

PREDICTORS OF PARK USE AMONG HISPANIC MOTHERS

A Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree

Master of Education

by

Samoya Cherice Copeland

August, 2013

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Abstract

Park use is associated with many health benefits, yet Hispanic females visit neighborhood parks infrequently. The purpose of this study was to: 1) describe neighborhood park characteristics and park use among Hispanic mothers who visit parks with their children, and 2) assess individual, psychological, and environmental predictors of park visits among Hispanic mothers who visit parks with their children. A sample of 105 Hispanic mothers participated. Acculturation, physical activity, park perceptions, park distance, and park visits with children were assessed using surveys. Relationships among park visits and study variables were examined using bivariate correlations. Park visits were significantly associated with physical activity ($r = .26, p < .01$), and park distance ($r = -.21, p < .05$). Park perceptions were not significantly associated with park visits. A multiple regression model was used to determine predictors of park visits. Findings from this study indicated that acculturation and physical activity were significant predictors of park visits.

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Chapter I

Introduction

The pervasiveness of obesity in the United States is alarming since over 35% of the adult population is obese (Ogden, Carroll, Kit, & Flegal, 2012). The prevalence of obesity and its impact on health is disproportionately affecting minority ethnic groups. Minority populations and in particular Hispanic females, have higher rates of obesity compared to females of other ethnic groups (Schoenborn & Adams, 2010). Hispanic females are also among the most vulnerable groups in the United States population to be affected by the obesity-related comorbidities such as cardiovascular disease, cancer, and diabetes (Cossrow & Falkner, 2004).

Physical activity is considered an effective approach to achieving and maintaining a healthy weight and general well-being (Catenacci et al., 2008). The Centers for Disease Control and Prevention (CDC, 2008) recommends that adults engage in a minimum of two hours and thirty minutes per week of moderate physical activity or one hour and fifteen minutes per week of vigorous aerobic activity or a combination of both intensities per week. Despite the health benefits associated with physical activity in combating obesity (United States Department of Health and Human Services [DHHS], 2008), only 31% of the American population engages in regular physical activity (Schoenborn & Adams, 2010).

Research has consistently indicated that features of the built environment facilitate or prevent engagement in physical activity (Giles-Corti & Donovan, 2002; McCormack, Rock, Toohey, & Hignell, 2010). Neighborhood parks are one of the most

frequently used venues to perform physical activity (Kaczynski & Henderson, 2007). However, the frequency of park visits and the intensity of physical activity performed while visiting parks is not the same across all individuals. Females and ethnic minorities are among the most infrequent park users and are less likely to engage in vigorous physical activity than males and Caucasians when visiting parks (Bedimo-Rung, Mowen, & Cohen, 2005; Reed, Arant, Wells, Stevens, Hagen & Harring, 2008). This indicates that despite the benefits of neighborhood parks in promoting physical activity, Hispanic females are less likely to visit parks and use them for vigorous physical activity.

Several factors which include perception of neighborhood parks, park size, features, condition, physical activity level, and park distance have been associated with park visits in adult populations. Studies have revealed positive associations between park visits and perceptions of the park environment (Cronan, Shinew, Schnieder, Stanis & Chavez, 2008; Leslie, Cerin, & Kremer, 2010; McCormack et al., 2010). Parks that were large, had a variety of features, and were well maintained, were visited more often than smaller parks with a limited number of features and were in poor condition (Cohen et al., 2010; Giles-Corti et al., 2005; McCormack et al., 2010). Research has suggested that individuals who visited parks regularly were more likely to engage in regular physical activity than non-users (Deshpande, Baker, Lovegreen & Brownson, 2005; Giles-Corti et al., 2005). Adults who lived in close proximities to neighborhood parks were more likely to visit parks than those who lived further away (Cohen et al., 2007; Kaczynski & Henderson, 2007; McCormack et al., 2010). Most studies on park visits have been done on Caucasian, middle income populations (Kaczynski & Henderson, 2007). Limited

studies have investigated the association among perceptions of parks, physical activity, park distance, and park visits among Hispanic females.

Acculturation is an important cultural variable to consider when studying Hispanic populations because a large number of Hispanic adults are immigrants (Pew Hispanic Center, 2007). Acculturation refers to the degree to which immigrants adopt the cultural traditions of a new country after prolonged contact (Crespo, Smit, Carter-Pokras, & Anderson, 2001). Acculturation has been shown to be associated with health behaviors. For instance, Hispanic adults who adopt the culture in the United States are found to be more likely to engage in detrimental health behaviors such as smoking than less acculturated Hispanic adults (Abraido-Lanza, Chao, & Florez, 2005). Conversely, acculturation has been positively associated with physical activity levels among Hispanic adults (Crespo et al., 2001). No previous study has examined the association between acculturation and park visits in Hispanic females. However, given that parks are among the most frequently used venues for physical activity, the association between acculturation and physical activity may elucidate possible relationships between acculturation and park visits. Few studies have investigated the association between acculturation and physical activity among Hispanic females and these studies have revealed a positive association (Evenson, Sarmiento, & Ayala, 2004; Fitzgerald et al., 2006). Therefore, acculturation may show a similar association with park visits and acculturation level may predict park visits.

