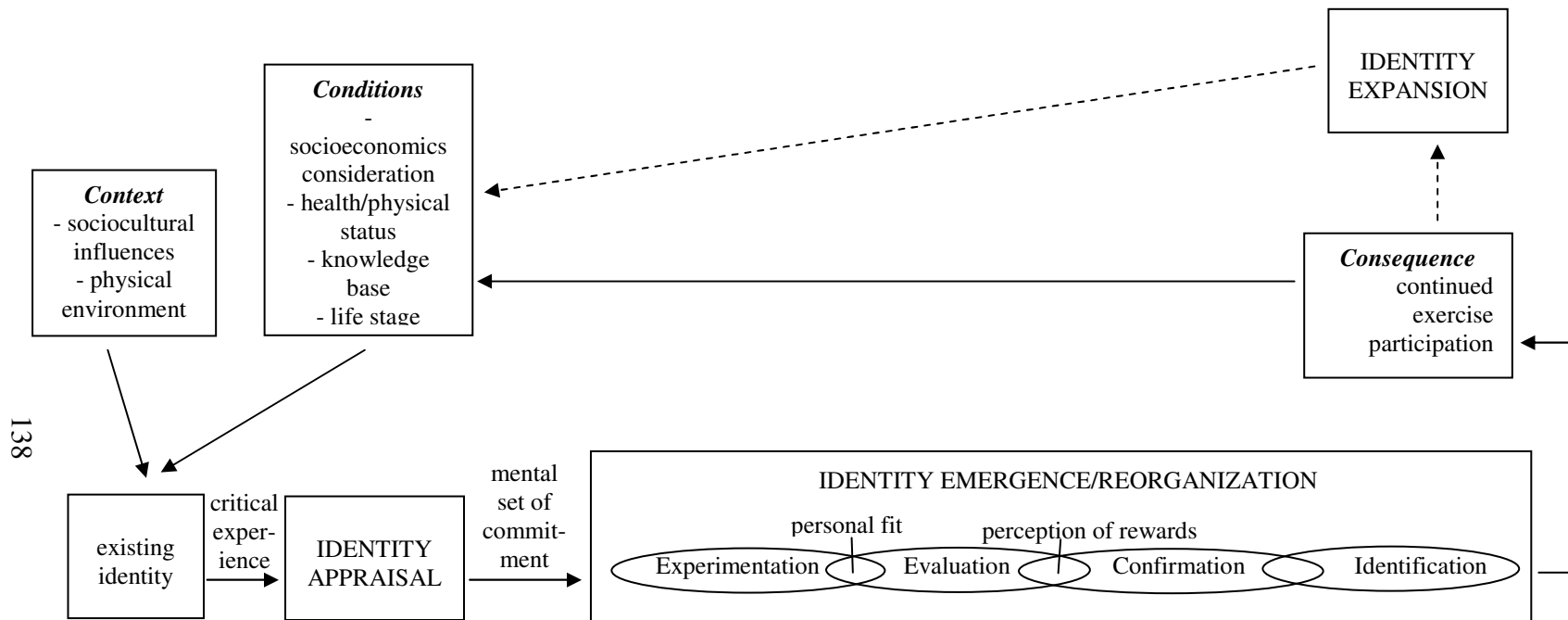


Figure 4.1: Schematic representation of the process of developing an exerciser identity (Medina, 1996)

Despite the difference in focus of the process models, Medina's model on identity development and the present study's model on the development of the behavior itself, there were marked parallels in the two depictions of the process of becoming physically active providing support for some of the aspects of the Physical Activity Evolution model. While there were several parallels to consider, four comparisons stood out as most significant: personal fit, the dynamic nature of the process, physical activity as a reinforcing behavior, and integration into the identity.

Personal fit in Medina's study was characterized by trying to find a program that exhibited a good personal fit with lifestyle and desired benefits. This stage emerged in the Experimentation phase of Identity Emergence/Reorganization. Varying levels of trying and dropping activities due to poor fit and length of time searching for personal fit were described by the participants in her study. This concept parallels the finding in the present study of needing to modify the physical activity regimen at various intervals to accommodate preferences, desired benefits and life changes. However, in the present model the concept, referred to as "planning with flexibility", is more organic to the process. It occurs over multiple time periods and across various dimensions of the physical activity experience. The fit of the regimen is considered and evaluated throughout movement through the process, speaking to the dynamic nature of the physical activity experience. In Medina's model, personal fit is more distinct temporally, occurring during Experimentation and before Evaluation. While re-cycling through the stages of her model is allowable, this conceptualization of personal fit results in a more discrete stage in the process. This difference seems slight but has important implications in intervention design. In both models, personal fit of the regimen emerges as an

important concept to include in teaching women how to incorporate physical activity into their lifestyles. However, in the present model, learning the skills to accommodate continued planning and adapting of the regimen to fit with life changes, both the daily type as well as the long-term, is germane to the success of movement through the process.

The concept of personal fit is a component of the dynamic nature of the process of integrating physical activity into daily life. Both models depicted the process as a series of stages that could be experienced and re-experienced through a number of cycles. In Medina's model, being stuck in a certain stage is captured as well the possibility of needing to cycle back through the entire process. Once a person has developed an exerciser identity, it is possible to experience another dissonant Identity Appraisal phase and cycle back through the process. The analogous behavioral process is depicted by the modification and cessation loops in the present model. Women can realize a need for modification of their regimen and thus their commitment to the lifestyle and cycle back through one or more of the loops. While it appears through the depiction of Medina's model that cycling back requires returning to the very beginning, or "existing identity", she explains in the text that the existing identity changes every time the process is experienced. Thus, while the person is returning the beginning of the process, they are returning with a different identity and not backtracking all the way to the person they were previously. This notion of a changed self parallels the present study exactly and is depicted here as cycling back through the process midway through, never actually returning to the beginning because once the process is initiated there is always that frame of reference for some level of success at physical activity. As with the concept of

personal fit, the dynamic nature of a physical activity regimen requires preparation and skill building on the part of the participants. If physical activity is conceptualized as a static prescription (e.g., 30 minutes of running on Monday, Wednesday, and Friday), women may become discouraged when they fail at incorporating this regimen into their lifestyle. Further, if this amount and type of activity does not result in the desired benefits from physical activity, they may come to believe that they chose the wrong solution to their problem. Based on the emergence of this concept in these two models, more attention should be paid to helping women build a toolbox of skills for a physically active lifestyle including various hints for modifying the regimen to fit into daily life, plans for dealing with future challenges to active lifestyle and a variety of programs to fit different goals and preferences. Physical activity requires a tailored regimen conceptualized both as tailoring the regimen to the woman during the Initiation Phase and as educating women about tailoring activity to their daily lives throughout the Integration Phase.

There are many references to physical activity as a self-reinforcing behavior in the Medina study. In the early phases she discussed that once some of the delayed onset benefits were realized, commitment was strengthened and exercise became self-reinforcing. Participants were motivated to continue exercising in order to continue to experience the related benefits. This concept mirrors the benefit-motivation-execution cycle described in the present study. In this process, the cycle is experienced after significant experience with physical activity and after discovering a successful enough regimen to reap benefits. In Medina's study it occurs somewhat earlier in the process and seems to be a more discrete discovery. However, the key to reinforcement in both models is delayed onset or enhanced benefits. While benefits in both studies were conceptualized

broadly, it could still be said that women were motivated not by some aspect of the activity itself but by some subset of the benefits that the activity could provide. Thus, it is not technically self-reinforcing but reinforcing via the benefits it provides. This finding is significant in two ways. It supports the importance of matching the regimen to the desired benefits. For example, if stress relief, increased mental focus and contemplative time are desired benefits, yoga would be a better activity choice for some women than a spinning class. However, if increased endurance and lower body muscle development are the desired benefits, spinning becomes an attractive option. It can be imagined, using this example, if the incongruous activity is chosen and the desired benefits not realized, stagnation in the process could occur if it is not recognized that a change in regimen is needed. It also emphasizes the importance of educating women about immediate and delayed onset benefits from physical activity participation. In both studies, people experienced benefits such as more energy, better sleep patterns and increased alertness early on in their participation. Further, some of the people came to value these benefits more than they expected. It might prove helpful to design intervention elements that highlight the immediate benefits of physical activity in order to “carry” women over until they experience some of the enhanced benefits that created the impetus for physical activity adoption and thus provide an important trigger for the benefit-motivation-execution cycle.

An important result of physical activity behavior becoming reinforcing, or entering the benefit-motivation-cycle, is the subsequent integration of exercise into the lifestyle. In Medina’s study integration was characterized by developing an exerciser identity. In this study, it was evidenced by a changed conceptualization of physical

activity as a part of daily life, something that would be missed if not present. It was further exemplified by women having to spend less energy planning for physical activity. They had acquired enough experience with dealing with daily and long-term challenges that some of the subsequent modifications had become easier and less of a burden. Participants in both studies experienced the realization that they had become used to their weekly activity sessions and the physical and mental benefits they provided. They spoke about how physical activity was a desired part of their day, a part of who they were, and an element of life that would be missed. Some discussed physical activity having a routinized role in life similar to brushing teeth and shopping. While it is unlikely that physical activity was as routinized as brushing teeth (the concept of relapse illustrates this point), the importance of this stage in both studies is the perception on the part of the participants that exercise was no longer one of a list of possible activities to be completed on a given day but now on the short list of priority activities that would be completed and further, that had transcended the activity itself and served to fulfill social time, personal time, or hobby pursuit. Another important feature of this integration is the understanding that even in relapse the person is never the same related to physical activity behavior as they were prior to realizing some success. They now have a frame of reference for when they were physically active and during the relapse that frame of reference will serve as a motivation to re-attain that success.

Overall, the comparisons and contrasts between this study and Medina's exemplify the potential for understanding physical activity behavior when considered as a process and studied using a contextual method. While different populations were investigated and the resulting models reflected these differing viewpoints, several

important features of the underlying process emerged from both studies. Further, although one model focused on identity emergence and the other on the behavioral process itself, one can imagine with some modification, the processes occurring in parallel. Thus, they do not necessarily reflect two entirely distinct processes but two different conceptualizations of the same basic process. In other words, the findings of each study are supported by the findings of the other and provide support for the further investigation of physical activity behavior in terms of the key concepts put forth in these models.

Another researcher used an adapted grounded theory approach guided by social identity theory to develop a framework of fitness participation (Laverie, 1998). Her sample of 15 aerobics participants was mostly female and Caucasian. She conducted in-depth interviews guided by the principles of social identity theory including the dominant role *doing* plays in daily life, the social nature of *doing*, and that social comparisons naturally occur when *doing*.

In her framework, participation in aerobics is initiated by various motivators including other people, dissatisfaction with other activities, or personal reasons such as health preservation. Ongoing participation in aerobics then leads to other motivators specific to continued participation including positive feelings, social connections, social comparisons, and mental and physical benefits. Experiencing these motivators leads to reinforcement of the aerobics identity of which there were four different types (Totally Immersed, Socially Influenced, Outcome Focused, and Detached Performers). The reinforcement of the aerobics identity then feeds back to continued participation in aerobics.

Findings from this study have obvious connections to both the present study and the Medina study (1996). The emergence of an exerciser identity as central to the maintenance of the behavior parallels the framework Medina developed. However, in Medina's study the reinforcement of the behavior through identity enhancement occurred toward the end of the process and characterized only a piece, albeit an important one, of the whole. The same comparison could be made to the present study. The parallel to the benefit-motivation-execution cycle and integration of physical activity into life is clear. Each study found that benefits resulting from continued participation served as motivators for maintenance of the behavior. While the concept of identity did not emerge as explicitly in this study, it is present in the descriptions of integration of activity into life which occurred concurrently with the benefit-motivation-execution cycle. However, this represents only one part of the overall process. Laverie's findings seem to characterize some of the final stages of maintaining physically active lifestyle rather than describing a more complete picture of the experience of adoption through maintenance. The partial description of the process of identity development and thus behavioral persistence exemplifies the importance of continuing to investigate this process in its entirety in order to develop refined and validated models that can be used in intervention planning. These models should also be considered among diverse gender and racial/cultural groups to understand the commonalities and differences inherent to different lived experiences.

Habit Formation

There is an obvious parallel between the process of integrating a behavior into daily life and the process habit formation. This section will consider the application of

habit formation to physical activity behavior and the significance of the findings from this study in the context of habit. There has actually been little application of the concepts of habit formation to physical activity behavior. Most of the papers found were conceptual in nature and certainly not specific to any gender or race/cultural group. However, these papers do offer some insight into the utility of habit formation in understanding and extending the present theory.

