

MOTIVATIONS AND BARRIERS TO PHYSICAL EXERCISE AMONG
AFRICAN-AMERICAN FEMALE COLLEGE STUDENTS

by

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ABSTRACT

This study examined differences between groups of exercising and non-exercising African American female college students. Groups were compared on a variety of psychosocial variables including perceived motivations, universal barriers, African American cultural barriers, and rejection sensitivity to race. The utility of self-efficacy as a moderator of perceived barriers was also explored. Lastly, the moderating role of ethnic identity on the perception of African American cultural barriers was examined. The results of this study supported the predicted relationship of physical exercise status with perceived positive motives/benefits and perceived universal barriers of exercise. However, the results revealed no significant relationships of exercise status and the African-American cultural barriers or rejection-sensitivity to race.

CHAPTER I

Introduction

In the United States, overweight/obesity has reached pandemic proportions; more than one in three American adults is clinically obese (Both, Gordon, Carlson, & Hamilton, 2000; Ogden et al., 2012). Consequently, the health risks associated with overweight/obesity, including diabetes, heart disease, hypertension, cardiovascular, cerebrovascular diseases, and in many cases, premature mortality (CDC, 2013), are on the rise (AHA, 2013; CDC, 2013). While overweight/obesity affects individuals of all backgrounds, significant health disparities are clearly demarcated by racial and gender lines. African American females bear the brunt; overweight/obesity rates of African American females are almost double those of Caucasian (32%), and Hispanic females (41%; CDC, 2013). Notably, 80% of African American females are overweight and 54% are diagnosed as obese (Office of Minority Health, 2013).

Although a direct link between overweight/obesity and low levels of regular physical exercise is well publicized, rates of sedentariness continue to rise among American adults (AHA, 2013; CDC, 2013). Unfortunately, African American females are less likely than other groups, including African American males and females of other ethnicities, to meet the recommended levels of physical activity – only an estimated 17.4% of African American females meet national guidelines for physical activity compared to 48% of all adults in the U.S (CDC, 2012). Moreover, African American females appear to suffer from disproportionately high rates of physical and mental health consequences of inactive lifestyle that include hypertension, diabetes, coronary heart disease, major depression, and overall reductions in quality of life (AHA, 2013; CDC,

2013; Neumark-Sztainer & Haines, 2004).

Similar trends were identified in the population of college students. According to most recent reports, only 46.5% of college students meet the recommended amount of physical activity (ACHA-NCHA, 2013). Not surprisingly, disparities in health behaviors persist among samples of ethnically diverse college students—African American female college students (AAFCS) seem to maintain the highest rates of sedentariness and overweight/obesity within their cohort (Keating et al., 2005; McArthur & Raedeke, 2009; Racette et al., 2005; Suminski & Petosa, 2002). These staggeringly disproportionate statistics demonstrate the need to further investigate factors that influence physical activity among African American females. The college environment is an opportune milieu to conduct research concerning health behaviors of minority students (CDC, 2013).

Background and Study Rationale

Researchers have established a copious amount of significant evidence that supports the benefits of regular physical activity on holistic health (ACSM, 2013; Garber et al., 2011). The cornerstone of this research has been identifying and examining cognition and affect that influence physical activity behavior (Garber et al., 2011). Past studies conducted in a college student population identified several factors associated with differential physical activity patterns such as perceived motivations to physical exercise (i.e., benefits; Grubbs & Carter, 2002), perceived barriers to physical exercise (Juniper et al., 2004), and perceived self-efficacy or the confidence in ability to overcome barriers to exercise (Taber et al., 2010; Williams, Bezner, Chesbro, & Leavitt, 2006). Overall, the results show that students who exercise regularly perceive more benefits of

staying physically active and report less barriers to exercise compared to non-exercisers (Grubbs & Carter, 2002; Juniper et al., 2004; McArthur & Raedeke, 2009). In addition, those with higher levels of self-efficacy report fewer barriers and engage in more physical exercise (Taber et al., 2010; Williams et al., 2006). However, it is less clear if the trends evidenced in the general population of college students regarding predictors of physical activity can be generalized to physical exercise habits in AAFCS.

The majority of existing investigations concerning physical activity habits of college females employed predominately Caucasian samples, with very low rates of AAFCS (e.g., Desai et al., 2008; Ebben & Brudzynski, 2008; Grubbs & Carter, 2002; Gyurcsik, Bray, Brittain, 2004; Kamarudin & Omar Fauzee, 2007; Lightfoot & Blanchard, 2007). Further, extant data regarding physical activity of AAFCS are inconsistent. For example, some researchers report upwards of 75% exercisers (Carter-Francique, 2011) compared to 35% (Kemper & Welsh, 2010) among samples of AAFCS. Although Caucasian students' behaviors have been extensively studied (e.g., Grubbs & Carter, 2002; Kilpatrick et al., 2005; Suminski & Peosta, 2002), factors influencing physical activity habits of AAFCS remain poorly understood and require further clarification.

Research suggested that under-examined culturally-specific factors may contribute to low rates of physical activity among African American females (Blanchard et al., 2008; Eyler et al., 2002; Keating et al., 2005). African American culture (ACC) specific beliefs play a pivotal role in the development and maintenance of health behaviors (Eyler et al., 2002; Hall et al., 2013; Harley, Odoms-Young, Beard, Katz, & Heaney, 2009). However, ACC specific beliefs have not been systematically studied in

the context of perceived barriers to physical activity. Moreover, research on health disparities suggested that certain psychosocial race-related perceptions such as perceived racism, increase chances of engaging in health risk behaviors and therefore, may contribute to low levels of physical exercise in minority groups (Harrell, Sadiki, & Taliaferro, 2003; Prelow, Mosher & Bowman, 2003; Kwate, Valdimarsdottir, Guevarra, & Bovjerg, 2003).

Because AAFCS are at an increased risk for becoming overweight/obese during and after college (Ajibade, 2011; CDC, 2013), and reportedly exercise less than both Caucasian female students (Racette et al., 2005) and African American male students (Blanchard, 2007; Flegal, Carroll, Ogden, & Johnson 2002), investigation of factors predicting differential levels of physical activity in this population is important and may help in developing culture-appropriate interventions to address the problem of sedentary lifestyle.

Purpose and Significance

The purpose of this study was to systematically examine differences between AAFCS Exercisers and AAFCS Non-exercisers on universal predictors of exercise (i.e., positive motives and universal perceived barriers), perceived barriers specific to African American culture and selected race-related psychosocial constructs (i.e., ethnic identity and rejection-sensitivity to race).

This study contributes to current scholarship about health disparities among young African American females by providing insight into universal and culture-specific factors associated with differential engagement in physical exercise among AAFCS. In addition, this investigation extends research on pertinent race-related psychosocial

constructs and health related behaviors of minority students.

Overview of Methodology and Hypotheses

This is a cross-sectional study that compares AAFCS, who exercise regularly (i.e., meet recommended levels of physical exercise specified by the ACSM, 2013) with AAFCS who do not, on selected variables. All variables were assessed by a questionnaire that was individually administered to a convenience sample of AAFCS attending Texas State University.

Due to sparse and inconsistent data on predictors of exercise behavior among AAFCS, as briefly outlined earlier, formulation of specific hypotheses was difficult. However, we develop the following set of working hypotheses that was tested in this project.

- I. The AAFCS Exercisers vs. Non-exercisers perceive more *total benefits* (I. a) and less *total barriers* (I. b) to physical exercise.
- II. The expected difference in the *total perceived barriers* between AAFCS Exercisers vs. Non-exercisers is moderated by *physical exercise self-efficacy*.
- III. The expected difference between AAFCS Exercisers vs. Non-exercisers in *African-American cultural barriers* is moderated by the degree of *ethnic identity* with African-American reference group.
- IV. The AAFCS Exercisers vs. Non-exercisers exhibit lower *rejection sensitivity to race*.

Chapter II reviews relevant literature regarding universal and cultural specific factors that may influence engagement in physical exercise among AAFCS. The methodology of the present study is described in Chapter III. Chapter IV describes the

results of the statistical analyses. The final chapter, Chapter V, provides a discussion of the obtained results, implications for future research and practice, and limitations of the study.

Definition of Key Terms

This section defines key terms often used in medical, psychological, and sociological research concerning levels and predictors of physical exercise among ethnic populations. While there are a multitude of variations among researchers and fields of study, these definitions explicate how each term is used in the context of this manuscript.

African American culture-specific barriers- customs, beliefs, and norms related to

African American culture previously identified as barriers to physical exercise.

African American females – females who self-identify as African American— indicating they are citizens and or residents of the United States and have origins in any part of the Africana diaspora.

Aerobic exercise – any activity that uses large muscle groups, can be maintained continuously, and is rhythmic in nature (ACSM, 2013).

Body Mass Index (BMI) – a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems. The use of BMI allows people to compare their own weight status to that of the general population (CDC, 2013).

Exerciser – adult aged 18-64 years who engages in at least 30 minutes of moderate-intensity aerobic activity 5 days per week or 20-minutes of vigorous activity 3

days per week, or accumulates a minimum of 150 minutes of moderate activity a week and 60 minutes of vigorous activity (ACSM/AHA, 2013).

Ethnic identity – the extent to which one identifies with a particular ethnic group(s). This construct refers to one's sense of belonging to an ethnic group and the part of one's thinking, perceptions, feelings, and behavior that is due to ethnic group membership. The ethnic group tends to be one in which the individual claims heritage (Phinney, 1996).

Exercise self-efficacy – the degree of confidence in one's ability to overcome barriers to exercise (Marcus, Selby, Niaura, & Rossi, 1992).

Exercise motivation – how intrinsic and extrinsic reasons move one to engage in physical exercise. Motivating factors to exercise are also conceptualized as *perceived benefits* to physical exercise.

Moderate Physical Exercise – 3.0 to 6.0 Metabolic Equivalent (METS) (3.5 to 7 kcal/min). Examples include walking at a pace of 3 to 4.5 mph on a level surface, race-walking less than 5 mph, light calisthenics, water aerobics, biking 5 to 9 mph, and stationary biking moderately (ACSM, 2013).

Non-Exerciser – adult aged 18-64 who does not subjectively report engaging in a minimum of 150 minutes of moderate to vigorous exercise per week (per ACSM/AHA, 2013 recommendations).

Obesity – medical term, determined when a person has excess body fat, that is, body fat that is not within the normal range that is appropriate for an individual's height, weight, and gender. An adult who has a BMI of 30 or higher is considered clinically obese (CDC, 2013).

Overweight – adult who has a BMI between 25 and 29.9 (CDC, 2013).

Physical Activity – any bodily movement produced by skeletal muscles that result in energy expenditure above resting (base) level. Physical activity broadly encompasses exercise, sports, and physical activities done as part of daily living, occupation, leisure, and active transportation (ACSM, 2013).

Physical Exercise – physical activity that is planned, structured, and repetitive and [that] has a final or intermediate objective in the improvement or maintenance of physical fitness (ACSM, 2013).

Perceived barriers – real or imagined structural or personal factors that serve as hurdles associated with the likelihood of the individual to adopt or continue a pattern of behaviors. Perceived barriers may prevent initiation or reduce continuation of a behavior.

Perceived benefits – real or imagined factors that positively influence the likelihood of the individual to begin or continue the behavior (physical exercise). Benefits are influenced by what one perceives or has previously experienced as a reward, serving as a motivation to action.

Rejection to Race-Sensitivity – one's “anxious expectation of rejection based on membership in a stigmatized social category or status group” (Mendoza-Denton, Downey, Purdie, Davis & Pietrak, 2002, p. 896).

Vigorous Physical Exercise – greater than 6.0 METS (more than 7kcal/min). Examples include race-walking - 5mph or faster, jogging, roller-skating, biking - more than 10 mph or up steep terrain, high impact aerobics, calisthenics - pushups, pull ups, Karate, and most competitive sports (ACSM, 2013).

List of Abbreviations

This section introduces the acronyms that are used throughout this thesis document.

AAFCS – African American female college students.

ACC – African American culture.

BMI – Body Mass Index.

EI – Ethnic Identity.

HBCU/HBU – historically Black college or university.

RS-r – Rejection Sensitivity to race.

CHAPTER II

Literature Review

Physical Exercise and Health

Physical exercise is defined as “any physical activity that is planned, structured, and repetitive and [that] has a final or intermediate objective in the improvement or maintenance of physical fitness” (ACSM, 2013; Casperson, Powell, Christenson, p.127). Randomized clinical trials and meta-analyses concerning physical exercise have provided indisputable scientific evidence that regular physical exercise improves biomarkers of physical disease such as cardiovascular disease, stroke, type II diabetes, and high blood pressure (Booth, Gordon, Carlson, & Hamilton, 2000; Caspersen, Powell, & Christianson, 1985; Garber et al., 2011; Giada et al., 1998). Regular physical exercise improves physical fitness levels, delays in all-cause mortality, and supports weight management (e.g., Haskell et al., 2007). Furthermore, physical exercise can act as a preventive and interventive component in cases of mild to severe depressive and anxiety disorders, and is associated with improved cognitive functioning (e.g., Bibeau et al., 2008; Erickson, 2007; Garber et al., 2011; Kramer & Martinsen, 2008; Mead et al., 2009). Ultimately, such data were used to substantiate current national recommendations regarding quality and quantity standards of physical exercise levels for American adults aged 18-65 to incur maximum health benefits.

According to the ACSM latest minimum physical exercise guidelines (2011) adults should get at least 150 minutes of moderate-vigorous intensity aerobic exercise per week. Moderate physical exercise refers to any cardiovascular activity resulting in the expenditure of 0 to 6.0 METS (3.5 to 7 kcal/min); examples include walking at a pace of

3 to 4.5 mph on a level surface, race-walking less than 5 mph, light calisthenics, water aerobics, biking 5 to 9 mph, and stationary biking moderately (ACSM, 2013). A MET is defined as the ratio of exercise metabolic rate. One MET refers to the energy expenditure for sitting quietly, approximately 1.2 kcal/min for a 154 lb. individual (CDC, 2013; U.S.D.H.H.S, 2013). Vigorous physical exercise refers to any aerobic activity resulting in an energy expenditure greater than 6.0 METS (more than 7kcal/min); examples include race-walking at 5mph or faster, jogging, roller-skating, biking more than 10 mph on up steep terrain, high impact aerobics, calisthenics, pushups, pull ups, Karate, and most competitive sports (ACSM, 2013). The exercise recommendations can be met through 30-60 minutes of moderate-intensity exercise, five days per week or 20-60 minutes of vigorous-intensity exercise, three days per week (ACSM/AHA, 2013). Resistance, flexibility, and neuromotor training (e.g., Tai Chi and yoga) training are also recommended 2-3 times per week to improve and maintain strength, and range of motion (ACSM, 2013).

Physical Exercise among College Students

While the widespread health benefits of regular physical activity have been well documented (Caprio & Genel, 2005; Donato, 2006; Gordon-Larsen et al., 2004), in the general population, students on college campuses generally report low levels of physical exercise (DeSai et al., 2008; Downs & Ashton, 2011; Irwin, 2007; Kemper & Welsh, 2012; McArthur & Raedeke, 2009; Suminski & Petosa, 2002; Weinfeldt & Visek, 2009). For example, according to the most recent data from the National College Health Assessment, only 46.5% of college students met the recommended amount of physical activity (ACHA-NCHA, 2013). While overall rates of physical exercise among college

students are lower than desired, physical exercise levels appear to be even lower in some segments of this population. Female college students tend to exercise less than males (e.g., Miller, Staten, Rowans, & Noland, 2005; Irwin, 2007). The ACHA-NCHA (2013) reports that only 43.8% of female college student participants of the National College Health Assessment (NCHA) survey met the recommended amount of physical activity compared to 51.9% of the male college student participants. Moreover, data indicate that among female college students, rates of physical exercise are the lowest among minority students (CDC, 2013) and particularly low among AAFCS (Lightfoot & Blanchard, 2011). AAFCS tend to report lower rates of physical exercise than Caucasian and Hispanic females within their cohort (Dishman, Jackson, & Bray, 2010; McArthur & Raedeke, 2009; Miller, Staten, Rowans, & Noland, 2005; Suminski & Petosa, 2002). For example, Suminski and Petosa (2002) conducted a cross sectional study to examine the relationship between the Transtheoretical Model stages of change to engage in exercise behavior and ethnicity in a diverse sample of college students. The results revealed that the risk of being in the non-exercise vs. exercise stage was significantly elevated for Asian (53%), Hispanic (80%), and African American students (42%) compared to Caucasian students. Further, 62% of AAFCS participants were classified as being in one of the beginning stages of change, i.e., pre contemplation, contemplation and preparation.

Consistent with these trends, results of several studies conducted on ethnically homogenous samples of AAFCS have reported low rates of physical exercise (Ajibade, 2011; Kemper & Welsh, 2010; Stanziano & Ajibade, 2012). For example, Ajibade (2011) examined the relationship between campus housing and physical activity behaviors in a sample of AAFCS at a Historically Black University (HBU). Results

showed that only 44% of the sample ($n=138$) meet the national standards for weekly amounts of both moderate and vigorous physical activity.