Overall, there is limited evidence to describe park visits among Hispanic females. Therefore a description of park use, park characteristics, and types of activities engaged

in parks by Hispanic females, and the identification of the predictors of park visits among Hispanic females is warranted.

Statement of the Problem

The high prevalence of obesity and inactivity among Hispanic females is of great concern from a public health perspective because research indicates that obesity and inactivity are risk factors for cardiovascular disease, type 2 diabetes, and metabolic syndrome (Calle & Thun, 2004; Cossrow & Falkner, 2004; Jia, 2005; Visscher & Seidell, 2001). Furthermore, Hispanic mothers are more likely to be the primary caregiver of children in the household (Crespo et al. 2000). This gender-prescribed role has been shown to act as a barrier to healthy behaviors such as engagement in physical activity among Hispanic mothers (Pichon et al. 2007). Neighborhood parks are among the most frequent venues for performing physical activity (Kaczynski & Henderson, 2007). However, Hispanic females are infrequent users of neighborhood parks. Individual factors (acculturation, physical activity, and perceptions of parks) and environmental characteristics (park distance) may play a significant role in predicting park visits among Hispanic mothers. However, knowledge on the factors contributing to park visits among Hispanic mothers is limited because previous studies of park visits have focused on the middle class Caucasian population (Kaczynski & Henderson, 2007).

Purpose and Hypotheses

The purpose of this study was to: 1) describe neighborhood park usage, park characteristics, and types of activities engaged in parks by Hispanic mothers who visit parks with their children, and 2) assess individual (acculturation and physical activity), psychological (perceptions of neighborhood parks), and environmental predictors (park distance) of park visits in a sample of Hispanic mothers residing in an inner city neighborhood located in the city of Houston. The following hypotheses were proposed:

- 1) There will be a negative association between park distance and park visits with children;
- 2) There will be a positive association between participants' park visits with children and participants' physical activity
- 3) There will be a positive association between participants' park visits with children and participants' perceptions of neighborhood parks;
- and 4) Acculturation, park distance, and physical activity will predict participants' park visits with their children.

Chapter II

Literature Review

Prevalence of Obesity

Obesity is widely recognized as a major health issue that deserves serious attention from a public health perspective. The World Health Organization (WHO, 2012) defines overweight and obesity as the excessive accumulation of fat within the body that pose a threat to one's health. The body mass index (BMI), which is the ratio of one's height and weight, has been used to distinguish between individuals who are overweight and obese. Individuals are considered to be overweight when their BMI is between 25 to 29.9 and obese when their BMI is 30 and above. Although obesity can also result from physiological anomalies, it usually results from an imbalance between caloric intake and physical activity (CDC, 2010). From the period 2009-2010, 33% of the United States adult population was estimated to be overweight and 36% was obese (Flegal, Carroll, Kit, & Ogden, 2012). The rate of obesity has typically been higher in females than males (Flegal, Carroll, Ogden, & Curtin, 2010). In contrast, Flegal et al. (2012) reported that there was no significant difference in the prevalence of obesity between males (36%) and females (35%). These latter findings may be the result of an increase in the rate of obesity among males and no significant decrease in the overall rate of obesity among females.

The prevalence of obesity differs among adults of varying ages, educational levels, poverty status, and ethnicity. According to Schoenborn and Adams (2010), adults in the 45-64 age group were more likely to be obese than those in older and younger age groups. Obesity rates tended to decline in adults with higher educational attainment and socioeconomic status. This relationship between obesity, education, and socioeconomic

status was greater in females than males (Cawley, 2004; Hammond & Levine, 2010; Schoenborn & Adams, 2010). In addition, obesity prevalence varies as a function of ethnicity. Obesity rate has been found to be more pronounced in non-Hispanic black (50%) and Hispanic (39%) adults than in Caucasian (35%) adults (Flegal et al., 2012). In sum, research suggests that being a female, minority, and poor place an individual at increased risk for obesity.

Obesity in Hispanic Females

Hispanic females have reported higher rates of obesity (41%) than their non-Hispanic white counterparts (32%) (Flegal et al., 2010, 2012; Ogden et al. 2012). Hispanic females are also disproportionately affected by the obesity-related comorbidities. They reported greater incidences of insulin resistant syndrome (IRS), a condition that is a precursor to cardiovascular disease than non-Hispanic white females (Cossrow & Falkner, 2004).

The high prevalence of obesity among Hispanic females is a public health priority given that Hispanics are the fastest growing minority group in the United States. For the period 2000 to 2010 the Hispanic population grew by 43% (U.S. Census Bureau, 2011). Despite the tremendous growth of the Hispanic population, Hispanics are often considered a part of the lower echelons of society due to lower incomes and levels of education when compared with non-Hispanic whites (Adler & Rehkopf, 2008). The terms Hispanic and Latino have been used interchangeably in the literature to refer to individuals from 'Cuban, Mexican, Puerto Rican, South or Central American, or other

Spanish origin regardless of race' (U.S. Census Bureau, 2011). In this study, the term Hispanic will be used to refer to persons from Mexican and Central American origin.