The important features of habit that potentially relate to physical activity behavior include the conceptualization of habits as automatic responses to stimuli, the belief that positive experiences enhance future execution of the same series of behaviors due to those behaviors becoming more strongly linked to the desired goals, and the tenet that cognitive processes play little role in the behavioral response to stimuli (Aarts, Paulussen, & Schaalma, 1997). However, in empirical investigations, habit is often operationalized simply as the self-reported frequency of past behavior. This past behavior is then thought to interact with other constructs such as intention to predict later behavior as in the Triandis model (Facione, 1993), a relationship that has been studied occasionally in the exercise domain.

No studies were found that empirically investigated the process of habit formation as a plausible explanation for the long-term development of physically active lifestyle. In the absence of these studies, habit can only be considered as a possible predictor of future behavior. If this relationship could be shown to hold, perhaps an expanded investigation into the role of habit in the integration of physical activity into daily life would be warranted. One group of studies was found that specifically addressed the effect of habit on future exercise behavior (Godin, Valois, Shephard, & Desharnais, 1987; Valois,

Desharnais, & Godin, 1988; Valois, Shephard, & Godin, 1986). In the earliest study, Valois and colleagues (1986) sent surveys to 240 people about habit, perceived physical ability, and exercise behavior. Subsequent surveys about proximal and distal exercise behavior were also sent at three and eight weeks, respectively, from baseline. The study found no significant interaction, though they had expected one, between habit and perceived physical ability. They did find that habit, or past behavior, was significantly predictive of both proximal and distal exercise behavior. The 1987 study (Godin et al., 1987) used the same data for a structural equation model to investigate causal relationships between intention, attitude, subjective norm, habit and proximal and distal exercise behavior. Proximal behavior was operationalized as habit relative to distal behavior. Habit did again predict distal behavior along with intention. The relationship of past behavior as a predictor for future behavior supports the finding in the present study of an Initiation Phase for physical activity. Some experience with physical activity is required before moving on to later stages of the process. Further, once experience with physical activity is gained, women are personally changed relative to physical activity behavior. They now possess a frame of reference for some level of success at the behavior. The primary weakness of the findings in this group of studies relates to their conceptualization of habit. If habit is conceptualized simply as past behavior, then the connection between habit and future behavior seems theoretically plausible and indeed supported empirically. However, the utility of habit theory is not in the simplified meaning of habit as a predictor variable but in the contextual process of habit formation. Further, these studies provide no evidence for whether or not physical activity behavior is in fact habitualized in its long-term maintenance.

A third study by the Valois group (1988) compared the Theory of Reasoned Action and the Triandis model to predict intention to participate in physical activity and distal participation (three weeks later). The Theory of Reasoned Action has been described earlier in this chapter. The Triandis model is similar in its inclusion of intention as a predictor of behavior, but it posits that behavior is a function of habit (past behavior), intention, and facilitating conditions (personal belief in ease or difficulty of participation). A survey was completed by 166 male and female participants (all Caucasian) assessing these theoretical constructs. A second survey was completed three weeks later measuring the behavioral component. The only significant predictor of distal behavior was a Triandis model function of habit and intention, mirroring the results of the other two studies from this group. The empirical support for the Triandis model variables led the authors to the conclusion that exercise requires a thought process (intention) and that it differs from behaviors such as seat belt use that can be routinized or occur with minimal cognitive processing. They further state that the physical demand and will required for exercise may render it a behavior where habit does not exert influence on behavior directly but acts as a mediator between intention and behavior. The findings of this study begin to explore the potential complexity of habit formation as applied to physical activity behavior. However, they are still operationalizing habit as past behavior and ignoring the feature of habit representing decreased cognitive processing. These studies also represent extremely limited views of behavior development with measurement of distal behavior taking place within three to eight weeks.

Ouellette and Wood (1998) attempted a meta-analysis of existing habit research to investigate their ideas about potential pathways for habit and intention to predict future

behavior. These included, but were not specific to, studies of physical activity behavior. Further, the studies included did not necessarily set out to investigate habit as a unique construct; the commonality lied in the measurement of past behavior and intention. Again, this study considered habit only as a past behavior predictor variable for future behavior, but the studies available for the meta-analysis investigating habit would only be using this conceptualization. The authors did propose a more complex construction of habit with four pathways dependent on frequency of behavioral execution and stability of behavioral context. In their hypotheses, habit should have the strongest impact on future behavior when the frequency is high (i.e., daily or weekly) and the context in which the behavior occurs is stable. Consequently, they propose that intentions should be the more influential factor when the behavior is only performed annually or a few times a year and in a less stable context. Physical activity behavior was coded as a high frequency, high stable context behavior. The results indicated that past behavior was an important predictor of future behavior. However, other predictors had similar effect sizes such as intentions, attitudes, behavioral control, and subjective norms. Through path analysis, the authors felt they found support for their hypothesis that habit formation was most conducive to behavioral domains where frequency and context stability were both high. Examples of these behavioral domains were alcohol and coffee consumption, exercise behavior, seat belt use, and class and church attendance. There was a “strong direct effect of past behavior on future responses (Ouellette & Wood, 1998)” (p. 66) which was characterized as habit formation. While the meta-analysis succeeds in specifying the role of habit more clearly than the previous study, it cannot be supported in the present study that physical activity can be classified as a stable context behavior. Further, the context of

physical activity seems more dynamic than some of the other behaviors in its group such as seat belt use and church attendance. Physical activity requires considerable physical exertion unlike the other behaviors in its group. It requires much more time investment than putting on a seat belt or consuming a beverage. The findings from the present study would support considering physical activity as a behavior that occurs in a non-stable context, everyday life. While some people might encounter the same environmental stimuli everyday when they come home from work triggering the exercise response, women in the current study often stated that every day was different or that there was no typical day. As such, it seems that physical activity should be considered in its own unique context or at very least with other behaviors of similarly changing daily manifestations. Further, while it could be argued that despite the potential differences in physical activity behavior compared to the other behaviors in its group, they did indeed as a group support the prediction of future behavior from past behavior. This relationship was also found in the Valois study (1986) and others (Dishman, 1987). While it seems clear that habit, when operationalized as past behavior, is predictive of future behavior, further work is needed to understand the process of habit formation and if physical activity behavior can indeed be habitualized.

To this end, Aarts and colleagues (1997) developed a model of physical exercise and habit formation from their synthesis of the literature on theoretical application to physical activity behavior. They concluded that theory application had largely ignored the repetitive nature of physical activity. Thus, they postulated that this repetitive nature would eventually result in the physical activity itself becoming automatic and routinized, no longer being regulated by a contemplative decisional process. The model they put

forth begins with the need to exercise as influenced by the social and physical environment. This need is then considered through perceptions of desirability, social norms, and behavioral control. Once the goal is set for exercise, intention follows, resulting in exercise performance. This sequence is referred to as the initial contemplative decision process. They note that any new attempt at exercise (e.g., choosing a different activity, location, etc.) would result in re-experiencing this initial contemplative process. Should the initial process result in a positive experience, habit formation ensues, thus in theory, habit could be formed after the first attempt at activity. After this step, when the need to exercise is again experienced, the only cognitive process required is to consider whether the same behavior can be executed. If so, the behavior is performed, habit reinforced and so on. If not, the initial contemplative process must be undergone. They conclude that with continued repetition and practice of a specific behavior (e.g., arrive home from work, change into shorts, run five miles), that behavior becomes automatic in the same situational context and no longer guided by “reasoned considerations”.

In relation to the present study, habit formation as conceptualized by Aarts and colleagues (1997) has the fundamental deficiency of not considering the dynamic placement of physical activity into the daily context of life. While it is conceivable that in the exact same circumstances, repeated behavior could become routinized, the findings of this study show that exact circumstances are limited in the integration of physical activity into daily life. For the women in this study, most days unfolded differently from the day before, and a variety of skills had to be drawn upon to incorporate physical activity into these changing circumstances. That is not to say that over time, women did not become

more skillful at this incorporation and that it could not have become less of a cognitive burden. However, to call it “automatic” or “immediately activated” by a situational cue ignores a key element of the integration process.

The most promising aspect of habit formation is the idea that positive experiences influence future participation or by feeling satisfied with one’s experience with a particular physical activity behavior, that behavior is then more strongly associated with the desired goal. This relationship between the behavior and its subsequent goal attainment can be supported in the present study. Women clearly had to find the physical activity regimen that fit their desired benefits and lifestyle before integration could be realized. The attainment of enhanced benefits then increased motivation and influenced further participation in the behavior. While this aspect of habit formation holds, entering the benefit-motivation-execution cycle was not static. The regimen was re-evaluated and adjusted regularly which would seem to require complex cognitive processing or re-entering Aarts and colleagues (1997) initial contemplative process. The behavior does become more routine and more integrated into the lifestyle, likely reducing the cognitive burden, but its dynamic nature seems to prevent true habit formation.

Habit theory may inform the process of integrating physical activity into daily life, but since it is typically considered outside of the context of daily life, it needs to be extended to accommodate the complexity of both the behavior itself and the dynamic situations into which it must fit. Further, it is unclear whether a cognitive shortcut would be necessary for each individual physical activity behavior and situation or if the reduced

cognitive processing would be more global. While it seems unlikely that physical activity is a behavior that becomes truly habitualized, more work is needed in this area to determine its utility in the exercise maintenance domain.

Kretchmar (2001) posits in his conceptual paper about the potential factors for exercise adherence, that habit, or the meaningless execution of a series of behaviors, cannot possibly account for the development of exercise adherence. He states that habit, feelings of duty, and feelings of enjoyment or fun may account for some of the development of behavioral persistence. However, he believes that more substantial meaning development is an untapped but potentially fruitful area of investigation in physically active lifestyle promotion. By substantial meaning he is referring to being moved or stirred by physical activity by having found some personally significant meaning. While this type of meaning was not described by all of the women in the present study, there were a few instances of hinting at discovering very personal meanings for physical activity such as strengthening of spirituality due to time spent in prayer while exercising. There were also many instances of feelings of duty and enjoyment. Further studies should investigate habit formation as a process specific to persistent physical activity behavior using a method that would allow for the emergence of enjoyment, duty, meaning and other constructs as important factors. This research should focus on the cognitive processes utilized in physical activity adoption and maintenance to discover whether physical activity qualifies as a potential habit formation behavior or if the cognitive processing is reduced but perpetually too involved in maintenance to be considered truly habitual.

Transtheoretical Model (TTM)

The only commonly utilized health behavior theory that was developed as a process theory is the Transtheoretical Model (Prochaska & DiClemente, 1983). The model represented an effort to integrate prominent psychological theories to describe how people change behaviors over time. It was developed by studying addictive behaviors; specifically smoking and has since been expanded to a myriad of health behaviors including physical activity. Central to the TTM are the five stages of change: Precontemplation, Contemplation, Preparation, Action and Maintenance. In brief, Precontemplation represents the stage where there is no intention to change in the foreseeable future. People in Precontemplation are often unaware or under-aware of a need to change their behavior. Contemplation is the stage where people have acknowledged a need to change and are considering action but have not made specific plans. At this stage, people are thought to be weighing the pros and cons of the behavior change. Once the person has decided to take action in the near future, usually operationalized as within the next month, they have progressed to the Preparation stage. People are usually trying out the behavior change during this stage, although not at criterion levels to be considered successful behavior change. The next stage is Action where people have progressed to exhibiting the behavior change at criterion levels for success. Behavioral change of one day through six months is classified as Action. Maintenance represents the last stage and is defined by successful behavior change lasting more than six months. The length of time a person remains in Maintenance is indeterminate and largely behavior dependent. People in Maintenance are continuing to stabilize their new behavior and avoid relapse. Some applications of the model use a sixth

stage, Termination to represent the point where there is no further temptation to engage in the old behaviors and self-efficacy is 100% in all previously tempting situations (Prochaska & Marcus, 1994). This stage has not been used in the physical activity domain. It is undetermined, and questionable, whether people can reach Termination for physical activity behavior or whether they remain at risk for relapse regardless of their length of time in the Maintenance stage. The original conception of stage progression was linear (Prochaska & DiClemente, 1983). Later research findings caused the authors to modify their model to include a spiral representation of stage progression which allowed for relapse and recycling through the stages (Prochaska, DiClemente, & Norcross, 1992).