However, research concerning the physical exercise levels of AAFCS appears to be inconsistent and other researchers report much higher rates of physical activity among AAFCS. For example, some studies identified 55% of AAFCS as being in the Transtheoretical Model's active/maintenance stage of physical exercise (Juniper et al., 2004) and 75% as reaching weekly recommended levels of physical activity (e.g., Carter-Francique, 2011).

In conclusion, the health benefits for physical exercise are well evidenced. Despite this knowledge, actual levels of physical exercise on college campuses are lower than desired. The majority of cross-sectional research involving ethnically diverse samples suggests that physical exercise levels of AAFCS are among the lowest in the college student population (Keating et al., 2005; McArthur & Raedeke, 2009; Suminski & Petosa, 2002). However, more recent reports indicate that higher percentages of AAFCS may be meeting physical exercise recommendations than previously reported (e.g., Carter-Francique, 2011; Kemper & Welsh, 2010). A relatively low rate of physical exercise among AAFCS, racial disparities in physical exercise behaviors and inconsistencies in extant data indicate more research is needed to corroborate and elucidate reasons for the reported discrepancies. As such, researchers have applied universal predictors of physical exercise to samples of AAFCS in an attempt to explain physical exercise behaviors among this population.

Universal Predictors of Physical Exercise

Researchers have identified a broad range of variables associated with differential

physical exercise patterns including intrapersonal (e.g., demographics, attitudes, health status), interpersonal (e.g., social support), environmental (e.g., access to fitness facilities, safety) and institutional/policy factors (Eyler et al., 2002; Keating et al., 2005; King et al., 2000; Sherwood & Jeffery, 2000; Trost, Owen, Bauman, Sallis, & Brown, 2002). Within this context, findings from the general population identified three universal psychosocial constructs associated with differential physical exercise habits: perceived benefits/positive motives and perceived barriers to engaging in physical activity (Brown, 2005; Gyurcsik, Bray & Brittain, 2004; Sallis & Owen, 1999; Kamarudin, & Omar-Fauzee, 2007), and exercise self-efficacy (one's confidence in one's ability to overcome barriers to exercise; Taber et al., 2010; Williams et al., 2006).

The construct of exercise motivations (i.e., benefits and barriers) attempts to identify intrinsic and extrinsic factors involved in the maintenance of physical exercise. Exercise motivation is theoretically grounded in the Self-Determination Theory (SDT; Deci & Ryan, 1985). SDT is a meta-theory concerned with the interplay between intrinsic needs and extrinsic forces which motivate one to engage and sustain a given behavior (Deci & Ryan, 1985). As such, the construct of exercise motivation was introduced to assess the predictive significance of this theory applied to physical activity. Researchers examined effects of both intrinsic factors such as enjoyment and extrinsic reasons such as expected rewards on physical exercise behaviors and adherence to an exercise regimen (Markland, Ingledew, Hardy & Grant, 1992; Ingledew & Markland, 2008; Ingledew, Markland & Ferguson, 2009). A review of past research suggested that intrinsic motivations appear to be more predictive of long-term physical exercise adherence than extrinsic motivations (Teixeira et al., 2012).

Conceptually related to exercise motivations, is the construct of perceived benefits which is commonly used to assess the positive motivations or expected positive outcomes of engaging in physical exercise (e.g., exercise improves my appearance). Perceived benefits can represent any positively reinforcing agent of the behavior encompassing both intrinsic and extrinsic influences. Perceived benefits will only serve to motivate the individual if he/she expects a positive outcome from engagement in the activity (Pender, 1996). Inherently, some benefits will be more intrinsic, such as increased stamina or decreased tiredness, while others will be extrinsic, such as a health insurance incentive or social praise.

Data obtained from ethnically diverse samples of female college students indicated that physically active individuals tend to report more benefits of physical exercise than those who do not exercise regularly (Allison, Dwyer & Makin, 1999; Grubbs & Carter, 2002; Sallis & Owen, 1999). Perceived benefits, intrinsic and extrinsic, emerged as a universal determinant of exercise adherence among ethnically diverse samples of adults (Dishman et al., 1980; Ingledew, & Markland, 2008; Ingledew, Markland, & Ferguson, 2009; Markland, Ingledew, Hardy, & Grant, 1992; Teixeira et al., 2012).

However, in some samples of college students that included AAFCS participants, researchers reported that the high endorsement of perceived benefits to physical exercise was not associated with actual physical exercise behavior (Blanchard et al., 2008; Juniper, Oman, Hamm & Kerby, 2004; Kemper & Welsh, 2004). For example, Kemper and Welsh (2004) had conducted a survey investigation and found that while 70% of African American students perceived a high level of benefits associated with physical

exercise, only 41% actually engaged in moderate to vigorous physical exercise.

Results of survey based investigations in ethnically diverse college females identified the following top ranked perceived motives/benefits to exercise: weight management, attractive/ appearance, and improved fitness (Grubbs & Carter, 2002; Kilpatrick et al., 2005; McArthur & Raedeke, 2009). For example, Weinfeldt and Visek (2009) reported the following top three perceived benefits in a sample of diverse female college students: stay active, improve overall fitness, and have fun in sports. Similar perceptions of benefits were reported by investigations using ethnically homogenous samples of AAFCS (Juniper et al., 2004) and African American college students (Kemper & Welsh, 2010). Ajibade (2011) reported the most endorsed motive (58%) to physical exercise in a sample of AAFCS was to lose weight. Results of the Blanchard et al. (2003) study confirmed previous commonly perceived benefits reported by AAFCS included viewing homework as a barrier (34%) to moderate physical exercise. The top benefits for both ethnic groups were the beliefs that physical exercise would improve their fitness, held by 48% of AAFCS compared to 23% of Caucasian females, and help reduce weight, held by 24% AAFCS, compared to 20% of Caucasian females.

Kemper and Welsh (2010) showed that more than 70% of participants from an HBU perceived health, appearance, weight control, fitness, feeling good and having fun as benefits of physical exercise. Similarly, in a sample of AAFCS, Juniper et al. (2004) reported that participants expect physical exercise to promote and protect their health, help them look and feel better, and manage stress; in addition, 62% of the respondents expected physical activity to be fun. Authors did not examine the relationships between participants' perceptions and actual exercise behavior.

The construct of perceived barriers (i.e., negative motivation) corresponds to any perceived obstacles associated with the undertaking of physical exercise behaviors such as cost or access to fitness facilities (e.g., Grubbs & Carter, 2002). Perceived barriers are the most commonly identified universal negative correlates of physical exercise among adults in the general population and college students (Grubbs & Carter, 2002; Gyurcsik, Bray & Brittain, 2004; Kamarudin & Omar-Fauzee, 2007; Sallis & Owen, 1999).

Results of studies conducted on ethnically diverse samples of female college students confirmed the relationship between perceived barriers and actual physical exercise levels; perceived barriers appeared to be associated with less physical activity (Allison, Dwyer & Makin, 1999; Brown, 2005; Grubbs & Carter, 2002; Gyurcsik, Bray & Brittain, 2004; Munford, 2012). The primary barriers to physical exercise identified by general samples of female college students include the following: time constraints (e.g., other priorities, school, work, social events) and physical exertion (Blanchard et al., 2003; Brown, 2005; Grubbs & Carter, 2002; McArthur & Raedeke, 2009), lack of motivation/laziness (Brown, 2005; Ebben & Brudzynski, 2008; Gyurcsik, Bray, & Brittain, 2004), and embarrassment (Kamarudin & Omar-Fauzee, 2007).

Similar barriers were reported by ethnically homogenous samples of African American college students (Blanchard et al. 2008; Juniper et al., 2004; Kemper & Welsh 2010). For example, Kemper and Welsh (2010) reported the muscle soreness and time demand as the most common obstacles to physical exercise identified by their sample of African American college students.

Self-efficacy as a predictor of physical exercise. According to social cognitive theory, the construct of self-efficacy posits that people's judgments of their capabilities to

carry out actions will predict their behaviors (Bandura, 1997). Theoretically, when an individual perceives barriers to an action and must overcome them, self-efficacy acts as a determinant of the behavior; thus, the higher one's level of self-efficacy, the more likely one will perform the behavior (Bandura, 1977). Applied to physical exercise, self-efficacy was found to be positively associated with actual physical exercise behaviors in ethnically diverse female college students (Anessi, 2007; Bray & Born, 2004; Gyurcsik, Brawley & Langhout, 2002; Gyurcsik, Bray & Brittain, 2004; McAuley, Pena & Jerome, 2001; Silver, Buckworth, Kirby, & Sherman, 2000; Taber et al., 2010; Williams et al., 2006).

Juniper et al. (2004) applied the Transtheoretical Model of change to investigate predictors of physical exercise among AAFCS. Results indicated that perceived barriers and self-efficacy, but not perceived benefits, significantly discriminated between AAFCS in inactive vs. other, more active stages of exercise behavior (Juniper et al., 2004). Similarly, Blanchard et al., (2008) found that only perceived behavioral control (i.e., self-efficacy), not perceived benefits, predicted actual exercise behavior among AAFCS participants.

In conclusion, there is relatively limited data available concerning motivations to physical exercise among AAFCS (Ajibade, 2011; Carter- Francique, 2011; Juniper, 2004). It appears that in the general college population, the universal constructs of perceived benefits/positive motives, perceived barriers/negative motives and self-efficacy are strong predictors of actual engagement in physical exercise. However, outcomes of some studies on physical exercise habits of AAFCS are inconsistent. While some researchers found that the barriers predicted physical exercise in diverse samples of

college students which included AAFCS (i.e., the pattern comparable to one found among the general population of female college students; Blanchard et al, 2008; Juniper et al., 2004) others found no relationship between perceived benefits and actual behavior as AAFCS tended to perceive physical activity as beneficial but these perceptions were not predictive of their actual physical exercise levels (Juniper et al., 2004; Kemper & Welsh, 2010).

Researchers of health disparities commonly stress the potential importance of cultural factors as predictors of health behaviors in ethnic populations (e.g., Ajibade, 2011; Carter- Francique, 2011; Kemper & Welsh, 2010; Suminski & Petosa, 2002). For example, Blanchard et al. (2003) attempted to assess the moderating influence of ethnicity on the theory of planned behavior (TPB) concerning physical exercise, and to generate common and ethnic-specific underlying beliefs in a sample of 90 Caucasian and 94 African American college students. Ethnic specific beliefs were generated using responses to 9 open ended questions such as, “what do you believe are the advantages of accumulating 30 minutes of moderate intensity exercise at least 5 days per week over the next 3 months?” Results indicated three main ethnic specific beliefs emerged, two for African American students, “good for the soul” (behavioral belief), and “no one to exercise with (control belief)”, and one for Caucasian students, the important role of having a health educator /instructor emerged as an influential belief. The authors suggested future investigations need to identify, confirm, and scale additional ethnic specific beliefs to physical exercise to understand differential influences on groups. Therefore, investigation of exercise-relevant beliefs that express concerns unique to African-American females may contribute to better understanding of differential levels of

physical exercise within this population.

African American Culture and Physical Exercise

Literature concerning physical exercise habits of ethnic populations posits that cultural factors influence individual motivation to physical exercise (e.g., Fleury & Lee, 2006). Culture refers to attitudes, norms, and values shared by a group that may affect individual behavior (e.g., commonly shared values or obligations that members of cultural groups feel to their community; Adamopoulos & Kashima, 1990). There is a significant amount of qualitative data collected in community samples of African American adult females to suggest that certain African American culture-specific beliefs and norms may present unique barriers to physical exercise. The following section describes African American culture (ACC) specific barriers to physical exercise derived from this literature.

Sedentary childhoods. Adult African American female participants in various qualitative investigations concerning physical exercise repeatedly cited experiencing sedentary childhoods. Women commented on the cultural normalcy of sedentariness as manifested among their African American friends and family members (Eyler, 2002; Harley et al., 2009; Wilbur et al., 2002). Sanderson, Little and Pulley (2002) conducted in-depth interviews with 61 adults of diverse ethnic background about barriers and enablers to physical exercise. The majority of the sample reported engaging in regular physical exercise activity (63%). One African American female participant stated, *“I think it is the way they are raised. I think Caucasian women are brought up in a household where their mothers, or their aunt, or whoever, are physically active when they were growing up, so it was kind of put on them. But when you are an African*

American, ...when you are growing up you don't think, I need to exercise, but, I need to do this and I need to do that, because it (physical activity) is not done around you"

(Sanderson, Little & Pulley, 2002, p.81). Likewise, Railey (2002) reported 85 % of women participants (N= 40) endorsed the statement, *"as a child no one emphasized the value of exercise"*.

Lack of community/family role models. African American female participants of qualitative investigations reported a lack of physically active African American female role models as a barrier to physical exercise (Harley et al., 2009; Ni et al., 2002; Richter et al., 2002; Sanderson, Little & Pulley, 2002; Wilbur et al., 2002). Sanderson, Little and Pulley (2002), for example, conducted six focus groups with 61 African American adult women ranging in age from 21 to 50 years old (mean BMI= 29.7). Identified barriers and enablers to physical exercise were categorized into the following thematic groups: personal, socio-environmental, physical environment, policy, and culture. Grouped as a cultural variable, the perception of having a lack of physically active role models has been highlighted by participants. One participant asked about role models stated, *"Well no one else in the neighborhood is active, that makes it hard...If you see someone else out there, that would motivate you to go out there with them"* (Sanderson, Little & Pulley, 2002, p.77). Similarly, focus group participants of another investigation lamented about the difficulty finding midlife African American role models who were physically active as a factor that reduced their motivation to engage in activities themselves (Im et al., 2011).

Lack of exposure to different types of physical activities. African American adult female participants in focus groups reported a lack of exposure to physical activities

(Eyler et al., 2002; Miles et al., 2007; Sanderson, Little & Pulley, 2002; Wilbur, et al., 2002), especially in contrast to Caucasian women who were seen as being “brought up on exercise” (Eyler, et al., 2002). Focus group participants indicated that traditionally, African American women were not encouraged to engage in physical exercise and therefore had very few experiences and/or associated skills preparing them to engage in physical exercise (Harley et al., 2009). As one participant stated, *“I go back to that same thing: exposure. And I don’t think we get exposed to exercise at a younger age so that we can enjoy it”* (Harley et al., 2009, p. 91). Similar to a lack of experience was the lack of opportunity to learn about the benefits of physical exercise. For example, Railey (2000) revealed 85% of AA female participants indicated they had not received encouragement from family regarding need for repetitive exercise and its pleasures or potential benefits.

Young et al. (2002) conducted focus group to identify environmental, policy and cultural predictors of physical exercise among urban, well-educated African American females. A sample of 39 African American adult females participated in eight focus group discussions. The majority of participants identified a lack of prior experience with physical exercise. As one participant stated, *“They [Caucasian] always, usually they raise their children in sports, so when you get older, you’re used to playing soccer and everything else”* (Young et al., 2002, p. 37). Similarly, another participant shared, *“they [her parents] did what they had to do to survive, so we just kinds picked up on that. Now if we had parents who were really active, we probably would continue it”* (Young et al., 2002, p. 37).

Discomfort of being the only African American woman in an exercise group or a gym. Negative experiences stemming from being the only African American female

in an exercise group and/or gym setting deter regular physical exercise, according to some African American adult females (Eyler et al., 2002; Harley et al., 2009; Im et al., 2011). Harley et al., (2009) verified previously identified AAC barriers associated with physical exercise in a study consisting of a small sample (N =15) of physically active African American female adults (age 25-45, median BMI = 23.4). The participants confirmed the experience of being the only AAF in the gym or exercise class; one woman stated, “*When I was younger, I took ballet. In my age group, I was on the only African American. So I guess psychologically, that impacted me*” (Harley et al., 2009, p. 93). Her sentiments are not unique; indeed, this statement exemplifies the experiences of many African American females within gym and or fitness settings (Eyler et al., 2002; Im et al., 2011).

Difficulty finding an exercise partner or instructor of the same racial background. African American adult female participants of qualitative research have reported engaging in reduced physical exercise because of their inability to find an African American exercise partner (Eyler, et al., 2002; Harley et al., 2009; Henderson & Ainsworth, 2003; Nies, Volman, & Cook, 1999). Not only do African American women have difficulty finding partners and instructors, they oftentimes find themselves isolated in fitness institutions.

Cultural ideals of larger body shape. African American culture generally encourages and espouses a heavier, shapelier, ideal female body size; especially in comparison to the *ideal* thin body shape associated with mainstream Western Caucasian populations (Kumanyika, 2008). Case in point, two African American female focus group participants succinctly stated, “*Caucasians . . . they are obsessed with being thin,*

you know, but with African Americans it's a slight compliment to you, the heavier you are, it is more acceptable in the African American community" (Sanderson, Little, & Pulley, 2002, p.81), and *"most black women don't worry a whole lot about their body . . . they are big, they like hips . . . they don't see it as a big problem for that kind of a body shape; white men . . . if they (women) are not thin, there's something wrong with them. But with us, we kind of like it"* (Sanderson, Little, & Pulley, 2002, p.81). Moreover, Grab et al. (2006) noted that thinner women within the African American culture might feel pressure to gain weight.

