Why Latinas Exercise: a Multi-Method Exploration of Motivators Using Participatory Photography Methodology

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WHY LATINAS EXERCISE: A MULTI-METHOD EXPLORATION OF MOTIVATORS USING PARTICIPATORY PHOTOGRAPHY METHODOLOGY

By

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A DISSERTATION

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Latinas are at risk for not engaging in optimal exercise and are at greater risk than other ethnic groups for being overweight and suffering deleterious health consequences. The current study’s researcher utilizes pedometers, exercise logs, surveys, and participatory photography to determine exercise motivators and barriers to exercise among Latinas. The specific aims of the presented research were to identify predictors of exercise, to investigate the relationship between motivation types, self-determination and acculturation among Latinas, and employ participatory photography methodology to better understand Latina’s exercise motivators and barriers.

The methodology included both quantitative and qualitative methods. Exercise motivation types (Amotivation, Extrinsic, Intrinsic) using the Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2), an exercise log and pedometer step counts were collected from 169 Latinas. Acculturation and demographic variables including income, education, and number of children were also collected. Each Latina met with the researcher to complete the BREQ-2, receive her exercise log and pedometers and to return her exercise logs. A sub-sample of 19 Latinas responded to semi-structured questions about exercise and photographed their exercise motivators and barriers.
Results showed that the more acculturated to American culture, the fewer steps on average per day were recorded by participants. Demographic variables were not significant predictors of exercise. Motivation type was not found to predict exercise (recorded steps per day). The Intrinsic regulation subscale, ‘I value the benefits of exercise,’ of the BREQ-2 had the highest mean score ($m = 3.28, SD = .83$). Participants in the qualitative phase of the study defined exercise as physical activities done for the purpose of exercising involving a set of physical and emotional effects. Exercise motivators identified through qualitative semi-structured interviews were classified as either Extrinsic or Intrinsic with the most frequently commented on being the Extrinsic category. Exercise barriers that emerged from the data were classified into a) competing obligations, b) personal limitations, c) environmental limitations, and d) competing diversions. Cultural aspects influencing Latinas’ exercise also emerged from the data classified into the following categories: a) job stress, b) changing family roles, c) fast food availability, and d) transportation.

The findings of this study suggest avenues for interventions that are family-centered and culturally-tailored based on education of what constitutes exercise. Exercise motivation is a complex issue for Latinas, and future researchers need to examine the mechanisms of becoming more Americanized that may adversely affect Latinas’ activity levels. The concept and measurement of Identified regulation may need to be revised before its further use among Latinas in addressing the significant health disparity attributable to sub-optimal exercise.
DEDICATION

This is dedicated to my absolutely amazing husband, my beautiful daughter, my family, my "village," all the people who have supported me throughout this process and to the participants of Why Latinas Exercise.
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Chapter I

Statement of the Problem

A majority of Latinas is not engaging in recommended levels of exercise and is at increased risk for obesity and related health consequences (Keller & Fleury, 2006; National Center for Health Statistics, 2009; U.S. Department of Health & Human Services, 2007). Contributing factors to being overweight or obese include: a) increased caloric intake, b) insufficient calorie expenditure, c) metabolism, d) genes, e) behavior, f) environment, g) culture, and h) socioeconomic status (SES) (U.S. Department of Health and Human Services, 2001). Of these factors, changes in individual behavior may be linked to motivation. Researchers have found that increasing individuals’ motivation, including Latinas, has successfully led to behavior change in a variety of health arenas including increased colorectal screening, increased medication adherence, substance abuse treatment and improved diet (Bernstein, Bernstein, Tassiopoulos, Valentine, Heeren, Levenson, et al., 2005; Hettema, Steele & Miller, 2005; Lussier & Richard, 2007; Wahab, Menon, & Szalacha, 2008). Researchers suggest that cultural and demographic factors such as acculturation (Abraido-Lanza, Chao, & Florez, 2005; Evenson, Sarmiento, & Ayala, 2004; Wolin, Colditz, Stoddard, Emmons, & Sorensen, 2006), income (Crespo, Smit, Carter-Pokras, & Andersen, 2001; Neighbors, Marquez, & Marcus, 2008), education level (Crespo et al., 2001; Corral & Landrine, 2008; Neighbors et al., 2008; Slattery et al., 2006), and number of children (Crespo et al., 2001; Neighbors et al., 2008; Slattery et al., 2006) may influence health-related behaviors and the motivation to participate in health-promoting behaviors such as exercise (Deci & Ryan, 1985; Pender, Murdaugh, & Parsons, 2011; Ryan & Deci, 2000).
The results of this study contribute to knowledge regarding motivation-related factors affecting exercise and may be useful in developing culturally sensitive interventions to increase exercise and improve the overall health of Latinas.

By using quantitative methods to identify predictors of exercise among Latinas, researchers can develop culturally-sensitive and tailored interventions that incorporate important variables that affect Latinas such as acculturation levels. Through the employment of participatory photography methodology, a more complete understanding of Latinas’ exercise motivators and barriers may be attained. By generating explanatory models of the relationships among types of motivators and exercise, researchers can develop culturally-tailored interventions to help Latinas maintain healthier levels of exercise and consequently decrease deleterious health outcomes.

**Theoretical Framework**

Two theoretical frameworks guide this study, the Health Promotion Model (HPM) (Pender, 1982) and Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000). HPM is the overarching nursing theory guiding this research. Essential elements of the HPM concerning behavior-specific cognitions can be further elucidated by SDT.

**Health Promotion Model.**

HPM is an explanatory model of health behavior drawing from findings in nursing, psychology, and public health research originally developed by Pender in 1982 (Pender, Murdaugh, & Parsons, 2002; Pender, Murdaugh, & Parsons, 2011). In the HPM, health is not merely an absence of disease but a dynamic state of being with focus on three main areas: a) individual characteristics and experiences, b) behavior-specific cognitions and affect, and c) behavioral outcome. The HPM is an approach-oriented
explanatory model of health behavior that exhibits six different behavior-specific cognitions and affects (i.e. perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences), commitment to a plan of action, immediate competing demands, and desired health promoting behavior.

In the HPM, each individual has a unique set of experiences and characteristics that influence his or her ability to adapt a health promoting activity (see Figure 1). The behavior-specific variables in the HPM, according to the authors, have major motivational significance for the individual and are considered a critical ‘core’ for intervention development because they can be measured and changed by interventions (Pender, Murdaugh, & Parsons, 2011). The behavior-specific variables most relevant to the current study are perceived benefits of action, perceived barriers to action, activity-related affect and interpersonal and situational influences.

Figure 1: Revised Health Promotion Model (Pender, Murdaugh, & Parsons, 2011)
**Self-Determination Theory.**

SDT is congruent with the HPM as a general theory of motivation containing elements of personal drive (Deci & Ryan, 1985; Ryan & Deci, 2000). The perceived benefits to action, activity-related affect, and interpersonal influences are the elements of the HPM that the SDT is further elucidating. According to Deci and Ryan (1985, 2000), self-determination is a continuum of different types of motivation ranging from Amotivation, to Extrinsic, to Intrinsic regulation (See Figure 2). On one end of the spectrum of self determination is Amotivation, meaning not having any motives for engaging in a new behavior. In other words, Amotivation is completely non-self-determined, and individuals who are regulated by Amotivation do not value the new behavior. On the other end is Intrinsic motivation in which activities are engaged in for the pure enjoyment of the activity and is completely self-determined (Deci & Ryan, 1985).

The middle of the spectrum consists of Extrinsic regulation, in which an individual focuses on goal oriented achievement, i.e., a focus on rewards and punishments for engaging in the behavior. Extrinsic regulation has four subparts: External, Introjected, Identified, and Integrated. These four subparts exist on a continuum of self-determination from the externally regulated to the more internally regulated (See Figure 2). External regulation means an individual uses external rewards for motivation such as family and friends telling him or her to exercise. Introjected regulation involves internalizing regulation with personal rewards and punishments such as feeling guilty when an exercise session is missed (Ryan & Deci, 2000). Identified regulation is a conscious valuing of a behavior in which a person might acknowledge the
benefit of an activity. Integrated regulation consists of a person engaging in a behavior for personal goals (Ryan & Deci, 2000). The SDT is the basis for the quantitative and aspects of the qualitative phases of the study.

**Definitions**

**Acculturation** is a multidimensional process consisting of the blending of original and receiving cultural beliefs, language, and customs in an individual (Schwartz, Unger, Zamboanga, Szapocznik, 2010). Acculturation is a multidimensional continuum on which an individual retains her own cultural beliefs, language, and customs (low acculturation, e.g. Hispanicism in this study) and integrates herself into the dominant culture in beliefs, language, and customs (high acculturation, e.g. Americanism in this study) (Schwartz, Unger, Zamboanga, Szapocznik, 2010; Schwartz, Zamboanga, Rodriguez, & Wang, 2007).

**Exercise** is a form of physical activity that is intentional exertion which is usually repetitive, structured, and undertaken with the goal of improving health (U.S. Department of Health & Human Services, 2008). The Physical Activity Guidelines distinguish
between the concepts of physical activity and exercise. For the purposes of the current study, the concept of exercise will be defined as a formalized activity undertaken with the goal of improving health. However the operationalization of exercise for the quantitative portion of this study, steps taken as measured by a pedometer, may include other forms of physical activity (e.g., activities associated with household chores or occupational responsibilities) beyond the above definition of exercise.

Latina is any female of Hispanic/ Latino ethnicity that self-identifies as such.

Research Questions and Hypotheses

Quantitative Phase I.

AIM I. Use quantitative methods to identify predictors of exercise among Latinas.

Hypothesis (H) 1. Demographic variables will predict exercise.

- H$_{1a}$ = Income will be positively related to exercise.
- H$_{1b}$ = Education will be positively related to exercise.
- H$_{1c}$ = Number of children will be negatively related to exercise.

H2. Acculturation will predict exercise.

- H$_2$ = Higher scores in the Americanism domain will predict exercise controlling for demographic factors (income, education, number of children).

H3. Motivation will predict exercise.

- H$_{3a}$ = Intrinsic motivation will be positively related to exercise controlling for demographic factors.
- H$_{3b}$ = Extrinsic motivation (External, Introjected, Identified) will be positively related to exercise controlling for demographic factors.
• H₃c = Amotivation will be negatively related to exercise controlling for demographic factors.

• H₃d = Self-determination (relative autonomy index) will be positively related to exercise controlling for demographic factors.

**AIM II.** Use quantitative methods to investigate the relationship between acculturation, motivation types, and self-determination.

**H4.** Acculturation will predict motivation.

• H₄a = Higher scores on the Americanism domain will predict Intrinsic and Extrinsic (External, Introjected, Identified) motivation controlling for demographic factors.

• H₄b = Higher scores on the Hispanicism domain will be inversely related to higher Intrinsic and Extrinsic (External, Introjected, Identified) motivation controlling for demographic factors.

**H5.** Acculturation will predict self-determination.

• H₅ = Acculturation will be related to self-determination.

**H6.** Motivation mediates the relationship between acculturation and exercise.

This hypothesis will be tested if H3 and 4 are supported.

• H₆a = Intrinsic motivation will mediate the relationship between acculturation and exercise controlling for demographic factors.

• H₆b = Extrinsic motivation will mediate the relationship between acculturation and exercise controlling for demographic factors.

• H₆c = Amotivation will mediate the relationship between acculturation and exercise controlling for demographic factors.
H7. Self-determination (relative autonomy index) mediates the relationship between acculturation and exercise. This hypothesis will be tested if H₃d and H₅ are supported.

- H₇: Self-determination will mediate the relationship between acculturation and exercise controlling for demographic factors.

Qualitative Phase II.

AIM III. Employ participatory photography methodology to better understand Latinas’ exercise motivators and barriers. The following research question is addressed in AIM III of the study among Latinas:

1) How do participants describe the motivators and barriers to exercise?

Significance and Purpose

The relevance of this project to public health is an identification of motivation-related predictors of exercise and the relationship of demographic variables (income, education, and number of children) and acculturation levels to exercise and to motivation among Latinas, a population that is disproportionately affected by overweight and diabetes mellitus. Through participatory photography methodology, a more complete understanding of Latinas’ exercise motivators and barriers is attained. Categories of exercise motivators and barriers are summarized for future suggestions to ultimately aid in the development of culturally-tailored interventions that increase motivation to engage in exercise for Latinas.

Through future investigation of these factors, a future explanatory model of exercise motivation types can be developed and future research can be aimed at the development and testing of culturally sensitive intervention strategies designed to
increase motivation to engage in exercise, therefore improving the overall health of involved Latinas. Improved health is crucial in disease prevention and increasing exercise is one of the recognized methods of achieving improved overall health (National Center for Health Statistics, 2009).
Chapter II

Literature Review

Obesity and inactivity as health disparities.

Persons who are overweight, body mass index (BMI) between 25-29.99, and obese, BMI greater than 30, have significant increased risk for health problems that have adverse affects for the individuals involved and also contribute significantly to overall costs in the United States healthcare system. According to Finkelstein, Fiebelkorn and Wang (2003), costs associated with being overweight accounted for 9% of total healthcare expenditures in United States or approximately $78.5 billion in 1998 and the costs are continuing to increase. Maintaining a healthy body weight, as defined by a BMI between 18 and 24.99, aids in the prevention of diseases attributed to obesity including diabetes mellitus type 2, hypertension, cardiovascular disease, stroke and dyslipidemia (CDC, 2008). Participating in exercise is an important way to maintain a healthy body weight and is a modifiable health behavior that can aid in the prevention of obesity.

Slattery et al. (2006) found a greater prevalence of obesity among Latinas compared to non-Latina white women as well as a strong inverse association between BMI and level of exercise. Slattery et al. (2006) had a sample size of 719 Latinas living in the South Western United States. The authors used a quantitative survey instrument to gather self-reported information regarding types and amounts of physical activity and demographic variables including education. The authors used language preference as a proxy for acculturation. The authors found that Latinas more acculturated to the United States, were more likely to report physical activity. These authors also found that Latina ethnicity was associated with being overweight and obese and that 42% of the Latina
population has a BMI greater than or equal to 30. They found that Latinas reported more housework, dependent care giving, dancing and work activity than non-Latina women. They also found that Latinas with higher levels of language acculturation were at increased relative risk of obesity.

In general, women exercise less than men. Clarke, O’Malley, Johnston, Schulenberg, and Lantz (2009) found that overall, men exercised more frequently than women. Clarke et al. (2009) used longitudinal nationally collected quantitative survey data for young adults of various ethnicities who had been followed repeatedly for 23 years ($n = 17,314$; $n_{women} = 9,631$) to determine trends in weight-related health behaviors. Hawkes and Holm (1993) also found that women were more likely to be obese and participate in less leisure time physical activity than men. Hawkes and Holm (1993) used purposeful sampling of a higher SES area in a Midwestern city in the United States. The study had 146 men and 158 women and the data were collected through a quantitative survey administered through an interview format.

The findings of exercise difference between genders by Clarke et al. (2009), and of lower rates of exercise among Latinas in particular, are substantiated by the population-based study conducted by Crespo, Smit, Andersen, Carter-Pokras, and Ainsworth (2000). Crespo et al. (2000) investigated the prevalence of physical inactivity during leisure time using a combination of results of the Third National Health and Nutrition Examination Survey, 1988-1994, in-person interview and medical examination. In this cross-sectional survey, researchers evaluated responses from 18,885 participants, of which, 2,426 were Mexican-American women. The authors found that Mexican-Americans men and women reported more than twice as much leisure time inactivity than
their non-Mexican counterparts and that, in particular, Mexican-American women reported more leisure time inactivity than their Caucasian counterparts. Neighbors, Marquez, and Marcus (2008), and the United States Department of Health and Human Services (2007) confirmed the findings of Crespo et al. (2000) in that Latinas tend to exercise less than Caucasian women.

Not only do Latinas tend to exercise less than Caucasian women, but they tend to be more obese. Inactivity is especially troublesome for Latinas as they are three times more likely than white non-Latinas to develop diabetes mellitus (Hettema, Steele, & Miller, 2005). Neighbors et al. (2008) collected data from a quantitative National Health Interview Survey on 11,754 Latinas predominately from Mexico and found that Latinas in six different subgroups were less active than their non-Latina Caucasian counterparts. Slattery et al. (2006) found the prevalence of obesity greater among Latinas when compared to non-Latina women regardless of their language acculturation level, although Latinas with higher levels of language acculturation were at increased risk for being obese. Abraido-Lanza, Chao, and Florez (2005) also found that Latinas exercise less than non-Latinas. In a secondary data analysis of the 1991 National Health Interview Survey (NHIS) administered through personal interview, the researchers analyzed data from 1,787 Latinas and found that Latinas are less likely to engage in exercise and more likely to have a high BMI.

Clarke et al. (2009) found that the rate of Latina women participating in exercise has declined over the last couple of decades while their rate of obesity has risen. Hubert, Snider, and Winkleby (2005) also determined that inadequate exercise was an independent contributor to obesity in Latinas who were more likely to be obese than
Latinos. Hurbert et al. (2005) conducted a cross-sectional survey to determine cancer-related risk factors of Latinos of predominately Mexican origin. Their total sample size was 715 self-identifying Latinos, of which 380 were women. Slattery et al. (2006) confirmed that the majority of Latinas does not engage in the recommended levels of exercise. In 2006, 74% of Latinas were overweight compared with 57% of non-Latina white women indicating a disparity (National Center for Health Statistics, 2009). Understanding why Latinas are not exercising at recommended levels is imperative if future researchers will be able to design research studies and interventions to overcome this health disparity.