The other important component of the TTM is the processes of change. The processes of change are activities and experiences that help to explain how the shifts from one stage to another occur. A brief summary of the 10 processes of change from Prochaska and colleagues (1992) is presented in Table 4.2.

Process of Change	Description
Consciousness raising	Increasing awareness about self and potential behavior change
Self-reevaluation	Assessing feelings and thoughts of self relative to the behavior change
Self-liberation	Belief that change is possible and commitment to act on that belief
Counterconditioning	Learning healthier behaviors that can substitute for problem behaviors
Stimulus control	Removal of cues for problem behaviors and addition of prompts for new behaviors
Reinforcement management	Rewards (from self or others) for making changes
Helping relationships	Seeking open and trusting support for new behaviors
Dramatic relief	Reduction of negative emotion caused by problem behavior through taking action
Environmental reevaluation	Assessment of how the behavior change will affect the social environment
Social liberation	Increase in social opportunities relative to the behavior change

Table 4.2: Processes of change (Prochaska et al., 1992)

These processes are used differentially depending on which stage a person is in and thus which stage they are progressing toward. Presumably the use of processes would also differ by behavior. In general, however, Prochaska and colleagues (1992) posit that the experiential or cognitive processes such as consciousness raising, dramatic relief, environmental reevaluation, self-reevaluation, and social liberation are most useful

during the early stage progressions. The behavioral processes such as self liberation, reinforcement management, helping relationships, counterconditioning and stimulus control are believed to be most useful in the later stage progressions.

The final constructs of the TTM are decisional balance, self-efficacy and temptation (Prochaska & Velicer, 1997). Decisional balance refers to the weighing of pros and cons for changing a behavior. This construct is believed to be most relevant for many behaviors, including physical activity behavior, in the early phases of stage progression when the cons of changing outweigh the pros in Precontemplation and cross over somewhere in Contemplation or Preparation (Prochaska & Marcus, 1994). Self-efficacy has been discussed earlier in this chapter, but is defined as situation specific confidence for engaging in a particular behavior. It is thought to increase across the stages for exercise behavior but has had limited ability to predict stage transition in the early stages (Prochaska & Marcus, 1994). Finally, temptation refers to urges to engage in a specific habit (specifically the problem behavior) in the face of difficult situations.

The TTM has been applied to physical activity behavior in a number of settings with mixed success. It should be noted that the model is rarely employed using all of its 18 constructs. As such, it is rarely investigated as a true process model. For the purposes of this discussion, the use of the TTM in physical activity behavior applications will be reviewed with studies considering the model in its full form being given particular attention. Where possible, applications to African American women will be highlighted. Finally the significance of the TTM in light of the present study's findings will be addressed.

In 2001, Marshall and Biddle conducted a meta-analysis of 80 study samples with data measuring one or more of the constructs of the TTM (Marshall & Biddle, 2001). Interestingly, only three of these studies included all of the key constructs of the TTM indicating that these three were essentially the only studies that considered the TTM in its entirety as a process model. Gender was considered as a moderating variable for the TTM constructs in the meta-analysis but not enough samples analyzed the data separately to report those findings. Race/ethnicity was not considered as a moderating variable.

In support of the use of a stage-based theory, physical activity appeared to increase with each movement through the stages. The largest effect size was for the movement from Preparation to Action (Cohen's $d=0.85$) as would be expected. An unexpected finding was evidence of small to moderate increases in physical activity from Precontemplation to Contemplation (Cohen's $d=0.34$). This finding may provide support for the Initiation Phase seen in the present study. Even when people have not fully committed to trying to adopt an active lifestyle, they might be testing various aspects of the behavior in preparation for that change in commitment. This meta-analysis considers the TTM as a strictly linear process, possibly because that was the way the included studies considered the model. Unfortunately, the spiral conception of the TTM best mirrors the dynamic and, at times ebb and flow nature, of regular physical activity participation suggested by the findings of both the present study and Medina's investigation of exercise integration. Further, the majority of the studies were cross-sectional, limiting their ability to consider the model as a process that unfolds over time.

The other constructs of the TTM considered in the meta-analysis also demonstrated interesting changes throughout the stage progression. Self-efficacy

exhibited effect sizes that were positive and significant across each stage of change but did not exhibit linearity with a decrease in the effect size in the transition between Contemplation and Preparation. Perhaps when first experimenting with the behavior, initial challenges attenuate self-efficacy. This meta-analysis could not provide insight into this finding.

Also from the meta-analysis, decisional balance, as measured by behavioral pros and cons, showed the largest contribution from pros in the early stages with small, continued contributions through the rest of the stage progressions. Behavioral cons showed the greatest impact in the early stage transitions as well. The largest decrease was from Precontemplation to Contemplation with continued declines across the stages to the smallest decrease occurring from Action to Maintenance. This finding differs from Prochaska and colleagues (1994) analysis of decisional balance for exercise acquisition. In that study behavioral cons rose from Precontemplation to Contemplation then began a steady decrease through the remaining stage transitions. This pattern was not unique to exercise behavior, it was seen also for smoking, quitting cocaine, and weight control with a less substantial increase for sunscreen use. This finding also requires further investigation for explanation of construct development across stage transition.

The processes of change analyses performed in the Marshall and Biddle meta-analysis (2001) resulted in many significant findings. Of the 40 effect sizes (10 processes by 4 stage transitions), 25 were statistically significant. The largest effect sizes across all processes were obtained in the transition from Precontemplation to Contemplation (d range=0.55 – 1.18) and from Preparation to Action (d range = 0.27 – 0.72) suggesting that the processes of change are used the most heavily during the significant change in

intention and then the significant change in behavior. Further, this finding suggests that both groups of processes are used in the stage transitions up through Action versus the hypothesis that the experiential processes are used early and the behavioral processes used later. Marshall and Biddle (2001) advocate for considering all ten processes as one group for the application to physical activity behavior.

For all five behavioral processes and three of the experiential processes the smallest effect sizes were for the transition from Action to Maintenance (d range=0.03 – 0.37) suggesting that fewer of these strategies are required once the behavior has been mastered for several months. This finding could also suggest that strategies required for maintenance were not being considered or measured. The largest single effect size was self liberation in the transition from Precontemplation to Contemplation ($d=1.18$). Self liberation also exhibited the largest effect size of the ten processes for the transition from Preparation to Action. The concept that belief in change and commitment/recommitment to change is an important feature of behavioral acquisition mirrors the key stages in the present theory of an initial commitment then a change/rededication of commitment prior to the Integration Phase. However, in the meta-analysis findings self-liberation seems to peak earlier in the process, prior to criterion level behavioral participation.

There were three studies in the meta-analysis that considered the TTM in its entirety. One of these studies investigated 819 male and female high school students through self-administered surveys using stage as the dependent variable (Nigg & Courneya, 1998). Core constructs of the TTM including the processes of change, decisional balance and self-efficacy were considered for their use across the stages of

change. All of the constructs were found to differ significantly across changes with each construct discriminating at least one stage. The constructs with the largest effect sizes were counterconditioning, self-liberation and self-efficacy.

The other two studies investigated the TTM among older adults. One study, again cross-sectional, used telephone interviews to assess stage, decisional balance, processes of change and self-efficacy in 349 men and women 65 years and older with a cardiac diagnosis (Hellman, 1997). As previously found, each of the core constructs was a significant predictor in differentiating between the stages for exercise behavior. The other study distributed a questionnaire completed by 583 men and women between the ages of 50 and 65 (Gorely & Gordon, 1995). The core constructs of the TTM were measured including stage, processes of change, self-efficacy, and decisional balance. Eight of the core constructs were statistically significant in discriminating among stages. These constructs were processes of change including self-reevaluation, consciousness raising, counterconditioning, self-liberation, stimulus control; self-efficacy; and both decisional balance variables, pros and cons. Each of these three studies provided support for the use of the core constructs of the TTM in the exercise domain despite their varied populations.

One other study was found, published in the same year as the meta-analysis, that investigated the entire TTM (Plotnikoff, Hotz, Birkett, & Courneya, 2001). This study utilized a telephone survey at three time points (baseline, six months, and one year) among 683 Canadian men and women. TTM constructs were analyzed for their ability to predict stage transition in the subsequent time period (e.g., the ability of baseline constructs to predict stage transition from baseline to six months). Eighteen of the 40 possible predictions (20 for each time period) were statistically significant. Similar to the

other studies, these findings indicate support for the core constructs of the TTM including self-efficacy, decisional balance, and the behavioral processes. The experiential processes were significant only in the prediction of remaining in Action/Maintenance from the six-month time-point to the one-year time-point. Further, since the study was longitudinal, it goes beyond the ability of the core constructs to discriminate between stages to the actual use of the constructs during stage transition.

Based on the findings from these studies, certain constructs appeared to have more relevance to this domain than others. Self-liberation appears to hold in a variety of studies and the involvement of commitment over time can be supported in the present study. Findings from the TTM studies continue to support findings from other models that self-efficacy is clearly a compelling construct for physical activity adoption. A serious limitation of most of these studies is their cross-sectional nature. As such, they really focus on whether the TTM might be useful in exercise domain rather than its utility in informing the development of a physically active lifestyle. Longitudinal studies or at least retrospective studies of people in the Maintenance stage are needed. This limitation highlights the importance of investigating the TTM as a process model unfolding over time.

In 2003, a review of physical activity interventions based on the TTM was published in the *British Journal of Sports Medicine* (Adams & White, 2003). Of the 16 interventions included in the review, three were included in Marshall and Biddle's meta-analysis (2001). Two of these three studies did not include a long-term measure, or proxy for maintenance, and will only be covered briefly here. The seven studies that did include a long-term measure will be considered in more detail. Overall, the studies reviewed

utilized designs including TTM based counseling, TTM based written materials, or both. General findings were that in the short term (six months or less), 11 of 15 intervention programs reported a statistically significant benefit of TTM based programs over control programs in stage progression, activity level or both. One program did not have a comparison group. This finding provides some evidence that the TTM can be used to design programs aimed at the adoption of physical activity, or stage progression, over time. In the longer-term (six months or more), only two of seven programs reported a benefit from TTM based intervention. As noted in the meta-analysis findings, the TTM may not be addressing important constructs for maintenance or there could be design issues such as not operationalizing constructs appropriately or not having enough of the sample in Maintenance to detect any significant differences. Since it appears that researchers are purposely addressing adoption (evidenced by the recruitment of all sedentary participants), the studies just may not be designed for true maintenance investigation. Future studies should focus on the use of the TTM through the Maintenance stage and beyond to relapse prevention. Further, no investigation of the TTM for relapse prevention in physical activity behavior was seen in these studies. This should be a strength of the model since it was developed in the areas of addictive behaviors where relapse is the norm (Prochaska et al., 1992). It also appears that researchers are still using the original linear conception of the model when it appears that the spiral conception is likely much closer to the reality of exercise adoption and maintenance as indicated by the findings of the present study.

Of the seven studies included in the review that used a follow-up or longer-term measure of effectiveness, five found no significant long-term effect of a TTM based

intervention over a control intervention (Cardinal & Sachs, 1995; Dunn et al., 1999; Graham-Clarke & Oldenburg, 1994; Harland et al., 1999; Pinto, Lynn, Marcus, DePue, & Goldstein, 2001). Three of these showed no advantage at all, long or short-term, of the TTM based intervention over the control condition (Cardinal & Sachs, 1995; Dunn et al., 1999; Graham-Clarke & Oldenburg, 1994). In all three studies, both intervention and control groups had significant differences from baseline in stage progression, activity level or both in the short-term. Two of these studies also showed significant differences from baseline in the long-term (Cardinal & Sachs, 1995; Dunn et al., 1999). Clearly, these studies are achieving some intervention effectiveness; however it cannot be attributed to the utilization of the TTM. Several possible reasons could be cited for the lack of findings related to the use of the TTM including failure to truly stage match the intervention, using a single worksite for intervention and control, and differentiating the intervention and control groups not only by theory driven materials but also by type of exercise (e.g., gym based versus lifestyle). Further, not all of the studies even used a physical activity outcome, only stage progression. While stage progression is indicative of positive behavior change, it is physical activity that is the outcome of interest and whose process needs to be elucidated.