Several researchers have posited that AAC ideals of female body size have increased African American females' risk for becoming overweight/obese and has promoted sedentary lifestyles in African American populations; the reduced stigma of being overweight/obese may be associated with reduced motivation to change (Befort et al., 2008; Webb, Looby, & Fults-McMurtery, 2004; Wolfe, 2000). Substantiating the theory, body image studies revealed that many African American females have a larger ideal body size, are more satisfied with their bodies at heavier weights (high body image satisfaction), and are less likely to identify themselves as overweight regardless of actual BMI (Franko et al., 2010; Cox, Zunker, Wingo, Thomas & Ard, 2010). Further, African American female participants of focus groups also repeatedly reported cultural acceptance of larger body size as a barrier to physical exercise (Befort et al., 2008; Blixen, Singh, and Thacker, 2006; Wolfe, 2000). For example, one participant stated, *"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"* (Harley, et al., 2009, p. 330).

As another example, Im et al., (2011) conducted a qualitative investigation

concerning midlife African American females' attitudes towards physical activity using a sample of 21 women. The majority of the sample, 52%, was obese and 29% were classified as overweight. Participants engaged in online discussion related to attitudes towards physical activity. Thematic analysis of the discussion produced four major themes: culturally acceptable body image, missed opportunity to learn, physical activity as a luxury, and wanting to be alone. Regarding culturally acceptable body image, participants indicated that their culture was more accepting of their large body sizes, and as a result their sense of attractiveness and self-esteem was high, as such women stated they did not feel the need to spend time exercising and were less concerned about losing weight than Caucasian women (Im et al., 2011). Results from the Carter-Francique (2011) investigation revealed 29 % of AAFCS ($n = 14$) participants agreed with the statement, "I feel pressure to maintain a certain body weight by the Black community and culture." A participant from the Malpede et al. (2007) focus group summed up the sentiments of others as she shared that she was explicitly discouraged from losing weight from male members of her family, namely her husband and father, because they don't find 'bony women' attractive.

Grooming/hair maintenance concerns. Many African American females undergo chemical (e.g., a perm) and/or non-chemical processes (e.g., pressing) to permanently and/or temporarily straighten naturally kinky-curly hair. Maintenance of this unnatural state of hair demands a substantial amount of time as regular visits to the salon to initiate and maintain the style are required, money—as salon visits are costly, and the routine avoidance of water or perspiration which causes the hair to revert back to its natural kinky- curly state.

African American female participants of qualitative investigations repeatedly cited opting out or avoiding exercise and its associated sweating due to the time and monetary costs required to redo one's hair after sweating and messing it [hair] up, particularly during the workday (Barnes et al., 2007; Eyler, 2002; Henderson & Ainsworth, 2003; Malpede et al., 2007; Railey, 2000). This sentiment was shared by multiple participants as illustrated by this quote, "*When I wore relaxed hair, I would avoid any activity that would cause my relaxed hair to revert back to a near natural state. Just styled my hair, I'm less motivated to exercise*" (Im et al., 2011 p. 330). Another participant chimed in, "*I also don't like to have my hair explode after I've styled it. My perception is that I look "wild" with my hair curly*" (Im et al., 2011, p. 330).

Hair care as a barrier to physical exercise among AA females was also supported by a few quantitative investigations. For example, Railey (2000) conducted a study concerning modifiable factors specific to African-American women that may be associated with higher incidences of obesity in this population. A sample of 40 overweight (BMI \geq 27.3) adult African American women (age 29-69) filled out various survey questions pertaining to life style including physical exercise. Notably, results indicated 48.6% of participating females admitted that hair care issues affected the frequency and intensity with which they participated in physical exercise.

In a study conducted by Hall et al. (2013), 103 adult African American females (age 21-60) completed a 40-item survey containing questions pertaining to physical activity, hair care practices, and the relationship between the two. Results revealed 31% of participants indicated that they "exercised less because of their hair," and 37.9% claimed to avoid exercise at times due to hair-related issues. Further, participants who

exercised less due to hair concerns were 2.9 times less likely to meet the minimum weekly recommended amount of physical exercise (Hall et al., 2013).

In summary, there is ample qualitative evidence that some AAC specific factors negatively affect physical exercise habits among some adult African American females. Likewise, there is inchoate quantitative research to support existence of such barriers (e.g., sedentary childhoods, lack of community/ family role models, lack of exposure to physical exercise, discomfort of being the only African American in gym or exercise class, difficulty finding a partner/instructor of the same race, cultural ideals of larger body shape (Carter-Francique, 2011), and grooming/ hair maintenance concerns (Railey, 2003; Hall et al., 2013). Existing quantitative evidence concerning the relationship between AAC barriers and physical exercise among AAFCS are scarce (Blanchard et al., 2003; Carter-Francique, 2011).

Moreover, researchers across disciplines posit that individual preferences and lifestyle choices—including physical exercise—are intricately linked to group, cultural, ethnic, and historical contextual identities (Liburd, 2003). Research concerning the role of ethnic identity and health behaviors has suggested that some AAC factors related to physical exercise and weight gain can be moderated by one's level of ethnic identity. The following section defines the construct of ethnic identity and synthesizes the available data concerning the role of ethnic identity in body weight maintenance and physical exercise habits of African American women.

Ethnic Identity & Health Behaviors

The psychological construct of ethnic identity (EI), according to Phinney and Ong (2007), includes an individual's self-concept, self-identification and feeling of belonging

and commitment to a certain group. Ethnic identity (EI) is part of social identity in that individuals tend to identify with a certain group and have value judgments and beliefs related to their membership in the group (Tajfel, 1981).

Both qualitative and quantitative research on eating behaviors in the African-American female population revealed that the predictive power of ACC specific eating behaviors and body weight status is often moderated by one's ethnic identity with AAC (Befort, Thomas, Daley, Rhode & Ahluwalia, 2008; Liburd et al., 2003; Peterson, Rojhani, Steinhaus, & Larkin, 2000; Wood & Petrie, 2010). For example, Liburd (2003) conducted semi-structured interviews with 23 African American men and women concerning the relationship between culture specific eating, *soul food diet* and physical exercise. Results of the investigation indicated that African American dietary food patterns were negatively associated with physical exercise.

Others suggested that EI may be associated with another ACC barrier—prescription to a large body image ideal among African American females. For example, Hesse-Biber et al. (2010) conducted in-depth qualitative interviews with 34 AAFCS attending predominately Caucasian colleges. Participants were interviewed about ideal body image, racial identity, and childhood experiences. Analysis revealed participants' identification with White and/or Black culture produced a set of beauty ideals aligned with mainstream and/ or Black culture, respectively. Similarly, Wood, Nikel and Petrie (2010) employed a sample of 322 AAFCS participants drawn from 5 different universities. Participants completed pre-existing measures representing EI, societal pressure regarding thinness, internalization of societal beauty ideals, body image concerns, and disordered eating. The results suggest that among African American

female participants, EI is inversely related to internalization of white female beauty ideals. Therefore, EI may play a moderating role in the relationships between some AAC specific barriers and the physical exercise levels of African American females.

Past research demonstrated that perceived racism and or discrimination adversely affect the health of African Americans, particularly in majority Caucasian institutions (Kwate, Valdimarsdottir, Guevarra, & Bovjerg, 2003; Vines et al., 2006). As such, researchers are urged to consider the contextual and practical relevance of the deleterious effects of racism and racist experiences on individual health behaviors of ethnic individuals. The following section presents literature concerning the role of perceived racism and the health of African Americans.

Perceptions of Racism and Health

Racism remains an insidious and inescapable added burden for non-dominant populations living in the United States. Recently, as a call to action, the American Psychological Association (APA) and the Association of Black Psychologists (ABPsi) held their first collaborative summit encouraging researchers to examine the intersection of race, stress, and the social milieu as additional and significant influences to the overweight/ obesity epidemic in underrepresented populations.

Perceived racism is the subjective and objective experience of prejudice or discrimination (Clark, Anderson, Clark, Williams, 1999). Research in the field of health disparities indicated individual and institutional discrimination, directly and indirectly (e.g., restriction or availability of services, mobility) adversely affects different health outcomes among minority populations, particularly when in authoritative, majority Caucasian institutions (e.g., hospitals and schools; Williams & Mohammed, 2009).

Direct influences of racism include residence in impoverished neighborhoods, racial bias in medical staff and care, undue stress associated with discrimination and the acceptance of the societal stigma of inferiority, which can have deleterious consequences for health of African Americans (Williams; 1999; Williams & Mohammed, 2009).

Among investigations utilizing samples of African American adult females (Kwate, Valdimarsdottir, Guevarra, & Bovjerg, 2003; Vines et al., 2006), and mixed gender samples, (Harrell, Sadiki, & Taliaferro, 2003; Landrine et al., 2006; Lillie-Blanton et al., 2000; Prelow, Mosher & Bowman, 2003; Williams, Neighbors, & Jackson, 2003) perceived racism was found to be associated with obesity, obesity-related diseases, and the underutilization of health services.

One aspect of perceived racism is captured by the Rejection Sensitivity-Race model ([RS-r], Mendoza-Denton et al., 2002). Defined as one's sensitivity to perceived rejection based on being a member of a devalued group, RS-r is a relatively new concept developed with distinctive relevance for African American students (Mendoza-Denton, 2000). Overall, persons with high levels of RS-r tend to avoid situations that might result in ethnically/racially based social rejection by disengaging from college life, less use of institutional resources, and undermined academic goal pursuit (Mendoza-Denton et al., 2002).

Mendoza-Denton et al. (2002) conducted a longitudinal study to assess if anxious expectations about race-based rejection had a formative role in African-American students' college experience, during and after their first weeks of college. A sample of 100 AA freshman college students at a predominately Caucasian university was used in the study. Participants filled out the rejection sensitivity to race questionnaire ([RSQ-r]

Mendoza- Denton et al., 2002), a measure designed to assess individual differences in anxious expectations of race-based rejection, and a daily survey to report on the diversity of the relationships they formed, and attitudes toward the university. The results indicated RS-race was negatively associated with sense of belonging at the university, such that those higher in RS-race showed a reduced sense of belonging relative to those lower in RS-race. Further, RS-race was negatively associated with feelings of well-being, such that students higher in RS-race reporting lower well-being and a higher sense of rejection than those lower in RS-race. Also, several other negative relationships were revealed between RS-race and academic performance.

More recently, Carter-Francique (2011) conducted a mixed-method investigation to assess the relationship between obesity, campus recreation facility usage, and the roles of race and gender biases in a sample of AAFCS attending a predominately Caucasian university ($N = 49$). Seventy-six percent of the sample qualified as moderate exercisers, however 40% utilized the campus facilities less than twice per week. Experiences of racism in the community were endorsed by 14%, 12% indicated experiencing racism in class, and 0% perceived racism in the campus recreation facility. Results indicated that perceived racial discrimination presented less than 15% of deterrent to physical activity participation. However, findings suggested that the sociocultural environment plays an important role in where AAFCS in this sample chose to participate in physical exercise as the majority of participants indicated a preference for engaging in activities with members of their sociocultural group such as African American dance and step teams, and historically Black Greek sororities. Limitations to this study include the failure to use a preexisting measure to assess aspects of perceived racism. Furthermore, incentives

and barriers were focused on the usage of physical exercise facilities, not the perceptions of motives to physical exercise itself; as such results were not directly comparable to pre-existing studies (e.g., Mendoza-Denton et al., 2002).

There is longstanding evidence of a negative relationship between perceived racism (and related constructs) and health outcomes among African American adults (Harrell, Sadiki, & Taliaferro, 2003; Landrine et al., 2006). Also, there is initial evidence suggesting that perceived racism is inversely associated with the engagement in university resources and goal pursuit among African American students in predominately Caucasian institutions (Mendoza-Denton et al., 2002).

In conclusion, given that AAFCS have some of the lowest rates of physical exercise and the highest rates of overweight/obesity, this investigation aimed to compare AAFCS who do and do not engage in regular physical exercise on a comprehensive set of universal motivational predictors of differential levels of physical exercise in this population of college students. Second, many researchers acknowledged the insufficient understanding of culture specific factors in regulating physical activity levels of African Americans. However, to date there is no research that systematically examined the contribution of ACC specific barriers to exercise, ethnic identity, and physical exercise behaviors among African-American females, neither in general nor in a college population. As such, another aim of this study was to systematically examine the relationship between the aforementioned ACC specific barriers to staying physically active and physical exercise behaviors of AAFCS with the level of ethnic identity as a moderator. Third, while research indicated RS-r negatively predicts academic engagement among some AAFCS, little is known about the relationship between

perceived racism and its effects on the physical health behaviors of AAFCS (Carter-Francique, 2011), as such this study attempted to find out if the detrimental effects of high RS-r generalize to exercise behaviors of AAFCS. Chapter III follows and describes the Methods used in the study.

CHAPTER III

Methods

This chapter describes the research design and methodology of the current study. It includes a description of assessment instruments, procedures used in recruitment of participants and data collection, and strategies applied to data analysis.

The purpose of this study is to systematically examine the differences between AAFCS Exercisers vs. AAFCS Non-exercisers on the following universal psychosocial variables: *perceived benefits of physical activity* (i.e., positive motives), *perceived barriers* (i.e., negative motives) and *physical exercise self-efficacy* (i.e., a confidence in ability to overcome barriers to exercise). In addition, an original assessment of *African American culture-specific barriers* derived from qualitative research conducted in African American populations is included in this investigation. Further, the possible moderating role of one's degree of *ethnic identity* (EI) on individual physical exercise habits, and endorsement of culture-specific barriers is explored. Additionally, expanding upon previous literature in the field of racial health disparities, another aim of this investigation is to examine the relationship between an additional assessment of psychological well-being relevant to ethnic minority status of AAFCS, the *rejection sensitivity to race (RS-r)*, which has been shown to negatively affect minority students' college performance, to test if this detrimental effect generalizes to health behaviors, specifically, physical exercise behaviors.

Research Design

The current study utilized a quasi-experimental design that compared AAFCS who qualified as Non-Exercisers ($N = 32$) vs. AAFCS who qualified as Exercisers ($N = 26$) based on national recommendations. The dependent variables of interest included universal perceived benefits/motives, universal barriers, ACC specific barriers, and rejection sensitivity based on race. Moderating variables of interest were exercise self-efficacy and ethnic identity. All variables of interest were measured using a survey comprised of pre-existing scales and one measure constructed for the purpose of this study (122 items total).

Participants

A convenience sample of 59 volunteer African American female students from Texas State University was recruited for this investigation. Due to the relatively low representation of African American students on campus, approximately 7% of the Texas State University student population according to University institutional data (Texas State University Institutional Data, News Service, 2013), and expected low rates of AAFCS who exercise regularly based on past research (e.g., McArthur & Raedeke, 2009), various non-probabilistic sampling techniques to optimize the participant recruitment process were employed (e.g., snowballing and venue-sampling). Participants were solicited from the university Rec Center and in common areas on the Texas State campus. As an incentive, participants were entered into a drawing of two \$40 gift certificates to a local hair salon.

Individuals were eligible to participate if they were currently enrolled at Texas State University, and self-identified as an African American, and female. Individuals

were not eligible to participate if they were medically precluded from engaging in physical exercise, and/or were currently a member of an athletic sports team.

The sample consisted of 58 AAFCS (one participant was removed from the original sample due to over 50% missing data). The mean age was 21.24 ($SD = 2.58$). Freshman composed 19.0%, sophomores 13.8%, juniors 25.9%, seniors 29.3%, and graduate students 12.1% of the sample. The majority of participants (75.9%) lived outside the college campus and were enrolled in academic courses for 12 or more credit hours (75.9%). As far as work hours, 41.4% worked 10 or less hours, 29.3% worked 11 to 20 hours and 29.2% worked 21 hours or more per week. The mean BMI of the sample was 24.58 ($SD = 5.04$; 67.2% normal weight, 10.3% overweight, 17.2% obese, 5.2% missing data). Based on the national recommendations for physical exercise (ACSM/AHA, 2013), 55.2% of participating AAFCS were classified as Non-Exercisers and 44.8% as Exercisers. Participant demographics are presented by group (see Table II).

Assessment Instruments

The questionnaire created for this investigation consisted of several scales that were previously used by researchers interested in physical exercise. All included scales are described below.

Physical activity items of ACHA-NCHA II survey (ACHA-NCHA, 2013).

Physical exercise level was assessed with two items taken from the ACHA-NCHA II survey that directly assess levels of moderate and vigorous levels of activity according to ACSM/AHA national standards. One item (item 5) assessed vigorous activity; participants were asked on how many of the past 7 days the participants exercised or

participated in physical exercise for at least 20 minutes that made them sweat or breathe hard. The second physical exercise item (item 6) assessed moderate activity; participants were asked on how many of the past 7 days they exercised or participated in physical exercise for at least 30 min that made them sweat or breathe less hard. Participants could select from response options ranging from 0 to 7 (days) on a Likert scale to indicate their answer to each question. Two additional items (7 & 8) included on the measure assessed participants' engagement in weight lifting, and the frequency of flexibility/stretching exercises; data from items 7 and 8 were used to add to the information gathered on individual profiles of AAFCS physical exercise habits. In the current study, self-report responses to the first two items were used to categorize participants as Exercisers (i.e., AAFCS who meet ACSM/AHA 2013 exercise guidelines of at least 60 minutes of strenuous or at least 150 minutes of moderate plus strenuous exercise per week) or Non-exercisers (i.e., AAFCS who do not meet ACSM/AHA, 2013 guidelines). Data was coded such that Non-exercisers were those who indicated < 3 days for item one, and/or < 5 days for item two, or a combination of less than 150 minutes of moderate plus strenuous exercise per week. This is a standard method of physical exercise assessment in the field (Ajibade, 2011; Seo, Torabi, Jiang, Fernandez-Rojas, & Park, 2009; Laska, Pasch, Lust, Story, & Ehlinger, 2009; Huang, Harris, Lee, Nazir, Born & Kaur, 2003). The physical exercise measure is located in Appendix A.