**Relationship between exercise and health.**

Sufficient levels of exercise are associated with reduced risk for being overweight, developing diabetes mellitus, reduced risk of stroke, osteoporosis, and breast cancer and therefore, individuals should engage in recommended levels of exercise to aid in achieving optimal health (National Diabetes Education Program, 2008; U.S. Department of Health & Human Services, 2008; U.S. Department of Health & Human Services, Healthy People 2010 Midcourse Review Physical Activity and Fitness 22, 2007; U.S. Department of Health & Human Services, 2001). Physical Activity Guidelines are that all adults should avoid inactivity and engage in 150 minutes or two-and-a-half hours per week of exercise such as brisk walking to prevent the aforementioned health problems associated with being overweight (U.S. Department of Health & Human Services, 2008).
Schneider, Basset, Thompson, Pronk, and Bielak (2006) conducted a single group, repeated measure experimental design to examine the effects of participants walking 10,000 steps per day for 36 weeks. The sample size comprised of 56 overweight or obese adults (37 women) who were given a pedometer during waking hours with the goal of walking 10,000 steps per day. Schneider et al. (2006) found improvements in body composition measures (reduced BMI, waist circumference, weight loss) among adheres and their results demonstrate that individuals, who were previously sedentary, can experience weight loss by walking 10,000 steps per day thus improving their overall health and reducing their risks for weight-related consequences.

According to Slattery et al. (2006), Latinas were significantly less likely to be overweight or obese if they reported participating in recommended levels of exercise. Exercise is an important, modifiable health behavior that is linked with reduction in stroke, obesity, and risk for developing weight related illness such as diabetes mellitus (CDC, 2008; Reimers, Knapp, & Reimers, 2009).

Factors associated with exercise.

Among women in general, several factors have been linked to exercise including income, education, and number of children (Crespo, et al., 2001; Neighbors et al. 2008; Slattery, et al., 2006; Sternfeld, Ainsworth, & Quesenberry, 1999). Among Latinas in particular, researchers conclude that acculturation, income, education, and number of children are related to exercise (Crespo et al., 2001; Neighbors et al., 2008; Slattery et al., 2006). The paragraphs below review literature on the relationship of each of these factors with exercise among Latinas.
**Acculturation.**

Abraido-Lanza et al. (2005), Cantero, Richardson, Baezconde-Garbanati and Marks (1999), Evenson, Sarmiento, and Ayala (2004), Slattery et al. (2006), and Wolin, Colditz, Stoddard, Emmons, and Sorensen (2006) found that Latinas more acculturated to the United States reported more involvement in exercise than less acculturated Latinas. Corral and Landrine (2008) confirmed the findings of the aforementioned authors regarding the affect of acculturation on exercise among Mexican American women. The effect of acculturation on exercise levels is more pronounced among Latinas than Latinos (Abriado-Lanza et al., 2005). Crespo, Smit, Carter-Pokras, and Andersen (2001) further analyzed Third National Health and Nutrition Examination Survey, 1988-1994, data among Mexican American adults ($n_{women} = 2,426$) and found that more acculturated Mexican Americans (i.e. those that spoke mostly English) reported more leisure time physical activity.

Cantero et al. (1999) interviewed with quantitative survey questions 573 Latinas, predominately from Mexican descent in an effort to determine the association between acculturation (measured by language preference and years living in the United States) and health practices. Cantero et al. (1999) found that higher acculturated Latinas reported more regular exercise than their less acculturated counterparts. Evenson et al. (2004) interviewed 671 Mexican Latinas about their physical activities. The researchers used quantitative survey questions to inquire about physical activities and measured acculturation by a language scale, length of residence and age at arrival in the United States. Evenson et al. (2004) also concluded that Latinas with higher acculturation to the United States were more likely to report being physically active.
Wolin et al. (2006) conducted a cross-sectional study to investigate the relation of language acculturation with physical activity levels. They surveyed 355 Latinos using quantitative surveys regarding their leisure time and occupational activities. Their measure of acculturation was language preference and generational status in the United States. Wolin et al. (2006) found a positive association ($p < .001$) between higher acculturation to the United States and self-reported leisure time activity. Corral and Landrine (2008) analyzed data collected through a quantitative survey, the 2001 California Health Interview Survey, from 4,190 women who self-identified as being of Mexican heritage. The researchers investigated acculturation status and ethnic minority health behavior and determined that higher acculturation to the United States was positively associated with self-reported leisure time physical activity. In fact, acculturated women in this study were 1.94 times more likely to report leisure time physical activity.

*Latinas’ cultural beliefs regarding health and exercise.*

Aspects of culturally founded traditional family values and gender roles may combine to create both motivators and barriers for Latinas to exercise (Gil & Vazquez, 1996). Traditionally, Latinas view their place to be in the home as a mother and caregiver, expecting to put the needs of her family and husband before her own and therefore antithetical to engaging in exercise (Berg, Cromwell, & Arnett, 2002; Gil & Vazquez, 1996). This same view may be present for other cultural groups impacting their participation in exercise as well (Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001). Sternfeld et al. (1999), in their quantitative survey investigation of physical activity patterns in a diverse population of women ($n = 224$ Latinas), found that being of
Hispanic ethnicity and having young children at home were more positively related to reporting household and care giving activities than Caucasian women. Having a role as a caregiver and expecting to put others before herself, may create internal tension when healthcare providers suggest beginning an exercise program.

Having a role as a homemaker and caregiver might also influence how women in general and Latinas in particular define and view exercise. Wilbur and Miller (1998) examined women’s physical activity patterns to determine a method for categorizing physical activity. Wilbur and Miller (1998) used a 24-cell quota (stratified by four occupations, two racial groups, and three age groups) research design. The researchers used a quantitative survey based on self-report to measure physical activity over 12 months from 176 African American and Caucasian women. They found that women reported most of their physical activities to be associated with household activities rather than leisure time physical activities. This finding was substantiated among Latinas by Eyler et al. (1998), Slattery et al. (2006), and Sternfeld, Ainsworth, and Quesenberry (1999).

D’Alonzo and Fischetti (2008), through qualitative focus groups with 26 women who self-identified as either Black ($n=11$) or Hispanic ($n=15$) and not regular exercisers, found that Latinas were more likely to view exercise as unfeminine. They found that Latinas were more likely to cite family obligations as a barrier to exercise. D’Alonzo and Fischetti (2008) also found that dancing was a preferred form of exercise among Latinas.
Berg, Cromwell, and Arnett (2002), conducted qualitative focus groups with Anglo American women ($n = 6$) and Mexican American women ($n = 10$) to identify attitudes and beliefs about physical activity. Among their findings was the idea that Mexican American women viewed exercise as something that was prescribed, important to regaining health, and that their families and their responsibilities to them were both motivators and barriers to exercise. In Berg et al. (2002)’s study, the Mexican American women framed references to physical activity in terms of restoring or improving health not as a way to promote health or prevent disease. The Anglo American women indicated physical activity as way to improve health, both physically and mentally.

For some Latinos, *curanderos*, or lay healers found predominately in the Southwest, play an important role in health care and see themselves as important players in combating unhealthy changes in diet encountered by Latinos living in the United States. Clark, Bunik, and Johnson (2010) conducted focused interviews with *curanderos* who worked with Latinos of Mexican heritage to determine the *curanderos’* views of and beliefs regarding obesity causes, particularly in children, in Latino families. Clark et al. (2010) conducted one and two hour interviews with seven *curanderos* and found that they attributed the rates of obesity, in part, to the change in foods eaten by Latinos and the decrease in breastfeeding resulting from a cultural shift away from more traditional beliefs that Latinos encountered while living in the United States. The *curanderos* viewed Anglo-centric interventions targeted for reducing obesity rates to be culturally alienating and provided the example of starting obesity reduction interventions too late, after the individuals are already obese, rather than earlier in life in order to prevent obesity. For example, they suggested culturally tailored obesity reduction interventions
should start with pregnant women because pregnant women expect to be told what to do either from a healer or a doctor. This expectation of being told what to do could also incorporate changes in diet and physical activity to help prevent obesity among Latinos.

By investigating and eventually incorporating the role of acculturation’s affect on exercise among Latinas, perhaps interventions can be designed to break through the acculturation barrier and reach less acculturated Latinas and find ways to encourage them to exercise. Evenson et al. (2004) suggest future studies aimed at investigating the effect of acculturation on exercise should incorporate language preference while Yeh, Viladrich, Bruning and Roye (2009) suggest the incorporation of community participatory research. Participatory photography may provide one viable venue for the promotion of participatory research in the investigation of the effect of acculturation on exercise.

**Income and education.**

Crespo et al. (2001), Neighbors et al. (2008), and Slattery et al. (2006) found that there was a significant and positive association between income and exercise. Clarke et al. (2009) confirmed the findings of the aforementioned authors concerning income and exercise. While not unique to Latinas, the impact of income on exercise must be considered when designing interventions that will be sustainable and effective in promoting exercise. Some suggestions include the promotion of activities that are accessible at low cost to participants such as increasing places where women could safely walk or play with their children as well as introducing sliding pay scales at recreation centers (Eyler et al. 2002).
Cantero et al. (1999) determined that Latinas who completed seven or more years of education reported more exercise than Latinas with less education. Crespo et al. (2001), Neighbors et al. (2008), and Slattery et al. (2006) confirmed Cantero et al. (1999) findings of a positive association of education with exercise. Corral and Landrine (2008) also determined that education was positively associated with exercise among Mexican American women. Abriadio-Lanza et al. (2005) found increased educational attainment to be positively related to increased report of exercise. Education levels need to be taken into consideration in future interventions to reach Latinas.

**Number of children.**

Eyler et al. (2002), through a series of focus groups with diverse groups of women, found that family priorities, including caring for children, among Latinas were a major barrier to engaging in exercise. Among Latinas, Crespo et al. (2001), Slattery et al. (2006), and Neighbors et al. (2008) found that the number of children was negatively associated with reported levels of exercise. Berg et al. (2002) found that family commitment, usually associated with child-care, was inversely associated with Mexican American women’s participation in exercise. Eyler et al. (2002) found that Latinas were more reluctant to leave their children with child care providers, preventing them from using child care facilities, than Caucasian women. In this study, Latinas cited the obligation to family and distrust in child care facilities as a major exercise barrier, a barrier that would be presumably amplified with increased number of children. By investigating the role of the number of children in relation to exercise in Latinas, more
effective interventions that incorporate the entire family or that provide child care or are designed for mothers (e.g., school-based programs right after drop-off time) can be designed and implemented.

**Motivation and Exercise.**

Motivation is an important factor that can be utilized and be applied directly to increasing exercise among adults and is an important construct to focus on when investigating exercise in Latinas. In general, adult learners are more motivated to learn when they value the learning. The concept of valuing learning can be applied to Latinas in terms of tailoring interventions to increase exercise by incorporating family values since families are considered important (Berg, Cromwell, & Arnett, 2002; Lussier & Richard, 2007; Sanders, 2005). Eyler et al. (1998) conducted a series of focus groups ($n = 10; 8-10$ women per group) with women from diverse backgrounds and found that among minority women, lack of motivation is a major barrier to exercise. Since individuals with Extrinsic and Intrinsic motivation tend to exercise more, determining types of exercise motivation is a worthy pursuit among minority women if interventions are to be designed to ultimately increase their participation in exercise. Frederick, Morrison, and Manning (1996) found that women who had an underlying Intrinsic nature to their motivation to exercise were more likely to exercise, a finding confirmed by Moreno, Cervello, and Martinez (2007) among Spanish women. Moreno et al. (2007) also found that Spanish women who were Amotivated spent less time exercising. Moreno et al. (2007) conducted a cross-sectional study using quantitative survey to collect data to validate the Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2). There were 298 Spanish women in the sample.
According to the self-determination theory, individuals who have Intrinsic motivation are more likely to engage in and continue to exercise than those with Extrinsic motivation (Deci & Ryan, 1985). Wilson and Rodgers (2004) concluded self-determination is a practical framework to study exercise motivation types among women. Determining exercise predictors and emphasizing Intrinsic exercise motivation among Latinas that also incorporate potentially important cultural components is paramount in the design of sustainable and effective interventions to increase Latinas’ exercise.

**Photography and Latinas.**

Photography as a vehicle for participant-generated data is an innovative research methodology that has been underutilized despite its success in nursing research (Foss & Kirkevold, 2008; Stevens, 2006; Wang, 1999; Wang & Burris, 1997). There are many degrees to which photography can be incorporated into a research study, including as a stimulus for participant generated narrative, as a data source, or as a community based research process to elicit change. One research methodology involving photography is known as participatory photography and has been successfully used in investigating Latinas health behaviors (Fleury, Keller, Perez, 2009; Keller, Fleury, Perez, Ainsworth, & Vaughan, 2008). Participatory photography is a methodology in which participants are given cameras and asked to photograph various items or events in their lives (Chircop & Sheppard-LeMoine, 2004). While uses of visual methodologies in nursing research vary, photography is most commonly used as a means of promoting understanding of a phenomenon (Riley & Manias, 2004). Understanding why Latinas are and are not participating in exercise is fundamental for the development of future interventions to
increase exercise levels. The current study’s researcher used participatory photography as a stimulus to generate participant narratives through semi-structured interviews in an attempt to gain a deeper understanding of exercise motivators and barriers.

**Assumptions**

Assumptions guiding the study are as follows:

- The basic assumptions of the SDT are that human beings are inclined towards being active in their development, human behaviors are a function of both person and environment, self-determined behaviors are chosen based on greatest potential for satisfying outcomes, and they have an innate tendency towards growth and the development of a coherent sense of self based on a fundamental set of universal needs (Deci & Ryan, 1985; Ryan & Deci, 2000).

- The relevant assumptions of the HPM are that individuals seek to actively regulate their own behavior and value growth in directions they consider positive. Healthcare professionals are a part of the interpersonal environment which exerts influence on persons throughout the life span (Pender, Murdaugh, & Parsons, 2011). The photography experience may loosen previous constraints of the women and encourage them to think about and express themselves regarding exercise and to identify what motivators and barriers exist for them.

- Another assumption guiding the methodological design of the study is that health is a fundamental right of every human being regardless of social class, religious beliefs or gender and can be improved through

Protection of Human Subjects

The research protocol and procedures for this study were approved by the University of Miami’s Institutional Review Board (IRB) to ensure compliance with established guidelines on protection of human subjects and confidentiality. A signed copy of the informed consent was provided to all of the participants in their preferred language. Informed consent forms (including a checkbox indicating willingness to be contacted for Qualitative Phase II) and all other identifying information were stored separately. All study documents were kept in a locked cabinet to which only the researcher had access. The researcher has received training in the responsible conduct of research as per University of Miami School of Nursing and Health Studies guidelines and maintains certification for research ethics training through the Collaborative Institutional Training Initiative, CITI.

All studies’ researchers involving human subjects must take action to protect the legitimate interests and rights of the subjects. The primary concern of the study “Why Latinas exercise: A multi-method exploration of motivators using participatory photography methodology,” was to maintain the confidentiality of the data and all persons who participated. Participants for the study were recruited in person or by phone from the participants’ pool of a randomized clinical trial, SEPA II (PI-Nilda Peragallo,
Dr.Ph.), who indicated interest in being contacted for future studies. The study was monitored for participant safety and data quality by the University Of Miami School Of Nursing and Health Studies’ Quality Assurance Team. All human subjects’ procedures for this study were conducted by the Principal Investigator of the current study who is bilingual in Spanish and English.
Chapter III

Methodology

Design.

The researcher utilized both retrospective and prospective study design elements and employed a combination of quantitative and qualitative methods. In Quantitative Phase I, 174 participants completed a survey regarding exercise motivation types. These participants were asked to complete self-report exercise logs and use pedometers for one week in order to collect objective and subjective information regarding their exercise habits. Three participants dropped out of this portion of the study. In the Qualitative Phase II, a subsample from Quantitative Phase I (n = 19), participated in participatory photography and semi-structured interviews regarding their exercise motives and barriers.

The retrospective elements of the current design stemmed from data related to income, education, and number of children, and acculturation variables already collected on these participants from the parent study, SEPA II (Salud, Educación, Prevención y Autocuidado [Health, Education, Prevention and Self-Care], PI-Nilda Peragallo, Dr.Ph). SEPA II is a randomized control trial in which the researchers evaluated the efficacy of a culturally tailored HIV risk reduction intervention specifically designed for Hispanic women (n=548) in South Florida. In SEPA II, female bilingual assessors conducted assessments with Latinas at four time-points: baseline and three, six and 12 months. All data from SEPA II were collected by self report in interview format and entered into a laptop by the assessor using a web-based data collection system, VELOS. Baseline
SEPA II data were used in the current study and were collected between January 2008 and April 2009. Data collection for the Quantitative Phase of the current study took place between May and December 2010.

**Sample.**

The current study enrolled women from the SEPA II study and used the data collected from SEPA II at baseline to provide information about income, education, and number of children, and acculturation levels. For the Quantitative Phase I, the predicted sample size needed to be at least 85 females to detect medium effect size of the relationships among demographic information, acculturation, exercise, and exercise motivation types. The researcher conducted a power analysis in order to determine the sample size and using its’ results, predicted a 60% follow-up rate, which was similar to previous research among Latinas (Peragallo, DeForge, O’Campo, Lee, Kim, Cianelli, & Ferrer, 2005), and was below the overall follow-rate in the SEPA II study of 66%. One of the assumptions of the current study was that there will be a continued similar follow-up rate among the women who participated in SEPA II. The resulting final sample size was 169 females\(^1\). The resulting retention rate was for the Quantitative Phase I was 98% which was much better than the 66% that was anticipated. For the Qualitative Phase II, the researcher determined that a sample size of 20 women was sufficient based on previous studies using this methodology (Stevens, 2006). Of the 20 women enrolled in the Qualitative Phase II, 19 completed the study. The resulting retention rate for the Qualitative Phase II was 95%.

\(^{1}\text{ } n = 168 \text{ for number of children}\)
SEPA II inclusion criteria included the following: participants self-identify as Latina, are female, between the ages of 18 and 50, are able to communicate in English or Spanish, report being sexually active in the past three months and are able to actively participate in the informed consent process.

Inclusion and exclusion criteria for the current study included previous participation in the SEPA II study who indicated in the SEPA II consent form that they were willing to be contacted for future studies \((n = 548)\). An additional inclusion criterion for the current study was that participants must be able to read and write in either English or Spanish. The participants’ literacy rates were determined by scores of 3 to 4 indicating reading or writing well or very well on the literacy subscales of the acculturation measure (see acculturation measurement). Literacy is crucial to being able to fill out the self-report exercise logs. Women who did not meet this requirement were not approached to participate in the study \((n = 9)\). In SEPA II, 45% of the women met the literacy criteria of being able to read and write well or very well in English while 95% of the women met the literacy criteria in Spanish. Participants were excluded from the study if they answer yes to having any serious health problems \((n = 13)\) that did not allow them to exercise when they were first contacted to participate in the current study.