Two of the studies found short-term differences between the TTM based programs and the control programs but no differences in the long-term (Harland et al., 1999; Pinto et al., 2001). Both studies used TTM based counseling by a trained health professional of varying degrees of intensity among sedentary patients recruited from their primary care physician. Both studies also used routine care from the physicians as their comparison group with randomized, controlled designs. Physically Active for Life (Pinto

et al., 2001) showed significant between group differences for stage in the short-term (6 weeks), but not for physical activity levels. Neither of these outcomes were significant at eight months, and stage showed a trend toward more participants from the control group being in the Preparation and Action stages ($p=0.07$). It is interesting that significantly more members of the intervention group were in the Preparation and Action stages at six weeks without significantly more of them meeting physical activity recommendations. This finding may be attributable to a design flaw in grouping Preparation and Action people together. Other studies have shown that exercise behavior shows a distinct Preparation stage where activity is being attempted but not at recommended levels (Prochaska et al., 1994). The idea of a Preparation stage could also be supported by the present study in the very early experiences of some women where they described trying out some different activities but not seriously committing to the behavior.

In the Newcastle Exercise Project (Harland et al., 1999), the most intensive of the four TTM intervention groups did show significantly improved activity scores over the control group at three months. However, at 12 months there was no difference in the groups. The authors did not venture any hypotheses regarding the loss of effects in the long-term, though the 12-week intervention could be considered to be aimed at exercise adoption as the individuals were all sedentary at baseline.

There is not evidence that exercise adoption and exercise maintenance are the same condition, thus those successful at adoption may not have been prepared to be successful at maintenance. Many studies recruited sedentary people to their TTM interventions indicating that they would have to be in the pre-Action stages or relapse at study start. Incidentally, relapse precontemplation or relapse contemplation were not

differentiated from the typical definitions of Precontemplation and Contemplation. As such, these interventions were not actually designed to understand or impact maintenance, where people would have to be recruited in the Action, Maintenance, or relapse phases for tailored intervention activities. Although the literature seems to show that effective programming has been developed for adoption but not for maintenance, studies continue to apply the model in the adoption context without expanding their investigation to further examine the utility of the TTM in the maintenance of physical activity behavior.

Two studies showed intervention effects in both the long and short-term. Steptoe and colleagues (Steptoe et al., 1999; Steptoe, Kerry, Rink, & Hilton, 2001) used behavioral counseling by practice nurses based on stage of change to increase regular physical activity as well as reduce smoking and fat consumption. Thus, all 883 of the men and women were underactive at baseline. Control participants received usual care. Participants were assessed at baseline, four months, and 12 months. For physical activity behavior, number of physical activity sessions completed increased significantly for the intervention group compared to the control group at both four months and 12 months. The likelihood of progressing to Action/Maintenance was also higher (odds ratio=2.15) for intervention versus control participants. Action and Maintenance were collapsed into one category which technically groups all those participating in three or more sessions per week for one week through twelve months together. Thus, this study remains focused on adoption even though it included a follow-up measure at 12 months. Due to collapsing the Action and Maintenance stages together it is impossible to discern whether more

individuals had moved into Action from the earlier stages or if people had progressed from Action to Maintenance or remained in Maintenance. As such, the information about the success of the intervention beyond Action is truncated.

The other study showing both short and long term effects specifically addressed maintenance of physical activity through a motivationally tailored intervention informed by the TTM (Bock, Marcus, Pinto, & Forsyth, 2001; Marcus et al., 1998). Sedentary individuals were assigned to either a tailored or standard intervention and assessed at baseline, one, three, and six months with follow-up at 12 months. Of the 120 participants who completed the follow-up measures, most were White females with mean age of 45 (± 10). At both six months and 12 months, participants in the intervention arm reported more minutes in physical activity than in the control arm. Only the six month differences were statistically significant ($p < 0.01$ versus $p=0.10$). However, significantly more participants in the intervention arm were meeting national recommendations for physical activity at both six and 12 months. Further, there was a significant difference at 12 months between participants who were and were not meeting national physical activity recommendations on constructs including higher self-efficacy, fewer barriers, and more endorsement of the behavioral processes of change. More detailed analysis of maintenance was conducted by dividing participants based on activity levels from six months through 12 months into four categories: those who were underactive and remained so, those who became active then regressed, those who were underactive and became active, and those who became active and remained so. Chi-square analysis was used to test difference in category assignment by intervention versus control. A significantly larger proportion of individuals who became active and remained so had

been in the intervention arm ($p < 0.01$). The study also found that core constructs of the TTM were involved in those entering the Maintenance stage at six months and remaining there at 12 months. These individuals exhibited increased self-efficacy between six and 12 months and continued to use the behavioral processes of change. Unfortunately, there were only 21 people in this category from which to base the analysis. However, this study was the only one found that investigated and endorsed the utility of the TTM in the maintenance of physical activity. Further, it supported the findings from the present study that maintenance is a dynamic process where women continue to utilize their skills in behavioral integration in order to maintain their healthy lifestyle. It is also the only study that considered relapse, an important aspect of physical activity participation that emerged from the present study.

Another study specifically investigated the Action and Maintenance stages among 57 physically active college students (Buckworth & Wallace, 2002). A survey assessing stage, self-efficacy, decisional balance, and processes of change as well as exercise behavior was distributed. Heart rate, blood pressure, and maximal aerobic capacity were also measured. Significant differences in the TTM constructs were found between those in the Action and Maintenance stages. Decisional balance varied between the two stages with the difference between pros and cons being significantly greater in the Maintenance stage. Further, consciousness raising scores, an experiential process of change, were higher for those in the Maintenance stage. This finding is quite interesting as consciousness raising is a process often associated with early stages of behavioral adoption. Perhaps further exposure to participation in exercise continues to increase knowledge and awareness beyond the adoption phase. Three of the behavioral processes

were also higher in the Maintenance stage including counterconditioning, self-liberation and stimulus control. Differences in self-efficacy were not found. There were also differences in activity frequency and physiological markers of fitness between the Action and Maintenance stages indicating that the latter is not merely an extension of the former but a stage with its own unique characteristics. The authors conclude from their findings that long-term exercise participation may be a dynamic process, a conclusion supported by the present study and the findings of the Bock and colleagues study (2001). Further, it appears from the limited empirical evidence available that TTM constructs may indeed be useful for conceptualizing maintenance behavior in addition to the much more commonly investigated adoption behavior.

Only one study was found specifically applying the TTM to African American women. Felton and colleagues (2000) studied TTM constructs among 104 African American women who volunteered to complete a one-time interviewer-administered survey. The women had a mean age of 39 years and represented a range of educational attainment. Constructs measured included decisional balance, self-efficacy, and physical activity stage. Self-report of physical activity participation was also included. Processes of change were not assessed. Thirty-three percent of the women were in the Action or Maintenance stage at data collection. Stage was significantly correlated with self-efficacy but not decisional balance. Other constructs significantly correlated with stage included friend and family support and enjoyment. Further analyses were conducted comparing those in pre-Action stages with those in Action/Maintenance. The only TTM construct that differed significantly between groups was self-efficacy. Other important differences between the two groups included physical activity participation as a teenager, friend and

family support and enjoyment. Based on the findings from this study, some constructs appear to hold for African American women, but clearly further investigation is needed including studies looking at the processes of change over stage progression. Intervention studies are also needed investigating TTM designed programs for African American women in each of the stages. The findings from the present study support the importance of friend and family social support. Further, many of the women reported participation in their teens years and enjoyment of physical activity.

Another study used one TTM construct to examine perceived barriers by stage in a diverse group of women including roughly equal groups of African American, Native American, Hispanic, and Caucasian women (Heesch et al., 2000). Stages of change and barriers were assessed among 2,912 women via an interviewer-administered telephone survey. The authors were primarily interested in understanding women in the pre-Maintenance stages of the behavior and thus dropped all the women who staged themselves in Maintenance from the analysis due to some measurement concerns. Barriers were found to be moderately to highly correlated among the racial/ethnic groups in the same stage. However, within each racial/ethnic group, barriers were significantly different between women in adjacent stages. If barriers can then be conceptualized as cons for exercise in a decisional balance context, different cons would need to be addressed among African American women depending on the stage. Specific findings from this study suggest that important cons for this group of women include being too tired and lacking energy for Precontemplators, care-giving duties and lacking a safe place for Contemplators, and lacking time and fearing injury for those in Preparation/Action. This study represents a limited application of the TTM to exercise behavior among

African American women. However, in light of the dearth of information related to this group, it does provide support for differentiation in cons across the stages. Some of the barriers described by the women in the present study did include lack of time and care-giving duties. Of course, women in the present study overcame these barriers. In terms of the TTM, studies elucidating which processes of change are important for African American women in overcoming their particular barriers are still in need.

While the evidence for the TTM as a process illustrating the full picture of physical activity adoption and maintenance is limited, severely among African American women, there is clearly some evidence of utility. The strongest evidence is for exercise adoption in the short-term. A few studies have provided evidence for potential of the TTM in understanding maintenance and maybe relapse prevention. This area is critical for future study. Further, some of the evidence from TTM based studies of the dynamic nature of the Maintenance stage refute the idea that physical activity behavior can be habitualized, thus casting doubt on the utility of habit formation in the exercise domain.

Future studies can be informed both by past TTM work on maintenance as described here as well as findings from the present study. This study is specific to physical activity while the TTM is more global. There are, however, parallels including an Initiation and Integration Phase that can be compared to early stage progression and later stage progression. Also, both methods conceptualize maintenance as a dynamic stage, where processes and techniques are being used to remain physically active. Further, both methods allow for temporary relapse, a component that appears important in long-term physical activity participation but has rarely been investigated. While the data from the present study were not analyzed through a processes of change structure,

some of the processes that proved important for exercise stage transition can be supported by experiences described by the women in the present study. In general, many of the women described experiences that mirrored the concepts of consciousness raising (learning more about physical activity and personal risk), dramatic relief (feelings of taking care of self and preventing disease), self-liberation (believing in self and committing to physical activity), self-reevaluation (assessing themselves as active women), helping relationships (seeking and maintaining physical activity companions), and stimulus control (leaving exercise clothes in trunk, taking up active leisure pursuits).

The body of literature on TTM application to exercise behavior could be greatly enhanced by conducting studies designed to actively recruit people in all the stages, consider the spiral conceptualization of the stages, and measuring intervention activities at 12 months and beyond using both stage and physical activity outcomes. The TTM also needs to be considered in the context of daily life, a context that has to account for gender and race/culture. It is unknown at this time if different groups of people use the processes of change differentially or move through the stages in different patterns. Further, patterns of relapse and strategies used to overcome relapse are not understood generally or by group.

The criterion by which to judge the utility of a process theory or by which to compare process theories is not as clear-cut as in the case of variance theory. Further, the one process theory with substantial empirical evidence in this review, the TTM, is often treated as a variance theory. Thus, there is little guidance in the physical activity literature to determine what criteria are best used for judging the quality of a process theory. In considering this issue, it is useful to return to Mohr's (1982) discussion of the properties

of a process theory. He states that the basis for explanation in this type of theory is how the factors fit together, how they are ordered in time, and what the important external influences on the factors are that promote or inhibit movement through the process. One method of assessing these properties would be through a longitudinal study. In planning this type of study it would be useful to recruit people at various stages of the physical activity evolution process to follow over time. The relationships between each construct and their ordering toward the outcome could be tested to ensure that the included factors were relevant to reaching the outcome and ordered properly.

While this approach provides evidence for one aspect of measuring a process theory's utility, it does not address whether or not the theory really describes the experiences of a large proportion of people acquiring the target behavior. This could be accomplished by selecting a new sample of people that meet the same selection criteria as those in the study of interest (e.g., physically active African American women). A qualitative assessment would then be designed aimed at affirmation or refutation of which steps and constructs were relevant and/or necessary for movement through the process. An assessment of this type should not be construed as a replication of a grounded theory study, rather an evaluation and refinement of the model based on the experiences of a new but comparable sample. Other studies could follow among groups of people exhibiting different characteristics to compare commonalities and differences in the process by variables such as race and gender.