Exercise Motivations Inventory II, EMI-2 (Markland, 1997). The EMI-2 assesses perceived benefits to physical exercise. It uses language suitable for participants who do and do not exercise, and it uniquely assesses reasons for inactivity (Ingledeu, Markland & Medley, 1998). The total of 51-items comprises 14 subscales, each

addressing distinctive exercise benefits by 3-4 items (i.e., *Affiliation, Appearance, Challenge, Competition, Enjoyment, Health Pressures, Ill-Health Avoidance, Nimbleness, Positive Health, Revitalization, Social Recognition, Strength and Endurance, Stress Management, and Weight Management*). Responses were marked on a 5-point Likert scale, from 0 - 'Not at all true for me' to 5-'Very true for me'.

The scale can be scored as a composite index of total perceived benefits ranging from 0 to 255, as well as a mean score of each subscale. The instrument showed good psychometric properties with confirmed factorial structure for subscales, Cronbach's alpha reliability coefficients ranging from 0.63 to 0.90, and test-retest reliability from 0.59 to 0.88 (e.g., Ingledew & Markland, 2008; Markland & Hardy, 1993; Markland & Ingledew, 1997). More information about EMI-2 can be accessed on the psychometric website at http://bangor.ac.uk/~pes004/exercise_motivation/scales.htm; the copy is attached in Appendix B.

Barriers subscale of the Exercise Benefits & Barriers to Physical Exercise Scale, EBBS (Sechrist, Walker, & Pender, 1987). This scale consists of 14 items comprising four domains: *Exercise Milieu, Time Expenditure, Physical Exertion, and Family Discouragement*. The scale uses a Likert-type 4-point response format from 1- 'strongly disagree' to 4 - 'strongly agree'. The perceived barriers to physical exercise can be scored as a composite index or as a mean score of each type of barrier. The EBBS barriers subscale demonstrated good psychometric properties with reported Cronbach's alpha internal reliability of 0.87 (Sechrist, Walker, & Pender, 1987) and test re-test reliability from 0.89 to 0.77 (Gyurcsik, Spink, Bray, Chad & Kwan, 2006). The EBBS barriers subscale is located in Appendix C.

African-American Cultural Barriers Questionnaire, AACBQ. This is an original scale developed for the purpose of this study to measure African-American cultural barriers to physical exercise. It consists of 14 items designed to address seven distinctive constraints to physical exercise, which were derived from qualitative studies with African-American females (see pp. 21-26). The following seven culture-specific barriers, each represented by two items, are addressed in the AACBQ: *Sedentary childhoods, Lack of community/family role models, Lack of exposure to different types of physical activities, Ethnic isolation* (i.e., discomfort of being the only African American woman in an exercise group or a gym), *Difficulty finding an exercise partner or instructor of the same racial background, Cultural ideals of larger body shape, Grooming/Hair maintenance concerns.* The additional barrier identified as culture-specific by African American women, *lack of encouragement to physical exercise,* is addressed by the *Family Discouragement* subscale of the EBBS/Barriers scale and was not be duplicated in the AACBQ. The scale uses a response format consistent with the EBBS/Barriers subscale (i.e., a 4-point Likert scale).

There are no previously existing psychometric data for this scale; the current study provided preliminary psychometrics of this new measure (please see Chapter IV, Results for the psychometrics of the AACBQ). The AACBQ is located in Appendix D.

Exercise Self-Efficacy Scale, ESES (Marcus, Selby, Niaura, & Rossi, 1992).

This five-item scale assesses one's perceived confidence in maintaining an exercise routine despite various obstacles. Each item begins with the stem, "I am confident I can participate in regular exercise when:" and respondents indicated their confidence in overcoming specific constraints on a 7-point scale. The exercise self-efficacy index is

calculated as a sum of numeric responses to all items. The scale has previously been used in research on psychosocial correlates of physical activity (e.g., Annesi, 2006; Annesi, 2007; Annesi et al., 2007) and demonstrated good psychometric properties with reported Cronbach's α = .82 and test re-test reliability over a period of 2-weeks of 0.90 (Marcus, Selby, Niaura, Rossi, 1992). The ESES is located in Appendix E.

Multigroup Ethnic Identity Measure, MEIM (Phinney, 1992). This scale assesses the degree of interest in and commitment to one's ethnic group. The instrument consists of 12 items comprising two factors *Ethnic identity search* (5 items) - a developmental and cognitive component, and *Affirmation, belonging and commitment* (7 items) - an affective component. The measure uses a 4-point Likert scale ranging from 1- *strongly disagree*, to 4- *strongly agree*. The preferred scoring method is to use the mean of responses to all 12 items for a composite score of *Ethnic Identity*, with higher scores indicating higher levels of African-American ethnic identity. Each subscale can also be scored separately (i.e., the mean of the five items for the *Ethnic identity search* index and the mean of the seven items for the *Affirmation, belonging and commitment index*).

Phinney (1992) reported Cronbach's alpha reliability coefficients for the *Affirmation, belonging and commitment* subscale of .75 for high school students and .86 for college students; for the *Ethnic identity search* subscale, .69, and .80, respectively. Other research, conducted on a wide range of ethnic groups and ages, confirmed high internal reliability of both subscales with Cronbach's alpha coefficients above .80 (e.g., Roberts et al, 1999; Stojek et al., 2010). The MEIM can be found in Appendix F.

Rejection Sensitivity Questionnaire-Race, RSQ-r (Mendoza-Denton et al., 2002). The scale assesses anticipatory anxiety of rejection due to race, a construct

developed by the authors of the measure (Mendoza-Denton et al., 2002). The instrument consists of vignettes of 12 social situations and respondents were asked to rate each on two dimensions: their *Anxiety of being rejected* based on race and their *Expectation to be rejected* based on race; responses are provided on 6-point Likert scales ranging from *very unconcerned* (1) to *very concerned* (6). The composite score is calculated as an average of all answers (i.e., across all episodes and anxiety/expectation scales). Higher scores indicate more concern about and higher expectation of rejection based on race (Mendoza-Denton, et al., 2002).

This measure showed acceptable psychometric properties on multiple samples of ethnically diverse college students (Mendoza-Denton, et al., 2002). A principal-components factor analysis was conducted on the anxious expectations scores for each of the 12 RSQ-r situations which revealed all 12 items of the RSQ-r had a factor loading higher than 0.50 (range = .52 to .78), and high internal reliability for African Americans ($\alpha = .90$; Mendoza-Denton, et al., 2002). Regarding construct validity, among African Americans, anxious expectations of race-based rejection were significantly positively correlated with frequency of perceiving race-based negativity over the past year, and with emotional reactivity following such negativity (Mendoza-Denton et al., 2002). The RSQ-r is located in Appendix G.

Finally, participants were asked to estimate their height and weight. The information was utilized to describe and compute BMI statuses of the sample.

Procedure

The researcher approached and informed potential participants of the goal of the investigation. AAFCS who consented to participation completed the survey on

location or scheduled a testing appointment at a more convenient time. All participants were volunteers. The questionnaire was administered individually or in small groups on the Texas State University campus by the author of this study.

Upon arrival to the study room, each participant provided informed consent. Next, each participant was provided with a number 2 pencil, the two-part questionnaire and a scantron. Part one of the survey consisted of items pertaining to demographics, physical exercise frequency, perceptions of motivations, barriers, self-efficacy, and ethnic identity. Answers to part one of the survey were recorded on the scantron with the participant's ID number pre-recorded. Part two of the survey was printed as a separate form, and consisted of items pertaining to rejection –sensitivity to race, and estimated height and weight. The answers to the second part of the survey were marked directly on the paper copies of these instruments with a pre-recorded participant ID number that matched the scantron ID number. After completion of the survey, participants were given a raffle ticket.

Data Analytic Strategy

Descriptive statistics and distributions of demographic information and all main variables included in the study were conducted. The internal consistency of all scales/subscales selected for the project were examined by Cronbach's alpha coefficients. Individuals were divided into either the Exerciser or Non-Exercisers group based on the pre-established cut off points based on the ACSM national recommendations of physical exercise for adults aged 18-65. Data were coded such that participants' responses of less than 5 days of moderate activity, less than three 3 days of vigorous activity, or less than 150 minutes of moderate-vigorous physical exercise combined would be Non-Exercisers,

and those who indicated 5 or more days of moderate activity, 3 or more days of vigorous activity or an accumulated time of 150 minutes of moderate-vigorous activity were coded as Exercisers. The hypotheses regarding group differences between AAFCS Exercisers and Non-exercisers were tested by independent samples t-test, analysis of variance (ANOVA) and analysis of covariance (ANCOVA).

Additionally, Chi² was used to examine differences in the crosstabs of physical exercise status and academic credit hours, work hours, living on/off campus, and BMI status. The significance level was set at the standard level of $p < 0.05$ for all inferential tests.

CHAPTER IV

Results

AAFCS Exerciser vs. Non-Exercisers: Demographic, BMI & Lifestyle Variables

The results of the t-tests for independent groups revealed no significant differences in age or BMI of AAFCS Exercisers vs. Non-Exercisers ($t(56) = 1.48, p = .15$ and $t(56) = 1.63, p = .11$, respectively). There was also no significant relationship between AAFCS exercise status and living on/off campus, number of credit hours or work hours per week reported by participants as evidenced by the outcomes of performed Chi² tests for independence ($p > .05$ for all tests; see Table I1).

Internal Reliability of Scales

The Cronbach's alpha coefficients were computed for all scales and subscales used in the present study. The results are included in the Table I2.

AAFCS Exercise Status & Perceived Benefits of Physical Exercise (Hypothesis Ia)

In order to assess whether AAFCS Exercisers vs. Non-Exercisers differ in their perception of physical exercise benefits, independent samples t- tests were conducted on the *Total Exercise Motivations* (i.e., benefits) score and mean score for each subscale.

Overall, The AAFCS Non- Exercisers perceived significantly less benefits of exercise ($M = 3.58, SD = .56$) than the AAFCS Exercisers group ($M = 3.92, SD = .65$), $t(56) = -2.12, p = .04$. The breakdown of this outcome by Motivations to Exercise subscales showed that Exercisers compared to Non-Exercisers endorsed significantly higher *enjoyment, social recognition, revitalization, and stress reduction* as benefits of

physical exercise; the differences in *positive health* motives were marginally significant ($p = .06$). No significant group differences were noted in perception of remaining benefits. The results of all t-tests performed on perceived motives/benefits of physical exercise are included in Table I3.

AAFCS Exercise Status & Perceived Barriers to Physical Exercise (Hypothesis 1b)

The Non-Exercisers ($M = 1.99$, $SD = .37$) did not significantly differ from Exercisers ($M = 1.88$, $SD = .37$) in perception of *Total Barriers* (i.e. *universal* and AAC barriers combined) to physical exercise, $t(56) = 1.17$, $p = .25$.

AAFCS Moderating Effect of Self Efficacy on AAFCS Exercise Status (Hypothesis II)

The hypothesized moderating effect of physical exercise *self-efficacy* on the group differences in perceived barriers to exercise (i.e., hypothesis II) could not be tested on our data due to the violation of ANCOVA's assumptions of independence between the covariate (i.e., exercise self-efficacy) and group effect; the AAFCS exercise status groups differed significantly in exercise self-efficacy, $t(56) = -4.64$, $p = .001$.

To further explore perception of barriers among AAFCS of differential physical exercise status, the independent samples t-tests were performed separately on the *Universal Barriers* to physical exercise (total and each subscale). The AAFCS Exercisers ($M = 1.70$, $SD = .37$) perceived significantly less *universal barriers* to physical exercise than Non-exercisers ($M = 1.92$, $SD = .34$), $t(56) = 2.32$, $p = .02$. The follow up analysis conducted on separate subscales of universal barriers revealed the same direction of significant group differences on the *time expenditure* and *physical*

exertion subscales but the differences were not significant on the *exercise milieu* and *family discouragement* subscales (see Table I4).

AAFCS Exercise Status & African American Cultural Variables (Hypothesis III & IV)

The *t*-tests for independent samples conducted on the *African-American Cultural* barriers to exercise showed no evidence of significant differences between AAFCS Exercisers vs. Non-Exercisers, neither on the ACC total nor the ACC of separate subscales (see Table E5).

The AAFCS exercise groups did not differ in *Ethnic Identity* ($p = .10$); therefore, this variable was entered as a covariate in group comparisons of perceived ACC barriers (i.e., AAC total and ACC subscales, separately). None of the performed ANCOVA tests showed a significant difference between AAFCS Exercisers vs. Non-Exercisers in their perceptions of ACC barriers.

Finally, our data evidenced no significant difference in *Rejection Sensitivity to Race* (RS-r) between AAFCS Exercisers vs. Non-Exercisers, $t(56) = -.75, p = .45$.

CHAPTER V

Discussion

Benefits of Exercise in AAFCS

Regarding our primary hypothesis (Ia), consistent with past research from general samples of college students (Grubbs & Carter, 2002; McArthur & Raedeke, 2009; Sallis & Owen, 1999), results from this study showed AAFCS Exercisers perceived significantly more benefits (positive motives) to physical exercise than AAFCS Non-Exercisers. Although this outcome was expected, the finding is inconsistent with some earlier studies involving AAFCS which reported no association between perceived benefits and physical exercise patterns in this population (Blanchard et al., 2003; Blanchard et al., 2008; Juniper, et al., 2004; Kemper & Welsh, 2010; Suminski & Petosa, 2002).

It is possible that some inconsistencies regarding the relationship between perceived benefits and physical exercise habits among AAFCS may be attributed to methodological differences. Several investigations did not measure actual physical exercise levels but instead utilized the Transtheoretical Model and Health Promotion Model stages of change as indicators of physical exercise status (Blanchard et al., 2003; Juniper et al., 2004; Suminski & Petosa, 2002). Other investigations employed relatively small numbers of AAFCS participants (Suminski & Petosa, 2002). Lastly, some investigations included results based on mixed gender samples of African American college students (Kemper & Welsh, 2010).

Regarding the perceived motives that differentiated between groups of exercisers and non-exercisers, our ability to compare our results with other investigations was

limited. Overall, there is a dearth of investigations concerning the physical exercise habits of AAFCS. Furthermore, many investigations examined overall levels of perceived motives of college students, not differentiating between groups of exercisers.

The data from the current study indicated that the perceived benefits subscales *enjoyment, positive health, social recognition, revitalization, and stress reduction* differentiated between exercise groups; no significant group differences were noted in perceptions of remaining benefits. Our results are partially consistent with the results of an earlier study obtained from diverse general sample of college students (McArthur & Raedeke, 2009) and a sample of male and female African American college students (Kemper & Welsh, 2010). Among the positive motives examined, *enjoyment* was most strongly associated with activity levels in this sample of ethnically diverse, mostly female college students (McArthur & Raedeke, 2009). Kemper and Welsh (2009) examined expected positive outcomes associated with physical exercise among male and female African American college students. Two out of three results were consistent with our findings; the most expected positive impacts on health as a result of physical exercise were on *health, appearance* and *stress management*.

On the other hand, our results are inconsistent with another report obtained from a general sample of college students (Grubbs & Carter, 2002). *Physical performance, appearance, and personal accomplishment* were strongly associated with significant differences between exercisers and non-exercisers in a sample of female college students (no ethnic breakdowns were provided). In our sample, we found no evidence that any of these subscales differentiated between the physical exercise statuses among AAFCS. The failure of the *appearance* subscale to differentiate between groups may be due to cultural

differences related to appearance concerns and physical exercise. Prior research indicated Caucasian students, particularly Caucasian females, placed more importance on appearance related motives to physical exercise compared to African American students (e.g., McArthur & Raedeke, 2009).

Barriers to Exercise in AAFCS

Regarding hypothesis 1b, perceived barriers to physical exercise, our results confirmed earlier findings that reported a negative relationship between perceived universal barriers and physical exercise levels among general samples of college students involving AAFCS (Blanchard et al. 2008; Grubbs & Carter, 2002; Gyurcsik, Bray & Brittain, 2004; Juniper et al., 2004; Kemper & Welsh, 2010; McArthur & Raedeke, 2009).

In the current study, the only two significant subscales of universal barriers to physical exercise that were found to differentiate between groups were *time expenditure* and *physical exertion*. Prior reports obtained from general samples of college students are partially consistent with this finding (McArthur & Raedeke, 2009), others citing additional subscales as differentiating participants' exercise status (Grubbs & Carter, 2002). For example, Grubbs and Carter (2002) found that *time* and *embarrassment* subscales differentiated between exercise groups in a sample of mostly female college students. Similarly, the use of *self-management strategies* which involve time management skills, differentiated between active and non-active stages of physical activity (McArthur & Raedeke, 2009). From a health promotion perspective, interventionists may want to focus on the development of time management programs as a way to increase participation in

physical exercise among college students who do not engage in adequate levels of physical exercise.