The demographic data variables of the current study included in the analysis were income, education, and number of children (see Table 1 for further detail). Income was self-reported as the monthly family income, education was self-reported as years of formal education, and number of children was self-reported. The mean age of the participants was 38.7 years, \(SD = 7.74\), with a range from 20 to 52 years. The average monthly family income for this group was about $1400. The sample had a relatively
high mean for years of formal education, $M = 14.12$ years, $SD = 3.21$ compared to other study populations of Hispanic immigrants (Munet-Vilaró et al., 1999; Peragallo et al., 2005). In this group, almost 21% of women did not have children, while 61% had one or two children. All demographic data were collected during the participants’ baseline interview for SEPA II.

Table 1
*Demographic characteristics of a sample of Latinas in South Florida (n = 169)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
<th>M</th>
<th>SD</th>
<th>Minimal and Maximum Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Income</td>
<td></td>
<td></td>
<td>$1400$</td>
<td>Less than $500 – more than $6000</td>
<td></td>
</tr>
<tr>
<td>Less than $1000</td>
<td>26</td>
<td>15.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1000–$2000</td>
<td>81</td>
<td>47.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2000–$3000</td>
<td>39</td>
<td>23.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than $3000</td>
<td>23</td>
<td>13.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level (years)</td>
<td></td>
<td></td>
<td>14.12</td>
<td>3.21</td>
<td>5 to 26</td>
</tr>
<tr>
<td>5 to 8</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 to 12</td>
<td>109</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many children do you have?**</td>
<td></td>
<td></td>
<td>0</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>54</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>49</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>19</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1  
*Demographic characteristics of a sample of Latinas in South Florida (n = 169)*

<table>
<thead>
<tr>
<th>Country of Origen</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia</td>
<td>73</td>
<td>43.2</td>
</tr>
<tr>
<td>Peru</td>
<td>19</td>
<td>11.2</td>
</tr>
<tr>
<td>Cuba</td>
<td>12</td>
<td>7.1</td>
</tr>
<tr>
<td>Venezuela</td>
<td>9</td>
<td>5.3</td>
</tr>
<tr>
<td>Honduras</td>
<td>9</td>
<td>5.3</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>8</td>
<td>4.7</td>
</tr>
<tr>
<td>United States</td>
<td>8</td>
<td>4.7</td>
</tr>
<tr>
<td>Argentina</td>
<td>7</td>
<td>4.1</td>
</tr>
<tr>
<td>El Salvador</td>
<td>6</td>
<td>3.6</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>5</td>
<td>3.0</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>5</td>
<td>3.0</td>
</tr>
<tr>
<td>Guatemala</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Ecuador</td>
<td>2</td>
<td>1.2</td>
</tr>
<tr>
<td>Mexico</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Panama</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Total</td>
<td>169</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* % not equal to 100 due to rounding errors  
** 1 participant did not answer Children question

**Quantitative Phase I recruitment.**

In Quantitative Phase I, participants from SEPA II who met the criteria for the current study were invited to participate either at their final SEPA II assessment or by telephone. Participants were recruited primarily by phone after they had completed their last follow-up assessment of the SEPA II study. If they were interested, they were administered informed consent procedures in person. All participants had an opportunity to discuss their participation with the researcher prior to signing the informed consent.
The researcher informed the potential participants that participation in any aspect of the study was completely voluntary. The consent form contained information about the purpose of the study, the types of data collected, compensation to be paid for participation, and the measures taken to protect the confidentiality of the responses. The researcher answered any questions about the research to assist women in making an informed decision about study participation. If the woman agreed to participate, she was asked to sign two consent forms summarizing the assurances, and return one to the researcher (keeping the other for her records).

For those SEPA II participants who agreed to partake in the current study, the surveys, pedometer instructions, self-report log, and informed consent materials were provided at the final SEPA II assessment or during their first appointment with the researcher. Of the participants 174 enrolled, 11 (6.3%) were contacted and enrolled during their final SEPA II assessment. Prior to enrollment, potential participants were informed that they would be contacted by telephone multiple times during the week they were wearing the pedometers to remind them to record their steps.

**Qualitative Phase II recruitment.**

Qualitative Phase II recruitment of subjects was done by phone by the researcher from the Quantitative Phase I participants who met the inclusion criteria for Phase II. There was a separate informed consent for Phase II. Qualitative Phase II participants were provided with an instruction sheet about the ethics of photography including instruction not to take photographs of recognizable faces of individuals without the permission of those individuals to help protect against inadvertent photography of unwilling subjects.
Participants in Phase II were selected from among those who participated in Phase I. With the selection of participants for Phase II, the researcher aimed to enroll a sample that included women who represented both high and low levels of acculturation and high and low levels of exercise. Potential Qualitative Phase II (i.e. Quantitative Phase I participants) were divided equally into four groups among two dimensions of acculturation and average daily steps yielding 4 cells (see Table 2).

Table 2  
*Qualitative recruitment of a sample of Latinas in South Florida (n = 20)* 

<table>
<thead>
<tr>
<th>Qualitative subsample</th>
<th>Hispanicism</th>
<th>Americanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Inactive</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Quantitative sample*  

<table>
<thead>
<tr>
<th>Active</th>
<th>86</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive</td>
<td>79</td>
<td>33</td>
</tr>
</tbody>
</table>

* Total greater than n recruited due to participants scoring ≥2.5 on both Hispanicism and Americanism subscale, i.e. bicultural

In Table 2, the Active participants represent those from Quantitative Phase I who reported in the top half of the average daily steps while the Inactive participants were those who reported in the bottom half of the average daily steps. The participants who scored greater or equal to a 2.5 in the Hispanicism domain of the Bidimensional Acculturation Scale for Hispanics (BAS) were considered high in Hispanicism while those classified as high in Americanism scored greater or equal to a 2.5 in the Americanism domain of the BAS. Quantitative Phase I participants were invited from each of these 4 cells shown on Table 2 until 5 per cell were enrolled. The participant who dropped out of the Qualitative Phase II part of the study was from the Inactive/
Americanism quadrant. When they were recruited, the participants were informed that participation in the Qualitative Phase II of the study involved photographing aspects of their lives related to their exercise behavior as well as participating in 2 face-to-face semi-structured interviews (one before taking the photographs and one after taking the photographs).

**Instruments.**

Instruments chosen for this study were based on a review of the literature and advice from the study’s dissertation committee. Income, education, and number of children, and acculturation instruments were those used in the SEPA II study and have been used previously with similar populations (Peragallo et al., 2005). The variables for the study are grouped in the following categories: predictor, proximal outcome, and outcome. The predictor variables are demographic variables including income, education, and number of children and acculturation status. The proximal outcome variables are exercise motivation types (Amotivation, External, Introjected, Identified, and Intrinsic) and self-determination. The outcome variable is exercise (the average steps/day of the participant and self-reported exercise logs). All measures were available in English or Spanish based on participant preference. Table 3 is a display of further details on the instruments used in this study.
Table 3

*Instruments used in an exercise motivation study of Latinas in South Florida*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Variable</th>
<th>Instrument</th>
<th>Description</th>
<th>Reliability/ Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acculturation</td>
<td>Predictor</td>
<td>BAS (Marin &amp; Gamba, 1996)</td>
<td>24 items, 2 subscales; Hispanicism &amp; Americanism</td>
<td>$\alpha = .86$ for Hispanicism and $\alpha = .94$ for Americanism</td>
</tr>
<tr>
<td>Exercise Motivation Types</td>
<td>Predictor</td>
<td>BREQ-2 (Markland &amp; Tobin, 2004)</td>
<td>19 items, 5 subscales</td>
<td>$\alpha = .81$ to $\alpha = .89$ (Moreno, Cervello, &amp; Martinez, 2007)</td>
</tr>
<tr>
<td>Exercise</td>
<td>Primary Outcome</td>
<td>Pedometers</td>
<td>Pager-sized device that counts steps</td>
<td>$\alpha = .95$ (Felton, Tudor-Locke, &amp; Burkett, 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-report logs</td>
<td>Paper log where date, activity type, and daily total of pedometer are recorded.</td>
<td>Spearman’s rho self-report and pedometer, $r_s = 0.607$ ($p = 0.003$) (Speck &amp; Looney, 2006)</td>
</tr>
</tbody>
</table>

**Predictor Variables.**

**Demographic variables.**

- **Income information** was collected during baseline interview for SEPA II and was self-reported by participants regarding their total family income in the previous month including social services.

- **Education** was collected during baseline interview for SEPA II and was the self-report of the total years of education a woman.

- **Number of children** was self-reported by participants during baseline interview for SEPA II.
Acculturation.

Acculturation was measured using the Bidimensional Acculturation Scale (BAS; Marin & Gamba, 1996). The BAS was developed after a review of the available literature determined a gap in bidimensional aspects of acculturation that captures how acculturated Hispanics may be to their culture of origin (Hispanic domain or Hispanicism) and to the new host culture (non-Hispanic domain or Americanism). The BAS has 24 items in the following subscales: a) language use, b) linguistic proficiency and c) electronic media. The items are scored on a 4-point Likert scale, ranging from almost never/ very poorly (value 1), sometimes/ poorly (value 2), often/ well (value 3), and almost always/ very well (value 4). Examples include: “How often do you speak English/Spanish?,” “How well do you understand television programs in English/Spanish?,” and “How well do you write in English/Spanish?”

The BAS results in two domain scores, Hispanicism, and Americanism with scores ranging from 1 to 4 and greater than or equal to 2.5 indicating high cultural activity in the indicated domain (Marin & Gamba, 1996). A participant is considered Bicultural if she scores greater than or equal to 2.5 in both Hispanicism and Americanism. In the original study conducted by Marin and Gamba (1996), the internal consistency scores were high for both domains resulting in $\alpha = .87$ for the Hispanicism and $\alpha = .94$ for the Americanism. SEPA II researchers report Hispanicism of the BAS to have $\alpha = .85$ and Americanism to have $\alpha = .95$. The skewness and kurtosis for Americanism and Hispanicism were acceptable for subscales, -1.5 and 3.5 for the Hispanicism and .5 and -.2 for Americanism. In the current study, there were 169 valid
data entries for the BAS confirmed by running frequencies to identify any missing data. The Americanism scale of the BAS had a Chronbach’s alpha of .94. The Hispanicism scale had a Chronbach’s alpha of .86.

**Proximal Outcome Variable.**

*Exercise motivation types and self-determination.*

Exercise motivation types were measured using the Behavioural Regulation in Exercise Questionnaire (BREQ-2; Markland & Tobin, 2004). The BREQ-2 is theoretically based on the Deci and Ryan’s (1985) self-determination theory and measures exercise motivation along the continuum of self-determination from non-self-determined (Amotivation) through increasing self-determination (Extrinsic, including the subparts of External, Introjected and Identified motivation) to the highest level of self-determination (Intrinsic). The BREQ-2 has 5 subscales, External (4 items), Introjected (3 items), Identified (3 items), Intrinsic (4 items), and Amotivation (4 items). Examples of items from the BREQ-2 subscales are: a) External, ‘I take part in exercise because my friends/family/partner say I should,’ b) Introjected, ‘I feel ashamed when I miss an exercise session,’ c) Identified, ‘It’s important for me to exercise regularly,’ d) Intrinsic, ‘I enjoy my exercise sessions’ and e) Amotivation, ‘I can’t see why I should bother exercising.’ The response options are in a Likert scale format (0-4) from ‘not true for me,’ ‘sometimes true for me,’ to ‘very true for me.’ Each of the 5 subscales is scored by adding the responses of the respective items. The subscales are not combined into one score.
Another approach to scoring the BREQ-2 involves computation of the relative autonomy index (RAI) (Ryan, Connell, & Grolnick, 1992). The RAI, which assumes that the subscales reflect a continuum of ordered scores of self-determination, is one score computed from multiplying each subscale score of the BREQ-2 by its weighting and then summing the weighted scores (Markland & Tobin, 2004). The RAI provides an index of the degree to which the participant feels self-determined. Markland and Ingledew (2007) found that physical activity was strongly associated with the RAI as determined by the BREQ-2. To determine the RAI for the BREQ-2, the subscales receive the following weightings from less self-determined to self-determined: Amotivation -3; External -2; Introjected -1; Identified +2; Intrinsic +3. The higher the positive score for the RAI, the higher the degree of self-determination with the maximum possible score is 20 and the minimum is -24 (Markland & Ingledew, 2007). The BREQ-2 is appropriate to measure an individuals’ place on the continuum of behavioral regulation and has been used successfully among Latinos, α = .81 to α = .89 (Moreno, Cervello, & Martinez, 2007).

In order to determine reliability of the BREQ-2, Chronbach’s Coefficient Alpha was computed for each subscale. Acceptable reliability was demonstrated with the following subscales: External regulation subscale with an alpha of .71, Introjected regulation with an alpha of .81, and Intrinsic regulation with an alpha of .89. Marginal reliability was demonstrated with the Amotivation subscale with an alpha of .63. Poor reliability was demonstrated with the Identified regulation with an alpha of .39. The RAI had poor reliability with an alpha of .35. Extrinsic motivation (External, Introjected, Identified) had poor reliability with an alpha of .52.
**Outcome Variables.**

**Exercise.**

Exercise was measured over the course of one week using a combination of methods: self-report logs and pedometers. The participants were instructed to wear the pedometers all day (from when they awake in the morning until they go to bed, excluding showering/ bathing/ swimming) and to complete a daily log indicating the number of steps for the day shown on the pedometer and to indicate the type of activities they did that day (from a checklist including housework, job-related, childcare, exercise, and a blank for ‘other’ activity). They were instructed not to fill out the log for any day in which they forget to put on the pedometer. The outcome variable for the current study is the average steps/day.

Speck and Looney (2001) and Tudor-Locke et al. (2002/2004) found that pedometers were valid instruments in measuring steps per day. Pedometers have been used reliably in research with women (Felton, Tudor-Locke, & Burkett, 2006; Speck & Looney, 2006; Tudor-Locke et al., 2004). The self-report logs provide data that was used to generally describe categories of exercise types. Tudor-Locke, Williams, Reis and Pluto (2002) found that self-reports combined with pedometers can provide important contextual information regarding exercise that is not recorded from motion sensors such as pedometers alone as the combination provides multiple perspectives which may provide for better interpretation of data. Speck and Looney (2006) concluded that there was a statistically significant correlation of seven-day activity recall with pedometer
values. Tudor-Locke et al. (2005) found that a minimum of three days of pedometer use is necessary to achieve a reliability of .80. Tudor-Locke et al. found that analyzing three days of pedometer use had an adjusted $R^2 = .94$.

In the current study, the outcome variable of exercise was measured by calculating the average number of steps per day reported on the exercise log. One hundred and fifty-five participants reported steps for seven days. Eleven of the participants reported six days of steps, four participants had five days of reported steps and one participant had four days of reported steps. Reliability of the means of a random sampling of three days of reported pedometer use ranged from a Cronbach’s alpha of .75 to .80 which is close to the findings of Tudor-Locke et al. (2005). Reliability of the means of a random sampling of four days of pedometer use ranged from .83 - .86 depending on which days were used. Reliability for the means of all seven days was .90.

**Quantitative Phase I Data Collection Procedures**

Of the 174 enrolled Phase I participants, 171, a 98.28 % retention rate, completed the BREQ-2 and the exercise log. Data collection on the BREQ-2 was through individual face-to-face assessments. All data were entered into the VELOS system, a password-protected web-based software data management system which was also used for SEPA II, in which participants are identified only by a study identification number. At the same appointment, participants received verbal instruction and a written handout on how to use their pedometers and complete their exercise logs, and were scheduled for a follow-up appointment with the researcher. The participants were telephoned or texted on Day 1, Day 3, Day 5, and Day 7 of their exercise log week to review the procedures, inquire about problems with the instructions and answer questions. They were also provided
with a phone number they could call if they have any questions or concerns. At the week’s conclusion, the participants met with the researcher and provided their exercise logs and were compensated at total of $30.00 for their time.

**Qualitative Phase II Data Collection Procedures**

Data collection for Qualitative Phase II was through individual face-to-face semi-structured interviews in which each participant took part in two semi-structured interviews, one before photographing motives and barriers to exercise and one afterwards. The photographs were a vehicle to generate data, in this case-verbal narrative.

**First Semi-structured Interviews.**

Using an approved interview guide (see appendix E), in the first semi-structured interview, the researcher asked the participant about her motives and barriers to engaging in exercise and explained the participatory photography procedures and ethics. The questions included asking participants: a) How do you define exercise?, b) What are your beliefs about exercise?, c) What motivates you to exercise?, d) What keeps you from exercise?, and e) How significant is exercise in your life?

The women were then provided with a disposable camera, ethical guidelines regarding photographing people, and a pre-addressed and stamped bubble mailer with instructions to mail the camera back to the researcher within two weeks. Each participant was instructed to photograph the top five reasons that motivate her to exercise and the top five reasons that discourage her from exercising. She was provided with the following
examples. A participant might photograph her child’s favorite toy to represent that the child is a motivator to engage in exercise to be healthy, while another participant might photograph her work uniform and identify it as a barrier to exercise.

The researcher discussed the importance of not taking photographs where people can be identified, an area of concern in participatory photography (Harper, 2005). Participants were given an instruction sheet addressing these ethical issues of participatory photography. The participants were called at the end of the two weeks to remind them to mail their cameras to the researcher.

Once the cameras were received and photographs developed, the researcher contacted the participants to schedule follow-up semi-structured interview in which they discussed their photographs, received a copy of their photographs, and $20.00 in compensation for their time. A total of 20 women were enrolled in Qualitative Phase II. One woman was unable to meet for the second semi-structured interview due to a change in her work schedule and her travel during the holidays.

Second Semi-structured Interviews.

When the disposable cameras were received and the researcher developed the film, the researcher scheduled the second semi-structured interview with the participant at a location of the participant’s choosing where the researcher met with the participant face-to-face to discuss the photographs. These images enabled participants to generate narratives through semi-structured interviews with the researcher. Questions during the second semi-structured interview included asking participants: a) Tell me why you took
this photograph?, b) What about this photograph motivates you to exercise?, c) What about this photograph is a barrier to exercise? and d) Can you tell me more about this photograph?