The TTM was the only process theory reviewed here with any empirical evidence for its utility outside of the founding study. Only one of the TTM studies reviewed directly addressed the issue of process theory quality or utility as discussed here. The

Plotnikoff and colleagues study (2001) used a longitudinal design with people in each of the stages at baseline. Their findings, as presented previously, provided support for the TTM as a process model. Further, Marshall and Biddle's (2001) meta-analysis of studies examining the TTM for exercise behavior provided additional evidence of the utility of the TTM specifically as a process theory. As described earlier in this chapter, they calculated mean effect size for each model construct by four stage transitions: Precontemplation to Contemplation, Contemplation to Preparation, Preparation to Action, and Action to Maintenance. The findings indicated many statistically significant effect sizes (e.g., 25 of 40 for the processes of change) which provided evidence that the constructs were being utilized in progression through the model. Further, findings indicated that different constructs were relevant to different stage transitions. These findings mirror the evidence provided by the Plotnikoff and colleagues study (2001). This type of analysis provides some evidence of the usefulness of the TTM as a process theory explaining behavior change. Further investigations should consider this issue both longitudinally and qualitatively to garner more detailed understanding of participants' movement through the model for specific behaviors of interest.

In general, process theories provide the best comparison to the current theory. It is clear that work is limited in this area. The actual process of behavioral integration in the physical activity domain remains largely untapped. Some of the studies reviewed here, especially Medina's study (1996) and the work on TTM among people in the Action and Maintenance stages, provide support for the present study's conceptualization of this process. Clearly there is still much work to be done. Researchers are studying sedentary people to understand physical activity maintenance. Sedentary people are appropriate for

studying adoption or in long-term studies that maintain analyses for each stage. But underactive and active people should be considered as a rich opportunity for studying adoption and maintenance of criterion levels of physical activity. Further, in order to investigate relapse prevention and relapse emergence, active people would have to be included. This appears to be an important area of future investigation as indicated by the present study. The relapse phase was salient to most of the women in this study and it can be imagined that while the study participants were successful in overcoming relapse, many other women may be stuck there. Once the full process of behavioral integration is better understood, constructs can be operationalized and pathways postulated and quantified. Until then, further attention is needed to refining, and in some cases integrating, the fledging process models available at this time.

Context and Conditions Influencing Physical Activity Participation

Several conditions and one contextual factor important to the development of a physically active lifestyle emerged during the course of the study. Of those, two have been addressed in the literature, social support and the influence of race/culture on physical activity participation. The limited information available related to the findings on planning techniques was discussed within the context of the Relapse Prevention Model earlier in this chapter.

Social Support

The presence and function of physical activity companions was an important finding of this study. Not only did every woman have a companion of some type, four different roles for companions were elucidated. These roles and their corresponding role functions as presented in the previous chapter represent the four types of social support

often referred to in social support research. These four types of social support include emotional, instrumental, informational, and appraisal (Heaney & Israel, 1997). Emotional support refers to supporting someone through feelings of empathy, love, and caring and instrumental support which involves the provision of tangible aid and services. Informational support refers to advice and suggestions while appraisal support is the provision of information that can be used for evaluation of behavioral progress and development.

Emotional support was provided in this study through companions in both the Motivational and Social roles. These people provided positive feedback and encouragement as well as enjoyable social experiences in the context of physical activity participation. Instrumental support was provided primarily by those in the Instructional role who acted as trainers and exercise professionals. Informational support was also provided by those in the Instructional role. Further, companions in the Facilitation role provided useful information and advice to the women regarding their physical activity as well. Appraisal support was also provided by a number of companion types. Instructional role companions were most suited to offer feedback that could be used for self-evaluation, though Motivational and Social role companions did as well. The findings from this study support the applicability of social support and different types of social support in the physical activity domain. Some of the work applying Social Cognitive Theory and the Transtheoretical Model also offers support for the general construct of social support in the field of exercise behavior as do reviews of important physical activity determinants (Buckworth & Dishman, 2002; Sallis & Owen, 1999).

Several other studies have specifically considered the role of social support on physical activity participation. Gillett (1988) investigated social support among 38 overweight women participating in a 16 week dance-exercise intervention. Qualitative interviews pre- and post-intervention as well as field notes from throughout the study were used to identify important concepts related to program adherence and dropout. Social support characteristics were cited as important factors among adherents including the opportunity for socialization, accountability, and motivational comments and reinforcement during class. All of these concepts can be supported by the present study as important factors related to physical activity participation.

Another study examined types of social support among African Americans (mixed gender) participating in a church-based intervention for a variety of health behaviors including exercise (Thrasher, Campbell, & Oates, 2004). Eight hundred-fifty women completed a telephone interview assessing emotional, informational, and instrumental support for engaging in physical activity. Physical activity participation was also assessed. Analyses revealed that emotional and instrumental support were significantly related to physical activity. The relationship between emotional support and physical activity was moderated by gender, with a significant, positive relationship existing among women but not men. Informational support was not found to have a significant relationship with physical activity. The findings for emotional and instrumental support can again be supported by the findings from the present study. The gender effect cannot be compared but provides interesting background for future testing of the present model among physically active men. Further, the finding related to the insignificance of informational support cannot be supported by the present study. Women

in this study indeed shared advice, information, and suggestions on physical activity participation. However, since few studies have examined the types and roles of social support in this domain, further work should continue to elucidate these relationships.

Other studies have compared social support as an exercise determinant among different racial/ethnic groups of women. Eyler and colleagues (1999) analyzed data from a telephone survey among 2,912 African American, Hispanic, American Indian/Alaskan Native, and White women who were 40 years old and older. Questions on physical activity social support (PASS) tapped general support, family support, and friend support. Physical activity participation was also measured. General PASS, family PASS, and friend PASS were found to vary significantly between the racial/ethnic groups.

Considering percentage of women receiving a high PASS score, African American women ranked third on both general and family PASS and second for friend PASS. Odds ratios were calculated for low, medium, and high PASS scores within each of four activity level groups. These groups were sedentary, regular exercisers, lifestyle activity, and cumulative activity (minutes rather than days as in the regular exercise category). There were no significant differences in PASS categories for African American women who were regular exercisers indicating that a significant association was not found for social support and regular exercise. There was an association between low levels of PASS and sedentary behavior. When odds ratio were calculated for each activity group with the combined sample of women, there was still no difference between high, medium, and low PASS scores and regular physical activity participation. Differences were found in the analyses of the other activity categories with race having a substantial effect in each model. The authors posited that perhaps PASS was more important in the

early stages of exercise acquisition than later in the process. The findings from the present study would indicate that while PASS may vary throughout the process, it is indeed utilized even after years of experience with the behavior as indicated by the descriptions from women in this study who had been exercisers for at least one year.

The findings from the telephone survey (Eyler et al., 1999) differ from the conclusions Eyler and colleagues (2002) drew from a review of studies investigating correlates of physical activity behavior among women. Considered overall and by racial/ethnic group, social support was found to be a strong determinant of physical activity participation, especially for sport and exercise versus lifestyle activity. Further, a qualitative study among 30 African American and 26 American Indian women also found a strong relationship between social support and physical activity (Henderson & Ainsworth, 2003). In the Henderson and Ainsworth study (2003), the majority of women who adopted physical activity cited social support as a positive factor. The authors do note that the type and amount of support varied across the women. Further, a concept they call the “ethic of care” emerged as an important factor in both positive and negative ways. Ethic of care refers to women putting the needs of others with whom they have relationship above their own self-care needs. This factor had a negative impact through constraining time but was also cited as having a positive impact due to providing a pool of potential partners for physical activity. The idea of care-giving duties interfering with physical activity participation at times was described by the women in the present study. Further, in the Henderson and Ainsworth study (2003), ethic of care was discussed as an expectation from the older generation which sometimes caused dissonance for the women

and their mothers or other family members. The positive aspect of ethic of care was not explicitly described although many of the women did engage their spouses and children in activity. A couple of the women engaged their parents as activity companions.

Social support is clearly an important factor related to physical activity shown by the present study as well as many previous studies. The findings from the present study help to elucidate the nature of the support physically active women utilize and the types of people who provide that support. Future studies should continue to examine the development of social support networks across the physical activity evolution process and how social networks vary by gender, age, and racial/ethnic groups.

African American Race/Culture

While there is an increasing amount of literature available about physical activity among African American women, very little of it directly addresses the influence of being an African American woman on physical activity participation. Many of the studies reviewed previously in this document specifically studied African American women and their knowledge, attitudes, and beliefs about physical activity. However, it was difficult to find studies that attempted to elucidate which elements of their physical activity knowledge, attitudes, beliefs, and participation were related to their lived experience as African American women. In the present study, the influence of race/culture was not brought up by the researcher during the interview phase, but the topic was probed for additional detail if introduced by the participant. Further, the influence of race/culture on physical activity participation was directly addressed in the focus group phase due to the heterogeneity of discussion around this topic during the interviews. Thus, in the present study, women were specifically asked to reflect on how race/culture influenced certain

aspects of their experience with physical activity. Despite this conceptual difference, previous studies, especially those that were qualitative and allowed for the emergence of unanticipated themes, do provide opportunities for comparison to the present study around some of the topics that emerged as important racial/cultural influences on physical activity participation.

The review of the literature on determinants of physical activity among African American women summarized in Table 1.2 indicated that messing up hair styles was a barrier cited by both younger and older groups of African American women. This barrier was an often discussed obstacle by the women in the present study as well. However, since the women were already physically active, they had devised methods of overcoming this barrier such as adjusting the timing of their weekly hair appointment, choosing easier to manage hair styles such as braids or natural styles, wearing absorbent head coverings during exercise, and adjusting personal expectations about their appearance (e.g., accepting that their hair would not look perfect all the time). The present study furthers the knowledge about the African American hair type as a barrier to physical activity participation by presenting methods used by physically active women to overcome the barrier as well as showing that this barrier can be minimized over the long-term.

Three studies were found that specifically included investigations of the influence of African American race/culture on physical activity participation (Henderson & Ainsworth, 2000; Nies et al., 1999; Young et al., 2002). One important study that included both African American and American Indian women was the Cross Cultural Activity Participation Study (Henderson & Ainsworth, 2000). This study investigated 30

African American and 26 American Indian women over the age of 40 through in-depth interviews as described in the literature review section of Chapter One. Questions were included in the interviews that directly addressed the relationship between race and physical activity participation. Women in both racial/cultural groups discussed the impact of having to balance care-giving roles on their physical activity participation. They described women as being the backbone of the family and some of the women seemed to believe that this pressure of putting others in the family before themselves was grounded in their culture. Care-giving as a competing role or the difficulty in balancing roles has been cited in other studies of African American women as a barrier to physical activity participation (Eyler et al., 1998; Felton, Boyd, Bartoces, & Tavakoli, 2002; King et al., 2000; Walcott-McQuigg & Prohaska, 2001; Young et al., 2002). This concept also emerged as part of the race/culture discussion in the present study. In terms of the racial/cultural impact of balancing roles, the women in the present study mostly discussed the belief among members of their family and community that women played a central role in the care of the family and were expected to put others before themselves. Women described listening to their family members' opinions, especially their mothers, and then continuing to participate in physical activity because they disagreed with the notion that personal health needs came after family members' health needs. The idea of general role balancing was discussed in the present study but not in the context of race. Most women connected this difficulty with the multiple roles required of all women rather than connecting it specifically with being African American.

Women in the Henderson and Ainsworth study (2000) went on to discuss that they were often the only African American woman in their group fitness class or at their

gym. However, they, like the women in the present study, expressed an acceptance of this situation and a determination not to let lack of participation by other African American women stop them from being successful. Further, women in the Henderson and Ainsworth study (2000) discussed another impact of low physical activity participation among their peers that mirrored the results of the present study which was not having role models for physical activity while growing up. Women in both studies discussed not having many family members that were physically active and not remembering their parents participating in active pursuits when they were growing up.

This finding was also central to another study that specifically addressed the impact of race/culture on physical activity participation. In the study by Young and colleagues (2002), 39 urban, African American women participated in focus groups around various factors, including cultural issues, related to physical activity participation. During these focus groups, women indicated that parents did not explicitly raise their children to participate in active leisure pursuits. They also discussed that there was a lack of role models for physical activity in their community. As such, they talked about having to serve as the role model if they were physically active. The importance of helping other African American women become physically active to avoid the threats of obesity, high blood pressure, and diabetes was described. Each of these themes mirrors concepts found in the present study. Further, women in the present study described the opportunity to act as role model for other African American women as positive and something they enjoyed doing.

The third focus group study that specifically addressed the impact of African American race/culture on physical activity resulted in the emergence of similar themes

(Nies et al., 1999). This study included 16 women aged 35 to 50 years. These women discussed both the difficulty of finding an exercise partner due to low participation in physical activity among African American women and difficulty in fitting in exercise with their other care-giving roles.