Regarding the perceived AAC barriers, our AACBQ scale designed for the purpose of this study showed an adequate internal reliability (i.e., Cronbach's $\alpha = .77$ for the total ACC index). However, the results of statistical analyses indicated that AAC barriers did not significantly differentiate between AAFCS physical exercise statuses. Albeit unexpected, the implications of this result are encouraging in light of the countless reports based on general samples of African American adult females which cited the influential role of AAC barriers on physical exercise (Befort et al., 2008; Eyler et al., 2002; Harley et al., 2009; Im et al., 2011; Newton et al., 2012; Railey, 2000), as well as the numerous recommendations from researchers of general samples of college students which indicated the need to assess and elucidate the influential roles of AAC barriers to physical exercise (Grubbs & Carter, 2002; McArthur & Raedeke, 2009; Suminski & Petosa, 2000). Our results suggest that AAC barriers do not negatively affect physical activity levels of AAFCS.

The lack of findings regarding the relationship between AAC barriers and exercise status may reflect age differences samples, namely, participants' age. Many qualitative and quantitative investigations utilized samples of older African American females, ranging in age from 35 to 79 (Harley et al., 2009; Henderson & Ainsworth, 2000; Im et al., 2011; Nies et al., 1999; Railey, 2000). For example, Harley et al. (2009) reported that the median age of study participants was 33 years. Similarly, Im et al. (2012) reported the average age of study participants was

51 years. In another study, the mean age for the focus groups members was 61 years of age (Sanderson, Little, & Pulley, 2002). Further, other investigations utilized samples of only sedentary African American females (Eyler et al., 2000; Railey, 2000), or only obese African American female participants (Railey, 2000).

Additionally, this unexpected finding may be due to differences in the methodology. Many investigations were qualitative in nature and did not assess the relationship between perceived AAC barriers and physical exercise levels (Eyler et al., 2002; Harley et al., 2009; Henderson & Ainsworth, 2000; Im et al., 2011; Nies et al., 1999; Richter et al., 2002; Sanderson et al., 2002; Wilbur et al., 2002).

The results of this investigation suggest that college aged African American females are able to negotiate AAC beliefs that were previously identified as being deleterious to their health. It is possible that the results of this investigation reflect a general change in American society. For example, the recent national campaign from First Lady Michelle Obama to make healthy lifestyle behaviors a priority for all Americans, especially for African American women, may have had the intended positive effect on the health behaviors of AAFCS. Future research may examine the effects of First Lady Michelle Obama's health care campaign on the health-related attitudes and behaviors of African American females.

According to our second hypothesis, the expected difference in the total perceived barriers (i.e., universal and specific to AA culture) between AAFCS Exercisers vs. Non-exercisers was expected to be moderated by exercise self-efficacy. However, in contrast

to reports indicating a moderating effect of self-efficacy on the relationship between physical exercise levels and perceived barriers (Juniper et al., 2004), the results of this investigation revealed that perceptions of barriers almost entirely overlapped with perceived level of self-efficacy. Higher levels of self-efficacy were associated with less perceived barriers; therefore, the analyses of moderating effects could not be performed. It appears that among AAFCS, the barriers are conceptualized as only those obstacles to engaging in exercise that cannot be successfully overcome.

Regarding the third hypothesis, the expected difference between AAFCS Exercisers vs. Non-exercisers in ACC barriers was expected to be moderated by the degree of ethnic identity with the African American reference group. In contrast to previous investigations that found a relationship between ethnic identity as African American and AAC beliefs (Liburd et al., 2003; Peterson, Rojhani, Steinhaus, & Larkin, 2000; Wood & Petrie, 2010), no such relationship was found in beliefs relevant to physical exercise of AAFCS. Our finding showed that AAC barriers did not differentiate exercise involvement of AAFCS, independent of their ethnic identity status.

Rejection Sensitivity to Race

Finally, contrary to our fourth hypothesis, our data evidenced no significant difference in rejection sensitivity to race between the AAFCS Exercisers and the AAFCS Non-exercisers. In contrast to earlier investigations that reported negative health outcomes of African American college students with high levels of RS-r (Mendoza-Denton et al., 2002), the results of the current study did not support this earlier trend. Prior research concerning a similar construct, perceived discrimination, obtained from a sample of African American college students also reported a negative association with

mental health facets such as perceptions of social support, increased symptoms of depression, and decreased levels of overall quality of life (Prelow, Mosher & Bowman, 2003).

The difference in assessed health outcomes may account for this inconsistency. For example, Mendoza-Denton et al. (2002) found high levels of RS-r were associated with facets of negative mental health and university engagement, such as feelings of well-being and rejection, feelings of support, happiness, rejection, belonging in the university, attitudes toward receiving academic help, and negative consequences in academics among a sample of African American students. Based on the results of the current investigation, it appears that the detrimental effects of RS-r established in other areas of health behaviors do not generalize to physical exercise habits of AAFCS.

Additionally, previous investigations concerning the effects of RS-r on African American students in predominately Caucasian institutions utilized mixed gender samples of African American students (Downey et al., 2002; Mendoza-Denton et al., 2002). In the United States, African American males report the highest rates of racial profiling, discrimination, and police violence among males and females of other races (Crutchfield, 2006). Given this sociopolitical context, it is feasible that RS-r plays a more important role in regulating health behaviors of African American males than African American females.

Limitations and Delimitations

Due to resource and time constraints, this investigation is not without limitations. First, the current study was conducted on a single university campus and involved a relatively small sample of AAFCS. Therefore, our findings may not be representative of

African American female college students in general.

Moreover, participants were categorized into 'Exerciser' or 'Non-Exerciser' groups based on their self-reported levels of physical exercise. Therefore, this study lacks objective verification of actual physical activity levels of participants. It is possible that the validity of participants' responses has been reduced by social desirability bias (i.e., reduced willingness to accurately report low levels of physical exercise behaviors). However, using a self-report measure to assess physical exercise levels is commonly used in research concerning physical exercise (e.g., Grubbs & Carter, 2002; ACSM, 2013). Furthermore, this method of physical exercise assessment allowed us to successfully differentiate between AAFCS Exercisers and Non Exercisers on the positive motives and universal barriers to physical exercise.

Regarding the lack of significant findings involving the RSQ-r, participants may have felt uneasy expressing feelings about cultural and racial preferences and experiences. It is worth noting that although the RSQ-r demonstrated adequate internal reliability, qualitative evidence from this study raised concerns about instrument validity. For example, participants' skin color/tone may have had an effect on their perceived level of concern about rejection sensitivity based on race. Several lighter skinned participants made statements such as, "*many people do not recognize me as black due to my complexion and or hair type,*" and "*I know sometimes people think I'm mixed and like don't treat me bad like they treat my darker skinned friends.*" According to a review of literature concerning racial phenotypicality bias and discrimination based on race-related phenotypical characteristics of the faces of Black Americans, "individuals with features that are typical of members of their racial/ethnic groups were perceived and treated more

negatively by social perceivers" (Maddox, 2004, p. 383). The skin tone of African American participants may need to be controlled in future research involving RS-r assessment. Lastly, the items from the RSQ-r were placed at the end of the relatively long survey (i.e., 115 items), as such, it is possible that some of the participants suffered from fatigue and reduced attentiveness when responding to questions pertaining to race and experienced discrimination.

Conclusion

Overall, the results of the current study confirmed the utility of perceived motivations (i.e., perceived benefits and perceived barriers) in predicting the physical exercise behaviors of AAFCS. In light of findings suggesting that culture specific factors do not negatively affect the physical exercise habits of AAFCS, future research should concentrate on identifying additional new factors that contribute to the reported lower levels of physical activity in this population (e.g., Rhodes & Smith, 2006). Further, as results of this investigation indicated AAC factors may have less influence on AAFCS physical exercise habits than previously thought, it would be interesting to examine if this cultural change corresponds to a diminishing gap in physical exercise levels of AAFCS compared to the general female college student population.

APPENDIX SECTION

APPENDIX A

Item 29 from the *American College Health Association-National College Health Assessment II*, ([ACHA-NCHA II], ACHA, 2011).

On how many of the past 7 days did you:
(Please mark the appropriate column for each row)

Answer scale: 0 days, 1day, 2 days, 3days, 4 days, 5 days, 6 days, 7 days

1. Do moderate-intensity cardio or aerobic exercise (caused a noticeable increase in heart rate, such as a brisk walk) for at least 30 minutes?

0 days, 1day, 2 days, 3days, 4 days, 5 days, 6 days, 7 days

2. Do vigorous-intensity cardio or aerobic exercise (caused large increases in breathing or heart rate, such as jogging) for at least 20 minutes?

0 days, 1day, 2 days, 3days, 4 days, 5 days, 6 days, 7 days

3. Do 8-10 strength training exercises (such as resistance weight machines) for 8-12 repetitions each?

0 days, 1day, 2 days, 3days, 4 days, 5 days, 6 days, 7 days

4. Did you participate in stretching and flexibility practices?

APPENDIX B

The Exercise Motivations Inventory – 2 (EMI-2; Markland & Ingledew, 1997).

Directions: On the following pages are a number of statements concerning the reasons people often give when asked why they exercise. *Whether you currently exercise regularly or not*, please read each statement carefully and indicate, by circling the appropriate number, whether or not each statement *is true* for you personally, *or would be true* for you personally if you did exercise. If you do not consider a statement to be true for you at all, circle the '0'. If you think that a statement is very true for you, circle the '5'. If you think that a statement is partly true for you, then circle the '1', '2', '3' or '4', according to how strongly you feel that it reflects why you exercise or might exercise. Remember, we want to know why *you personally* choose to exercise or might choose to exercise, not whether you think the statements are good reasons for *anybody* to exercise.

Personally, I exercise (or might exercise) ...

Not at all true for me - 1 2 3 4 5 - Very true for me

Affiliation subscale: (4 items)

() indicates ordinal position of the item on the survey

- To spend time with friends (18)
- To enjoy the social aspects of exercising (32)
- To have fun being active with other people (46)
- To make new friends (57)

Appearance subscale: (4 items)

- To help me look younger (12)
- To have a good body (26)
- To improve my appearance (40)
- To look more attractive (52)

Challenge subscale: (4 items)

- To give me goals to work towards (22)
- To give me personal challenges to face (36)
- To develop personal skills (50)
- To measure myself against personal standards (59)

Competition subscale: (4 items)

- Because I like trying to win in physical activities (20)
- Because I enjoy competing (34)
- Because I enjoy physical competition (48)
- Because I find physical activities fun (58)

Enjoyment subscale: (4 items)

- Because I enjoy the feeling of exerting myself (17)

Because I find exercising satisfying in and of itself (31)
For enjoyment of the experience of exercising (45)
Because I feel at my best when exercising (56)

Health pressures subscale: (3 items)

Because my doctor advised me to exercise (19)
To help prevent an illness that runs in my family (33)
To help recover from an illness/injury (47)

Ill-health avoidance subscale: (3 items)

To avoid ill-health (10)
To prevent health problems (24)
To avoid heart disease (38)

Nimbleness subscale: (3 items)

To stay/become more agile (21)
To maintain flexibility (35)
To stay/become flexible (49)

Positive health subscale: (3 items)

To have a healthy body (15)
Because I want to maintain good health (29)
To feel more healthy (43)

Revitalization subscale: (3 items)

Because it makes me feel good (11)
Because I find exercise invigorating (25)
To recharge my batteries (39)

Social recognition subscale: (4 items)

To show my worth to others (13)
To compare my abilities with other peoples' (27)
To gain recognition for my accomplishments (41)
To accomplish things that others are incapable of (53)

Strength and endurance subscale: (4 items)

To build up my strength (16)
To increase my endurance (30)
To get stronger (44)
To develop my muscles (55)

Stress management subscale: (4 items)

To give me space to think (14)
Because it helps to reduce tension (28)
To help manage stress (42)
To release tension (54)

Weight management subscale: (4 items)

To stay slim (9)

To lose weight (23)

To help control my weight (37)

Because exercise helps me to burn calories (51)

APPENDIX C

Barrier Subscale of the *Exercise Benefits and Barriers Scale*, EBSS (Sechrist, Walker & Pender, 1985).

() indicates ordinal position of the item on the survey. * indicates item is reverse scored.

Exercise Milieu:

- Places for me to exercise are too far away (62)*
- I am too embarrassed to exercise (63)
- It costs too much money to exercise (64)
- Exercise facilities do not have convenient schedules for me (65)
- I think people in exercise clothes look funny (69)
- There are too few places for me to exercise (73)

Time Expenditure: (3 items)

- Exercise takes too much of my time (60)
- Exercise takes too much time from family relationships (68)
- Exercise takes too much time from family responsibilities (71)

Physical exertion: (3 items)

- Exercise tires me (61)
- I am fatigued by exercise (66)
- Exercise is hard work for me (72)

Family discouragement: (2 items)

- My spouse (or significant other) does not encourage me to exercise (67)
- My family members do not encourage me to exercise (70)
- My friends don't encourage me to exercise. (New item; 74)

APPENDIX D

African American Cultural Barriers Questionnaire, AACBQ

*Reversed scoring

Sedentary childhoods:

Physical exercise was not a big part of my childhood. (75)

Physical exercise was not encouraged in my family home (82)

A lack of community/family role models:

Women in my family do not exercise (76)

Many people in my community exercise regularly (83; R*)

I have friends who exercise regularly (89; R)

A lack of exposure to different types of physical activities:

I am used to being in a gym or physical exercise setting (77; R*)

I find myself intimidated by gyms because I am not familiar with equipment and/or the gym atmosphere (84)

The discomfort of being the only African American woman in an exercise group/gym:

I'm less comfortable in the gym/exercise classes because I rarely see other African-Americans there (78)

The gym/exercise classes make me self-conscious because often I'm the only African-American female there (85)

Difficulty finding an exercise partner or instructor of the same racial background:

I have African-American friend(s) who do/would like to exercise with me (79; R*)

I'd exercise more if only I could find an African-American exercise partner (86)

Cultural ideals about desirable body shape:

A thin/toned female body is less sexy/attractive than a larger body shape (80)

I receive more positive feedback from the opposite sex if I am thick and shapely (87)

Grooming/Hair Maintenance:

I don't mind if my hair will get messed up because of sweating during physical exercise (82; R*)

I find myself regularly avoiding or decreasing exercise to preserve my hairstyle (88)

APPENDIX E

Exercise Self Efficacy Scale, ESES (Marcus, Selby, Niaura, and Rossi, 1992).

Directions: please complete the following sentence with the appropriate response.
I am confident I can participate in regular exercise when:

	1	2	3	4	5	6	7			
	<i>(not at all confident)</i>						<i>(very confident)</i>			
I am tired...				1	2	3	4	5	6	7
I am in a bad mood				1	2	3	4	5	6	7
I feel I don't have the time				1	2	3	4	5	6	7
I am on vacation				1	2	3	4	5	6	7
It is raining or snowing				1	2	3	4	5	6	7

APPENDIX F

Multi-Ethnic Identity Measure, MEIM (Phinney, 1992).

Directions: In this country, people come from many different countries and cultures, and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Hispanic or Latino, Black or African American, Asian American, Chinese, Filipino, American Indian, Mexican American, Caucasian or White, Italian American, and many others. These questions are about your ethnicity or your ethnic group and how you feel about it or react to it.

Please fill in: In terms of ethnic group, I consider myself to be _____.

Use the numbers below to indicate how much you agree or disagree with each statement.

(4) Strongly agree (3) Agree (2) Disagree (1) Strongly disagree

*indicates ordinal position of the item in the original scale

Ethnic Identity search:

I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs. (1)*

I am active in organizations or social groups that include mostly members of my own ethnic group.(2)

I think a lot about how my life will be affected by my ethnic group membership (4)

In order to learn more about my ethnic background, I have often talked to other people about my ethnic group. (8)

I participate in cultural practices of my own group, such as special food, music, or customs. (10)

Affirmation, Belonging & Commitment

I have a clear sense of my ethnic background and what it means for me. (3)

I am happy that I am a member of the group I belong to. (5)

I have a strong sense of belonging to my own ethnic group. (6)

I understand pretty well what my ethnic group membership means to me. (7)

I have a lot of pride in my ethnic group. (9)

I feel a strong attachment towards my own ethnic group. (11)

I feel good about my cultural or ethnic background. (12)

APPENDIX G

Rejection Sensitivity to Race Questionnaire, RS-r (Mendoza-Denton et al., 2002).

Directions: Each of the items below describes new situations that people encounter. Some people are concerned about these new situations and others are not. Please imagine yourself in each situation and circle the number that best indicates how you would feel.

1. Imagine that you are in class one day, and the professor asks a particularly difficult question. A few people, including yourself, raise their hands to answer the question.

- How concerned/anxious would you be that the professor might not choose you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the professor might not choose me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

2. Imagine that you are in a pharmacy, trying to pick out a few items. While you're looking at the different brands, you notice one of the store clerks glancing your way.

- How concerned /anxious would you be that the clerk might be looking at you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the clerk might continue to look at me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

3. Imagine you have just completed a job interview over the telephone. You are in good spirits because the interviewer seemed enthusiastic about your application. Several days later you complete a second interview in person. Your interviewer informs you that they will let you know about their decision soon.