Although the researcher had the photographs developed before the second semi-structured interview, the researcher did not review the photographs prior to the semi-structured interviews to prevent potential bias or guiding of the participant during the follow-up semi-structured interview. To ensure privacy and data safety, the researcher transported the photographs in a sealed envelope and participants were asked to remove any images where faces of individuals could be seen before the semi-structured interviews. During the semi-structured interview, the participants were encouraged to discuss and generate a narrative on what the participant found to be motivators or barriers to exercise in her images. After the follow-up semi-structured interview, the researcher gave the participant a set of her photographs. In the rare instance where an image might be deemed particularly useful for professional dissemination purpose, written consent was to be obtained from the participant to use that image.

**Missing Photographs.**

In the Qualitative Phase II, 20 participants were enrolled. One participant dropped out of the study and did not mail back her camera and did not participate in the second semi-structured interview. Her responses to the first semi-structured interview were coded and included in the analysis. For the other 19 participants, most, or 57% (114 photographs), of the photographs were not available for use in the second semi-structured interview due to technical or user error, lost cameras. One camera was damaged by a
participants’ child while she was moving, and one participant came to her second semi-
structured interview before the film was developed due to a series of miscommunications.

The details of number of photos available are given in Table 4.

<table>
<thead>
<tr>
<th>Number of Photographs</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

Data analysis

**Quantitative Phase I.**

The AIMS and hypotheses associated with Phase I are reviewed briefly below.

**AIM I.** Use quantitative methods to identify predictors of exercise among Latinas.

*Hypothesis (H) 1. Demographic variables will predict exercise.*

*H2. Acculturation will predict exercise.*

*H3. Motivation will predict exercise.*

**AIM II.** Use quantitative methods to investigate the relationship between acculturation, motivation types, and self-determination.

*H4. Acculturation will predict motivation.*

*H5. Acculturation will predict self-determination.*

*H6. Motivation mediates the relationship between acculturation and exercise.*
H7. Self-determination (relative autonomy index) mediates the relationship between acculturation and exercise.

A visual representation of the overall model testing H2-7 is displayed in Figure 3. In answering hypotheses H2-7, the collected demographics (income, education, number of children) were used as controls.

![Figure 3: Model of motivation and exercise](image)

All Hypotheses were tested using either SEM using Mplus version 5.21 (Muthen & Muthen, 1998-2007) or Statistical Package for the Social Science (SPSS) version 18.0 where appropriate. For example, SPSS was used to determine if individual demographics were positively related to exercise in H1a: Income will be positively related to exercise while Mplus was used to test if collectively all the demographics were positively related to exercise. Mplus was used to control for demographic factors (income, education, number of children) in H2 through H7.
SEM is an appropriate methodology for analyzing data whose structure may be specified in the form of linear models based on a priori ideas, contains latent variables, correlated independent predictors and group comparisons (Kline, 2005). In the interpretation of the results, the coefficient of each pathway is calculated relative to/controlling for the other pathways in the model at the same level. For example, the magnitude of the effect of the pathway between External motivation and exercise will be interpreted controlling for all other pathways (Introjected to exercise, Identified to exercise, Intrinsic to exercise, Amotivation to exercise, and acculturation to exercise) in the model. Effect sizes using Cohen’s d (small: 0.1 - 0.29, medium: 0.3 -0.49, large: $\geq$ 0.5) were compared to determine the strength of the current relationships among the variables in addressing the three quantitative aims (Cohen, 1992). Mediation was tested using the product of coefficients method which is a comparison of methods to test the significance of the mediated effect (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). **Power analysis.** The sample size of 169 provided sufficient power ($1 - \beta = .80$, $\alpha = .05$) to detect medium-sized effects ($ES = .05$) of the current predictors of exercise (Kline, 2005).

**Qualitative Phase II.**

**AIM III.** Employ participatory photography methodology to better understand Latina’s exercise motivators and barriers.

The data for Phase II were analyzed using content analysis. Qualitative content analysis is an analytic process in which the analyst first immerses herself in the transcripts in order to grasp a larger understanding of the selected phenomena (Hsieh & Shannon, 2005). The goal of content analysis is to establish categories and frequencies of
categories within the data by deriving codes and sorting into categories and subcategories based on relationships which are grouped into meaningful clusters (Hsieh & Shannon, 2005). The audio-recorded semi-structured interviews were transcribed and translated by trained bilingual professionals. After the Spanish transcripts were translated, the researcher compared the original Spanish transcription to the English translation for any discrepancies. Four trained personnel, including the researcher, used qualitative content analysis aided by computer software Nvivo 9, to organize and code the data. Before the trained personnel organized and coded the data, the researcher organized and coded all of the transcripts. The narratives were analyzed in their original language and then coded in English. With qualitative content analysis, the coders established categories and frequencies of categories by code derivation and sorting the data (Hsieh & Shannon, 2005). The specific aim of this section of the study was to employ participatory photography methodology to better understand Latinas’ exercise motivators and barriers.

The reviewers began the content analysis by reading through the transcripts without making notes and then re-read the transcripts several times to immerse themselves in the transcripts in order to grasp a larger understanding of the exercise motivators and barriers. Step one in content analysis is to identify the unit of analysis. The unit of analysis was at the level of a sentence. The researcher took the participant’s response to each semi-structured interview question and separated it into sentences for both semi-structured interviews. In this study, the unit of analysis was at the level of the sentence. If the sentence represented more than one idea (i.e. meaning unit), it was separated so that each unit of analysis represented one idea. In the second step, the researcher and the trained individuals developed categories that encompassed the units of
responses. The third step, the researcher and the trained individuals identified exemplars from each category and calculated the number of responses and frequencies within each category for the total sample. Through content analysis, the participant categories regarding motivators to engage in exercise were identified. As dictated by descriptive qualitative methodology, interpretation of the data was directed towards the production of a rich and descriptive summary of events in the everyday language of the participants (Sandelowski, 2000). A written summary of identified categories regarding the motivators and barriers of exercise identified in Qualitative Phase II was the result.

Creditability.

To ensure creditability in category definition, the researcher and three trained individuals reviewed the category definitions to ensure they were clear and understandable. Direct quotes were used to describe the categories and sub-categories to increase creditability (Denzin & Lincoln, 2003; Lincoln & Guba, 1985). The researcher discussed the categories and sub-categories with the three trained individuals until consensus was met. The researcher also developed a qualitative coding manual as an additional technique to establish creditability. Appendix F has more detail concerning the coding manual. Ensuring creditability is essential in determining the trustworthiness of qualitative data. Lincoln and Guba (1985) also address the use of methodological triangulation in establishing creditability. Triangulation is discussed below.

Triangulation of qualitative with quantitative data.

Triangulation is a scientific method that provides researchers a valid and arguably more rigorous approach to nursing research than purely quantitative or qualitative approaches. Based on the complexity of identifying barriers and motivators to exercise
and the interaction of multiple variables, the researcher decided on a multi-method approach in order to achieve triangulation. Denzin (1970) defines triangulation as the use of multiple research methods, such as surveys, participatory photography, and semi-structured interviews, to investigate single phenomena, e.g. exercise motivators and barriers, in an attempt to overcome the inherent limitations and possible bias of a single method. Methodological triangulation is the use of more than one research method in one study.

In the current research, a between methods, a combination of both qualitative and quantitative methods, approach was adopted by the researcher (Denzin, 1989; Kimchi, Polivka, & Stevenson, 1991). Shih (1998) also describes the term triangulation as a combining of qualitative and quantitative methods in a single study to potentially strengthen the comprehensiveness and reliability and validity of the study and elaborates on the purposes of triangulation as either confirmatory or aiding in the completeness of understanding of a particular phenomenon of interest. The goal of using triangulation in the current study was to aid in the completeness of understanding of what Latinas describe as motivators and barriers to exercise and to determine predictors of motivators and barriers to exercise.
Chapter IV

Quantitative Phase I Results

The results of the data analysis for both the Quantitative Phase I and the Qualitative Phase II are presented this chapter. The first part of the chapter presents the results of Quantitative Phase I, including: a) discussion on reliability of instruments, b) exploratory factor analysis findings, c) missing data, d) descriptive findings on acculturation and exercise, and e) research questions, hypotheses, and findings. The second part of the chapter presents the results of Qualitative Phase II, including: a) a definition of exercise, b) exercise beliefs, c) exercise motivators, d) exercise barriers, e) significance of exercise, and f) cultural aspects of exercise. The third part of the chapter presents the results from the methodological triangulation.

Quantitative Phase I.

Reliability of Instruments.

Acceptable reliability was demonstrated with the following subscales of the BREQ-2: a) External regulation subscale with an alpha of .71, b) Introjected regulation with an alpha of .81, and c) Intrinsic regulation with an alpha of .89. Marginal reliability was demonstrated with the Amotivation subscale with an alpha of .63, but it was still used in the analyses. Poor reliability was demonstrated with the Identified regulation with an alpha of .39. The researcher attempted to improve reliability by removing Item 17 “I get restless if I don’t exercise regularly” which was the least correlated item in the Identified subscale. This improved the alpha to .51, which was deemed by the researcher as poor. The RAI, which is a composite derived from applying a weight to each subscale
and then summing the weighted scores, had poor reliability with an alpha of .35. Extrinsic motivation, a composite derived from the (External, Introjected, Identified) had poor reliability with an alpha of .52.

*Follow-up analyses to improve scales.* In order to address the problems with reliability and unacceptable skewedness of three of the subscales of the BREQ-2 (Amotivation, External regulation, and Intrinsic regulation) based on histograms, the researcher conducted several scale transformations as well as an exploratory factor analysis to determine if any of the scale’s reliabilities could be improved or if new scale could be derived that would be more reliable. Table 5 has further details on the individual subscales as well as the BREQ-2 as a single scale.

<table>
<thead>
<tr>
<th>Subscale</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amotivation</td>
<td>.38</td>
<td>.60</td>
<td>.63</td>
</tr>
<tr>
<td>External Regulation</td>
<td>.92</td>
<td>.89</td>
<td>.71</td>
</tr>
<tr>
<td>Introjected Regulation</td>
<td>2.14</td>
<td>1.26</td>
<td>.81</td>
</tr>
<tr>
<td>Identified Regulation</td>
<td>2.95</td>
<td>.57</td>
<td>.39</td>
</tr>
<tr>
<td>Intrinsic Regulation</td>
<td>3.28</td>
<td>.83</td>
<td>.89</td>
</tr>
<tr>
<td>BREQ-2 as one scale</td>
<td>1.92</td>
<td>.44</td>
<td>.72</td>
</tr>
</tbody>
</table>

*Exploratory Factor Analysis Findings*

*BREQ-2 Exploratory Factor Analysis.*

The first follow up analysis included exploratory factor analysis (EFA) on the BREQ-2 to see if other factors not previously identified emerged. The EFA with varimax
rotation suggests that 3 Factors emerged from the BREQ-2 that account for 48.36% of the variance. Factors 1 and Factor 2 are the same as the Intrinsic regulation domain and the Introjected regulation domain as determined by the original authors of the BREQ-2 (Markland & Tobin, 2004). The new factor (Factor 3) was named External Forces by the researcher. The resulting EFA is shown in Table 6.

Table 6
*BREQ-2 exploratory factor analysis results in an exercise motivation study of Latinas in South Florida (n = 169)*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalues</th>
<th>Rotation Sums of Squared Loading % of Variance</th>
<th>Rotation Sums of Squared Loading Cumulative % of Variance</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 (Intrinsic regulation) (sum of 4,10,15,18)</td>
<td>3.36</td>
<td>17.69</td>
<td>17.69</td>
<td>.89</td>
</tr>
<tr>
<td>Factor 2 (Introjected regulation) (sum of 2,7,13)</td>
<td>2.50</td>
<td>13.16</td>
<td>30.85</td>
<td>.81</td>
</tr>
<tr>
<td>Factor 3 (External Forces) (sum of 1,6, 7, 13,16)</td>
<td>2.22</td>
<td>11.69</td>
<td>42.55</td>
<td>.72</td>
</tr>
<tr>
<td>BREQ-2 as one scale</td>
<td></td>
<td></td>
<td></td>
<td>.72</td>
</tr>
</tbody>
</table>

Factor 3 or External forces (1: I exercise because other people say I should, 6: I take part in exercise because my friends/family/partner say I should, 7: I feel ashamed when I miss an exercise session, 13: I feel like a failure when I haven’t exercised in a while, 16: I feel under pressure from my friends/family to exercise) has 2 items (7: I feel
ashamed when I miss an exercise session, and 13: I feel like a failure when I haven’t exercised in a while) that double load on the Introjected regulation factor (2: I feel guilty when I don’t exercise, 7: I feel ashamed when I miss an exercise session, 13: I feel like a failure when I haven’t exercised in a while). The post-hoc analyses addressed the research hypotheses concerning the External forces subscale of the BREQ-2 in accordance to the relevant specific aims of the study.

The second follow up analysis included transforming the following variables in an attempt to improve normal distribution: a) Amotivation, b) External regulation, and c) Intrinsic regulation. Transformations included square root, log10, and inverse transformations. All transformations were rejected because they did not improve the distribution of the subscales on the histograms.

**Missing data.**

There were no missing data points for BREQ-2, BAS, self-reported income or education. One participant did not provide data on number of children; this participant was excluded from the test of Hypothesis 1: Demographic variables will predict exercise. In the data concerning the participants’ steps per day, there were a total of 22 missing data points, including eight data points out of 1197 possible that were not reported by participants. Fourteen additional data points were removed after the researcher deemed them as outliers after visual inspection of the histograms. Outliers were determined by analyzing each participant’s daily recorded steps and removing individual steps that did not fit the participant’s general pattern of steps determined by histograms. Two
participants’ data were discarded completely for being extreme outliers. One participant reported the equivalent of over 20 miles a day and another reported less than 0.1 miles a day, both of which were highly unlikely when compared to the rest of the sample.

All data analyzed with Mplus treated missing data with full information maximum likelihood (FIML). Using FIML reduced bias in the hypothesized model by estimating the model parameters to include missing data by borrowing from other variables when needed. Including missing data by borrowing from other variables maximizes power so that a participant’s data might be used even if that data set was missing data. In listwise deletion, a data set missing any data points would be completely deleted.

Using SPSS, the researcher imputed the mean for the participants who were missing data points. The researcher used the imputed means to compute the average steps per day for all participants. The researcher calculated the average steps per day based on the total number of days recorded for each individual participant. After discarding the outliers, no one participant had more than three data points missing. One participant had three days of missing data, four participants had two days of missing data, 11 participants had one day of missing data.

**Descriptive Findings on Acculturation and Exercise.**

The mean acculturation score of the BAS for Hispanics (Marin & Gamba, 1996) for the Americanism scale was 2.35 out of a possible score of 4. The mean acculturation score for the Hispanic scale was 3.56 out of a possible score of 4 indicating the sample is
more highly acculturated to their Hispanic culture of origin. Approximately 98% of the sample scored above 2.5 in the Hispanic domain, and 3.5% scored above 2.5 in the Americanism domain.

The mean number of steps per day was 6,685. The participants who recorded the lowest quartile of average steps per day took 3,927 steps on average. The participants who recorded the middle 50% took 6,070 steps per day while the participants who recorded in the 75% took 8,882 steps. All of these quartiles are below the recommendation of 10,000 steps per day (Schneider et al., 2006), but the highest quartile did approach the recommendation.

Quantitative Research Questions, Hypotheses, and Findings.

Study findings for each of the specific aims and, related hypotheses, are presented below. Data analyses were conducted using Statistical Package for the Social Science (SPSS) version 18.0 and Mplus version 5.21 (Muthen & Muthen, 1998-2007).

Specific Aim I. Identify predictors of exercise among Latinas.

The variables examined include demographic variables (income, education, and number of children), acculturation, motivation (Amotivation, Extrinsic, Intrinsic, self-determination), and exercise.

Hypothesis (H) 1: Demographic variables (income, education, and number of children) will predict exercise as measured in average steps per day.

H_{1a} = Income will be positively related to exercise. Income was not significantly related to exercise. For approximately every $1000 change in monthly income, there was a non-significant ($p = .85$) decrease of approximately 50 steps per day ($\beta = -0.01$).
$H_{1b} =$ Education will be positively related to exercise. Education was not significantly related to exercise. For each year of education reported, there was a non-significant ($p = .84$) increase of approximately 19 steps per day ($\beta = 0.02$).

$H_{1c} =$ Number of children will be negatively related to exercise. Number of children was not significantly related to exercise. For each child reported, there was a non-significant ($p = .50$) increase of approximately 28 steps per day ($\beta = 0.05$). A follow-up analysis examined whether having any children was related to exercise. For women who reported having children, there was a non-significant ($p = .94$) increase of approximately 53 steps per day ($\beta = 0.01$).

In addition to testing H1, the researcher ran correlations between demographic variables and exercise to further clarify the relationship between demographic variables and exercise. The researcher ran correlations on both self-reported exercise as well as average steps per day. There was no significant correlation between income, education, or number of children and exercise (self-reported exercise or average steps per day).

**H2: Acculturation will predict exercise.**

$H_2 =$ Higher scores in the Americanism domain will predict exercise controlling for demographic factors (income, education, number of children). Controlling for demographic variables (income, education, and number of children), higher scores in the Americanism domain was significantly ($p = .04$) negatively related to exercise. For each increase of 1 point in score of acculturation towards being more acculturated to the American culture, there was a significant decrease of 820 average steps per day in exercise ($\beta = -0.16$).
Additional analyses were conducted to elucidate the relationship between higher Americanism and self-reported exercise. Using SPSS, correlations were run between scores on the Americanism subscale of the BAS and participants’ self-report of whether they engaged in exercise during their week of wearing pedometers. The higher the women scored on the Americanism subscale of the BAS, the more likely they were to report exercise as one of their daily activities. The Spearman’s rho correlation was $r_s = .205$, $n = 169$, $p < .01$ for the reported days, a weak but statistically significant positive correlation. There was no statistically significant correlation between scores on the Americanism subscale of the BAS and reported average steps. However, after controlling for income, number of children, and education, there was a significantly negative correlation of 820 average steps per day in exercise ($\beta = -0.16$, $p = .04$).