The most commonly found themes in the literature directly related to the influence of African American race/culture on physical activity participation were hair type as a barrier, difficulties/expectations related to care-giving duties, and effects of low participation among African American women such as lack of role models and difficulty finding exercise partners. Each of these themes emerged in the present study. What was unique about the present study was its ability to allow themes around race/culture to emerge in the interviews and then based on those emergent themes investigate the influence of race/culture further during the focus groups. In addition, few other studies have specifically investigated physically active African American women. Thus, not only are these themes discussed as barriers to participation, women in the present study were able to describe their methods of overcoming them. These women show that while the barriers related to race/culture elucidated in previous studies were relevant to them, they were not issues that could not be overcome. Further investigation among African American women with experience in regular physical activity could provide additional methods of approaching and navigating barriers to active lifestyle that stem from the daily, lived experience as an African American woman. Further, these studies would provide important information for tailoring interventions to the relevant needs and desires of African American women. Since physical activity needs to fit within the context of daily life and be able to adapt to life changes, understanding how life as an African

American woman impacts physical activity participation is essential. Once this area of research has expanded, information on commonalities in the process of physical activity evolution among women in general and how that process differs based on the impact of contextual factors such as race/culture will be available for intervention development. It is clear from the present study that the women who participated felt that racial/cultural factors were an important consideration in addressing the issue of physical activity participation in their community.

Study Limitations

In this type of study there is always the possibility for limitations to arise that would need to be considered when applying the findings. These limitations stem from two main areas, the chosen methodology and the study population. While grounded theory was the appropriate method of inquiry for this study, its use presents certain limitations. Some of these limitations revolve around the central role the investigator takes in the recruitment, data collection, and analysis during the study. Grounded theory requires data collection in an environment constructed by the researcher and the participant. While measures were put in place to maximize credibility and dependability, it is possible that different investigators with different groups of participants would have resulted in different findings. Further, the data collection and analysis process were highly dependent on the background, skills, and abilities of the researcher. Although techniques to ensure confirmability were built into the study design, it is also possible that the findings could be investigator dependent. Finally, the results of this study were meant to describe the experience of the participants and as such are most pertinent to women who fit these characteristics. Other African American women, especially those

from different socioeconomic backgrounds, age ranges, and geographic conditions should be considered different from these women and thus provide opportunity for an extension of this theory to expanded populations in future studies.

This caveat is directly related to limitations based on the study population. While theoretical saturation was reached, the sample size was small, thus limiting the types of women to which the findings can be applied. Further, the sample did not include women from other racial/cultural backgrounds in order to truly elucidate those factors related to being African American as compared to those that apply to women in general. Further, selection bias should be considered. Once women screened into the study, they were contacted to set up an interview time. It is possible that women who desired to participate were somehow different than those who elected not to call or those that decided not to participate (e.g., did not return researcher's phone calls) after screening. Study participation did require meeting the interviewer at a public location for at least one hour and then agreeing to be contacting for further collection activities. For some women, this level of contact may not have been desirable or feasible based on their schedules. Finally, the study sample consisted of African American women while the researcher was a Caucasian woman. While considerable thought was invested in minimizing any potentially negative impact of racial/cultural differences between interviewer and participant, it is possible that an African American researcher would have gathered data resulting in different findings.

Although each of these limitations should be considered, many elements of the study design were included to ensure that the study was not weakened by these issues as discussed thoroughly in Chapter Two. For example, peer debriefing and member

checking were both utilized to ensure that the conclusions of the researcher were indeed grounded in the data. Transcripts were reviewed by the investigator and committee members to check for appropriate interview style and rich data quality. Careful documentation of each data collection and analysis phase was employed. These methods exemplify only a few of the techniques used to ensure that the data collected were high-quality and the conclusions inferred from that data were grounded in the women's experiences. Further, at times the researcher recorded in the field notes an apparent advantage to not being an African American woman in that the participants seemed compelled to explain issues related to race and culture more thoroughly due to a lack of personal experience on the part of the researcher.

As discussed in Chapter Three, the women participating in the focus groups found the model to fit their experience with physical activity. They reiterated several of the important concepts that emerged from the interviews and verified that the process model was grounded in the data. One participant stated, "I think that because I know the pattern to be true in my own lifestyle with this theory ... so I really know where I fit and know that it does really apply in my particular situation."

Study Implications

The grounded theory investigation undertaken in this study resulted in a process theory explaining the evolution of physical activity behavior among African American women. This process was characterized by an Initiation Phase, Transition Phase, and Integration Phase each exemplifying the dynamic nature of long-term physical activity participation. The presence of a modification loop and a cessation loop also emerged as important features. Further, this process took place within the context of women's lives,

specifically their experiences as African American women. Conditions that helped women progress through the process were also elucidated including planning methods, physical activity companions, and types of benefits experienced.

The implications of this study have been discussed throughout this chapter. For clarity, important implications are summarized below categorized as those most useful in further theory development explaining physical activity among African American women and those that are most useful to programmatic elements of efforts to assist women in adopting and maintaining a physically active lifestyle.

Theoretical

This study provides important insight into the process by which African American women adopt and maintain physical activity. Few other theories have been put forth that consider physical activity as a process or in the context of daily life. The Physical Activity Evolution process presents an account of this process and provides a bridge from some of the important constructs in major health behavior theories to substantive, process theories focused on physical activity behavior. It moves beyond why African American women adopt physical activity to how they integrate it into their daily lives. While these findings move the understanding of this process forward, they also generate questions for future study including;

1. How does this process differ among women of other racial/ethnic backgrounds?
2. What implications does low socio-economic status have on the process?
3. Is the cessation loop an appropriate explanation for currently inactive or underactive women?

4. How do physical activity companions and their roles vary across the process? Are certain roles more important in different stages of the process?
5. What is the timeline for the evolution of benefits as physical activity evolves? How long do women participate in physical activity before they see any benefits? How long do they have to experience early benefits before achieving long-term benefits? How do benefits experienced early and long-term benefits interact as motivators for continued participation?
6. How can the development of an exerciser identity as proposed by Medina (1996) be integrated with the process of behavioral evolution proposed in this study? Does this integration expand the ability of the model to explain the evolution of physical activity behavior?

Extension of this study to answer these questions would allow for the development of a rich theory capable of explaining physical activity evolution under a variety of conditions. A fully developed theory could be tested using path analysis or structural equation modeling to verify the relationships exemplifying movement through the process. These efforts would build on the current literature base and provide an important theoretical basis for the development of physical activity interventions to improve participation among inactive and underactive women as well as provide information about assisting exercisers in preventing and overcoming relapse.

Practical

Although the process theory proposed in this study is a new framework for understanding physical activity evolution among African American women, some important lessons can be garnered for future efforts at program design including:

1. Helping women adopt physical activity is not sufficient to development of physically active lifestyle. Attention should be paid to learning how to navigate life changes and potential obstacles after the Integration Phase by including techniques for modifying a regimen to fit into daily life, plans for dealing with future challenges, and learning a variety of activity options for different goals and preferences.
2. During the Integration Phase, programs should focus on the fit of the prescribed regimen to the desired goals of the woman ensuring that the selected activities fit both to her lifestyle and the results important to her.
3. Efforts should be made to educate women about the timing of desired benefits and the importance of some of the early benefits to overall quality of life.
4. Programs should guide women in the planning of their physical activity regimens to include flexibility and dynamic qualities perhaps utilizing the minimum acceptable-maximum possible criteria.
5. Interventions should use these methods in aiming to move women forward through the process to the Transition Phase where commitment to physically active lifestyle is achieved.

Other strategies for intervention that could be gleaned from the findings of this study include activities aimed at developing a social network for physical activity. The desire among physically active African American women to act as role models could

serve as the basis for mentor-mentee dyads in the intervention setting. As these ideas are further developed through programmatic studies, they will be refined and incorporated into both the practical and theoretical literature in this area.

Conclusions

This study has made an important contribution to the knowledge base on the development of physical activity among African American women. Future studies can use the knowledge gained to further theory development in this area and expand theory development to women of other backgrounds and situations. These findings can also be used to inform intervention development and spur further investigation into some of the important practical implications. Continued investigation of this process in its entirety will lead to the development of refined and validated models that can be used in intervention planning.

The concept of investigating health behaviors in context and among people who have successfully incorporated those behaviors into their daily lives should be further utilized in research studies. By studying women who have successfully adopted a behavior, strategies to overcome known barriers can be elucidated and applied to intervention planning for other women. Further, through validating the experiences of women who have committed to healthy lifestyle, a natural helper network could be developed within the community to promote the adoption and maintenance of healthy lifestyle behaviors. By collaborating with women who have integrated healthy lifestyle practices into their lives, a resource already in the community, health behavior change can move beyond the intervention into the everyday lives of community members.

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APPENDIX A
GENERAL STUDY SCREENING TOOL/ PHONE SCRIPT

Hello, my name is Amy Harley. I am a student at The Ohio State University and I am trying to understand physical activity among African American women. To see if you are interested in participating, I want to tell you a little bit about how I plan on learning about this subject. I would like to talk with you about your experiences with physical activity. Our discussion or interview will take between 1 – 1½ hours and will be at a location of your choice. In addition, a second interview may be requested which would take 30 – 60 minutes and can be by phone or in-person whichever is most convenient. As a thank you, you will receive a gift certificate for \$15 for the initial interview and \$10 for the second interview if needed.

At the end of the study everyone that I talk to will be invited to a meeting where I will share what I have learned. If you agree to talk with me, all information will be kept confidential and you can ask questions or stop at any time during the interview. I need to ask you some questions to find out if I can include you in my interviews. The questions will take 10 –15 minutes. Are you interested in finding out if I may include you in my interviews?

NO:

Thank you for your time. May I take about one minute to ask you a few brief questions about yourself?

Are you male or female? (Ask only if necessary)

What is your race?

How old are you (today)?

What is the highest grade or year of school you completed?

What is your marital status (today)?

How many children do you have?

What is your height and weight?

Do you now smoke cigarettes everyday, some days, or not at all?

Thank you. If you change your mind about the interviews, please call me at 293-9136.

YES:

Thank you. Let's start with a few questions about you and your activity pattern.

Are you male or female? (Ask only if necessary)

[female]

What is your race?

[AA, Black]

How old are you (today)?

[25 – 45]

What is the highest grade or year of school you completed?

[Some college or technical school or higher]

Do you need help walking or moving around? [no]
Have you recently been diagnosed with an eating disorder? [no]

Have you been told you have a terminal illness? [no]

Did you play varsity sports in college or professional sports at any time? [no]

DOES NOT pass through one or more questions:

What is your height and weight?
What is your marital status (today)?
How many children do you have?
Do you now smoke cigarettes everyday, some days, or not at all?

I'm sorry but I can't include you in the interviews at this time. Thank you so much for your interest. If you have any further questions, please call me at 293-9136.

DOES pass through all questions, proceed to screening tools.

1. Adapted Godin Questionnaire
2. Adapted Commitment to Physical Activity Questionnaire

DOES NOT meet study criteria:

What is your height and weight?
What is your marital status (today)?
How many children do you have?
Do you now smoke cigarettes everyday, some days, or not at all?

I'm sorry but I can't include you in the interviews at this time. Thank you so much for your interest. If you have any further questions, please call me at 293-9136.

DOES meet study criteria:

Thank you, I can include you in the interviews. Let's set up a time when we can get together. When is a good day and time for you?

Where would you like to meet (participant's home, Columbus main library)? Let me confirm the address _____ .

Can I also get a phone number where I can reach you about the interview?
_____ .

I will meet you at _____ (location) on _____ (date) at _____ (time). Please call me at 293-9136 if anything changes or you have any questions. Once again, my name is Amy Harley. I look forward to meeting with you. Thank you.

APPENDIX B

ADAPTED GODIN LEISURE-TIME EXERCISE QUESTIONNAIRE

Considering a **7-day period** (a week), how many times on the average do you do the following kinds of physical activity for **more than 15 minutes** while at work, as part of house or yard work, to get from place to place, and in your spare time for recreation, exercise, and sport.