- How concerned/anxious would you be that you might not be hired because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that I might not be hired because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

4. It's late at night and you are driving down a country road you're not familiar with. Luckily, there is a 24-hour 7-11 just ahead, so you stop there and head up to the counter to ask the young woman for directions.
- How concerned/anxious would you be that she might not help you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the woman might not help me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

5. Imagine that a new school counselor is selecting students for a summer scholarship fund that you really want. The counselor has only one scholarship left and you are one of several students that is eligible for this scholarship.
- How concerned/anxious would you be that the counselor might not very unconcerned very concerned choose you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that he might not select me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

6. Imagine you have just finished shopping, and you are leaving the store carrying several bags. It's closing time, and several people are filing out of the store at when suddenly, the alarm begins to sound, and a security guard comes over to investigate.
- How concerned/anxious would you be that the guard might stop you very unconcerned very concerned because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the guard might stop me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

7. Imagine you are riding the bus one day. The bus is full except for two seats, one of which is next to you. As the bus comes to the next stop, you notice a woman getting on the bus.

- How concerned/anxious would you be that she might avoid sitting next to you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that she might not sit next to me because of my race/ethnicity

Very Unlikely 1 2 3 4 5 6 Very Likely

8. Imagine that you are in a restaurant, trying to get the attention of your waitress. A lot of other people are trying to get her attention as well.

- How concerned/anxious would you be that she might not attend you right away because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that she might not attend to me right away because of my race/ethnicity

Very Unlikely 1 2 3 4 5 6 Very Likely

9. Imagine you're driving down the street, and there is a police barricade just ahead. The police officers are randomly pulling people over to check drivers' licenses and registrations.

- How concerned/anxious would you be that an officer might pull you over because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the officers might stop me because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

10. Imagine that it's the second day of your new class. The teacher assigned a writing sample yesterday and today the teacher announces that she has finished correcting the papers. You wait for your paper to be returned.

- How concerned/anxious would you be that you might receive a lower grade than others because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect to receive a lower grade than others because of my

race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

11. Imagine that you are standing in line for the A TM machine, and you notice the woman at the machine glances back while she's getting her money.

- How concerned/anxious would you be that she might be suspicious of you because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that she might be suspicious of me because of my very unlikely very likely race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

12. Imagine you're at a pay phone on a street corner. You have to make a call, hut you don't have change. You decide to go into a store and ask for change for your bill.

- How concerned/anxious would you be that the cashier might not give you change because of your race/ethnicity?

Very unconcerned 1 2 3 4 5 6 Very Concerned

- I would expect that the cashier might not give me change because of my race/ethnicity.

Very Unlikely 1 2 3 4 5 6 Very Likely

APPENDIX H

Study Survey

Survey Instructions:

We would like to take the opportunity to thank you for your participation. It is very important that you answer the following questions as carefully and as honestly as possible. Please be sure to read each question thoroughly and take care that your responses are coded properly on your scantron form, just as you would for an exam (i.e., make sure that the item number on the survey, corresponds to the item number on the scantron). In the survey, you will see instructions that explain how to use the numeric scale to answer questions for different sections of the survey. Please pay close attention to these instructions that are printed in bold font. Read each item on the survey very carefully and respond by marking your answer on the scantron. Choose only one response to each item. Do not leave any items blank. As you complete the following survey, please keep in mind that your opinion and responses are very important to us and to the future health of African American female college students at Texas State University and beyond.

On the Scantron form, please bubble in your date of birth in the section marked *Identification*, using the format in this example: *day-month-year 04-11-82*. Do Not print your name.

1. What is your academic classification?
 - A. freshman
 - B. sophomore
 - C. junior
 - D. senior
 - E. graduate
2. How many **credit hours** do you take this semester?
 - A. 6 or less
 - B. 9
 - C. 12
 - D. 15
 - E. 18 or more
3. Typically, how many **hours** per week do you work?
 - A. 0
 - B. 1-10
 - C. 11-20
 - D. 21-30
 - E. 40 or more
4. Do you live ***On*** or ***Off*** campus?
 - A. On campus
 - B. Off campus

Directions: Items 5-8 concern physical exercise levels over the past 7 days.

Use the following scale to indicate the number of days on the scantron:

A	B	C	D	E	F	G	H
0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days

On how many of the past 7 days did you...

5. ...Do moderate-intensity cardio or aerobic exercise (caused a noticeable increase in heart rate, such as a brisk walk) for at least 30 minutes?
6. ...Do vigorous-intensity cardio or aerobic exercise (caused large increases in breathing or heart rate, such as jogging) for at least 20 minutes?
7. ...Do 8-10 strength training exercises (such as resistance weight machines) for 8-12 repetitions each?
8. ...Participate in stretching and flexibility practices?

Directions: For the following items, 9-59, we want to know why *you personally choose* to exercise or might choose to exercise. The following are statements concerning the reasons people often give when asked why they exercise. Whether you currently exercise regularly or not, please read each statement carefully and indicate, whether or not each statement is true for you personally, or would be true for you personally if you did exercise.

Use the following scale:

A	B	C	D	E	F
Not at all True	not true	somewhat untrue	somewhat true	true	Very True

Personally, I exercise (or might exercise)...

9. ...to stay slim.
10. ...to avoid ill-health.
11. ...because it makes me feel good.
12. ...to help me look younger.
13. ...to show my worth to others.
14. ...to give me space to think.
15. ...to have a healthy body.
16. ...to build up my strength.
17. ...because I enjoy the feeling of exerting myself.

Use the following scale:

A	B	C	D	E	F
Not at all True	not True	somewhat untrue	somewhat true	true	Very True

Personally, I exercise (or might exercise)...

18. ...to spend time with friends.
19. ...because my doctor advised me to exercise.
20. ...because I like trying to win in physical activities.
21. ...to stay/become more agile.
22. ...to give me goals to work towards.
23. ...to lose weight.
24. ...to prevent health problems.
25. ...because I find exercise invigorating.
26. ...to have a good body.
27. ...to compare my abilities with other peoples'.
28. ...because it helps to reduce tension.
29. ...because I want to maintain good health.
30. ...to increase my endurance.
31. ...because I find exercising satisfying in and of itself.
32. ...to enjoy the social aspects of exercising.
33. ...to help prevent an illness that runs in my family.
34. ...because I enjoy competing.
35. ...to maintain flexibility.
36. ...to give me personal challenges to face.
37. ...to help control my weight.
38. ...to avoid heart disease.
39. ...to recharge my batteries.

Use the following scale:

A	B	C	D	E	F
Not at all True	not true	somewhat untrue	somewhat true	true	Very True

Personally, I exercise (or might exercise)...

40. ...to improve my appearance.
41. ...to gain recognition for my accomplishments.
42. ...to help manage stress.
43. ...to feel more healthy.
44. ...to get stronger.

45. ...for enjoyment of the experience of exercising.
46. ...to have fun being active with other people.
47. ...to help recover from an illness/injury.
48. ...because I enjoy physical competition.
49. ...to stay/become flexible.
50. ...to develop personal skills.
51. ...because exercise helps me to burn calories.
52. ...to look more attractive.
53. ...to accomplish things that others are incapable of.
54. ...to release tension.
55. ...to develop my muscles.
56. ...because I feel at my best when exercising.
57. ...to make new friends.
58. ...I find physical activities fun.
59. ...to measure myself against personal standards.

Directions: Below are statements that relate to ideas about exercise (items 60-89). Indicate the response that corresponds to the degree to which you agree or disagree with each statement. Use the following scale:

A	B	C	D
Strongly Agree	agree	disagree	Strongly Disagree

- 60. Exercise takes too much of my time.
- 61. Exercise tires me.
- 62. Places for me to exercise are too far away.
- 63. I am too embarrassed to exercise.
- 64. It costs too much money to exercise.
- 65. Exercise facilities do not have convenient schedules for me.
- 66. I am fatigued by exercise.
- 67. My spouse (or significant other) does not encourage me to exercise.
- 68. Exercise takes too much time from family relationships.
- 69. I think people in exercise clothes look funny.
- 70. My family members do not encourage me to exercise.
- 71. Exercise takes too much time from family responsibilities.
- 72. Exercise is hard work for me.
- 73. There are too few places for me to exercise.
- 74. My friends don't encourage me to exercise.
- 75. Physical exercise was not a big part of my childhood.
- 76. Women in my family do not exercise.
- 77. I am used to being in a gym or physical exercise setting.
- 78. I'm less comfortable in the gym/exercise classes because I rarely see other African-Americans there.
- 79. I have African-American friend(s) who do/would like to exercise with me.

Use the following scale:

A	B	C	D
Strongly Agree	agree	disagree	Strongly Disagree

80. A thin/toned female body is less sexy/attractive than a larger body shape.
81. I don't mind if my hair will get messed up because of sweating during physical exercise.
82. Physical exercise was not encouraged in my family home.
83. Many people in my community exercise regularly.
84. I find myself intimidated by gyms because I am not familiar with equipment and/or the gym atmosphere.
85. The gym/exercise classes make me self-conscious because often I'm the only African-American female there.
86. I'd exercise more if only I could find an African-American exercise partner.
87. I receive more positive feedback from the opposite sex if I am thick and shapely.
88. I find myself regularly avoiding or decreasing exercise to preserve my hairstyle.
89. I have friends who exercise regularly.

Directions: In this country, people come from many different countries and cultures, and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Hispanic or Latino, Black or African American, Asian American, Chinese, Filipino, American Indian, Mexican American, Caucasian or White, Italian American, and many others. These questions (items 90-101) are about your ethnicity or your ethnic group and how you feel about it or react to it. Use the following scale to indicate the degree to which you agree with each statement:

A	B	C	D
Strongly Agree	agree	disagree	Strongly Disagree

90. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.
91. I am active in organizations or social groups that include mostly members of my own ethnic group.
92. I think a lot about how my life will be affected by my ethnic group membership.

Use the following scale to indicate the degree to which you agree with each statement:

A	B	C	D
Strongly Agree	agree	disagree	Strongly Disagree

93. In order to learn more about my ethnic background, I have often talked to other people about my ethnic group.
94. I participate in cultural practices of my own group, such as special food, music, or customs.
95. I have a clear sense of my ethnic background and what it means for me.
96. I am happy that I am a member of the group I belong to.
97. I have a strong sense of belonging to my own ethnic group.
98. I understand pretty well what my ethnic group membership means to me.
99. I have a lot of pride in my ethnic group.
100. I feel a strong attachment towards my own ethnic group.
101. I feel good about my cultural or ethnic background.

Directions: For the next set of questions (items 102-106), please bubble-in the response that best describes your agreement with the statement.

Please use the following scale:

A	B	C	D	E	F
Not Confident	low confidence	slightly confident	neutral confidence	moderately confident	Very Confident

I am confident I can participate in regular exercise when...

102. ...I am tired.
103. ...I am in a bad mood.
104. ...I feel I don't have the time.
105. ...I am on vacation.
106. ...It is raining or snowing.

Please let the researcher know that you have finished this part of the survey

Participant ID # _____

Directions: The format for this section is unique.

Each of the items below describes new situations that people encounter. Some people are concerned about these new situations and others are not. Please imagine yourself in each situation and circle the letter that best indicates how you would feel. Each 'situation' has two questions associated with it and each question has a different response scale.

**Please respond to each question by circling the appropriate letter.
Please use the response scale below each item.**

Imagine that you are in class one day, and the professor asks a particularly difficult question. A few people, including yourself, raise their hands to answer the question.

- How concerned/anxious would you be that the professor might not choose you because of your race/ethnicity?
 - A. Very Unconcerned
 - B. slightly unconcerned
 - C. unconcerned
 - D. slightly concerned
 - E. somewhat concerned
 - F. Very Concerned

- I would expect that the professor might not choose me because of my race/ethnicity.
 - A. Very Unlikely
 - B. unlikely
 - C. somewhat unlikely
 - D. somewhat likely
 - E. likely
 - F. Very Likely

Imagine that you are in a pharmacy, trying to pick out a few items. While you're looking at the different brands, you notice one of the store clerks glancing your way.

- How concerned /anxious would you be that the clerk might be looking at you because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that the clerk might continue to look at me because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine you have just completed a job interview over the telephone. You are in good spirits because the interviewer seemed enthusiastic about your application. Several days later you complete a second interview in person. Your interviewer informs you that they will let you know about their decision soon.

- How concerned/anxious would you be that you might not be hired because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that I might not be hired because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

It's late at night and you are driving down a country road you're not familiar with. Luckily, there is a 24-hour 7-11 just ahead, so you stop there and head up to the counter to ask the young woman for directions.

- How concerned/anxious would you be that she might not help you because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that the woman might not help me because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine that a new school counselor is selecting students for a summer scholarship fund that you really want. The counselor has only one scholarship left and you are one of several students that is eligible for this scholarship.

- How concerned/anxious would you be that the counselor might not very unconcerned very concerned choose you because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that he might not select me because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine you have just finished shopping, and you are leaving the store carrying several bags. It's closing time, and several people are filing out of the store at when suddenly, the alarm begins to sound, and a security guard comes over to investigate.

- How concerned/anxious would you be that the guard might stop you very unconcerned very concerned because of your race/ethnicity?
 - A. Very Unconcerned
 - B. slightly unconcerned
 - C. unconcerned
 - D. slightly concerned
 - E. somewhat concerned
 - F. Very Concerned

- I would expect that the guard might stop me because of my race/ethnicity.
 - A. Very Unlikely
 - B. unlikely
 - C. somewhat unlikely
 - D. somewhat likely
 - E. likely
 - F. Very Likely

Imagine you are riding the bus one day. The bus is full except for two seats, one of which is next to you. As the bus comes to the next stop, you notice a woman getting on the bus.

- How concerned/anxious would you be that she might avoid sitting next to you because of your race/ethnicity?
 - A. Very Unconcerned
 - B. slightly unconcerned
 - C. unconcerned
 - D. slightly concerned
 - E. somewhat concerned
 - F. Very Concerned

- I would expect that she might not sit next to me because of my race/ethnicity
 - A. Very Unlikely
 - B. unlikely
 - C. somewhat unlikely
 - D. somewhat likely
 - E. likely
 - F. Very Likely

Imagine that you are in a restaurant, trying to get the attention of your waitress. A lot of other people are trying to get her attention as well.

- How concerned/anxious would you be that she might not attend you right away because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that she might not attend to me right away because of my race/ethnicity.

- A. very unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. very likely

Imagine you're driving down the street, and there is a police barricade just ahead. The police officers are randomly pulling people over to check drivers' licenses and registrations.

- How concerned/anxious would you be that an officer might pull you over because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that the officers might stop me because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine that it's the second day of your new class. The teacher assigned a writing sample yesterday and today the teacher announces that she has finished correcting the papers. You wait for your paper to be returned.

- How concerned/anxious would you be that you might receive a lower grade than others because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect to receive a lower grade than others because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine that you are standing in line for the ATM machine, and you notice the woman at the machine glances back while she's getting her money.

- How concerned/anxious would you be that she might be suspicious of you because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

- I would expect that she might be suspicious of me because of my very unlikely very likely race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Imagine you're at a pay phone on a street corner. You have to make a call, but you don't have change. You decide to go into a store and ask for change for your bill.

• How concerned/anxious would you be that the cashier might not give you change because of your race/ethnicity?

- A. Very Unconcerned
- B. slightly unconcerned
- C. unconcerned
- D. slightly concerned
- E. somewhat concerned
- F. Very Concerned

• I would expect that the cashier might not give me change because of my race/ethnicity.

- A. Very Unlikely
- B. unlikely
- C. somewhat unlikely
- D. somewhat likely
- E. likely
- F. Very Likely

Please Turn the Page for the LAST SECTION ☺

What is your weight? _____ and height? _____

THANK YOU! THANK YOU! THANK YOU! ☺

APPENDIX I

Table I1

Demographics of participants.

Item	Exercisers %	Non-Exercisers	<i>df</i>	χ^2	<i>p</i>
Credit Hours					
Less than 12	64.3	35.7	1	2.83	.09
12 or more	38.6	61.4			
Work Hours					
0-10 hrs.	45.8	54.2	2	1.09	.58
11-20 hrs	52.9	47.1			
21 or more	35.3	64.7			
Living					
On campus	57.1	42.9	1	1.13	.29
Off campus	40.9	59.1			

Table 12

Reliability Coefficient by Scale

Scale	Cronbach's alpha
Exercise Motivation Inventory II (51)	0.93
Stress Management (4)	0.83
Revitalization (3)	0.63
Enjoyment (4)	0.82
Challenge (4)	0.65
Social Rec(4)	0.75
Affiliation (4)	0.85
Competition (4)	0.87
Health Pressure(4)	0.68
Ill Health (3)	0.79
Positive Health (3)	0.83
Weight Manage(4)	0.85
Appearance (4)	0.70
Strength/Endurance (4)	0.82
Nimbleness (3)	0.71
Exercise Barriers Scale (15)	0.75
Exercise Milieu (6)	0.75
Time Expenditure (3)	0.25
Physical Exertion (3)	0.57
Family Encouragement (3)	0.52

Table I2 continued.

Scale	Cronbach's alpha
African American Cultural Barriers (15)	0.77
AACB(2)-Sedentary Childhood	0.87
AACB2(2)-Lack of experiences	0.49
AACB3(3)-Lack of role models	0.23
AACB(2)-Only AA female in gym	0.69
AACB(2)-Female friends/instructor	0.30
AACB(2)-Cultural ideals abt body shape	0.56
AACB(2)- Grooming /hair care	0.87
Self-Efficacy Scale (5)	0.73
Multigroup Ethnic Identity Scale (12)	0.83
Rejection Sensitivity-Race Survey (12)	0.94

Table I3.