Health and Economic Consequences of Obesity

Obesity greatly compromises the physical health of individuals. Obesity increases one's risk of developing conditions such as high blood pressure, type 2 diabetes, high levels of cholesterol, coronary heart disease, gallbladder disease, and certain cancers (Calle & Thun, 2004; Jia, 2005; Mokdad et al., 2003; Visscher & Seidell, 2001). The American Medical Association (AMA, 2012) considers obesity to be a major contributor to the 112,000 preventable deaths that occur in the United States per year.

There are also psychological consequences that result from being obese. Fabricatore and Walden (2004) reported that extremely obese adults were at high risk of developing emotional disturbances. This is largely due to the negative stigma associated with obesity and the pressure from society to be thin (Fabricatore and Walden, 2004; Wang, Brownell, & Wadden, 2004). Depression and suicidal attempts have been linked to obesity among adults. Carpenter, Hasin, Allison, and Faith (2000) reported that depression, suicidal ideation, and suicide attempts were more likely to occur in obese females and overweight males than adults of a normal weight. Dixon, Dixon, and O'Brien (2003) reported that weight reduction in obese adults was associated with a reduction in the symptoms of depression.

There are economic consequences associated with obesity and obesity- related comorbidities. Hammond and Levine (2010) identified direct medical, productivity, transportation, and human capital costs as the four major categories of economic impact

associated with obesity. The direct medical costs incurred when diagnosing and treating the serious health conditions associated with obesity is considerable. Finkelstein, Trogon, Cohen, and Dietz (2009) estimated that approximately ten percent of all medical spending was attributable to obesity in 2008. Productivity costs were incurred when there was loss in productivity resulting from employees being absent from work (absenteeism) due to obesity-related illness. Loss in productivity was also due to premature mortality and high rates of disability benefit payments (Finkelstein et al., 2009). Jacobson and King (2009) estimated that the annual fuel prices associated with the transportation of the overweight and obese among the US population was approximately \$2.7 billion per year.

The Relation between Physical Activity and Obesity

Physical activity has been defined as any movement produced by skeletal muscles that require energy expenditure (Caspersen, Powell, & Christenson, 1985). Physical activity can take various forms and includes walking, working, performing household chores, aerobic exercise, and recreational activity such as playing sports. The intensity of physical activity has been determined by the rate at which the body spends energy. Several types of physical activity intensities have been identified (DHHS, 2008). These include light, moderate, and vigorous physical activity. During light intensity physical activity, the body spends approximately one to two times the amount of energy spent when an individual is at rest. Moderate intensity physical activity is performed when the body spends approximately three to six times the amount of energy spent at rest. During vigorous intensity physical activities the body spends six or more times the energy spent at rest (DHHS, 2008).

Physical activity is instrumental in the prevention and treatment of obesity (Catenacci et al., 2008; Donnelly et al., 2004; Fogelholm & Kukkonen-Harjula, 2000; Hill & Wyatt, 2005; Jakicic, 2002). Research has shown that individuals who engage in regular physical activity are less likely to become overweight or obese than those who do not (Fogelholm & Kukkonen-Harjula, 2000; Sallis & Glanz, 2009). Consequently, physical activity has been inversely associated with mean BMI scores in both males and females (Lahti-Koski, Pietinen, Heliövaara, & Vartiainen, 2002). The DHHS (2009) and the CDC (2008) have recommended that individuals engage in physical activity of diverse intensity to achieve health benefits. It was recommended that adults engage in a minimum of 150 minutes of moderate intensity physical activity or 75 minutes of vigorous aerobic activity per week or a combination of both intensities to maintain good health. Donnelly et al. (2009) recommended greater than 250 minutes of moderate intensity physical activity per week to achieve clinically significant weight loss.

Prevalence of Physical Activity

Despite the physical activity guidelines proposed by the DHHS (2009) and the CDC (2008), only 31% of Americans engaged in regular physical activity in 2005 to 2007. Approximately, 23% of adults engaged in regular light to moderate physical activity and 11% engaged in regular vigorous physical activity (Schoenborn & Adams, 2010). Studies have also indicated that engagement in regular physical activity vary as a function of gender and ethnicity. For the period 2005 to 2007, 69% of males and 59% of females were reported to have engaged in physical activity in the US. During the same period, 34 % of non- Hispanic whites engaged in regular physical activity, whereas only 23% of non-Hispanic blacks and 22% of Hispanics engaged in physical activity