*H3: Motivation will predict exercise.*

Testing H3 was complicated by poor reliability in some of the subscales of the BREQ-2. Although all of the hypotheses were tested, only the Intrinsic, External, Introjected and Amotivation scales had alphas that were acceptable. In addition to using all subscales of the BREQ-2, motivation was also tested using the composite Extrinsic score to test Extrinsic regulation and the composite RAI to test self-determination. None of the hypotheses were supported; the results for each hypothesis are shown below.

H3a = Intrinsic motivation will be positively related to exercise controlling for demographic factors. Controlling for demographic variables, Intrinsic motivation was not significantly related to exercise ($\beta = 0.13$, $p = .17$).
H$_{3b}$= Extrinsic motivation will be positively related to exercise controlling for demographic factors. Controlling for demographic variables, Extrinsic motivation (External, Introjected, Identified) was not significantly related of exercise ($\beta = 0.07, p = .46$).

H$_{3c}$= Amotivation will be negatively related to exercise controlling for demographic factors. Controlling for demographic variables, Amotivation was not significantly related to exercise ($\beta = 0.02, p = .80$).

H$_{3d}$= Self-determination (relative autonomy index) will be positively related to exercise controlling for demographic factors. Controlling for demographic variables, self-determination (relative autonomy index) was not significantly related to exercise ($\beta = 0.21, p = .60$).

Additional analyses included determining if correlations existed among types of motivation and exercise (self-report and average steps per day). There was a weak but statistically significant negative correlation between amotivation and self-reported exercise with a spearman’s rho of $r_s = -.228, n = 169, p < 0.01$. There was a weak but statistically significant positive correlation between identified regulation and self-reported exercise with a Pearson’s correlation of $r = .155, n = 169, p = .044$. There was a weak but statistically positive correlation between intrinsic regulation and self-reported exercise with a Spearman’s rho of $r_s = .276, n = 169, p < .001$. There was also a weak but statistically positive correlation between Relative Autonomy Index regulation and self-reported exercise with a Pearson’s correlation of $r = .296, n = 169, p < .001$. There was a weak but statistically significant positive correlation between self-reported exercise and average steps per day with a Pearson’s correlation of $r = .242, n = 169, p = .002$. 
The researcher also tested H3 using the External Forces scale which emerged from the EFA, to determine if the new factor would yield different findings. This analysis did not yield significant results. Controlling for demographic variables, External Forces was not significantly related to exercise. For every change in the score on the External Forces subscale, there was non-significant ($\beta = -0.04$, $p = .58$) decrease of approximately 35 steps per day.

Additional analysis was conducted in order to examine whether using the BREQ-2 as a single scale to measure exercise motivation would yield different findings. This analysis did not yield significant results. Controlling for demographic variables, BREQ-2 was not significantly related to average steps per day. For every change on the motivation scale, there is a non-significant ($\beta = 0.03$, $p = .73$) change of approximately 13 steps recorded per day.

Additional analyses were conducted in order to determine whether converting the BREQ-2 scales into dichotomous variables based on the median splits would yield different findings. None of these analyses yielded significant results. Each one is reported below.

Controlling for demographic variables (income, education, and number of children), Intrinsic motivation was not significantly related to exercise. For every change in the score on the Intrinsic subscale, there was a non-significant ($p = .19$) increase of approximately 790 steps per day ($\beta = 0.1$). Controlling for demographic variables, External regulation was not significantly related of exercise. For every change in the score on the External regulation subscale, there was a non-significant ($p = .23$) decrease of approximately 805 steps per day ($\beta = -0.09$). Controlling for demographic variables,
Amotivation was not significantly related to exercise. For every change in the score on the Amotivation subscale, there was non-significant \( (p = .42) \) increase of approximately 489 steps per day \( (\beta = 0.06) \). Controlling for demographic variables, Self-determination (relative autonomy index) was not significantly related to exercise. For every change in the score on the Relative Autonomy Index, there was a non-significant \( (p = .81) \) increase of approximately 22 steps per day \( (\beta = 0.02) \).

Specific Aim II. Investigate the relationship between motivation types, self-determination and acculturation.

**H4.** Acculturation will predict motivation.

H4a = Higher scores on the Americanism domain will predict Intrinsic and Extrinsic motivation controlling for demographic factors. Controlling for demographic variables, higher scores on the Americanism domain was neither a significant predictor of Intrinsic \( (\beta = -0.02, p = .78) \) nor Extrinsic motivation \( (\beta = -0.12, p = .20) \).

H4b = Higher scores on the Hispanicism domain will be inversely related to higher Intrinsic and Extrinsic motivation controlling for demographic factors. Controlling for demographic variables, higher scores on the Hispanicism domain was neither a significant predictor \( (\beta = 0.07, p = .27) \) of Intrinsic nor Extrinsic motivation \( (\beta = 0.17, p = .09) \).

The researcher also tested H4 using the External Forces to determine if the new factor would yield different findings. This analysis did not yield significant results. Controlling for demographic variables, higher scores on the Americanism domain was not a significant predictor \( (\beta = -0.06, p = .40) \) of External Forces. For each unit change in
the Americanism domain score, there was a non-significant decrease of 0.06 in the External Forces score. Controlling for demographic variables, higher scores on the Hispanicism domain was not a significant predictor ($\beta = 0.07, p = .36$) of External Forces. For each unit change in the Hispanicism domain score, there was a non-significant increase of 0.07 in the External Forces score.

Additional analysis was conducted in order to examine whether using the BREQ-2 as a single scale to measure exercise motivation would yield different findings. This analysis did not yield significant results. Controlling for demographic variables, neither change in scores on the Americanism domain nor change in scores on the Hispanicism domain was a significant predictor ($\beta = -0.13, p = .09$) and ($\beta = 0.15, p = .06$) respectively, of motivation measured by the BREQ-2. For every change in score on the Americanism domain, there was a non-statistically significant decrease of 1.48 points in motivation as measured by the BREQ-2. For every unit change score on the Hispanicism domain resulted in a non-significant increase of 2.94 points on the BREQ-2.

Additional analyses were conducted to further examine the relationship between acculturation and motivation. The researcher used the previously converted dichotomous variables: a) External regulation, and b) Intrinsic regulation to retest H4. Controlling for demographic variables, higher scores on the Americanism domain was neither a significant predictor ($\beta = 0.05, p = .51$) of Intrinsic nor a significant predictor ($\beta = -0.08, p = .42$) predictor of Extrinsic motivation. For every change in the score on the Americanism domain, there was a non-significant ($p = .51$) increase of 0.05 points on the
Intrinsic motivation subscale. For every change in the score on the Americanism domain, there was a non-significant \((p = .57)\) decrease of 0.01 points on the Extrinsic motivation subscale.

Controlling for demographic variables, higher scores on the Hispanicism domain was neither a significant predictor \((\beta = 0.14, p = .06)\) of Intrinsic nor a significant predictor \((\beta = -0.04, p = .66)\) predictor of Extrinsic motivation. For every change in the score on the Hispanicism domain, there was a non-significant \((p = .06)\) increase of 0.39 points on the Intrinsic motivation subscale. For every change in the score on the Hispanicism domain, there was a non-significant \((p = .70)\) decrease of 0.01 points on the Extrinsic motivation subscale.

**H5. Acculturation will predict self-determination (RAI).**

H5 = Acculturation will be related to the RAI.

Controlling for demographic variables, acculturation was not significantly related to the RAI. Scores on the Americanism domain were not a significant predictor \((\beta = 0.00, p = .92)\) of the RAI. Scores on the Hispanicism domain were not a significant predictor \((\beta = 0.00, p = .89)\) of the RAI. For each standard deviation change in Hispanicism domain score, there was a non-significant increase of .00 SD in the RAI score.

Additional analyses were conducted to determine if acculturation predicted self-determination. The RAI was recalculated with the transformed subscales of the BREQ-2. Once recalculated, H5. Acculturation will predict self-determination was retested. Controlling for demographic variables, acculturation was not significantly related to the RAI. Scores on the Americanism domain were not a significant predictor \((\beta = 0.13, p = \)
.12) of the RAI. Scores on the Hispanicism domain were not a significant predictor ($\beta = 1.97, p = .17$) of the RAI. For each unit change in the Hispanicism domain score, there was a non-significant ($p = .17$) increase of 1.97 in the RAI score. For each unit change in the Americanism domain score, there was a non-significant ($p = .12$) increase of 0.87 in the RAI score.

**H6. Motivation mediates the relationship between acculturation and exercise.**

This hypothesis was to be tested if motivation predicted exercise (H3) and acculturation predicted motivation (H4) were supported. Because motivation was not significantly related to exercise (H3) and acculturation was not significantly related to motivation (H4), this hypothesis was not tested.

**H7. RAI mediates the relationship between acculturation and exercise.**

This hypothesis was to be tested if RAI (H3d) was positively related to exercise and acculturation predicted RAI (H5) were supported. Because the RAI was not significantly related to exercise nor was acculturation significantly related to the RAI, this hypothesis was not tested.

### Summary of findings of an exercise motivation study of Latinas in South Florida ($n = 169$)

<table>
<thead>
<tr>
<th>Hypothesis (H)</th>
<th>B</th>
<th>b</th>
<th>SE (b)</th>
<th>p</th>
<th>90% CI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong>: Demographic variables will predict exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1a: Income</td>
<td>-0.01</td>
<td>-47.87</td>
<td>255.45</td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1b: Education</td>
<td>0.02</td>
<td>18.69</td>
<td>90.48</td>
<td>.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1c: Number of Children</td>
<td>0.05</td>
<td>28.27</td>
<td>42.15</td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 7
Summary of findings of an exercise motivation study of Latinas in South Florida

\( n = 169 \)

<table>
<thead>
<tr>
<th>Hypothesis (H)</th>
<th>( b )</th>
<th>( SE (b) )</th>
<th>( p )</th>
<th>90% CI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H2:</strong> Acculturation will predict exercise</td>
<td>-820.43</td>
<td>401.25</td>
<td>.04*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H_2: ) Higher scores in the Americanism domain will predict exercise</td>
<td>-0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>H3:</strong> Motivation will predict exercise</td>
<td>0.13</td>
<td>359.74</td>
<td>.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H_{3a}: ) Intrinsic motivation will be positively related to exercise</td>
<td>0.13</td>
<td>493.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H_{3b}: ) Extrinsic motivation will be positively related to exercise</td>
<td>0.07</td>
<td>1097.10</td>
<td>.46</td>
<td>[0.00, 0.91]</td>
<td>0.05</td>
<td>0.11</td>
</tr>
<tr>
<td>( H_{3c}: ) Amotivation will be negatively related to exercise</td>
<td>0.02</td>
<td>499.79</td>
<td>.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( H_{3d}: ) Self-determination (relative autonomy index) will be positively related to exercise</td>
<td>0.21</td>
<td>26.78</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**H4:** Acculturation will predict motivation
Table 7  
Summary of findings of an exercise motivation study of Latinas in South Florida  
(n = 169)

<table>
<thead>
<tr>
<th>Hypothesis (H)</th>
<th>B</th>
<th>b</th>
<th>SE (b)</th>
<th>p</th>
<th>90% CI</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>H4a: Higher scores on the Americanism domain will predict Intrinsic and Extrinsic motivation</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
</tr>
<tr>
<td>Intrinsic</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.09</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic</td>
<td>-0.12</td>
<td>-0.06</td>
<td>0.04</td>
<td>.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H4b: Higher scores on the Hispanicism domain will be inversely related to higher Intrinsic and Extrinsic motivation</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
</tr>
<tr>
<td>Intrinsic</td>
<td>0.07</td>
<td>0.17</td>
<td>0.15</td>
<td>.27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic</td>
<td>0.17</td>
<td>0.14</td>
<td>0.08</td>
<td>.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H5: Acculturation will predict self-determination (RAI)</td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
<td> </td>
</tr>
<tr>
<td>Hispanicism</td>
<td>0.00</td>
<td>0.38</td>
<td>2.69</td>
<td>.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Americanism</td>
<td>0.00</td>
<td>-0.16</td>
<td>1.53</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
Qualitative Phase II Results

Qualitative Phase II.

The specific aim of the Qualitative Phase II was to employ participatory photography methodology to better understand Latinas’ exercise motivators and barriers. The results presented below are collectively based on two qualitative semi-structured interviews, one before and one after participants took photographs of their exercise motivators and barriers. During the first semi-structured interview, the researcher asked each participant five questions. The questions included asking participants: a) How do you define exercise?, b) What are your beliefs about exercise?, c) What motivates you to exercise?, d) What keeps you from exercise?, and e) How significant is exercise in your life?. The second semi-structured interview was an amplification of motivators and barriers and included asking participants: a) Tell me why you took this photograph?, b) What about this photograph motivates you to exercise?, c) What about this photograph is a barrier to exercise? and d) Can you tell me more about this photograph? (See Appendix E for further detail).

The researcher used qualitative content analysis to establish categories and frequencies of categories that emerged from the narratives of the semi-structured interviews. Figure 4 is a presentation of the categories that emerged from the semi-structured interviews. In addition to providing information that was directly in response to these questions, the participants’ responses also provided information on cultural aspects of being a Latina immigrant and its impact on their exercise (see Figure 5 Cultural Aspects further detail). Figure 4 Exercise in Latinas is a visual overview of the classification of questions and answers to the qualitative section.
**Participant Characteristics.** The participants in Qualitative Phase II were from nine countries including the United States; they ranged in age from 21 to 50 years old, and had a mean education level of 13.6 years, $SD = 2.64$. Nineteen out of 20 participants in Qualitative Phase II were born outside of the United States. The number of years spent living in the United States, including the participant born in the United States, ranged from approximately two to 30 with an average of 12.8. Twenty-five percent ($n = 5$) of the participants in the qualitative sample did not have children while 75% ($n = 15$) of the participants had between one and three children. The average monthly family income for this group was about $1500 (See Table 8 for further detail).

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
<th>M</th>
<th>SD</th>
<th>Minimal and Maximum Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Income</td>
<td></td>
<td></td>
<td>$1500</td>
<td>$500- $1,000 – $5,000- $6,000</td>
<td></td>
</tr>
<tr>
<td>Less than $1000</td>
<td>4</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1000-$2000</td>
<td>7</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2000- $3000</td>
<td>6</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than $3000</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level (years)</td>
<td></td>
<td></td>
<td>13.60</td>
<td>2.64</td>
<td>10 to 20</td>
</tr>
<tr>
<td>10 to 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 to 16</td>
<td>10</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 to 20</td>
<td>7</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many children do you have?</td>
<td></td>
<td></td>
<td>1.35</td>
<td>1.04</td>
<td>0 to 3</td>
</tr>
<tr>
<td>0</td>
<td>5</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise in Latinas: a content analysis

Definition
- Activities
  - Physical
  - Emotional
- Effects

Beliefs
- Essential Practice
- Good for Health
- Obligation

Motivators
- Extrinsic
  - External
  - Introjected
  - Identified
- Intrinsic

Barriers
- Competing Obligations
- Personal Limitations
- Environmental Limitations
- Competing Diversions

Significance
- High
- Moderate
- Little/None

Exercise Cues
- Resources
- Environment

Figure 4 Exercise in Latinas: a content analysis
**Definition of Exercise.** The first question the participants were asked was, “How do you define exercise?” All 20 participants provided responses that could be classified and contributed to a definition of exercise that emerged of physical activities done for the purpose of exercising involving a set of physical and emotional effects. Categories that emerged in the definition of exercise are presented in Table 9. The majority of the statements regarding exercise activities were about formalized activities engaged in for the purpose of exercising. One participant defined exercise as cooking, cleaning and doing chores.

*Effects were either physical or emotional.* All 20 participants described physical effects of exercise in their definition. The physical effects included the sub-categories of cosmetic and health. The cosmetic effects sub-category had 15 comments made by 12 participants. Specific cosmetic effects included looking better, getting in shape and staying younger. The health effects sub-category included 29 comments made by 17 participants. Specific health effects included feeling better, helping health, and staying well. The emotional effects category had 12 comments made by 10 participants. The majority of statements made by the participants were about emotional effects concerning improving well-being, such as helping mental health, maintaining good spirits and increasing happiness. Only one participant mentioned a therapeutic effect, taking stress away.

Most participants defined the effects of exercise as positive – i.e., energizing, entertaining, and good for them mentally. As one 43 year old mother of three stated, “Any physical activity that makes your heart pump and you sweat a little bit.” According
to the participants, doing exercise generally results in improved physical health, mental health, looks, and being in good shape. Another 43 year old mother of one said, “Exercise for me is an activity in which we activate our body, in which we burn fat, we stay healthy, we will develop muscles, and we especially to stay healthy mentally, and physically [sic].”

An exception to the positive effects of exercise was provided by one 38 year old mother of three who cleaned houses for a living. She described the dust and chemicals she inhaled as a negative effect on her health. She said, “Although I am exercising, cleaning, you know that when you clean a house: sweeping, mopping, climbs the stairs, passes vacuum, but I do not feel that this is an exercise to help my health.”
Table 9
Definition of exercise in an exercise motivation study of Latinas in South Florida (n = 20)

<table>
<thead>
<tr>
<th>Activities (9)</th>
<th>Physical (20)</th>
<th>Effects</th>
<th>Emotional (10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>3</td>
<td>Cosmetic (12)</td>
<td></td>
</tr>
<tr>
<td>Playing a sport</td>
<td>1</td>
<td>Gets you in shape/ burns fat/ lose weight</td>
<td>7</td>
</tr>
<tr>
<td>Doing sit-ups</td>
<td>1</td>
<td>Look well/ better/ have better figure</td>
<td>4</td>
</tr>
<tr>
<td>Running</td>
<td>1</td>
<td>Look younger/ stay young/ live longer</td>
<td>3</td>
</tr>
<tr>
<td>Physical activity apart from work</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doing corporal movements</td>
<td>1</td>
<td>Health (17)</td>
<td></td>
</tr>
<tr>
<td>Spending some time working out</td>
<td>1</td>
<td>Helps our health</td>
<td>10</td>
</tr>
<tr>
<td>Doing cardio</td>
<td>1</td>
<td>Feel better</td>
<td>4</td>
</tr>
<tr>
<td>Cooking, cleaning and doing chores</td>
<td>1</td>
<td>Stay well/ maintain weight</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Helps physical health</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stay/ feel active</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Makes your heart pump/ help joint and heart</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>circulation/ makes you sweat</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase energy level</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inhaling chemicals/ dust</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Being disease and pain free</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sleep better</td>
<td>1</td>
</tr>
</tbody>
</table>
Exercise Beliefs. The second question the researcher asked the participants was, “What are your beliefs about exercise?” Three participants gave answers that were not classifiable (responses that were either too general for classification, “It’s good.” and “I believe 100% in exercise and good nutrition. 100%.” Or did not really address the question, i.e., steps that must be taken in order to be able to exercise. For her, she felt medical clearance and guidance were necessary before being able to exercise). The remaining 16 participant described their exercise beliefs in the following three categories: a) good for health, b) essential practice, and c) obligation. Categories that emerged regarding exercise beliefs are presented in Table 10.