The differences in perceived positive motives to physical exercise between AACFS Non-Exercisers vs. AACFS Exercisers.

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Motives Total						
Non-Exercisers	32	3.59	0.56	56	-2.10	.04
Exercisers	26	3.92	0.65			
Affiliation						
Non-Exercisers	32	2.75	1.2	56	-0.03	.98
Exercisers	26	3.92	1.3			
Appearance						
Non-Exercisers	32	4.22	0.96	55	-1.33	.07
Exercisers	26	4.57	1.03			
Challenge						
Non-Exercisers	32	3.65	0.94	56	-1.17	.25
Exercisers	26	3.96	1.1			
Competition						
Non-Exercisers	32	2.90	1.3	56	-1.59	.12
Exercisers	26	3.5	1.6			

Table I3 cont.

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Enjoyment						
Non- Exercisers	32	3.45	3.45	56	-4.30	.01
Exercisers	26	4.56	4.56			
Health Pressure						
Non-Exercisers	32	3.12	3.13	56	-1.87	.35
Exercisers	26	2.75	2.76			
Ill-Health Avoid						
Non-Exercisers	32	4.67	1.25	56	-0.54	.59
Exercisers	26	4.82	0.82			
Nimbleness						
Non-Exercisers	32	4.13	1.20	56	0.69	.49
Exercisers	26	3.93	0.97			
Positive Health						
Non-Exercisers	32	5.02	0.99	56	-1.87	.06
Exercisers	26	5.41	0.41			
Revitalization						
Non-Exercisers	32	1.17	0.33	56	-4.59	.01
Exercisers	26	1.53	0.26			

Table I3 cont.

Scale	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Social Recognition						
Non-Exercisers	32	2.21	1.10	56	-2.17	.05
Exercisers	26	2.89	1.22			
Strength						
Non-Exercisers	32	4.48	1.09	56	-1.34	.17
Exercisers	26	4.84	0.86			
Stress						
Non-Exercisers	32	3.92	1.18	56	-2.58	.01
Exercisers	26	4.65	0.94			
Weight Management						
Non-Exercisers	32	4.53	1.19	56	-0.84	.40
Exercisers	26	4.80	1.22			

Table 14

Differences in perceived universal barriers to physical exercise among AAFCS Exercisers and AAFCS Non-Exercisers.

<i>Scale</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Universal Barriers Scale						
Non-Exercisers	32	1.92	0.34	56	2.30	.02
Exercisers	26	1.70	0.37			
Time Expenditure						
Non-Exercisers	32	1.81	0.52	56	2.03	.05
Exercisers	26	1.56	0.42			
Physical Exertion						
Non-Exercisers	32	2.47	0.50	56	2.71	.01
Exercisers	26	2.04	0.71			
Exercise Milieu						
Non-Exercisers	32	1.54	0.49	56	0.04	.96
Exercisers	26	1.53	0.43			

Table I4
cont.

<i>Scale</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Family Discourage						
Non-Exercisers	32	1.84	0.64	56	1.10	.28
Exercisers	26	1.66	0.56			

Table 15

Differences in perceived AAC Barriers between AAFCS Exercisers and AAFCS Non-Exercisers.

<i>Scale</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
ACC Barriers						
Total						
Non- Exercisers	32	2.07	0.47	56	0.09	.93
Exercisers	26	2.06	0.47			
Sedentary Childhoods						
Non- Exercisers	32	1.94	1.01	56	0.06	.95
Exercisers	26	1.92	0.74			
Lack of experiences						
Non- Exercisers	32	2.31	0.85	56	0.82	.41
Exercisers	26	2.13	0.78			
Lack of role models						
Non- Exercisers	32	2.30	0.69	56	0.58	.56
Exercisers	26	2.20	0.55			
Only AAF in gym						
Non- Exercisers	32	1.68	0.70	56	-1.59	.12
Exercisers	26	2.01	0.88			
Partner/Instructor						
Non- Exercisers	32	1.90	0.75	56	0.01	.99
Exercisers	26	1.90	0.75			

Table I5 cont.

<i>Scale</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Cultural ideal of body						
Non- Exercisers	32	2.17	0.71	56	-0.51	.61
Exercisers	26	2.27	0.74			
Grooming/Hair care						
Non- Exercisers	32	2.05	1.04	56	0.65	.52
Exercisers	26	1.88	0.82			

References

- Adamopoulos, J., & Kashima, Y. (1999). Introduction: Subjective culture as a research tradition. In J. Adamopoulos, & Y. Kashima (Eds.), *Cross-cultural psychology series: Social psychology and cultural context*. (pp. 1-5). Thousand Oaks, CA: SAGE Publications, Inc. doi: <http://dx.doi.org/10.4135/9781452220550.n1>
- Ajibade, P. (2011). Physical activity patterns by campus housing status among African American female college students. *Journal of Black Studies*, 42(4), 548-560. doi:10.1177/0021934710385116
- Airhihenbuwa, C. O, Kumanyika S., Agurs, T. D., & Lowe, A. (1995). Perceptions and beliefs about exercise, rest, and health among African Americans. *American Journal of Health Promotion*, 9, 426–9.
- Allison, K. R., Dwyer, J. J. M., & Makin, S. (1999). Perceived barriers to physical activity among high school students. *Preventive Medicine*, 28, 608–615. doi:10.1006/pmed.1999.0489
- American College Health Association. (2013). American College Health Association - National College Health Assessment (ACHA-NCHA) Web Summary. Available at http://www.acha-ncha.org/data_highlights.html
- American College Health Association. American College Health Association-National College. (2013). *Health Assessment II Reference Group Executive Summary Fall 2012*. American College Health Association.

- American College Health Association. (2003). American college health association-national college health assessment II: Generalizability, reliability, and validity analysis. *American College Health Association*. Retrieved from: <http://www.acha-ncha.org/grvanalysis.html>
- American College of Sports Medicine News Releases. (2013). ACSM Issues New Recommendations on Quantity and Quality of Exercise [News Release]. Retrieved May 21, 2012, from <http://www.acsm.org/about-acsm/media-room/news-releases/2011/08/01/acsm-issues-new-recommendations-on-quantity-and-quality-of-exercise>
- Annesi, J. J. (2006). Relations of physical self-concept and self-efficacy with frequency of voluntary physical activity in preadolescents: Implications for after-school care programming. *Journal of Psychosomatic Research, 61*, 515-520.
- Annesi, J. J. (2007). Relations of changes in exercise self-efficacy, physical self-concept, and body satisfaction with weight changes in obese White and African American women initiating a physical activity program. *Ethnicity & Disease, 17*, 19-22.
- Annessi, J. J., Unruh, J.L., & Whitaker, A.C. (2007). Relations of change in self-efficacy, exercise, attendance, mood, and perceived actual physical changes in obese women: Assessing treatment effects using tenants of self-efficacy theory. *Journal of Social, Behavioral, and Health Sciences, 1*, 72-85. doi: 10.5590/JSBHS.2007.01.1.05
- Bandmann, E. (2008). Physical activity questionnaires - A critical review of methods used in validity and reproducibility studies [Unpublished manuscript]. Retrieved from <http://gih.diva-portal.org/smash/record.jsf?pid=diva2:218618>

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Bauman, A. E., Sallis, J. F., Dzewaltowski, D. A., & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. *American Journal of Preventive Medicine*, *23*, 5-14. doi:10.1016/S0749-3797(02)00469-5
- Batraka, N, Hornsby, P. P., & Schorling, J. B. (2000). Clinical implications of body image among rural African American women. *Journal of General Internal Medicine*, *15*, 235-241.
- Befort, C. A., Thomas, J. L., Daley, C. M., Rhode, P., & Ahluwalia, J. S. (2006). Perceptions and beliefs about body size, weight, and weight loss among obese African American women: A qualitative inquiry. *Health Education Behavior*, *35*, 410-426. doi:10.1177/1090198106290398
- Bibeau, W. S., Moore, J. B., Mitchell, N. G., Vargas-Tonsing, T., & Bartholomew, J. B. (2010). Effects of acute resistance training of different intensities and rest periods on anxiety and affect. *Journal of Strength Conditioning Research*, *24*, 184-189. doi: 10.1519/JSC.0b013e3181ae794b
- Blanchard, C. M., Fisher J., Sparling, P., Nehl, E., Rhodes, R., Courneya, K., & Baker, F. (2008). Understanding physical activity behavior in African American and Caucasian college students: An application of the theory of planned behavior. *Journal of American College Health*, *56*, 341–346. doi:10.3200/JACH.56.44.341-346

- Blanchard, C. M., Rhodes, R. E., Nehl, E., Fisher, J., Sparling, P., & Courneya, K. S. (2003). Ethnicity and the theory of planned behavior in the exercise domain. *American Journal of Health Behavior, 27*, 579-591. doi:10.5993/AJHB.27.6.1
- Booth, F. W., Gordon, S. E., Calson, C. J., & Hamilton, M.T. (2000). Waging war on modern chronic diseases: Primary prevention through exercise biology. *American Journal of Applied Physiology, 38*, 774-787.
- Bopp, M., Wilcox, S., Laken, M., Hooker, S. P., Parra-Medina, D., Saunders, R., Butler, K., Fallon, E. A., & McClorin, L. (2009). 8 Steps to fitness: A faith-based, behavior change physical activity intervention for African Americans. *Journal of Physical Activity & Health, 10*, 568–577.
- Bragg, M. A, Tucker, C. M, Kaye, L. B., & Desmond, F. (2009). Motivators of and barriers to engaging in physical activity: Perspectives of low-income culturally diverse adolescents and adults. *American Journal of Health Education, 40*, 146–54.
- Bray, S. R., & Born, H. A. (2004). Transition to university and vigorous physical activity: Implications for health and psychological well-being. *Journal of American College Health, 52*, 181-188.
- Carter-Francique, A. (2011). Fit and phat: Black college women and their relationship with physical activity, obesity and campus recreation facilities. *Sport, Education and Society, 16*, 553-570. doi:10.1080/13573322.2011.601136
- Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise and physical fitness: Definition and distinctions for health related research. *Public Health reports, 100*, 126-131.

- Centers for Disease Control and Prevention. (n.d.). Obesity and overweight for professionals: Data and statistics: Adult obesity-DNPAO-CDC. Retrieved from <http://www.cdc.gov/obesity/data/adult.html>
- Centers for Disease Control and Prevention. CDC (1997). Surveillance summaries, MMWR, 46 (No. SS-6). Retrieved from <http://www.cdc.gov/mmwr/PDF/ss/ss4606.pdf>
- Centers for Disease Control and Prevention. (2013). Healthy people 2020. Retrieved from May 21, 2012 from http://www.cdc.gov/nchs/healthy_people/hp2020.htm
- Centers for Disease Control and Prevention. (2010). Physical activity guidelines. Retrieved from <http://www.cdc.gov/physicalactivity/index.html>
- Centers for Disease Control and Prevention. (2011). FASTSTATS-exercise or physical activity. Retrieved from <http://www.cdc.gov/nchs/fastats/exercise.htm>
- Corbett, D. R., Calloway, D. (2006). Physical activity challenges facing African-American girls and women. *President's Council on Physical Fitness and Sports E-Newsletter*, Winter.
- Clark, R., Anderson, N. B., Clark V. R., & Williams, D. R. (1999). Racism as a stressor for African Americans. A biopsychosocial model. *American Journal of Psychology*, 54, 805-816.
- Courneya, K. S., Friedenreich, C. M., Arthur, K., Bobick, T. M. (1999). Understanding exercise motivation in colorectal cancer patients: A prospective study using the theory of planned behavior. *Rehabilitation Psychology*, 44, 68-84.

- Courneya, K. S., Jones, L. W., Rhodes R. E., Blanchard, C. M. (2004): Effects of different combinations of intensity categories on self-reported exercise. *Research Quarterly Exercise Sport*, 75, 429-433.
- Dishman, R. K., Jackson, A. S., & Bray, M. S. (2010). Validity of processes of change in physical activity among college students in the TIGER study. *Annals of Behavioral Medicine*, 40, 164-175. doi:10.1007/s12160-010-9208-2
- Do, D. P., Dubowitz, T., Bird, C. E. (2007). Neighborhood context and ethnicity differences in body mass index: A multilevel analysis using the NHANES III Survey (1988-1994). *Economics of Human Biology*, 5, 179-203.
- Duru, O. K., Sarkisian, C. A., Leng, M., & Mangione, C. M. (2010). Sisters in motion: A randomized controlled trial of a faith-based physical activity intervention. *Journal of the American Geriatrics Society*, 58, 1863–1869. doi:10.1111/j.1532-5415.2010.03082.x
- Ebben, W., & Brudzynski, L. (2008). Motivations and barriers to exercise among college students. *Journal of Exercise Physiology*, 11, 1-11.
- Evenson, K., Thompson, J., Wilcox, S., & Young, D. (2002). Environmental, policy, and cultural factors related to physical activity in a diverse sample of women: The women's cardiovascular health network project—introduction and methodology. *Women & Health*, 36, 50-56. doi:10.1300/J013v36n02_01

- Eyler, A., Vest, J., Sanderson, B., Wilbur, J., Matson-Koffman, D., Evenson, K. R., Thompson, J.L., Wilcox, S., & Rohm-Young, D. (2002). Environmental, policy, and cultural factors related to physical activity in a diverse sample of women [Special issue: The Women's Cardiovascular Health Network Project]. *Women & Health, 36*, 1-15. doi:10.1300/J013v36n02_01
- Franko, D., & Roehrig, J. (2011). African American body image. In T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (2nd ed) (pp. 221-228). New York: Guilford Press.
- Garber, C. E., Blissmer, B., Deschenes, M., Franklin, J., Lee, I-M., Nieman, D., & Swain, D. (2011). Quantity and quality of exercise for adults for developing and maintain cardiorespiratory, muscular, and in apparently healthy adults: Guidance for prescribing exercise. *Medicine and Science in Sports & Exercise, 43*,1134-1359.doi:10.1249/MSS.obo13e318213febf
- Gary, T. L., Gross, S. M., Browne, D. C., & LaVeist, T. A. (2006). The college health and wellness study: Baseline correlates of overweight among African Americans. *Journal of Urban Health, 83*, 253-265.
- Giada, R., Bertaglia, E., & De Piccoli, B. (1998). Cardiovascular adaptations to endurance training and detraining in young and older adults. *International Journal of Cardiology, 65*, 149-55. [http://dx.doi.org/10.1016/S0167-5273\(98\)00102-8](http://dx.doi.org/10.1016/S0167-5273(98)00102-8)
- Godin, G., & Shepard, R. J. (1985). A simple method to assess exercise behavior in the community. *Canadian Journal of Applied Sport Science, 10*,141-146.

- Grabe, S., Ward, L. M., & Hyde, J. S. (2006). Ethnicity and body dissatisfaction among women in the United States: A meta-analysis. *Psychological Bulletin*, *132*, 622-640.
- Grubbs, L., & Carter, J. (2002). The relationship of perceived benefits and barriers to reported exercise behaviors among college undergraduates. *Family and Community Health*, *25*, 76-84.
- Gyurcsik, N., Bray, S., & Brittain, D. (2004). Coping with barriers to vigorous physical activity during transition to university. *Family and Community Health*, *27*, 130-142.
- Gyurcsik, N.C., Brawley, L.R., & Langhout, N. (2002). Acute thoughts, exercise consistency, and coping self-efficacy. *Journal of Applied Social Research*, *32*, 2134-2153.
- Hall, R. R., Francis, S., Whitt-Glover, M., Loftin-Bell, K., Swett, K., & McMichael, A. J. (2013). Hair care practices as a barrier to physical activity in African American women. *Journal of American Dermatology*, *149*, 310-314.
doi:10.1001/jamadermatol.2012.1946.
- Harley, A. E., Odoms-Young, A., Beard, B., Katz, M. L., & Heaney, C. A. (2009). African American social and cultural contexts and physical activity: Strategies for navigating challenges to participation. *Women & Health*, *49* (1), 84–100.
doi:10.1080/03630240802690861

- Hardy, E., Corte, C., Finnegan, L., Kim, M., Matthews, A., & Wilbur, J. (2011). Dimensions of racial identity as predictors of physical activity in midlife African American women. *Western Journal of Nursing Research*, 33, 1098-1099. doi:10.1177/0193945911413668
- Harrell, J. P., Sadiki, H., & Taliaferro, J. (2003). Physiological responses to racism and discrimination: An assessment of the evidence. *American Journal of Public Health*, 93, 243–248. doi:10.2105/AJPH.93.2.243
- Haskell, W. L., Lee, I-M., Pate, R. R., Powell, K., Blair, S. N., Franklin, B.A., Macera, C. A., Heath, G. W., Thompson, P. D., & Bauman, A. (2007). Physical activity and public health: Updated recommendation for adults from the American college of sports medicine and the American heart association. *Medicine and Science in Sports and Exercise*, 39, 1423-1434.
- Heesch, K. C., Brown, D. R., & Blanton, C. J. (2000). Perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups. *Women & Health*, 30, 61–76. doi:10.1300/J013v30n04_05
- Henderson, K., & Ainsworth, B. (2000). Enablers and constraints to walking for older African American and American Indian women: The cultural activity participation study. *Research Quarterly in Exercise Sport*, 71, 263-272.
- Henderson, K. A., & Ainsworth, B. E. (2003). A synthesis of perceptions about physical activity among older African American and American Indian women. *American Journal of Public Health*, 93, 313-317. doi:10.2105/AJPH.93.2.313

- Hesse-Biber, S., Livingstone, S., Ramirez, D., Barko, E. B., & Johnson, A. R. (2010). Racial identity and body image among black female college students attending predominately white colleges. *Sex Roles, 63*, 697-711. doi:10.1007/s11199-010-9862-7
- Hoffman, D. J., Policastro, P., & Quick, V. (2006). Changes in body weight and fat mass of men and women in the first year of college: A study of the "freshman 15." *Journal of American College Health, 55*, 41-45. doi:10.3200/JACH.55.1.41-46
- Huang, T. K., Harris, K., Lee, R. E., Nazir, N., Born, W., & Kaur, H. (2003). Assessing overweight, obesity, diet, and physical activity in college students. *Journal of American College Health, 52*, 83-86. doi:10.1080/07448480309595728
- Im, E-O., Ko, Y., Hwang, H. Y. K. H., Chee, W., Stuijbergen, A., Walker, L., Brown, A., McPeck, C., & Chee, E. (2011). Physical activity as a luxury: African American women's attitudes towards physical activity. *Western Journal of Nursing Research, 14*, 317-341. doi: 10.1177/0193945911400637
- Ingledeew, D. K. I., & Markland, D. (2008). The role of motives in exercise participation. *Psychology & Health, 23*, 807-828.
- Ingledeew, D. K., Markland, D., & Ferguson, E. (2009). Three levels of exercise motivation. *Applied Psychology: Health and Wellbeing, 1*, 336-355.
- Ingledeew, D. K. I., Markland, D., & Medley, A. (1998). Exercise motives and Stages of Change. *Journal of Health Psychology, 3*, 477-489.
- Jacobs, D. R., Ainsworth, B. E., Hartman, T. J., & Leon, A. S. (1993). A simultaneous evaluation of 10 commonly used physical activity questionnaires. *Medical Science Sport Exercise, 25*, 81-91.