(Schoenborn & Adams, 2010). Among Hispanics, females (20%) exhibited lower rates of physical activity when compared with non-Hispanic white females (30%). Furthermore, approximately 16% of Hispanic females versus 23% of non-Hispanic white females engaged in regular light to moderate physical activity. Seven percent of Hispanic females versus 10% of non-Hispanic white females engaged in regular vigorous activity (Schoenborn & Adams, 2010). These findings are consistent with previous research reporting low levels of physical activity among Hispanic females (Niles, VanderWal, Schim, Artinian, & Sherrick-Escamilla, 2005; Neighbors, Marquez, & Marcus, 2008; Pichon et al., 2007). Furthermore Crespo et al. (2000) found that Hispanic females were more likely to be homemakers than their Caucasian counterparts. Pichon et al. 2007 revealed that the gender- prescribed role of Hispanic mothers to care for the needs of their children and household chores contributed to their low rate of physical activity. Given the consistently low levels of physical activity reported in Hispanic females and particularly those with children, further investigation of the factors associated with physical activity among Hispanic mothers is warranted.

Neighborhood Parks and Physical Activity

Recent research has focused on the role that the environment plays in promoting or inhibiting engagement in physical activity. In particular, researchers are now examining the characteristics of the built environment that influence physical activity. Built environments are places designed or constructed by human activity and include buildings, the layout of communities, roads, sidewalks, and neighborhood parks (Sallis, Floyd, Rodriguez, & Saelens, 2012).

Bedimo-Rung et al. (2005) suggested that natural park environments attract large crowds more than other man-made environments. The authors surmised that neighborhood parks were a great source of pleasure for those who live in close distances to them and provided opportunities for social interaction. Neighborhood parks have also been associated with several health benefits. Park visits have been associated with good physical health, and psychological benefits such as stress reduction, and improvements in mood (Orsega-Smith et al., 2004; Payne, Orsega-Smith, Roy, & Godbey, 2005; Sugiyama, Leslie, Giles-Corti, & Owen, 2008).

Researchers have observed differences in park use as a function of gender, geographic location, socioeconomic status, age, and ethnicity. Males have been found to visit parks more frequently than females (Cohen et al., 2007; Cohen et al., 2010). Inner city residents, who earn low incomes, older adults, and ethnic minorities, were reported to be infrequent park users (Bedimo-Rung et al., 2005; Cohen et al., 2007; Reed et al., 2008). According to Moore, Roux, Evenson, McGinn, and Brines (2008), parks are equitably distributed across minority and nonminority neighborhoods. Despite the presence of parks in minority communities, minorities were less likely to visit neighborhood parks than their Caucasian counterparts (Bedimo-Rung et al., 2005; Reed et al., 2008). This may be due to the lower quality of parks in minority communities. Suminski, Connolly, May, Wasserman, Olvera and Lee (2012) observed that the quality of the features and amenities in parks located in minority neighborhoods were of poorer quality than parks in Caucasian neighborhoods. Furthermore, the authors also observed that the number of incivilities in parks located in minority neighborhoods were greater than parks located in Caucasian communities. Incivilities, defined as the erosion in the

standards of the community, include disorderly physical surroundings (e.g. trash, graffiti) and undesirable social behaviors (e.g. loitering) (Bedimo-Rung et al. 2005). The presence of incivilities may also deter park visits among minorities.

Individuals who visit parks have a choice in the activities they engage in for the duration of the park visit. Some park users choose to be sedentary, while others engage in several types of physical activity. Floyd et al. (2008) reported that more than one half of park users in Tampa, Florida, Chicago and Illinois engaged in sedentary behavior while at the park. The choice of physical activity performed in recreational parks differs as a function of gender. Cohen et al. (2010) used the System of Observing Play and Recreation in Communities (SOPARC) to determine the use of park amenities in 30 parks that varied in size from one to 21 acres. Their observations revealed that the most frequently used areas of the parks were gymnasiums and baseball fields. High use was observed in sidewalks, lawns and play areas. Mostly females (89%) were observed in dance studios, on sidewalks (63%) and in play areas (58%). Males outnumbered females on basketball courts (90%), soccer fields (81%) and tennis courts (80%). Reed et al. (2008) used direct observation to investigate the most frequently used physical activity settings in twenty-five community parks. They found that the most frequently used setting among males and females were paved trails. Males were more likely to engage in sporting activities such as softball and baseball while females were more likely to use swimming pools for physical activity

Although park users may choose to be sedentary while visiting parks, neighborhood parks play an integral role in facilitating physical activity among the population. Research has suggested that individuals who visited parks regularly were

more likely to engage in regular physical activity than non-users (Deshpande et al., 2005; Giles-Corti et al., 2005). Furthermore neighborhood parks have also been associated with more physical activity than other exercise and sports facilities (Kaczynski & Henderson, 2007). The intensity of physical activity performed in parks varied as a function of gender and ethnicity. Reed et al (2008) observed that men and Caucasians were more likely to engage in vigorous physical activity than females and park users from minority groups. In sum minority females are infrequent park users and tend to engage in less vigorous physical activity than their Caucasian counterparts when visiting neighborhood parks. There is limited investigation that describes park usage and the factors associated with park visits among Hispanic females.