Table 10
Exercise beliefs in an exercise motivation study of Latinas in South Florida
(n = 20)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Good for Health</strong></td>
<td>10</td>
</tr>
<tr>
<td>Have better health</td>
<td>6</td>
</tr>
<tr>
<td>Maintain health</td>
<td>4</td>
</tr>
<tr>
<td><strong>Essential Practice</strong></td>
<td>5</td>
</tr>
<tr>
<td>Essential for life</td>
<td>1</td>
</tr>
<tr>
<td>Is an ongoing process</td>
<td>1</td>
</tr>
<tr>
<td>Is a positive practice</td>
<td>1</td>
</tr>
<tr>
<td>Best thing for stress</td>
<td>1</td>
</tr>
<tr>
<td>Best thing for everything</td>
<td>1</td>
</tr>
<tr>
<td>Live a better life</td>
<td>1</td>
</tr>
<tr>
<td><strong>Obligation</strong></td>
<td>4</td>
</tr>
<tr>
<td>Hard to do</td>
<td>3</td>
</tr>
<tr>
<td>Have to/ should do it</td>
<td>2</td>
</tr>
</tbody>
</table>
The most common belief, held by ten participants, was that exercise is good for one’s health. Of these 10, four described their exercise beliefs as helping them maintain their health and six described their exercise beliefs in terms of helping them improve their health. Five participants indicated that their exercise beliefs are that exercise is an essential practice. Four participants described their exercise beliefs in terms of a sense of obligation. Of these four, three participants described their exercise beliefs as a sense of obligation and being difficult to fulfill.

The participants’ responses showed that they believe exercise to be important but difficult to do. The complexity of the participants’ answers is exemplified in the following statement made by a 22 year old participant without children:

My beliefs, you think if you exercise you will be healthier, you will be much happier so you will live a better life and I think when you exercise and you look good, good things will come. And I think everyone should do it but it’s just hard sometimes.

**Exercise Motivators.** The third question the researcher asked the participants was, “What motivates you to exercise?” All 20 participants gave answers that were classifiable into Extrinsic and Intrinsic categories guided by the SDT (Deci & Ryan, 1985; Ryan & Deci, 2000) theoretical framework that Markland and Tobin (2004) used in creating the BREQ-2. Collectively, there were 62 comments made by 19 participants on exercise motivators that were categorized as Extrinsic and six comments made by four different participants that were categorized as Intrinsic. Two participants made statements classified in all four categories. These categories that emerged as exercise motivators are presented in Table 11.
Extrinsic motivators. Nineteen of the participants gave answers classifiable in the Extrinsic category. In accordance with the BREQ-2, under the Extrinsic category emerged the sub-categories of External (exercises because of external pressures, i.e. “Because my friends/family/partner say I should”), Introjected (exercising because of

Table 11

| Exercise motivators in an exercise motivation study of Latinas in South Florida |
|-------------------------------------------------|---|---|
|                                                | (n) of participants | (n) of comments |
| **External (… say I should)**                  | 9             | 11             |
| Others                                         | 4             |                |
| Media                                          | 3             |                |
| Society                                        | 2             |                |
| Friends                                       | 2             |                |
| **Introjected (If I don’t exercise…)**         | 10            | 12             |
| I will be overweight                           | 3             |                |
| I won’t be able to take care of my children    | 3             |                |
| I won’t be around for my family in the future  | 2             |                |
| I won’t look good                              | 2             |                |
| I will feel bad about myself                   | 1             |                |
| I will have Lonjita or “fat rolls”             | 1             |                |
| **Identified (I exercise to …)**               | 16            | 35             |
| Have health benefits                           | 10            |                |
| Look better/good                               | 8             |                |
| Have wellbeing                                 | 6             |                |
| Have weight control                            | 3             |                |
| Live longer                                    | 1             |                |
| To relax                                       | 1             |                |
| **Intrinsic (I exercise because I…)**          | 4             | 6              |
| Enjoy working out                              | 2             |                |
| Love myself                                    | 1             |                |
| Want to have fun                               | 1             |                |
| Want to learn how to dance                     | 1             |                |
| Desire to work all the muscles of the body     | 1             |                |
somewhat internalized pressure, i.e. “I feel guilty when I don’t exercise”), and Identified (exercising because of conscious acceptance of behavior, i.e. “I value the benefits of exercise”) Regulation.

The Identified sub-category had the most comments with 35 made by 16 participants. Identified items included a desire to: a) have health benefits, b) look better, c) have wellbeing, d) have weight control, e) live longer, and f) to relax. The next largest Extrinsic category was External with 11 comments made by 9 different participants on four different items including exercising because others, media, society, and friends say I should. The Introjected sub-category had 12 comments made by 10 participants in six different items concerning the consequences if the participants did not exercise. Items included: a) being overweight, b) not being able to care for children, c) not being around for family in the future, d) not looking good, e) feeling bad about myself, and f) having fat rolls if participants did not exercise.

Eleven participants gave responses that included more than one sub-category of Extrinsic motivators. A 34 year old mother of one described her exercise motives with items classified as Introjected and Identified when she said, “What motivates me to exercise? To always be healthy, to be happy with my body. To have health to be able to take care of my daughter [sic].” For this participant, the Identified regulation stemmed from her desire to be healthy and happy with her body. The Introjected regulation is exemplified with her stated desire to be able to care for her daughter.

*Intrinsic motivators.* Four participants made statements classified as Intrinsic. Intrinsic items included exercising because of a) love of oneself, b) joy of working out, c) desire to have fun, d) desire to learn how to dance, and e) desire to work muscles in
the body. One 42 year old mother of two simply responded, “Loving myself.” when asked about her exercise motivators. A 22 year old without children described one of her motivators to exercise with, “You just enjoy working out [sic].” A third participant, a 46 year old without children responded to the question with, “I like to exercise” and “I like jogging.” The fourth participant, a 21 year old without children, described her Zumba class as an exercise motivator because it taught her how to dance and provided her with the ability to move all of her muscles.

External Cues. In addition to the categories of motivators that could be classified as under the Extrinsic and Intrinsic categories guided by the SDT (Deci & Ryan, 1985; Ryan & Deci, 2000), participants referred to external cues that motivated them to exercise. These categories of external cues are presented in Table 12. When describing their exercise motivators, 13 participants gave 28 comments about two different sub-categories, external and environmental factors, of external cues. The external sub-category had 18 different comments made by 11 participants and seven different items which included a) access to a swimming pool, b) proximity to a gym, and c) aerobics class. The environmental sub-category had 10 comments made by 7 participants on four different items including a) ocean and beach, b) nature and parks, c) summer and d) beautiful days as identified exercise cues.
Exercise Barriers. The fourth question the researcher asked the participants was, “What keeps you from exercise?”. All 20 participants provided responses that could be classified: a) competing obligations, b) personal limitations, c) environmental limitations, and d) competing diversions. Categories that emerged as exercise barriers are presented in Table 13.

The most frequently mentioned category was competing obligations with 37 comments made by 17 of the women. The most frequently mentioned items in the competing obligations category were work/school obligations, caring for children and not having free time. One 46 year old mother of two described her barriers with the following, “sometimes my work, sometimes my children and my obligations at home when I arrive. I have other things to do.” A 38 year old mother of three described her competing obligations as a lack of “free time because there are so many things that I have
to do that I do not give priority to exercise. Free time is to rest or dedicate to my family or to do paperwork.” Three participants mentioned not being able to afford gym membership as one of their exercise barriers. One 43 year old mother of three mentioned simply, “And also if I want to do exercise like in a gym or things like that, is more like … I can’t afford it, even though I know I can do exercise otherwise.”

Table 13
Exercise Barriers in an exercise motivation study of Latinas in South Florida

<table>
<thead>
<tr>
<th>Category</th>
<th>(n) of participants</th>
<th>(n) of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competing Obligations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work/School obligations</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>No free time</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Caring for children</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Household obligations</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Can’t afford gym membership</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Church</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Significant other</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Work colleagues</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Personal Limitations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Too tired from work</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Don't want to/ feel like exercising</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Being lazy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Too tired</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Full stomach</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Illness/ not feeling well</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>No discipline</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Self-conscious</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Poor health</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Limitations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cold weather</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lack of proximity of place to exercise</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
The next most common category of exercise barriers was personal limitations with 26 comments made by 15 of the women. The most frequently mentioned items in the personal limitations category were being too tired from work, lacking desire to exercise, and being lazy. Ten participants mentioned being too tired to exercise while seven participants mentioned either being lazy or lacking desire to exercise as one of their exercise barriers. As one 22 year old participant without children said, “Very much just being lazy just nothing feels as good as lying in your bed doing nothing.”

The environmental limitations category included three comments made by two women. Items in the external category included inclement weather and lack of proximity of a place to exercise. One 46 year old mother of two described her barriers with, “Also there are no places, sometimes near my house, as appropriate to do so. It's a big street and many houses and there. Sometimes I have to go far to find a place.” The other participant, a 46 year old without children, described her barriers with, “The cold sometimes makes me lazy.”

The competing diversions category included five comments made by four participants. Items included in the competing diversions category included social commitments and spending time on the internet or watching television. Three different participants mentioned their computers and televisions as exercise barriers. As one 46

<table>
<thead>
<tr>
<th>Category</th>
<th>(n) of participants</th>
<th>(n) of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competing Diversions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer/ Internet/ Watching TV/ movie</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Social commitments</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Table 13
Exercise Barriers in an exercise motivation study of Latinas in South Florida
year old without children said, “When I get into the computer and I'm chatting with my family, and already takes my desire to exercise. That's why there are times when I don't even turn it on. Because it turns me off [sic].”

**Exercise Significance.** The fifth and last question the researcher asked participants was, “How significant is exercise in your life?”. Categories that emerged as exercise significance are presented in Table 14. Of the 20 who were asked this question, two participants gave answers that could not be classified (these participants described their exercise beliefs when asked about exercise significance). Fourteen of the participants indicated that exercise was highly significant in their lives. A 47 year old without children stated, “To me it is very important, because I know it helps prevent many things that can be negative, bad for my health.” A 40 year old mother of one said, “To me, exercise is something very important for our health. If you exercise, the result is always been fine. Health-wise, mentally and physically.” While a 46 year old without children echoed the same sentiment when she said, “Exercise for me is very important to the health of body and mind.”

<table>
<thead>
<tr>
<th>Category</th>
<th>(n) of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High significance</strong></td>
<td>14</td>
</tr>
<tr>
<td>Very important/ significant</td>
<td>13</td>
</tr>
<tr>
<td>Crucial/ basic</td>
<td>1</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>2</td>
</tr>
<tr>
<td>Important</td>
<td></td>
</tr>
<tr>
<td><strong>Little/ none</strong></td>
<td>2</td>
</tr>
<tr>
<td>Very little/ not really</td>
<td></td>
</tr>
</tbody>
</table>
Two of the participants described exercise as moderately significant in their lives. A 22 year old participant without children said, “I don’t know I just think, I think everyone thinks exercising is important, everyone wishes they could exercise all the time but it's just really hard.” Two other participants said that exercise was not really important in their lives with one 28 year old mother of three answering the question with, “Honestly very little.”

_Cultural Aspects of Exercise._ The semi-structured interviews elicited eight responses provided by four participants about culture-related aspects that influenced exercise. Categories that emerged as cultural aspects of exercise are presented in Table 15. Four participants gave responses that the researcher coded into four categories: a) job stress, b) changing family roles, c) fast food availability, and d) transportation. The most frequently commented on category was job stress. All four of the Latinas described how their job stress affected their lives in the United States, two mentioned changing family roles in this country as affecting exercise, one participant mentioned that the dependence/use of transportation in the United States affects exercise, and one participant mentioned the availability of fast food, which while not being directly to exercise, is relevant. Some examples are given below.

![Figure 5 Cultural aspects of exercise in an exercise motivation study of Latinas in South Florida](image)
A 47 year old participant without children, who had lived in the United States for 17 years, described her job stress with, “When there is a lot of work, there's a lot of stress… you have no desire to do anything, just go home and rest” and described life in the United States as “very stressful.” She also spoke about her experience working away from her family and the effects on her participation in exercise:

Well, I'm from another country, and sometimes you need to communicate with your family, and the time when you communicate with your family, is when you get out of work. So you leave work and eat something and then the phone that is part of life when you are alone. And then you start talking and talking and talking, sometimes 1 or 2 hours, and when you notice, there is no time to exercise. So the phone kind of absorbs you and you stay there. And then, there is no time to exercise, no room to exercise, and I talk a lot on the phone.

Another participant, a 38 year old without children, who had lived in the United States for 13 years, described her job stress with, “One thing I have learned here in this country is that we must work all the time” and how her family roles have changed with, “I have to give 200%, because in a relationship like that there are two, in this country we both have to contribute, but right now he is not, so I have to give 200%.”

A 42 year old mother of two who had lived in the United States for 16 years described the availability of fast food with, “And since you are in a rush, because of school or work, you don't take time to cook and bring your lunch; or to choose a place, because some times, even fast foods offer salads and everything.” She continued her description of the effects of fast food availability on her exercise with, “They (fast food restaurants) are everywhere,” and they do not “allow for exercise or losing weight.”
One participant, a 49 year old mother of one who had lived in the United States for 26 years, commented on the effects of driving everywhere on her ability to exercise with:

Here if you have to go to Publix, you take a car, and then everybody is fighting to park close to the door, right, close to their door and they don’t want to walk because it's all hot, because it's raining, some excuses. But we try to park very close. In Latin America, people, they don’t use the car because everything so condensed to park that you walk, there is walking distance to go places.

**Triangulation Results.**

The goal of using methodological triangulation is to glean information not available through the sole use of either quantitative or qualitative methods. With triangulation, researchers can extend findings beyond the quantitative goal of predictive causation relationships between variables, to a deeper, description of the phenomena being studied, i.e. exercise motivators and barriers, not available any other way. With qualitative data, the participants provide rich data and a deeper sense of the women who are the participants in this study and insight into their exercise motivators and barriers.

<table>
<thead>
<tr>
<th>Category</th>
<th>(n) of comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job stress</td>
<td>4</td>
</tr>
<tr>
<td>Changing family roles</td>
<td>2</td>
</tr>
<tr>
<td>Fast food availability</td>
<td>1</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 15

*Cultural aspects of exercise in an exercise motivation study of Latinas in South Florida*
For example, in the current study, cultural aspects of exercise emerged from the qualitative data that would not have been obtained through the purely quantitative methods.

From this point of view, the researcher is investigating the women who participated in the Qualitative Phase II of this study not only as participants but also as individuals who are their own experts on their exercise motivators and barriers. Combining the quantitative survey data with the qualitative narratives allows the researcher to develop a more complete understanding of what Latinas describe as motivators and barriers to exercise and to determine predictors of motivators and barriers to exercise. Examples are provided below.

The given end goal of quantitative methodology is to seek causal relationships among variables, in this case, exercise motivators and barriers among Latinas. In the current study, the main quantitative finding was that the more Americanized Latinas took fewer steps per day when compared to their cohorts who scored higher on the Hispanicism domain. Quantitatively, the participants identified their exercise motivation as Intrinsically regulated with a mean score of 3.28 ($SD = .83, \alpha = .89$) out of a possible score of 4. The higher the score, the more the participants embodied Intrinsic regulation and the more they exercised because they simply enjoyed exercise. However, qualitatively, the participants’ comments were most frequently categorized into the Identified subcategory containing comments made by 16 participants suggesting their motivation to be more Identified. Quantitatively, and in support of these finding, the mean for the Identified regulation was 2.95 ($SD = .57, \alpha = .39$) out of a possible score of 4. The higher the score, the more the participant embodied Identified regulation. Data
regarding the exercise motivations and barriers of Latinas emerged from the semi-structured interviews shed some insight on possible explanations for this divergence. These data include cultural aspects of exercise as well as the external cues the participants discussed as important factors in their exercise motivators and barriers. The researcher discusses the implications of these findings for nursing education, practice and future research directions in Chapter V.
Chapter V

Discussion

This study was designed to determine and characterize the motivators, barriers, and predictors of exercise in a sample of community dwelling Latinas in South Florida. This chapter is organized into the follow sections: a) overview of findings, b) discussion regarding acculturation and exercise findings, c) discussion of lack of support for other study hypotheses, d) cultural aspects and affects on exercise, e) limitations of the current study, and f) implications for nursing practice, education, and future research.

a. Overview of findings.