	Target	Actual	Percent
a) STRENUOUS PHYSICAL ACTIVITY (HEART BEATS RAPIDLY) (for example, race walking, running, jogging, aerobics, basketball, roller skating or blading, vigorous or synchronized swimming, vigorous biking, jumping rope, backpacking, karate, circuit training)	4		
b) MODERATE PHYSICAL ACTIVITY (NOT EXHAUSTING) (for example, fast walking, jazzercise, yoga (other than hatha), gardening, scrubbing floors or washing windows, tennis, easy bicycling, easy swimming, popular, ballroom and folk dancing, hiking, weight training)	10		
c) MILD PHYSICAL ACTIVITY (MINIMAL EFFORT) (for example, window shopping, stretching, hatha yoga, playing catch, vacuuming, washing dishes, light housework, bowling, golf, easy walking, bathing or feeding children)	20		
TOTAL			

Considering a 7-day period (a week) how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

OFTEN	SOMETIMES	NEVER / RARELY
_____	_____	_____

For how long have you been active at this level?

SCORING:

Chart

If responds at target level in any one category = **active**

If does not respond at target level in any one category but has activity at less than target level in two or more categories:

1. Calculate percent in each category
2. If total percent equals or greater than 100% = **active**
3. If total percent less than 100% = **not active**

If responds at less than target level in one category with no activity in one or two of the other categories = **not active**

Sweat Question

Used to augment information from chart:

If often = **active** (compare to chart for logic)

If sometimes = consult chart, ask for further clarification if necessary

If never/rarely = **not active** (compare to chart for logic)

Length of Time Question

If responds 1 year or longer = **eligible for study**

If responds less than 1 year = **not eligible for study**

APPENDIX C

ADAPTED COMMITMENT TO PHYSICAL ACTIVITY SCALE

The following statements may or may not describe your feelings about physical activity. Physical activity includes a wide range of activities, examples of these activities are walking, tennis, badminton, yoga, racquetball, football, basketball, cycling, dance, running, swimming, weight training, fitness calisthenics, etc. Please CIRCLE the appropriate letter or letters to indicate how well the statement describes your feelings most of the time. There are no right or wrong answers. Do not spend too much time on any one item, but give the answer which seems to describe how you generally feel about physical activity.

SD = Strongly Disagree, D = Disagree, U = Uncertain, A = Agree, SA = Strongly Agree

1.	I look forward to physical activity	SD	D	U	A	SA
2.	Physical activity is a chore	SD	D	U	A	SA
3.	I do not enjoy physical activity	SD	D	U	A	SA
4.	Physical activity is very important to me	SD	D	U	A	SA
5.	Life is more fulfilling as a result of physical activity	SD	D	U	A	SA
6.	Physical activity is pleasant	SD	D	U	A	SA
7.	I dislike the thought of doing regular physical activity	SD	D	U	A	SA
8.	I would arrange or change my schedule to participate in physical activity	SD	D	U	A	SA
9.	I have to force myself to participate in physical activity	SD	D	U	A	SA
10.	To miss a day of physical activity is a relief	SD	D	U	A	SA
11.	Physical activity is a high point in my day	SD	D	U	A	SA

Scoring:

Questions 1, 4, 5, 6, 8, 11:

SD	D	U	A	SA
1	2	3	4	5

Questions 2, 3, 7, 9, 10:

SD	D	U	A	SA
5	4	3	2	1

Score greater than 33 = **eligible for study**

Score less than or equal to 33 = **not eligible for study**

APPENDIX D
RECRUITMENT FLYER

WOULD YOU LIKE TO PARTICIPATE IN A STUDY EXPLORING PHYSICAL ACTIVITY AMONG AFRICAN AMERICAN WOMEN?



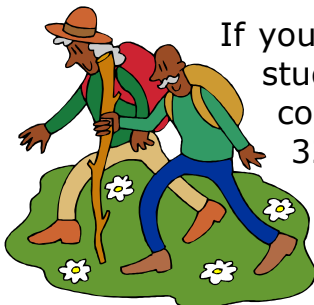
We are currently looking for African American women between the ages of 25 and 46 who regularly exercise or are physically active in some way for a study at The Ohio State University's School of Public Health.

Women who are eligible to participate in the study will be asked to take part in an initial interview that will last 1 – 1 ½ hours and possibly a follow-up interview that would last 30 – 60 minutes. The interviews will focus on what it is like to start physical activity and how physical activity is incorporated into daily life.



All interviews will be one-on-one and conducted by a female researcher from OSU in the location of the participant's choice. As a thank you, each participant will receive \$15 for the initial interview and \$10 for the follow-up interview if needed.

Each participant will be invited to a focus group with the researcher at the end of the study where they will learn about what was found in the study. At the focus group there will be an opportunity to discuss and comment on the study findings.



If you are interested in participating in the study or want more information, please contact Amy Harley at 614-293-9136 (w) or 614-327-1971 (c) or via email at harley.13@osu.edu.

APPENDIX E
STUDY SIGN-UP SHEET



**WOULD YOU LIKE TO PARTICIPATE
IN A STUDY EXPLORING
PHYSICAL ACTIVITY
AMONG AFRICAN AMERICAN WOMEN?**



We are currently looking for African American women between the ages of 25 and 45 who regularly exercise or are physically active in some way for a study at The Ohio State University's School of Public Health.

Women who are eligible to participate in the study will be asked to take part in an initial interview that will last 1 – 1 ½ hours and possibly a follow-up interview that will last 30 – 60 minutes. The interviews will focus on what it is like to start physical activity and how physical activity is incorporated into daily life.

All interviews will be one-on-one and conducted by a female researcher from OSU in the location of the participant's choice. As a thank you, each participant will receive \$15 for the initial interview and \$10 for the follow-up interview if needed.

NAME	PHONE NUMBER

Researcher Contact: Amy Harley, Phone: 293-9136
Email: harley.13@osu.edu

APPENDIX F
INITIAL AND FINAL INTERVIEW GUIDES

The Process of Becoming Physically Active
Initial Interview Guide

Thank you very much for taking the time to meet with me. As we spoke about over the phone, I am trying to understand the process of becoming an active woman. There are no right or wrong answers. I am interested in your experience with physical activity. Take your time in answering the questions and feel free to clarify any question that seems unclear. We can skip any questions that you don't feel comfortable with or end the interview at any time if you don't wish to continue. I have some topics here that I want to cover, but I want you to think of this more as a conversation than an interview. I want to hear your thoughts, opinions, and experiences.

Let's just start with you telling me a little bit about yourself.

- What roles do you fill in your daily life?
- How do you balance your various roles?
- Tell me more about your role as a [active person] OR
 - Tell me about your role as a physically active woman
 - Who supports you in this role?
 - How?
 - Is there anyone who is not very supportive of this role?
 - In what way?
 - How do you deal with that?
- Describe how your role as a [insert role, i.e. mother, wife, banker] affects your role as a [insert role of active woman]

I want to get a sense of you as a woman and what your life is like. Walk me through a typical week and the various things you do and people you interact with. Let's start with yesterday. Was yesterday a typical day?

- Describe how physical activity fits into your day/week
- Walk me through a session from the time you leave to go there to the time you arrive home. When is the last time you did [activity]? Let's start with that session.
 - Where do you do it?
 - How far away is that?
 - How often?
 - How long does it take?
 - Any equipment needed?
 - How much does it cost?
 - Who else is involved?
 - Always the same or do you vary?
- Scheduled?
 - How?
 - How far in advance?
- Tell me about the kinds of arrangements you need to make to fit in physical activity
 - Childcare

- Transportation
- Meals
- Try to think of a time when something happened during the day and you did not end up doing [activity] even though you planned to? Walk me through that day.
 - Describe how you feel when you miss a session
 - What other kinds of things have happened that caused you not to go?
 - How do you reschedule?

I would like you to think about when you first became an active woman. Looking back, when would you say you became a [insert relevant activity, i.e. tennis player, gardener]?

- What made a difference in your decision to take up [tennis]?
- Who did you know that [played tennis]?
- How did they influence your experience with [tennis]?
- What kind of prior experience did you have with [tennis]?
 - Experience with other activities?
- What was your life like at that time?
 - Job
 - Family
 - Health conditions
- How did you get involved?
 - Find place?
 - Learn skills?
 - Find equipment?
- How has your involvement changed since you first started?
- What goals did you set for yourself related to [activity]?
 - Describe how to tried to meet them
 - How long did you work towards those goals?
 - Describe how you felt when you succeeded/did not succeed?
 - Have they changed over time?
 - Did you reach any milestones/goals that you hadn't anticipated at first?

How does being physically active make you feel about yourself?

- How has it changed the way you feel about yourself?
- Describe how you body felt (physically) when you first began to [activity]
 - Describe how your body feels now when you [activity]
 - What impact does wanting to look a certain way (physically) have on your activity level?
- Describe what you thought about while you were first doing [activity]
 - Describe what you think about now when you [activity]

How does being physically active influence your relationships with others?

- Other women?

Can you think of a time when you started a particular physical activity but ended up quitting? Describe that time to me.

- How did you choose that activity?
- Who was involved?
- Tell me about your life at that point in time
 - Job
 - Family
 - Health conditions
- Describe one of the sessions to me from start to finish
 - Where?
 - Physical feelings?
 - Mental feelings?
 - Skill development?
- Describe for me when you stopped doing [activity]

I don't have any other questions but I am sure I must have missed something. What else can you think of that might be helpful?

I have a few questions to ask you:

What is your marital status (today)?

How many children do you have?

What is your height?

What is your weight?

Do you now smoke cigarettes everyday, some days, or not at all?

The Process of Becoming Physically Active
Final Interview Guide

Thank you very much for taking the time to meet with me. As we spoke about over the phone, I am trying to understand what it means to be an active woman. There are no right or wrong answers. I am interested in your experience with physical activity. Take your time in answering the questions and feel free to clarify any question that seems unclear. We can skip any questions that you don't feel comfortable with or end the interview at any time if you don't wish to continue. I have some topics here that I want to cover, but I want you to think of this more as a conversation than an interview. I want to know about your thoughts, opinions, and experiences.

I want to start by having you tell me a little bit about yourself. I just want to know a bit about who you are, if you have a job outside the home, any children, things like that.

You've mentioned several/various/a few different roles. How does physical activity fit in with those other responsibilities?

I want to get a sense of the physical activity that you do. I want you to walk me through a couple of your exercise sessions including where you go and who you interact with. Let's start with yesterday. Did you exercise yesterday?

- Describe how physical activity fits into your day/week
 - Why did you choose this particular activity?
 - How did you learn how to do it?
 - Do you exercise with other people?
 - How did you meet them?
 - Describe your relationship with them
 - Do you see them outside of the exercise sessions?
 - Do you switch around activities?
- Scheduled?
 - How?
 - How far in advance?
 - When did you start planning it?
- Try to think of a time when something happened during the day and you did not end up doing [activity] even you planned to? Walk me through that day.
 - Describe how you feel when you miss a session
 - What other kinds of things have happened that caused you not to go?
 - How do you reschedule?
- Does physical activity ever cut into other activities or obligations?
 - How do you deal with that?

I would like you to think about when you first became an active woman. Looking back, when would you say you became physically active?

- Were you active growing up?

- Was anyone in your family active?
- Is anyone in your family active now?
- How did they influence your experience with physical activity?
- How has your involvement changed since you first started?
- Were there any significant changes in your life around the time you started exercising regularly?

What goals do you set for yourself related to physical activity?

- When did you start setting goals for yourself?
- How did you choose which goals to focus on?
- Have you met any of the goals that you set for yourself?
 - How did that affect your physical activity program?
- Did you reach any milestones/goals that you hadn't anticipated at first?

Have you noticed any benefits from exercise?

- When did you first start noticing benefits?
 - How did that impact your experience with physical activity? **OR**
 - How do/did you keep yourself going until you start/started noticing benefits?

How does being physically active affect the way you feel about yourself?

- How has it changed the way you feel about yourself?
- Would you say that physical activity has changed your life?

YES:

- How so?
- Would you say it has made you a better person?

NO:

- What kind of impact has physical activity had on your life?

Describe how your body felt (physically) when you first began to [activity]

- Describe how your body feels now when you [activity]

Describe what you thought about while you were first doing [activity]

- Describe what you think about now when you [activity]

Can you think of a time when you started a particular physical activity but ended up quitting? Describe that time to me.

- Tell me about when you quit the activity
- When did you pick it back up?
- How did you decide it was time to start being active again?
 - How did you choose the activity?

How is your current experience with physical activity different from your past experiences when you were not participating regularly?

- How often have you cycled from inactive to some activity to regular activity?

- What prompts the change?
- What kinds of barriers did you have before?
 - How are things different now?

I don't have any other questions but I am sure I must have missed something. What else can you think of that might be helpful?