Cultural Factors Associated with Park Visits in Hispanic Females

Cultural factors are important to consider when studying Hispanic populations because a large number of the Hispanic population within the United States is comprised of individuals of diverse generational status (US Census Bureau, 2011). According to projections by the PEW Hispanic Center (2007), in the next four decades immigrants and their U.S. born descendants will account for 82% of the population increase in the United States. During this time it is expected that the Hispanic population, which is already the country's largest minority group, will triple in size and contribute the most to the nation's population growth (Passel & Cohn, 2008).

Acculturation refers to the psychological and cultural changes that occur when immigrants adapt to the customs of their host country (Berry, 2005). Investigators have used place of birth, length of time in the new country or generational status as proxy

measures of acculturation. However, language proficiency is the most widely used proxy measure of acculturation (Wolin, Colditz, Stoddard, Emmons, & Sorensen, 2006).

Studies have indicated that as Hispanic immigrants become acculturated in the US, they adopt health-related behaviors of the mainstream society. Highly acculturated Mexican Americans have reported a higher increase in alcohol consumption, tobacco usage, and adoption of unhealthy dietary practices compared to their less acculturated counterparts (Abraido-Lanza et al., 2005; De La Rosa, Vega, & Radisch, 2000; Unger, Reynolds, Shakib, Spruijt-Metz, & Johnson, 2004). The negative impact of acculturation on health behavior is also shown in Hispanic adolescents. Unger et al (2004) reported that Hispanic adolescents who were highly acculturated engaged in more unhealthy behaviors such as eating more fast food and being sedentary than their less acculturated peers. De La Rosa et al. (2000) outlined the mechanism by which Hispanics who were less acculturated reported healthier practices. They explained that less acculturated Hispanics maintained traditional values which enabled them to reject unhealthy American practices such as substance abuse. No previous study has investigated the influence of acculturation on park visits among Hispanic females. Neighborhood parks are the most frequent venue for the performance of physical activity (Kaczynski & Henderson, 2007). Therefore, consideration of the association between acculturation and physical activity may elucidate possible relationships between acculturation and neighborhood park visits.

Despite the negative impact of acculturation on some health behaviors, acculturation was also shown to have a positive impact on physical activity level among immigrants (Afable-Munsuz, Ponce, Rodriguez, & Perez-Stable, 2010; Gerber, Barker, & Puhse, 2012); Wolin et al., 2006). Afable-Munsuz et al. (2010) examined how physical

activity changed among Mexican, Chinese, and Filipino immigrants. They investigated the effect of generation, language preference and length of time in the US on physical activity. Findings from this study indicated that Mexican immigrants in bilingual homes had greater levels of physical activity when compared with those who spoke Spanish only. Gerber et al. (2012) reviewed 44 studies that examined the relationship between acculturation and physical activity among minority groups in six countries. Positive relationships between physical activity and acculturation were found in studies conducted in the US, Canada, Europe and Australia. The associations were more pronounced in females than in males and the young and elderly populations. Wolin et al. (2006) discovered that high acculturation level (as defined by English language) was positively associated with physical activity in a large sample of multiethnic Americans. However, the authors did not disaggregate the results by the diverse ethnic groups.

Crespo et al. (2001) investigated the relationship between acculturation and physical inactivity among Mexican Americans. Acculturation levels were determined based on language preference, place of birth and the length of time living in the US. Their findings indicated that low levels of acculturation were associated with an increased rate of inactivity during leisure time for both males and females. Abraido-Lanza et al. (2005) reported differences in the association between physical activity and acculturation among Hispanic males and females. They examined data from the 1991 National Health Interview Survey (NHIS) to determine the impact of acculturation on healthy behaviors in Latinos when compared with non-Latinos. They concluded that while physical activity was greater for highly acculturated Latino females, there was no association between acculturation level and physical activity in men. Berrigan, Dodd, Troiano, Reeve, and

Ballard-Barbash (2006) used the 2000 National Health Interview Survey to assess the associations between acculturation in both leisure time physical activity and non-leisure time physical activity. They observed a positive association between physical activity and acculturation measured by language proficiency. These are similar to findings later reported by Ghaddar, Brown, Pagan, and Diaz (2010) whose study also indicated that acculturation was significantly associated with physical activity. Neither of these two studies reported results disaggregated by gender.

Degrance, Mouton, Lichtenstein, and Hazuda (2005) investigated mediators that explain the differences between physical activity in elderly Mexican Americans and European Americans in a community in the United States. They concluded that acculturation was not significantly associated with physical activity. These contradictory findings may be due to differences in how acculturation was measured. Previous studies used language preferences and proficiency to measure acculturation while this study used cultural value and family attitude as proxies of acculturation. Marquez and McAuley (2006) also found no association between acculturation measured using the Short Acculturation Scale for Hispanics (SASH) and physical activity among a sample of 153 Hispanics from 15 countries. However the SASH is a uni-dimensional scale which does not provide a comprehensive assessment of the acculturation process. The limitation with uni-dimensional scales is that they only consider the effect of the dominant culture. Uni-dimensional scales assume the rejection of the culture of origin and the adoption of the dominant culture. The possibility of a balance between the two cultures is not considered (Cabassa, 2003).