In this study, seven hypotheses were presented to identify predictors of exercise and investigate the relationship between acculturation, motivation types, and self-determination. Of these seven hypotheses, only one predicting the relationship of acculturation and exercise was supported. The finding of more Americanized Latinas engaging in less exercise (as measured by number of steps taken) than their less Americanized counterparts supports the idea that more highly Americanized Latinas are at increased risk for increased obesity and related health consequences (Keller & Fleury, 2006; National Center for Health Statistics, 2009; U.S. Department of Health & Human Services, 2007). As noted by the U.S. Department of Health & Human Services (2001), behavior is one of the contributing factors to being overweight and acculturation (Abraido-Lanza et al., 2005; Evenson et al., 2004; Wolin et al., 2006) may influence health-related behavior including exercise.
This study’s researcher found that participants were on average walking less than the current recommendation of 10,000 steps per day (Schneider, Basset, Thompson, Pronk, & Bielak, 2006). As Latinas are not engaging in the recommended levels of exercise, they are at increased risk for the deleterious consequences related to inadequate levels of exercise (U.S. Department of Health & Human Services, Healthy People 2010 Midcourse Review Physical Activity and Fitness 22, 2007) including diabetes mellitus, osteoporosis, breast cancer and depression (National Diabetes Education Program, 2008; U.S. Department of Health & Human Services, 2008; U.S. Department of Health & Human Services, 2001). As the current findings suggest, this risk seems to be accentuated with increased Americanization. Researchers have found that Latinas who are more Americanized are at greater risk for increased BMI, inadequate exercise levels, and depression (Abraido-Lanza et al., 2005; Evenson et al., 2004; Wolin et al., 2006). When compared to their less Americanized counterparts, Latinas who are more Americanized seem to be more at risk for the aforementioned consequences of inadequate activity levels suggesting that there is some protective of health behavior about being less acculturated. The qualitative findings of this study suggest that contributing protective factors may include more use of public transportation and more physically demanding jobs than more Americanized Latinas. The qualitative findings help to elucidate the quantitative results of the study and will be integrated into the discussion.

b. **Supported Hypothesis: acculturation and exercise findings.**

The study results supported the hypothesis that acculturation was predictive of exercise controlling for demographic factors (income, education, number of children). The researcher of the current study found the Latinas who were more acculturated to the
United States (i.e. Americanism) walked fewer average steps per day than the less acculturated Latinas. Of note, the current study’s researcher did not differentiate between leisure time activity and work related physical activity but rather measured average steps per day along with self-reported physical activity. Additional analyses were conducted to further investigate the relationship between higher Americanism and exercise. There was a weak but statistically positive correlation between Americanism and self-reported exercise which is in the opposite direction of the finding that women who had higher scores on Americanism walked fewer steps per day than those less Americanized. That is, women who were more Americanized were more likely than their less Americanized counterparts to report that they exercised, but they actually took fewer steps.

These contradictory findings suggest a discrepancy between the more Americanized Latinas’ perceptions of exercise when compared to the less Americanized Latinas. This discrepancy could be indicative of a greater perception difference between the concepts of exercise versus physical activity among Latinas of varying acculturative status. It is possible that what Latinas perceived as exercise varied according to their acculturations status. The researcher’s current findings do agree with those of Abraido-Lanza et al. (2005), Cantero et al. (1999), Evenson et al. (2004), Slattery et al. (2006), and Wolin et al. (2006) that more acculturated Latinas reported more exercise than less acculturated Latinas.

c. Unsupported Hypotheses.

The results did not support the remaining hypotheses. However, there were statistically significant, albeit weak, correlations between exercise and specific motivation types. The findings are discussed below.
Demographic variables and exercise.

Unlike the findings of other studies, neither family income (Crespo et al., 2001; Neighbors et al., 2008), nor education level (Crespo et al., 2001; Corral & Landrine, 2008; Neighbors et al., 2008; Slattery et al., 2006), nor number of children (Crespo et al., 2001; Neighbors et al., 2008; Slattery et al., 2006), had a predictive effect on exercise among Latinas. There are several potential explanations for the reason that the findings of the current study were different from previous research.

One reason for the discrepancy between the current findings and previous research may lie in the national origins of the women in this sample, which were different and more heterogeneous than in the studies cited. Women in this sample were from 16 countries including the United States with the majority being from South America (65%, \(n = 110\)), particularly from either Colombia (43.2%, \(n = 73\)), or Peru (11.2%, \(n = 19\)). The women in the Crespo et al. (2001) study were Mexican American and in the Neighbors et al. (2008) study, they were predominately Mexican, Mexican American, or Puerto Rican. Women from South America may be inherently different from women from Mexico and Puerto Rico in their health behaviors and the effects of acculturation. Caetano, Ramisetty-Mikler, and Rodriguez (2009) found that women from South and Central America, excluding Mexico, had different rates of alcohol abuse and dependence than their Puerto Rican and Mexican counterparts, suggesting that patterns of health-related behaviors may be different in these two sub-groups of Hispanics.

Second, although this sample of Latinas had similar income levels to Latinas in other studies, they had a mean of 14 years of education, which is higher than in the other studies cited (Munet-Vilaró et al., 1999; Peragallo et al., 2005; Slattery et al., 2006).
Cantero et al. (1999) determined that Latinas who completed seven or more years of education reported more exercise than Latinas with less education. The relatively high level of education of this sample may partially explain the lack of predictive effect of education on exercise.

Although the quantitative findings did not support a relationship between number of children or having children and exercise, the qualitative data did indicate that some women found motherhood and other family obligations to be a barrier to exercise. Caring for children was described by the qualitative subsample as one of their competing obligations and considered a barrier to exercise. However, having the ability to care for children was also identified in the Introjected subcategory under Extrinsic exercise motivators by the same subsample indicating that some participants identified their families as an exercise motivator. A 43 year old mother of three described her family as her motivation to exercise with, “If you have friends or family that want to exercise with you make it a lot easier (sic).” The same participant described her family as her inspiration to become more active. She stated, “I need to be healthy if I want to be around with my kids later.” Berg, Cromwell, and Arnett (2002) also found that participants identified their families and their responsibilities to their families to be both motivators and barriers to exercise.

Motivation and exercise.

This sample of women identified through quantitative means that their exercise motivation is predominately Intrinsically regulated as evidenced by the high mean score ($M = 3.28, SD = .83, \alpha = .89$) on the Intrinsic regulation subscale of the BREQ-2 and that they did not identify with Amotivation ($M = .38, SD = .60, \alpha = .63$) suggesting that this
group is self-determined. In contrast, all but one of the qualitative subsample participants made comments classified as Extrinsically motivated. The most commented on category in the Extrinsic regulations was the Identified category, with 16 of the 20 participants commenting, although this was not supported with quantitative methods suggesting a disconnection between how exercise motivation is measured among this sample and what emerged from the qualitative semi-structured interviews. In general, these participants believed exercise to be good for their health, an essential practice as well as an obligation. They described their exercise motivators in a manner that is similar to the concept of Extrinsic regulation, that is, motivated by external rewards, which contradicts the findings of Moreno, Cervello, and Martinez (2007) who found Spanish women to have Intrinsically regulated exercise motivation.

While none of the motivation scales predicted exercise when reported as number of steps, there were some were significant correlations between some of the motivation scales and self-reported exercise. There were positive correlations between self-reported exercise and Identified regulation (exercise is chosen because it is considered beneficial for the participant), Intrinsic regulation (exercise is chosen because the participants enjoy doing it) and the Relative Autonomy Index (a continuous scale of motivation that contains the entire gamut from Amotivation to self-determination). There was an inverse correlation between self-reported exercise and Amotivation. Therefore as with the findings on acculturation, there was a difference in the findings regarding the relationship of motivation and exercise depending on how exercise was measured. One possible explanation that the hypotheses testing specific motivation types and number of steps taken could be that the participants’ motivations were mixed and therefore no single scale
was sufficiently predictive in and of itself. One explanation for these opposing findings could lie in the complexity of the qualitative responses. Over half of the participants in the qualitative phase gave responses about their motivation that included multiple subcategories.

**d. Cultural aspects and affects on exercise.**

Although the quantitative findings on motivation did not, by and large, yield significant results, the subsample of women in the Qualitative Phase II did provide rich data concerning exercise motivation among Latinas. Participants not only defined exercise, gave their exercise beliefs, motivators, barriers and significance, but they also provided information about how culturally-related aspects of their lives and their experience as immigrants might affect exercise. The participants discussed job stress, changing family roles, fast food availability, and transportation as cultural aspects that affected their exercise. Some of the participants described walking more in their home countries, a finding supported by Eyler et al. (2002). Changes in main modes of transportation (i.e. driving instead of walking) could also affect their ability to work and how much time they would have for cooking for their family thus making fast food more appealing. Collectively, their answers further elucidate what motivates and what prevents Latinas from exercising.

**Participatory photography: participants’ reactions and impact**

The participants responded favorably to the methodology of participatory photography. When asked about taking photographs, the 14 of the 19 participants
responded affirmatively either describing their experience as positive, easy, interesting, or simply that they liked it. One 41 year old mother of one said, “It was really a cool experience I like it even though I didn’t have to just take that many pictures [sic].”

The favorable reaction to the photography as well as some of the responses indicate that participatory photography might serve as an intervention to expand Latina’s thinking about exercise. Two participants mentioned that being asked to photograph her exercise motivators and barriers to exercise was in itself, a motivator to exercise. One 43 year old mother of one said, “It is an experience which motivates you to become interested in things that are happening in our lives and it inspires you to exercise,” when asked about her experience. The other participant, a 23 year old without children said, “And yes, ’cause if it were not for this experience, I would have gone to the gym once, but it gave me more inspiration. Taking pictures... it did motivate me.” One participant, a 41 year old mother of one mentioned that simply having the camera in her purse, “I kept thinking about that [the camera] and I keep thinking and thinking and make me think more of what I want to do you know.” Seven of the participants commented on the process of self-reflection when asked about their experiences with participatory photography. One 47 year old without children said, “When I was taking the pictures and said, I was looking for the things that motivate me and I had never thought about what motivates me and what doesn’t, and this makes you look at yourself, it gives you the opportunity to reassess things.”

The current study’s researcher used participatory photography as a means for generating participant narrative through semi-structured interviews. Whereas some information regarding culturally-related aspects effects on exercise emerged from the
data, a deeper, richer understanding of culturally-related aspects might be obtained through a more in-depth use of participatory photography methodology, in particular, Photovoice. Photovoice is a more specific subset of participatory photography rooted in Freire (2009)’s empowerment education, feminist theory, and documentary photography. Photovoice is a detailed methodology and intervention coined by Wang and Burris in 1997. Although originally used with rural Chinese women as a means of gaining insight into the community’s needs through the eyes of the women, Wang and Burris (1997) note that Photovoice can be used in many ways including in health promotion among different groups and communities to addressing diverse public health issues. Several published research studies describe the use of Photovoice in diverse subgroups of women, including women living with HIV/AIDS, adolescent parents, and African-American breast cancer survivors (Gosselink & Myllykangas, 2007; Lopez, Eng, Randall-David, & Robinson, 2005; Stevens, 2006).

Wang (1999) employed Photovoice to explore the representation of women’s bodies, lives, and health, guided by the idea that images provide a means for teaching and influencing an individual’s ideas related to their health status and health outcomes. Other researchers have focused on improved nutrition and better health, but Photovoice has not yet been used to help Latinas explore their motivators to engage in exercise (Keller, Fleury, Perez, Ainsworth, & Vaughan, 2008; Keller, Fleury, & Rivera, 2007; Schwartz, Sable, Dannerbeck, & Campbell, 2007).
e. Limitations of the current study

There are methodological, conceptual, and study design limitations in this study. Limitations and their potentially introduced bias need to be considered when interpreting the results from this study. They are discussed in the following paragraphs.

Measure of exercise.

One limitation was that the outcome variable of this study, average steps per day, did not take into account other forms of exercise such as swimming or biking. Therefore, some exercise that the Latinas participated in may not have been recorded. In an effort to minimized this potential bias, the participants were asked to complete self-report logs in which they were encouraged to indicate the types of activity they participated in each day. The activities listed on the self-report log included housework, childcare, job related, excise and an ‘other’ category. The other category was intended to capture activities not already listed and many of the women did write in activities such as walking their dog, attending church, and going to the mall. The contradictory findings when using the steps per day variable versus the self-report of exercise might be due in part to this issue. Alternative forms of measuring exercise beyond pedometer use, such as determining exercise intensity, use of an accelerometer, or calories burned, may provide greater insight into Latinas exercise habits and should be considered for future studies.

Selection bias of sample.

The generalizability or selection bias of the current study may be limited by its incorporation of aspects of the SEPA II project. First, the SEPA II study was in and of itself a convenience sample, which limits generalizability. Further, one of the inclusion criteria of SEPA II was being sexually active with a male partner in the last three months.
Differences may exist between excluded populations regarding types of motivation, motivators and barriers to engage in exercise. Particularly given the qualitative finding regarding competing obligations to family as a barrier to exercise, it could be that the SEPA II women may have unique qualities that make their exercise motivation types, motivators and barriers differ from other Latinas who are not sexually active.

**Self-reported data.**

There may be potential biases associated with the use of self-reported data in this study. There may have been some attempts at giving socially desirable responses when answering questions about exercise. Some participants may have constructed their answers to be more aligned with an attitude that “one can take hours and hours talking about how good exercise is.” as one 47 year old mother of two said. To minimize this, the researcher assured the participants that there was no right or wrong answers to the qualitative questions. The researcher also consulted with her qualitative expert, Dr. Stevens, when wording the qualitative semi-structured interview to avoid influencing the responses.

**Reliability of instruments.**

Another set of potential limitations concerns the reliability of the study instruments. First, the collection of demographic information including, income, education, and number of children, and acculturation data was from the SEPA II study, which occurred anywhere from 13 to 35 months prior to the collection of the exercise data, and therefore there is the potential for poor temporal reliability of the measures. This limitation was mitigated by the putative stability of the constructs that are being used from an earlier time-point. The temporal stability of the BAS was demonstrated by
test-retest of the BAS from baseline time-point to the first follow-up assessment, from the first follow-up assessment to the second follow-up assessment, and from baseline assessment to the second follow-up assessment. In SEPA II, the acculturation scales proved stable across the study’s four time-points, which provides reliability to the acculturation measure for the study. As described in Chapter IV, the poor reliability of the Identified regulation, $\alpha = .39$, subscale, and the marginal reliability of the Amotivation subscale, $\alpha = .63$, was also a limitation of this study that might have contributed to a lack of statistically significant findings.

**Poor photograph quality.**

The researcher designed the current study to use photographs taken by the participants to generate narratives about participants’ thoughts on exercise barriers and motivators. Due to unforeseen factors, a few participants did not have any photographs to reference in their second semi-structured interview. It was not uncommon for some of the participants’ photographs either not to turn out the way they intended or not be available. In several instances, the participants only had four or five photographs to describe in the second semi-structured interview. The researcher attempted to minimize technical factors regarding the photographs by having all of them developed at the same photography lab. Several explanations could be responsible for the photographs not turning out. One explanation being that the researcher purchased a damaged batch of disposable cameras. The lack of flash on the cameras could also explain some of the issues. Despite individualized instructions with each participant before giving her the camera; user error must also be recognized as a possible explanation. Future researchers
might benefit from either disposable cameras with flash that function indoors more reliably than non-flash cameras. Another solution would be to use digital cameras so the participants could instantly see what they photographed.

f. Implications for Nursing Practice, Education and Research

The participants from this study viewed exercise as a positive endeavor and value the results, both physical and mental, of exercise. Nurses should incorporate these positive attitudes and valuing of the benefits of exercise into their patient care. Understanding the changing views of Latinas as they become more acculturated to the United States is imperative if nurses and other healthcare workers are to effectively educate their patients regarding exercise as both a health promoting activity as well as a disease prevention strategy. As seen from the results of this study, the more Americanized Latinas are more likely to report exercise as one of their daily activities. Nurses need to encourage the next step of educating and encouraging more physical activities that can be included in the self report to combat the reality of more Americanized Latinas actually taking few steps than their less Americanized counterparts. This encouragement may take the form of designing and implementing culturally tailored interventions that incorporate preferred forms of exercise, such as dancing, in with family centered activities which fell into the most frequently mentioned barriers, competing obligations.

The results from this study show that Latinas have some of the same barriers to exercise as other groups of women. They have competing obligations including going to work, caring for children and doing housework; activities that leave little or no time for them to exercise. One of the keys to potentially effective interventions to engaging in
exercise is to incorporate factors that help to alleviate their competing obligations such as integrating exercise more into their daily lives by providing childcare options for mothers who want to exercise or through education of how to increase exercise in the work settings. Another avenue might include drawing upon social support network to help Latinas find others who are interested in exercising so that they can help motivate each other.

As healthcare providers, nurses are able to be more involved in the education of our patients regarding what exercise is and what ‘counts’ as exercise. Targeting Latinas’ perception of exercise is an important focus area for education as well as for practice. One example for patient education would be to educate patients that they are exercising when they walk to a bus stop or when they are working labor intensive jobs. These potentially protective factors may be able to be harnessed through education to help Latinas feel good about their everyday incidental exercise and highlight their everyday exercise as something valuable and good for them and to help those who are acculturating to American culture, to maintain behaviors that are protective of their health.

Understanding Latinas’ perceptions of exercise can help to better guide practitioners to presenting exercise in a culturally sensitive manner. From the results of this study, Latinas more acculturated to American culture were more likely to report exercise as one of their activities than their less Americanized counterparts. Through education by practitioners, Latinas may be more likely to report exercise if they are educated to think of activities of daily living as exercise. As found in the quantitative and the qualitative findings, this group of Latinas identified and described exercise as
physical activity involving increased heart rate that has several positive effects. Understanding the perceived effects of exercise such as improved general physical health, mental health, and physical looks can help to guide future exercise interventions.