I have a few questions to ask about you:

What is your marital status (today)?

How many children do you have?

What is your height?

What is your weight?

Do you now smoke cigarettes everyday, some days, or not at all?

APPENDIX G
FOCUS GROUP GUIDE

The Process of Becoming Physically Active
Focus Group Guide

INTRODUCTION: [5 MIN]

Thank you so much for coming to today's focus group. I want to introduce a colleague of mine who will be helping out today. This is Sato Ashida and she will be helping to take notes and assist in running the meeting today.

I want to take the opportunity to show you some of the preliminary findings from the interviews that I conducted with each of you. Then I would like to hear your thoughts and opinions about the findings. The feedback that you provide will be incorporated into the analysis before the final report is written.

I want to assure you that everything you say today will be kept confidential. We will not report any names of participants or unique combinations of your personal information that would identify you. I will leave my contact information with each of you today in case you have questions or concerns about the project. I would also like to ask you to keep the thoughts and opinions of your fellow participants confidential.

We are here to hear *your* thoughts and opinions about the findings from this study, so there are no right or wrong answers. I want you to think of this as a group discussion. Please share your thoughts freely with each other while respecting each person's opportunity to speak. I have markers and paper here to make name tents so we can remember each other's names more easily. Please write down whatever you prefer to be called- this can be a fake name if that is more comfortable for you.

[Make name tents]

I will be recording this session as I did the interviews because it is important that I have your thoughts and opinions exactly in your own words. I am going to go ahead and turn on the recorder now.

Let's start by going around the room and having everyone state their preferred name and their favorite activity to do in Columbus.

OK, it looks like we're ready to get started with our discussion.

PART 1: MAIN PROCESS: [35 MIN]

I'm going to start by presenting to you the main results from the study. Using the information contained in your interviews, I worked through each of your experiences one-by-one to create an overview of how physical activity is adopted and integrated into long-term lifestyle. I will be using information from each of your interviews to illustrate the process. Names and details have been changed so these quotes cannot be attributed to a specific woman.

[Briefly review main process model using flip chart and ‘composite woman’ for illustration]

I have some questions for you about the process, but feel free to ask questions yourselves or get up and take a closer look or point something out if you need to.

1. How does this process seem to fit with your personal experience with physical activity?

- **How does it differ?**
- **Did you move through the chart in a different sequence than I’ve presented?**
- **Which steps were most crucial to moving through the process?**

2. If you could change something about this chart to better fit your experience, what would it be?

I also want to ask you about some specific aspects of the process. Considering this alternative loop- I suspect that a lot of women struggle with incorporating physical activity over the long-term. They are able to start but are not able to sustain and I suspect that they get stuck in here. Almost all of the women in this study discussed dealing with a time in their lives where they fell into this loop. But since all of you are physically active, you have been able to overcome these challenges.

3. Please take a moment and think back to a time when you temporarily stopped or decreased physical activity.

- **What prompted you to pick it back up? [In brief]**
 - **What types of things helped you to pick it back up?**
 - **How did the loss of benefits from your exercise regimen influence your decision to pick it back up?**
- **Thinking about women that you know that struggle with becoming physically active, that seem to be stuck in this loop, what is different about your experience?**

Now let’s turn our attention to the time when you returned to the main flow. I have shaded this box called ‘Change in commitment to PA’ because there really seemed to be a point, sometime after women had been engaging in physical activity for awhile, that an increase in commitment or priority of physical activity occurred. Some women referred to the “light clicking on” or having a “breakthrough”.

4. Think about this time in your experience with physical activity.

- **How did this change in commitment come about?**
- **In what way did the way you think about exercise change?**

5. All of you discussed flexibility in planning their exercise- having back-up plans, alternative days or activities, or things they could do at home.

- **How did you develop this strategy of planning your activity with flexibility?**
- **How important do you think being flexible about your exercise regimen is to its long-term maintenance?**

Many of you discussed doing physical activity for what I would call substantial benefits, things like weight loss or maintenance or to prevent or control health conditions like high blood pressure or diabetes. These benefits are really related to long-term physical activity engagement as I indicated in the process. However, all of you mentioned more short-term, daily life type of benefits such as more energy, better ability to deal with stress, feeling better, and taking more time for yourself, among others.

6. Did you know about the short-term benefits before you started exercising or did you discover them with experience?

- **How did the short-term benefits influence your adoption of physical activity**
- **How did the short-term benefits influence your continuation with physical activity?**
- **How important were the short-term benefits in your continuation with physical activity?**
- **How are the short-term benefits related to the substantial benefits?**
- **Did you discover any new substantial or long-term benefits?**

[Briefly summarize thoughts and ideas presented so far]

Does anyone else have anything to add that would be important to include in the process?

PART 2: AA CONSIDERATIONS:

[25 MIN]

Another area I would like to cover today is how the experience of being an African American woman has impacted both your desire to be physically active and your success at reaching that goal.

Most of you talked about being an African American woman in the interviews, some of you referring to yourselves and others to a friend or family member. The context in which race was mentioned varied widely among you, from complicated issues such as the history of slavery in the US to distinct barriers such as maintaining hair style. I want to understand more about the influence of race on physical activity participation from your point of view.

7. How has your experience with physical activity been shaped by your background as an African American woman?

- **Do you see your community or social circle as supportive of being physically active?**
 - o **How so?**
 - o **How is being a physically active woman perceived in your community or social circle?**

- **According to national statistics, a lot of Black women are not physically active, probably a lot of the Black women you know. What factors have been most important for you in not being one of those women?**
 - **How have you maintained exercise while many of the women around you have not?**

- **What have been the challenges?**
 - **Possible areas to probe:**
 - **Facilities with very few/no African American women**
 - **Difficulty maintaining hair in desired style**
 - **Positive support for being heavier than might be healthy**
 - **Positive support for resting in leisure time**
 - **Do you think there are differences depending on what part of the country you were raised?**
 - **What about differences in whether or not you are of Southern heritage?**

- *Possible comments for divergence of the discussion to the larger issue of slavery to bring the conversation back to physical activity*
 - *Clearly the history of African Americans in the U.S. has shaped the life experience today, how has what you're saying impacted your experience with physical activity specifically?*
 - *Can you relate that overall experience to your experience with physical activity?*

[Briefly summarize thoughts and ideas presented so far]

Does anyone else have anything to add that would be important to include in the consideration of being African American as a factor in physical activity perception or participation?

PART 3: PHYSICAL ACTIVITY COMPANIONS: [20 MIN] [Optional: will be addressed if time permits]

All of you mentioned different people or popular figures that played roles in your adoption of physical activity and your maintenance of an exercise regimen. I created a chart outlining the different roles these people played and which kinds of people filled those roles. The chart is a summary of all your experiences, so you may see your situation only in a small piece of the whole.

[Briefly review chart]

8. Are there any important roles that I have left out?

- What do you see as the most important role type?

9. Some of you have exercise leaders and exercise groups that you see on your videos and DVD's. I have been calling these people, virtual trainers and virtual exercise companions. How do these companions fill some of the roles shown on the chart?

10. How important have companions been in your experience with physical activity?

- How have they helped you progress through the steps I presented [here]?

[Briefly summarize thoughts and ideas presented so far]

Does anyone else have anything to add that would be important to include in the consideration of physical activity companions?

PART 4: CLOSING: [10 MIN]

We are just about finished. I want to thank all of you again for your time. I think we had a really good session here today. I mentioned to you before that I would be providing you with a report of the results from the study in case you wanted to take that back to your sorority, church, or other community group.

What I need to know from you is the most useful format for that report.

- Executive summary
- Actual charts and models and shown here today

Please sign the address sheet going around if you would like me to send you a copy of the report. You can provide a current email or street address.

Does anyone else have anything to add that would be important to include in the study findings?

Feel free to see me afterwards if you have any questions or concerns about the focus group or the project in general.

APPENDIX H
STUDY INFORMATION SHEET AND INFORMED CONSENT FORM

THE PROCESS OF BECOMING PHYSICALLY ACTIVE:
A GROUNDED THEORY STUDY WITH AFRICAN AMERICAN WOMEN
Study Information

WHAT IS THIS PROJECT ABOUT AND WHY AM I BEING ASKED TO PARTICIPATE?

You are being asked to participate in a project studying physical activity among African American women. Your experience as an African American woman will help us understand how physical activity is adopted and incorporated into everyday life. There are no right or wrong answers to these questions. We are interested in your ideas and your experiences. Your answers will be kept confidential, and the results of the interviews with you will be reported in such a way that no individual will be able to be identified.

WHAT WILL I BE ASKED TO DO IF I CHOOSE TO PARTICIPATE?

We are asking that you participate in an initial interview that will take 1 to 1½ hours and possibly a follow-up interview that will take 30 – 60 minutes. A female interviewer from the Ohio State University will come to your home or other place you prefer to meet for the initial interview. The follow-up interview can take place in person or by telephone, whichever you prefer. We will be asking you about your experiences with physical activity. All participants will be invited to a focus group at the end of the study to hear about the results of the study and provide feedback.

IS THERE ANY RISK TO PARTICIPATION?

No. The activities of this project will not harm you in any way.

IS THERE ANY COST OR BENEFIT TO ME TO PARTICIPATE?

There is no cost for participating in the project. When the initial interview is over, you will receive a gift certificate for \$15 as a thank you for taking time from your busy schedule. You will receive a \$10 gift certificate for completing the follow-up interview if needed.

WILL INFORMATION BE KEPT CONFIDENTIAL?

Yes. The researcher is trained to respect your privacy. The interview will be tape-recorded to ensure the accuracy of information you share with us. We will listen to the tapes, type the conversations and then keep the tapes in a locked file cabinet at The Ohio State University. When the study is over, we will destroy the tapes. Project reports will not use your name or include anything you said that could identify you.

IS PARTICIPATION VOLUNTARY?

Yes. You are not required to participate in this interview. You can sign this form and still decide not to participate. You can ask questions or stop your participation at any time.

WHAT IF I HAVE QUESTIONS ABOUT MY PARTICIPATION (NOW OR DURING THE PROJECT)?

Please call Amy Harley at (614) 293-9136, and she will answer any questions or concerns regarding this project. If you have questions about your rights as a participant, you can call The Ohio State University Office of Research Risks Protection at (614) 688-4792.

Protocol #: 2003E0212

CONSENT FOR PARTICIPATION IN RESEARCH

I consent to participating in research entitled:

*The Process of Becoming Physically Active:
A Grounded Theory Study with African American Women*

Amy Harley, Co-Investigator, has explained the purpose of the study, the procedures to be followed, and the expected duration of my participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me. I understand that the interviews will be tape-recorded and have given my consent.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Print the name of the participant:	
Date:	Signed: <i>(Participant)</i>
Signed: <i>(Principal Investigator or his/her authorized representative)</i>	

APPENDIX I

SUMMARY OF PARTICIPANT CHARACTERISTICS

ID	Age (yrs)	Body Mass Index	Primary Activity	% Active ¹	Time Active	Commit Score ²
1	41	29.4	Weights/ Treadmill	435%	1 year	53
2	35	30.9	Group fitness	465% 230%	8 months 4 months	44
3	45	21.0	Treadmill	590%	10+ years	48
4	31	26.0	Group fitness	650% 280%	2 months 1+ years	46
5	42	39.7	Weights/ Walking	350% 158%	3 months 1+ years	48
6	26	20.4	Weights/ Misc. Cardio ³	1280%	5+ years	43
7	26	19.4	Weights/ Misc. Cardio	150%	1 year	40
8	33	25.8	Dance/ Volleyball/ Gym	370%	15 years	41
9	42	23.0	Group fitness	1305%	1 year	49
10	33	24.8	Tae Bo/ Lifestyle	165%	4 years	41
11	33	21.1	Exercise videos	575%	20+ years	55
12	31	22.1	Weights/ Misc. Cardio	120%	20+ years	41
13	30	27.7	Weights/ Misc. Cardio	580%	3 years	45
14	45	23.4	Group fitness/ Running	280%	3 years	52
15	25	21.9	Group fitness/ Running	490%	15+ years	48

¹ Percent of minimum eligible physical activity participation criteria as calculated from the adapted Godin Leisure-Time Questionnaire

² Score on the adapted Commitment to Physical Activity Scale (possible range=11-55)

³ Refers to utilization of miscellaneous cardiovascular fitness equipment including treadmill, stair stepper, stationary bicycle, and elliptical machine

Table I.1: Summary of participant characteristic