Few studies have examined the relationship between physical activity and acculturation among Hispanic females. Evenson et al. (2004) examined general levels of physical activity among 671 Hispanic females. Participants with high acculturation levels (based on language proficiency and those who arrived in the United States when they were 25 years old or younger) were more active than those with lower acculturation levels. Fitzgerald et al., (2006) examined the association between acculturation and lifestyle practices in low income Puerto Rican females. In this study participants were considered to be physically active if they responded 'yes' to the question "Do you exercise at least three times per week for half an hour each time?" Acculturation was measured by using the primary language spoken at home and self-assessed English proficiency. Participants who spoke Spanish only or were not fluent in English were categorized as having a low acculturation status. Conversely, participants who spoke both languages, were fluent in English or spoke English only were considered as having a high acculturation level. The authors concluded that high acculturation levels were associated with increased physical activity.

Pichon et al. (2007) examined acculturation level in Hispanic females using the Acculturation Rating Scale for Mexican Americans and physical activity which was measured using the International Physical Activity Questionnaire (IPAQ). Their findings indicated that acculturated females were more engaged in both vigorous and moderate levels of physical activity than less acculturated Hispanic females. They explained their results by stating that many Hispanic females came from countries where health promotion efforts did not focus on promoting physical activity.

In sum, there is more consistent evidence indicating that acculturation is associated positively with physical activity in Hispanic populations than it is not. Given that parks are one of the most frequently used venue for physical activity a similar association may be observed between acculturation and park visits among Hispanic females. Acculturation may be a significant predictor of park visits.

Perceptions of Neighborhood Parks and Park Visits

Researchers have sought to investigate the characteristics of parks that are associated with their use. Park size, park features, and condition have been associated with park visits. Giles-Corti et al. (2005) reported that large parks were more frequently used for walking than smaller parks. The authors also concluded that parks with more features such as trees, birds and water features were visited more than parks with less features. These findings were later supported by Kaczynski, Potwarka, & Saelens, (2008) who concluded that neighborhood parks with more features were more likely to be visited for physical activity than parks with less features. McCormack et al. (2010) and Cohen et al. (2010) found that the presence of features such as water fountains, seating and picnic tables were important for park users. McCormack et al. (2010) also concluded that parks that were well maintained and in good condition were visited more frequently than those that were not.

McCormack et al. (2010) reviewed 21 quantitative studies that investigated the attributes of parks that were associated with park visits and physical activity. Perceptions of park safety, and comfort and convenience were found to be associated with park visits. Leslie et al. (2010) found similar findings in their investigation of how variations in the

perceptions of safety, and walking destination of neighborhood parks affected park visits. They concluded that park visits increased with positive perceptions. Veitch, Ball, Crawford, Abbott and Salmon (2012) also alluded that improving features in neighborhood parks was associated with increased park visits.

Perceived Neighborhood Park Safety and Park Visits

Bedimo-Rung et al. (2005) defines safety as a perceived measure that refers to the feelings of security in the park. Safety is also measured objectively based on the amount of crime reported in an area. Investigators have used time of day, traffic, perceptions of crime and possibility of sustaining an injury as descriptors of safety. McCormack et al. (2010) revealed that safety concerns affected park visits. In most of the reviewed studies, participants identified the presence of undesirable individuals such as drug users and the homeless as deterrents to park visits. Conversely, Cohen et al. (2010) found no association between park safety and park visits. In their study of 30 heterogeneous parks, although approximately 100% of respondents perceived their parks as safe, respondents were infrequent park users. Regarding Hispanic females, there have been limited investigations of the association between park safety and park visits. In a study conducted by Cronan et al (2008) to examine park visits among Hispanic adults, Hispanic females cited fear of theft and physical assault and not enough lighting as reasons for infrequent park visits.

Perceived Neighborhood Park Comfort and Convenience, Satisfaction, and Park Visits

No previous study has investigated the association between perceived comfort and convenience of neighborhood parks and park visits. However, a few studies have shown that positive perceptions of comfort and convenience comfort regarding environments are associated with their use for physical activity (Ball, Bauman, Leslie, & Owen, 2001; Deshpande et al., 2005; Giles-Corti, & Donovan, 2002; Richter, Wilcox, Greaney, Henderson, & Ainsworth, 2002). Ball et al. (2001) found a positive association between an environment convenient for walking and physical activity among adults. King et al. (2003) found a strong correlation between both convenience and neighborhood walkability and physical activity in a sample of 149 elderly Caucasian females. No previous study has been done to investigate the association between perceived satisfaction and park visits.