- Juniper, K. C., Oman, R. F., Hamm, R. M., & Kerby, D. S. (2004). The relationships among constructs in the health belief model and the trans-theoretical model among African American college women for physical activity. *American Journal of Health Promotion, 18*, 354-357.
- Karvinen, H. K., Courneya, S. K., Campbel, L. K., Pearcey, G. R., Dundas, G., Ccapstick, V., & Tonkin, S. K. (2007). Correlates of exercise motivation and behavior in a population-based sample of endometrial cancer survivors: An application of the Theory of Planned Behavior. *International Journal of Behavioral Nutrition and Physical Activity, 4* (21). doi:10.1186/1479-5868-4-21
- Keating, X. D., Guan, J., Pinero, J. C., & Bridges, D. M. (2005). A meta-analysis of college students' physical activity behaviors. *Journal of American College Health, 54*, 116-125.
- Kemper, K. A., & Welsh, R. S. (2010). Physical activity behaviors of students of a rural historically black college. *Journal of American College Health, 58*, 327-334. doi:10.1080/07448480903501772
- King, A., Castro, C., Wilcox, S., Eyler, A., Sallis, J., & Brownson, R. (2000). Personal and environmental factors with physical inactivity among different racial-ethnic groups of U.S. middle-aged and older-aged women. *Health Psychology, 19*, 354-364. doi: 10.1037/0278-6133.19.4.354
- Kilpatrick, M., Hebert, E., & Bartholomew, J. (2005). College students' motivation for physical activity: Differing men's and women's motives for sport participation and exercise. *Journal of American College Health, 54*, 87-94.

- Krieger, N. (1996). Racial discrimination and blood pressure: The CARDIA Study of young black and white adults. *American Journal of Public Health, 86*, 1370–1378. doi:10.2105/AJPH.86.10.1370
- Krieger, N. (2000). Discrimination and health. In *Social Epidemiology* (pp. 36–75). Oxford: Oxford University Press Inc.
- Kumanyika, S. K. (2008). Environmental influences on childhood obesity: Ethnic and cultural influences in context. *Physiology & Behavior, 94*, 61–70.
- Kwate, N., Valdimarsdottir, H., Guevarra, J., & Bovjerg, D. (2003). Experiences of racist events are associated with negative health consequences for African American women. *Journal of National Medical Association, 95*, 450-460.
- Landrine, H., Klonoff, E. A., Corral, I., Fernandez, S., & Roesch, S. (2006). Conceptualizing and measuring ethnic discrimination in health research. *Journal of Behavioral Medicine, 29*, 79–94. doi:10.1007/s10865-005-9029-0
- Laska, M., Pasch, K. E., Lust, K., Story, M., & Ehlinger, E. (2009). Latent class analysis of lifestyle characteristics and health risk behaviors among college youth. *Prevention Science, 10*, 376-386. doi:10.1007/s11121-009-0140-2
- Liburd, L. (2003). Food, identity and African American women with type -2 diabetes: An anthropological perspective. *Diabetes Spectrum, 16*, 160-165. doi: 10.2337/diaspect.16.3.160
- Lillie-Blanton, M., Bodie, M., Rowland, D., Altman, D., & McIntosh, M. (2000). Race, ethnicity, and the health care system: Public perceptions and experiences. *Medical Care Research and Review, 57*, 218–235.

- Malpede, C. Z., Greene, L. F., Fitzpatrick, S. L., Jefferson, W. K., Shewchuk, R. M., Baskin, M. L., & Ard, J. D. (2007). Racial influences associated with weight-related beliefs in African American and Caucasian women. *Ethnicity & Disease, 17*(1), 1-5.
- Marcus, B. H., Selby, V. C., Niaura, R. S., & Rossi, J.S. (1992). Self-efficacy and the stages of exercise behavior change. *Research Quarterly Exercise Sport, 63*, 60–66.
- Markland, D., & Hardy, L. (1993). The Exercise Motivations Inventory: Preliminary development and validity of a measure of individuals' reasons for participation in regular physical exercise. *Personality & Individual Differences, 15*, 289-296.
- Markland, D., & Ingledew, D. K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised exercise motivations inventory. *British Journal of Health Psychology, 2*, 361-376.
- Martinsen, E. W. (2008). Physical activity in the prevention and treatment of anxiety and depression. *Nordic Journal of Psychology, 62*, 25-29.
doi:10.1080/08039480802315640
- McAuley, E., Pena, M. M., Jerome, G. J. (2001). Self-efficacy as a determinant and outcomes of exercise. In: Roberts G.C. (Ed), *Advances in Motivation in Sport and Exercise*. (235-261). Champaign, IL: Human Kinetics Publishers, Inc.
- Miles, L. (2007). Physical activity and health. *Nutrition Bulletin, 32*, 52-54.
doi: 10.1111/j.1467-3010.2007.00668.x

- Miller, K., Staten, R., Rayens, M., & Noland, M. (2005). Levels and characteristics of physical activity among a college student cohort. *American Journal of Health Education, 36*, 215–221.
- Motl, R. W., McAuley, E., & DiStefano, C. (2005). Is social desirability associated with self-reported physical activity? *Preventive medicine, 40*, 735-739.
- Nelson, T. F., Gortmaker, S. L., Subramanian, S. V., Cheung, L., & Wechsler, H. (2007). Disparities in overweight and obesity among U.S. college students. *American Journal of Health Behavior, 31*, 363-373.
- Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., Macera, C. A., & Castaneda-Sceppa, C. (2007). Physical Activity and public health in older adults: Recommendation from the American college of sports medicine and the American heart association. *Medicine and Science in Sports and Exercise, 39*, 1435-1445.
- Nguyen-Michel, S. T., Unger, J. B., Hamilton, J., & Sprujit-Metz, D. (2006). Associations between physical activity and perceived stress/hassles in college students. *Stress and Health, 22*, 179-188. doi: 10.1002/smi.1094
- Nies, M. A., Vollman, M., & Cook, T. (1999). African American women's experiences with physical activity in their daily lives. *Public Health Nursing, 16* (1), 23-31. doi:10.1046/j.1525-1446.1999.00023.x
- Office of Minority Health (2013). Obesity and African Americans. U.S Department of Health a Human Services Office of Minority Health. Retrieved from <http://minorityhealth.hhs.gov/templates/content.aspx?ID=6456>.

- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of Obesity in the United States, 2009-2010. National Health and Nutrition Examination Survey 2009-2010 (Data Brief No.82). *U.S. Department of Health and Human Services, Centers For Disease Control.*
- Owens, C.S. (2008). Diabetes and obesity risks in African American young adult freshmen attending a historically Black college/university. *Journal of Health Care among the Poor and Underserved, 19*, 1096-1118.
- Pate, R. R., Pratt, M., Blair, S. N., Blair, S.N., Haskell, W.H., Macera, C. A., & Wilmore, J. H. (1995). Physical activity and public health: A Recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of the American Medical Association, 273*, 402-407.
doi:10.1001/jama.1995.03520290054029
- Patrick, K., Covin., J. R., Fulop., M., Calfas. K., & Lovato, C. (1997). Health risk behaviors among California college students. *Journal of American College Health, 45*, 265–272.
- Petersons, M., Rojhani, A., Steinhaus, N., & Larkin, B. (2000). Effect of ethnic identity on attitudes, feelings, and behaviors toward food. *Eating Disorders: The Journal of Treatment & Prevention, 8*, 207-219. doi:10.1080/10640260008251228
- Phinney, J. (1992). The multi group ethnic identity measure: A new scale for use with adolescents and youth adults from diverse groups. *Journal of Adolescent Research, 7*,156-176.

- Prelow, H. M., Mosher, C. E., & Bowman, M. A. (2006). Perceived racial discrimination, social support, and psychological adjustment among black emerging adults. *Journal of Black Psychology, 32*, 442-454.
- Quaterman, J., Harris, G., & Chew, R. M. (1996). African-American students' perceptions of the value of basic physical education activity programs at historically black colleges and universities. *Journal of Teaching in Physical Education, 15*, 188-204.
- Railey, T. M. (2000). Parameters of obesity in African-American women. *Journal of the National Medical Association, 92* (10), 481-484.
- Racette, S. B., Deusinger, S. S., Strube, M. J., Highstein, G. R., & Deusinger, R. H. (2005). Weight changes, exercise, and dietary patterns during freshman and sophomore years of college. *Journal of American College Health, 53*, 245-251.
- Roberts, A., Cash, T. F., Feingold, A., & Johnson, B. T. (2006). Are black-white differences in females' body dissatisfaction decreasing? A meta-analytic review. *Journal of Consulting and Clinical Psychology, 6*, 1121-113.
- Roberts, E. R., Phinney, S. J, Masse, L. C., Chen, Y. R., Roberts, R. C., & Romero, A. (1999). The structure of ethnic identity of young adolescents from diverse ethnocultural groups. *Journal of Early Adolescence, 19*,301-322.
- Rogers-Wood, N. A., & Petrie, T. A. (2010). Body dissatisfaction, ethnic identity, and disordered Eating among African American women. *Journal of Counseling Psychology, 57*, 141-153. doi:10.1037/a0018922

- Richter, D., Wilcox, S., Greaney, M. L., Henderson, K. A., & Ainsworth, B. E. (2002). Environmental, policy, and cultural factors related to physical activity in a diverse sample of women [Special issue: The Women's Cardiovascular Health Network Project.] *Women & Health, 36*, 91-109.
- Sallis, J. F., & Saelens, B. E. (2000). Assessment of physical activity by self-report: Status, limitations, and future directions. *Research Quarterly for Exercise & Sport, 71*, 1-14.
- Sanderson, B., Littleton, M., & Pulley, L. V. (2002). Environmental, policy, and cultural factors related to physical activity among rural, African American women. *Women & Health, 36*, 73-88. doi:10.1300/J013v36n02_06.
- Sarkin, J. A., Nichols, J. F., Sallis, J. F., & Calfas, K. J. (2000). Self-report measures and scoring protocols affect prevalence estimates of meeting physical activity guidelines. *Medicine and Science in Sports and Exercise, 32*, 149-156.
- Sechrist, K. R., Walker, S. N., & Pender, N. J. (1987). Development and psychometric evaluation of the exercise benefits/barriers scale. *Research in Nursing & Health, 10*, 357-365. DOI: 10.1002/nur.4770100603
- Seo, D., Torabi, M. R., Jiang, N., Fernandez-Rojas, X., & Park, B. (2009). Cross-cultural comparison of lack of regular physical activity among college students: Universal versus transversal. *International Journal of Behavioral Medicine, 16*, 355-359. doi:10.1007/s12529-008-9029-x
- Sharpe, P., Granner, M. L., Hutto, B. E., Wilcox, S., Peck, L., & Addy, C. L. (2008). Correlates of physical activity among African American and white women. *Health Behavior, 32*, 701-713.

- Sherwood, N. & Jefferies, R. (2000). The behavioral determinants of exercise: Implications for physical activity interventions. *Annual Review of Nutrition, 20*, 21-44.
- Silver, W., Buckworth, J., Kirby, T. E., & Sherman, W. M. (2000). Characteristics of exercise behavior among college students: Application of social cognitive theory to predicting stage of change. *Preventive Medicine, 31*, 494-505.
- Stanziano, D. C., & Butler-Ajibade, P. (2011). Differences in health-related behaviors and body mass index risk categories in African American women in college. *Journal of the National Medical Association, 103*, 4-8.
- Suminski, R. R., & Petosa, R. (2002). Stages of change among ethnically diverse college students. *Journal of American College Health, 51*, 26-31.
doi:10.1080/07448480209596324
- Taber, D. R., Meischke, H., & Maciejewski, M. L. (2010). Testing social cognitive mechanisms of exercise in college students. *American Journal of Health Behavior, 34*, 156-165.
- Teixeira, P. J., Carraca, E.V., Markland, D., Silva, M, N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity, 9* (78).

- Texas State University Institutional Data, News Service. (n.d.). Texas State sets new fall enrollment record: University News Service: Texas state university. *Texas State University News Service*. Retrieved May 18, 2013, from http://www.txstate.edu/news/news_releases/news_archive/2011/September-2011/FallEnrollment092211.html
- Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine and Science in Sports and Exercise*, *34*, 1996–2001. doi:10.1097/00005768-200212000-00020
- Vines, A. I., Baird, D. D., McNeilly, M., Hertz-Picciotto, I., Light, K. C., & Stevens, J. (2006). Social correlates of the chronic stress of perceived among black women. *Ethnicity & Disease*, *16*, 101-107.
- Vines, A. I., Baird, D. D., Stevens, J., Hertz-Picciotto, I., Light, K. C., & McNeilly, M. (2007). Associations of abdominal fat with perceived racism and passive emotional responses to racism in African American women. *American Journal of Public Health*, *97*, 526-530. doi:10.2105/AJPH.2005.080663
- Walton, G., & Cohen, G. (2007). A question of belonging: race, social fit, and achievement. *Journal of Personality and Social Psychology*, *92*, 82-96. doi:10.1037/0022-3514.92.1.82
- Webb, T. T., Lobby, E. J., & Fults-McMurtery, R. (2004). African American men's perception of body figure attractiveness: An acculturation study. *Journal of Black Studies*, *34*, 370-385.

- Wilbur, J., Chandler, P., Dancy, B., Choie, J., & Plonzynski, D. (2002). Environmental, policy, and cultural factors related to physical activity in urban, African American women. *Women Health, 36*, 17–28.
- Wilcox, S., Castro, C., King, A. C., Housemann, R., & Brownson, R. C. (2000). Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. *Journal of Epidemiological Community Health, 54*, 667–672. doi:10.1136/jech.54.9.667
- Williams, D. R. (1999). Race, socioeconomic status, and health: The added effects of racism and discrimination. In N. E. Adler, M. Marmot, B. S. McEwen, J. Stewart (Eds.), *Socioeconomic status and health in industrial nations: Social, psychological, and biological pathways* (pp. 173-188). New York, NY US: New York Academy of Sciences.
- Williams, B. R., Bezner, J., Chesbro, S. B., & Leavitt R. (2006). The effect of a walking program on perceived benefits and barriers to exercise in postmenopausal African American women. *Journal of Geriatric Physical Therapy, 29*, 43-49.
- Williams, D. R., Neighbors, H., & Jackson, J. (2003). Racial/ethnic discrimination and health: Findings from community studies. *American Journal of Public Health, 98*, 200–208.
- Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine, 32*, 20–47. doi 10.1007/s10865-008-9185-0

Young, D., He, X., Harris, J., & Mabry, I. (2002). Environmental, Policy, and Cultural Factors Related to Physical Activity in Well-Educated Urban African American Women [Special issue: The Women's Cardiovascular Health Network Project]. *Women & Health, 36*, 29-41. doi:10.1300/J013v36n02_03

Young, D. R., Gittelsohn, J., Charleston, J., Kaytura, F-A., & Lawrence, J. A. (2001). Motivations for exercise and weight loss among African-American women: Focus group results and their contribution towards program development. *Ethnicity and Health, 6*, 227–45.