Another important factor to consider in discussions between healthcare providers and Latinas concerning exercise is the potential for and prevalence of depressive symptoms. One of the health benefits of exercise is reduced depression (U.S. Department of Health & Human Services, 2007). Although not included as a separate variable in the current study, responses from the qualitative semi-structured interviews indicate that depressive symptoms may have an effect on exercise participation. Latinas are at risk for depression and the SEPA II sample did have a high prevalence of women with depressive symptoms (McCabe, Vermeesch, Hall, Peragallo, & Mitrani, 2011). As one 47 year old without children described her barriers to exercise with, “Being tired, wanting to get home and lay down, the stress that sometimes you just can't [exercise].” As one 22 year old woman said, “Very much just being lazy just nothing feels as good as lying in your bed doing nothing” when asked about her exercise barriers. Latinas appear to be particularly affected by depression. A recent national survey found that 43.7% of Latinas report feelings of sadness, hopelessness, or worthlessness some or most of the time within the last 7 days as asked in the Center for Epidemiological Studies – Depression Scale (CES-D) (Pleis & Lucas, 2009). A 2007 study by Harralson, Emig, Polansky, Walker, and Cruz found that Latinas who participated in an exercise program had decreases in depressive symptoms.
The World Health Organization (2000) listed economic inequality and unequal responsibility for care-giving as risk factors for depression. Both economic hardships and responsibilities for care-giving were given as exercise barriers by the qualitative subsample in the category of competing obligations. In a study designed to evaluate predictors and mediators of depressive symptoms among Hispanic women who participated in SEPA II, researchers found that acculturative stress, Hispanic stress, and self-esteem combined to account for 53% of the variance of depression (Vermeesch, Gonzalez-Guarda, Hall, McCabe, Cianelli, & Peragallo, 2010). Among the qualitative subsample, job stress and changing family roles, items indicative of acculturative and Hispanic stress, emerged as cultural aspects that influenced exercise. Stroup, Lawrence, and Trevifio (1992), Miller, Markides, and Black (1997), Crockett, Randall, Shen, Russell, and Driscoll (2005), Roth, Ackerman, Okonkwo, and Burgio (2008), Kim, Chiriboga, and Jang (2009), and Berry (1997) have concluded that Latinas experience depressive symptoms differently than other ethnic groups indicating they may have a unique range of predictors and mediators of depressive symptoms including acculturative stress and Hispanic stress. Including these predictors in discussions with Latinas might be beneficial in encouraging increased exercise participation.

Knowing more about Latinas’ exercise motivators and barriers could also help direct development and implementation of future healthcare mobile applications. One of the potential targets for knowledge is the applications targeted at treating and helping patients control their obesity related illnesses including diabetes such as those described by Brennan, Downs, and Casper (2010). Through these smart phone applications, healthcare providers can see in real time information such as a patient’s glucose metering
readings or amount of exercise just completed. Insufficient calorie expenditure is one of the factors linked to obesity and exercise is a modifiable factor to increase calorie expenditure (U.S. Department of Health and Human Services, 2001).

**Future studies.**

The results from this research lend themselves to several different avenues for future research revolving around the main finding of the effect of acculturation on actual exercise and exercise perceptions. There are future studies that could be designed and conducted to further investigate the acculturative effects on actual exercise, exercise beliefs, and exercise motivators and barriers among Latinas. Acculturation is a complex process that, among this sample of Latinas, has a negative effect on exercise measured in average steps per day. Given the conflicting results in the literature regarding the effects of acculturation on exercise, methodological triangulation has the potential to aid investigators interested in attaining more complete understanding of exercise predictors and motivators. Future researchers need to examine the multiple mechanisms of becoming more Americanized to determine how becoming more Americanized may adversely affect Latinas’ exercise levels. For example, acculturation measures may need to be revised to incorporate relatively new influences, especially the internet and social media. Existing interventions may need to be revised to be more culturally sensitive for Latinas. Exploration through qualitative methodology of Latinas perception of exercise could be furthered through qualitative methods to determine the extent to which their perception of exercise influences their actual exercise.
The dual role of families and family obligations as competing obligations along with the Intrinsic enjoyment of exercise should be targeted for future interventions. For these participants, the role of family is tied to perceived benefits and perceived barriers to action as well as interpersonal influences as described by the behavior-specific variables of the HPM (Pender, Murdaugh, & Parsons, 2011) and must be considered when designing future interventions. A family centered or family friendly exercise intervention that incorporates family obligations might be an effective means to increase exercise among Latinas. Family centered and friendly interventions may help alleviate internal tension caused by Latinas describing themselves as caregivers who puts others before themselves (Berg, Cromwell, & Arnett, 2002). If their families were involved in the exercise interventions, there might be less internal tension of meeting Latinas exercise needs.

One future study should include more demographic variables other than or in combination with education levels, income, and number of children to determine predictive effects on exercise levels for Latinas. Other demographic variables that could be included might include length of time spent in the United States or lifetime percentage, employment status, and relationship status.

Another future study could exam in more detail the types of activities and the duration, transportation, and jobs (primarily sedentary or active in nature) of the women to see if any correlations were evident. Also, because the current study did not measure the types of transportation (i.e. automobiles, mass transit, walking) that were used by this
sample of Latinas but these variables could be included in future studies to determine any correlations with self-reported physical activity. Future studies may focus more on types of physical activity and the effects of acculturation.

Because this sample of Latinas was primarily from South America, it is possible that this sample of Latinas has different exercise motivators and barriers than other subgroups of Latinas. One approach to determine the generalizability of this study’s findings might be to conduct qualitative focus groups with different groups of Latinas from other geographic areas. In the focus groups, the women would be given a summary of the qualitative themes that emerged from the semi-structured interviews and asked to discuss their reactions to the themes. Two different approaches could be taken when designing this future study. One approach would be to attempt to have groups of Latinas formed from homogeneous geographic areas in an attempt to perceive differences between subgroups of Latinas. Another approach would be to attempt to have different groups of homogeneous acculturative status, those highly acculturated to the United States compared to those highly acculturated to Hispanic culture, in an attempt to compare groups based on acculturation levels. In an attempt to determine if the identified themes transcended culture, a group of demographically similar non-Hispanic white women could comprise another focus group in either approach.

**Conclusion**

This study was designed to determine and characterize the motivators, barriers, and predictors of exercise in a sample of community dwelling Latinas in South Florida. In summary, the participants valued exercise but did not meet the current recommendations for duration. The more Americanized they were, the fewer steps they
walked than their less Americanized counterparts but were more likely to report exercise as a daily activity. Some of the participants in the qualitative subsample indicated acculturation is related to life-style factors that lead to more sedentary lives. No one motivational factor predicted exercise but the women did seem to have Intrinsically regulated motivations to exercise which supports the use of the SDT in the current study. The four behavior-specific variables identified by Pender’s HPM that are considered a part of the critical ‘core’ for intervention development most relevant to the current study are perceived barriers to action, perceived benefits to action, activity-related affect and interpersonal influences and need to be considered with future intervention development (Pender, Murdaugh, & Parsons, 2011). Nurses might have a critical role in interpersonal influences in increasing motivation to exercise for Latinas in future interventions.

Despite this study’s limitations, some conclusions can be drawn from the findings to guide future avenues for future research and intervention development to promote exercise among Latinas. The acculturation process and associated cultural aspects affecting exercise will be incorporated into future research. The researcher plans to follow-up with a next study to take the motivators and barriers identified in this study to another group of Latinas for validation. The ultimate goal is to develop and test an explanatory model for exercise motivations for Latinas.
References


National Center for Health Statistics. (2009, April). Overweight prevalence (Data are for the U.S.). Retrieved from Centers for Disease Control and Prevention: [http://www.cdc.gov/nchs/data/hus/data/hus08.pdf#075](http://www.cdc.gov/nchs/data/hus/data/hus08.pdf#075)


Appendices

Appendix A

Bidimensional Acculturation Scale (Marin & Gamba, 1996)

**Interview Date:** / / 
**Patient ID:** 
**Assessor Initials:**

**BAS**
*Bidimensional Acculturation Scale (Marin and Gamba, 1996)*

*INTERVIEWER READ OUT LOUD: Ahora le voy a preguntar su preferencia de lenguaje.*

<table>
<thead>
<tr>
<th>(Marque solamente una respuesta por pregunta)</th>
<th>Casi nunca</th>
<th>Algunas veces</th>
<th>Frecuentemente</th>
<th>Casi siempre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ¿Con qué frecuencia habla usted INGLÉS?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ¿Con qué frecuencia habla en INGLÉS con sus amigos/o?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ¿Con qué frecuencia piensa usted en INGLÉS?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ¿Con qué frecuencia habla usted ESPAÑOL?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ¿Con qué frecuencia habla ESPAÑOL con sus amigos/o?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ¿Con qué frecuencia piensa usted en ESPAÑOL?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muy mal</td>
<td>No muy bien</td>
<td>Bien</td>
<td>Muy bien</td>
</tr>
</tbody>
</table>

| 7. ¿Cómo usted habla en INGLÉS?     |            |               |                |              |
| 6. ¿Cómo usted lee en INGLÉS?       |            |               |                |              |
| 9. ¿Cómo usted entiende los programas de televisión en INGLÉS? |            |               |                |              |
| 10. ¿Cómo usted entiende los programas de radio en INGLÉS? |            |               |                |              |
| 11. ¿Cómo usted escribe en INGLÉS?  |            |               |                |              |
| 12. ¿Cómo usted entiende la música en INGLÉS? |            |               |                |              |
| 13. ¿Cómo usted habla en ESPAÑOL?  |            |               |                |              |
| 14. ¿Cómo usted lee en ESPAÑOL?    |            |               |                |              |
| 15. ¿Cómo usted entiende los programas de televisión en ESPAÑOL? |            |               |                |              |
| 16. ¿Cómo usted entiende los programas de radio en ESPAÑOL? |            |               |                |              |
| 17. ¿Cómo usted escribe en ESPAÑOL? |            |               |                |              |
| 18. ¿Cómo usted entiende la música en ESPAÑOL? |            |               |                |              |

| 19. ¿Con qué frecuencia ve programas de Televisión en INGLÉS? |            |               |                |              |
| 20. ¿Con qué frecuencia usted escucha programas de radio en INGLÉS? |            |               |                |              |
| 21. ¿Con qué frecuencia usted escucha música en INGLÉS? |            |               |                |              |
| 22. ¿Con qué frecuencia ve programas de Televisión en ESPAÑOL? |            |               |                |              |
| 23. ¿Con qué frecuencia usted escucha programas de radio en ESPAÑOL? |            |               |                |              |
| 24. ¿Con qué frecuencia usted escucha música en ESPAÑOL? |            |               |                |              |
Appendix B

Behavioural Regulation in Exercise Questionnaire (BREQ-2) (Markland & Tobin, 2004)

EXERCISE REGULATIONS QUESTIONNAIRE (BREQ-2)

Age: ___________ years  Sex:  male  female
(please circle)

Why do you engage in exercise?

We are interested in the reasons underlying peoples’ decisions to engage, or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

<table>
<thead>
<tr>
<th></th>
<th>Not true for me</th>
<th>Sometimes true for me</th>
<th>Very true for me</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I exercise because other people say I should</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I feel guilty when I don’t exercise</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I value the benefits of exercise</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I exercise because it’s fun</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I don’t see why I should have to exercise</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I take part in exercise because my friends/family/partner say I should</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I feel ashamed when I miss an exercise session</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>It’s important to me to exercise regularly</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I can’t see why I should bother exercising</td>
<td>0 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Not true for me</td>
<td>Sometimes true for me</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>10</td>
<td>I enjoy my exercise sessions</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>11</td>
<td>I exercise because others will not be pleased with me if I don’t</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>12</td>
<td>I don’t see the point in exercising</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>13</td>
<td>I feel like a failure when I haven’t exercised in a while</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>14</td>
<td>I think it is important to make the effort to exercise regularly</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>15</td>
<td>I find exercise a pleasurable activity</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>16</td>
<td>I feel under pressure from my friends/family to exercise</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>17</td>
<td>I get restless if I don’t exercise regularly</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>18</td>
<td>I get pleasure and satisfaction from participating in exercise</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>19</td>
<td>I think exercising is a waste of time</td>
<td>0</td>
<td>1 2 3 4</td>
</tr>
</tbody>
</table>

Thank you for taking part in our research
Appendix C

Demographic Questionnaire

Peragallo, DeForge, O’Campo, Lee, Kim, Cianelli & Ferrer (2005)

**El Centro Demographic Intake Form**

1. Please tell me where you were born (country of birth).
   - ○ United States
   - ○ Argentina
   - ○ Bolivia
   - ○ Brazil
   - ○ Chile
   - ○ Colombia
   - ○ Costa Rica
   - ○ Cuba
   - ○ Dominican Republic
   - ○ Ecuador
   - ○ El Salvador
   - ○ Guatemala
   - ○ Honduras
   - ○ Mexico
   - ○ Nicaragua
   - ○ Panama
   - ○ Paraguay
   - ○ Puerto Rico
   - ○ Uruguay
   - ○ Venezuela
   - ○ Other
   - ○ Other
   - ○ Other
   - ○ Other

   1a. Years living in U.S. __________

2. What is your current relationship status?
   - ○ Single
   - ○ In a relationship, not legally married
   - ○ Married
   - ○ Divorced
   - ○ Separated
   - ○ Widowed

3. Are you currently living with your spouse or partner?
   - ○ YES
   - ○ NO
   - ○ Not Applicable

4. How many children do you have? __________  ○ None *(SKIP to 5)*
   4a. Do any of your children live in another country? ○ YES  ○ NO *(SKIP to 5)*

   4a1. If yes, give their ages, country where they live, and number of years you have lived apart (in another country) from them. List from youngest to oldest. If there are more than 4 children living in another country, bubble here: ○

<table>
<thead>
<tr>
<th>Child 1</th>
<th>Age</th>
<th>Country</th>
<th>Years apart</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child 2</td>
<td>Age</td>
<td>Country</td>
<td>Years apart</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child 3</td>
<td>Age</td>
<td>Country</td>
<td>Years apart</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child 4</td>
<td>Age</td>
<td>Country</td>
<td>Years apart</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>---------</td>
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</tbody>
</table>

5. What religion are you?
   - ○ Baptist
   - ○ Christian
   - ○ Episcopalian
   - ○ Evangelist/Pentecostal
   - ○ Other Christian (Specify __________)
   - ○ Other Non-Christian (Specify __________)
   - ○ Jehovah's Witness
   - ○ Jewish
   - ○ Methodist
   - ○ Muslim
   - ○ Presbyterian
   - ○ Protestant
   - ○ Roman Catholic
   - ○ None
6. How often do you attend religious services? Would you say...
○ More than once a week  ○ Less than once a month
○ Weekly  ○ Only on special days
○ Monthly (1+)  ○ Not at all

7. Do you consider yourself...? *(INTERVIEWER: Read all choices)*
○ Not religious  ○ Somewhat religious  ○ Very religious

8. How strongly do the beliefs of your religion influence your life? *(INTERVIEWER: Read all choices)*
○ Not at all  ○ Somewhat  ○ Very much  ○ Not Applicable

9. How many years of education you have completed? __________

10. Are you currently employed?  ○ YES *(SKIP to 11)*  ○ NO

10b. If no, when was the last time that you had a job?
○ More than 1 year ago  ○ Less than 1 year ago  ○ Never been employed

11. Last month, what was the total amount of money you and your family lived on, including public assistance (after taxes)?
○ Less than $500  ○ $500 - $999  ○ $1,000 - $1,999  ○ $2,000 - $2,999
○ $3,000 - $3,999  ○ $4,000 - $4,999  ○ $5,000 - $5,999  ○ $6,000 or more

12. How many people in this country lived from this money? __________

13. Do you have health insurance?  ○ YES  ○ NO

14. How do you usually pay for your own healthcare? *(Bubble only one)*
○ Private Insurance Plan (not provided at work)  ○ Medicare
○ Private Insurance Plan (provided at work)  ○ Out of Pocket
○ Medicaid  ○ Don't Pay
○ Other (Specify _________________________________)

15. Where do you usually go when you are sick or want advice about your health? *(Bubble all that apply)*
○ Clinic  ○ Nurse Practitioner  ○ Doctor’s Office
○ Emergency Room  ○ “Curandero”  ○ Family Member, Friend, or Neighbor
○ Other (Specify: _________________________________)

16. Do you have a regular doctor or healthcare provider?  ○ YES  ○ NO
17. When was the last time you saw your doctor or healthcare provider? Month/Year
_____/____

18. How many times were you in the emergency room in the past three months for your health problems? ________

19. How would you describe your health in the past three months?
○ Poor           ○ Fair           ○ Good           ○ Very Good
Appendix D
Self-report exercise log

<table>
<thead>
<tr>
<th>Date</th>
<th>Total Steps</th>
<th>Type of activity (please check all that apply)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Housework ___  Childcare ___  Job related ___  Exercise ___  Other ___</td>
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<tr>
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<td>Housework ___  Childcare ___  Job related ___  Exercise ___  Other ___</td>
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<td>Housework ___  Childcare ___  Job related ___  Exercise ___  Other ___</td>
</tr>
</tbody>
</table>
Appendix E

Qualitative Phase II Interview Guide

1st interview

The first interview session will be to conduct informed consent, to explain the purpose of the study, how to use the camera, and ethics regarding participatory photography (i.e. do not take photographs of identifiable faces). In this interview general questions regarding exercise motivators and barriers will be asked. Questions may include:

- How do you define exercise?
- What are your beliefs about exercises?
- What motivates you to exercise?
- What keeps you from exercise?
- How significant is exercise in your life?

2nd interview

The purpose of this interview is to discuss the participant’s photographs regarding exercise motivators and barriers. Questions may include:

- Tell me why you took this photograph?
- What about this photograph motivates you to exercise?
- What about this photograph is a barrier to exercise?
- Can you tell me more about this photograph?
Appendix F

Qualitative Coding Manual for
Vermeeesch Dissertation Why Latinas Exercise

Steps for conducting qualitative content analysis
1. Read through the individual interview guide
2. Read through transcripts (in its original language) without making notes or coding to get a feel for what is being said and begin to make sense of the data.
3. Re-read through the transcripts, keeping the research purpose in mind (i.e. employ participatory photography methodology to better understand Latina’s exercise motivators and barriers) and moving through steps 4-6 as needed.
4. Use NVivo to code significant sentences (i.e. meaning units)
5. Cluster these statements into categories [attempting to keep names of categories (NVivo nodes) as close to actual words of participants]
6. Cluster nodes or categories into major themes, identifying different subcategories of these themes if needed.
7. Once the themes have been identified, reread transcripts to make sure all the significant statements and subcategories can be “captured” by the themes. If not, revise the themes (Mayring, 2000).
8. Participate in conference calls and email discussions about identified themes and categorizations until consensus is met.

Each participant was asked the following questions during interview I:
- How do you define exercise?
- What are your beliefs about exercises?
- What motivates you to exercise?
- What keeps you from exercise?
- How significant is exercise in your life?

Each participant was asked the following questions during interview II:
- Tell me why you took this photograph?
- What about this photograph motivates you to exercise?
- What about this photograph is a barrier to exercise?
- Can you tell me more about this photograph?