Park Distance and Park Visits

According to Bedimo-Rung et al. (2005) proximity refers to the distance that park users have to travel from their homes to parks. Studies have shown that proximity to parks has been associated with park visits. Cohen et al. (2007) found that individuals who lived 0.5 miles away from parks visited the park more frequently than those who live at further distances. Cronan et al. (2008) discovered that nearly half of Hispanic park users walked approximately fourteen minutes to the park indicating that close proximity encouraged park visits. McCormack et al. (2010) later concluded that driving to parks

was a barrier to park visits and the ability to walk to the park was positively associated with park visits.

Kaczynski and Henderson (2007) reviewed fifty studies that investigated the association between features of parks and park visits. The authors were particularly interested in examining how the proximity to parks from participants' homes was related to physical activity. Their review of literature revealed mixed associations between park distance and physical activity. These mixed results were attributed to the variety of descriptors used to measure proximity. While some investigators used continuous measures such as distance and time to assess proximity, others used categorical measures of proximity. However, most studies that used continuous measures of proximity suggested that close proximities to parks was associated with increased physical activity. Kaczynski and Henderson (2007) emphasized that further study was needed to establish relationships between park characteristics and park visits in minority groups since most of the studies reviewed involved middle class Caucasian adults in urban and suburban communities.

In sum, no previous study has described park visits among Hispanic mothers and simultaneously investigated the associations among individual, psychological, and environmental factors, and park visits in Hispanic mothers. To fill this gap in the literature, the purpose of this investigation was to describe park usage among Hispanic mothers and assess the influence of individual factors (acculturation, physical activity, perceptions of neighborhood parks), and environmental factors (park distance) on park visits among Hispanic mothers.

Theoretical Framework

The theoretical framework for this study is based on the social ecological model developed by McLeroy et al. (1988). The social ecological model is based on the premise that an individual's behaviors are determined by individual, social and physical environmental factors, and the interactions that occur among them. The model has been utilized in various fields of study to gain an understanding of the behaviors of individuals through a look at individual characteristics as well as features present in the environment. This model has also been used to drive educational, therapeutic, and policy interventions that impact the health and well-being of individuals and communities (Stokols, 2000). The social ecological model is viewed as an improvement over previously popular behavioral models used to explain human behavior. This model adopts a comprehensive approach to understanding the influences of biological, psychological, sociocultural, and physical environmental factors and how they interact to affect human behavior and well-being (Stokols, 2000). The model can easily be adapted to describe specific behaviors and populations (Elder et al., 2007).

The social ecological model is considered an ideal framework that can be used to examine the impact of individual, psychological, and environmental factors on several health conditions and health behaviors. Stokols (2000) proposed that the model be used to determine the etiology of several health-related problems including cardiovascular disease, cancer, and occupational injury. The model has been utilized in public health interventions that target proper nutrition. For example, Robinson (2008) utilized the model as a framework to examine the interpersonal, intrapersonal, community, and public policy factors that impact dietary behaviors among low-income African Americans.

Stokols (2000) reported that the model was ideal to investigate factors associated with physical activity since physical activity occurs in multiple settings. The social ecological model has also been widely used as a guide for interventions aimed at increasing physical activity in adults (Fleury & Lee, 2006; Giles-Corti & Donovan, 2002). Giles-Corti and Donovan (2002) used the model as a framework for the Study on Environmental and Individual Determinants of Physical Activity (SEID) project. This study examined the relative influence of individual, social, and environmental determinants of physical activity among 1803 adults. Fleury and Lee (2006) used the model to investigate the factors that affect physical activity levels in African American females.

For the purpose of this study, the social ecological model will be used as a framework to determine the individual factors (acculturation and physical activity) psychological factors (perception of parks), and environmental characteristics (park distance) that influence park visits among Hispanic mothers. Figure 1 illustrates the study model.

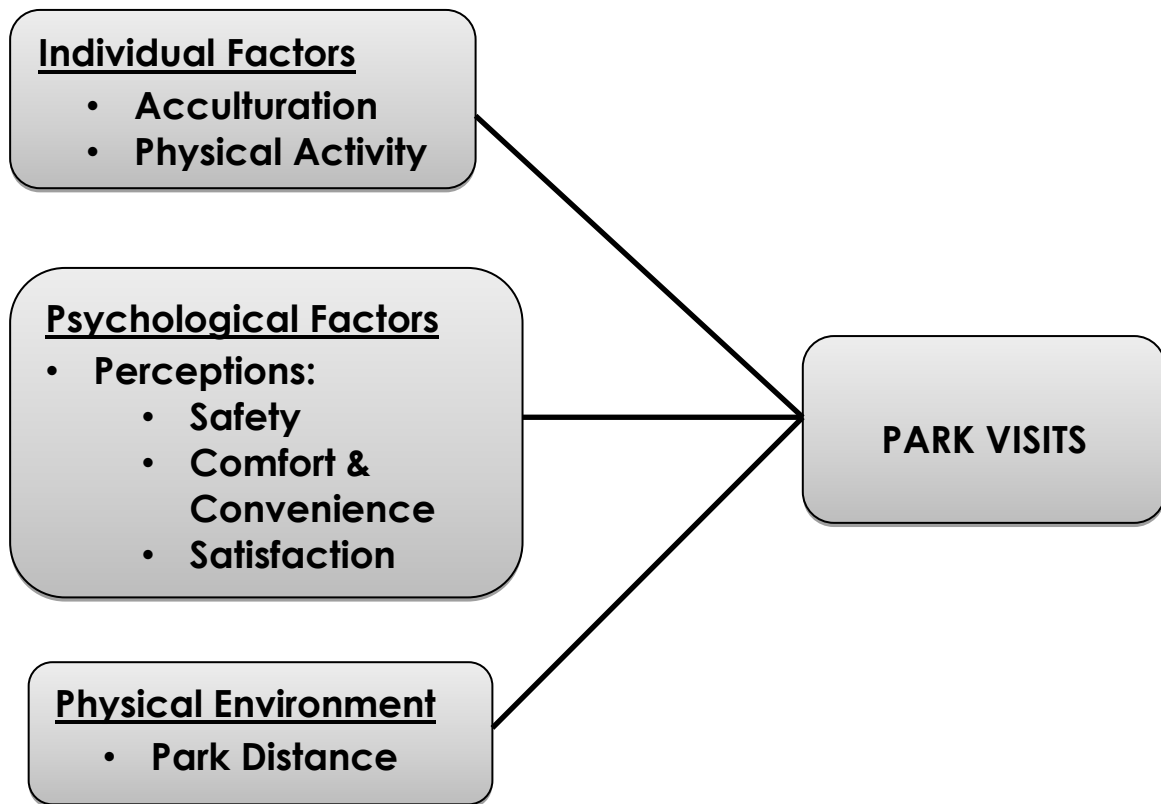


Figure 1. Framework for the Investigation of Factors Associated with Park Visits Among Hispanic Mothers

Chapter III

Methodology

Study Design

A cross-sectional study design was used to assess the role of individual, psychological, and environmental factors associated with park visits with children among Hispanic mothers.

Participants and Study Setting

Archival data from the Urban Hispanic Perceptions of Environment and Activity Among Kids (UHPEAK) study will be used in this study. The UHPEAK study was a cross sectional examination of the role of environmental variables and child and maternal perceptions of three environmental settings (home, school and park) in predicting physical activity among children. The present study will only examine data obtained from the mothers assessed in the UHPEAK study. Therefore, the sample for this study was comprised of 105 Hispanic mothers from the UHPEAK study residing in the Eastwood neighborhood located in the city of Houston, Texas. This area is bounded by State Highway 59 to the west, Buffalo Bayou and the Houston Ship Channel on the north, Loop 610 on the east and Interstate Highway 45 to the south. Approximately, 92% of the residents in the Eastwood neighborhood are of Hispanic ancestry, 54% are 25 years and older and have no high school diploma, and 36% of the families have annual incomes lower than \$15,000. (US Census Bureau, 2011). The selected area includes twenty-seven parks. These parks varied according to size, type and quality of equipment.

Participants were recruited in this study if: 1) they were of Hispanic origin; 2) they had at least one child aged 10-11 that attended one of the targeted elementary schools; 3) they were living with target child in the same household located in the Eastwood neighborhood; and 4) they were able to read or write in Spanish or English. Participants were recruited through their children who were in the third and fifth grade of four elementary schools in the targeted neighborhood. To recruit participants, research assistants made announcements about the study in school classrooms with the permission of school administration and distributed flyers with information about the study to be sent home to parents. Research assistants also met with eligible participants at the schools during drop off and pick up times and at various school events to inform them about the study and solicit their participation. Interested participants were invited to an orientation session where the study description and what their involvement would entail were discussed. All participants were required to sign consent forms prior to the start of the data collection. The UHPEAK study was reviewed and approved by the Committee for the Protection of Human Subjects at the University of Houston and the Houston Independent School District Research Office.

Measures

Demographic and cultural characteristics. Demographic data were collected through a demographic survey. The survey consisted of 22 questions which included items that pertained to education, household income, and marital status. Acculturation was assessed using the Bi-dimensional Acculturation Scale for Hispanics (BAS) developed by Marin and Gamba (1996). The BAS is a 24 item Likert type scale that is

comprised of 12 items that assess language in the Anglo domain and 12 items that assess the Hispanic domain. If individuals score highly on both domains they are considered bicultural. If individuals score highly on the Anglo domain they are considered to be of a high level of acculturation while those with high scores in the Hispanic domain are of a low acculturation level.

Acculturation scores are derived by averaging the scores in each domain. Average scores range from 1 to 4 in each domain and an average score of 2.5 is used as the cutoff point. Therefore, for this study mothers with scores of 2.5 and above in the Anglo domain and below 2.5 on the Hispanic domain were considered highly acculturated. If a mother's score in the Hispanic domain was 2.5 and above and less than 2.5 on the Anglo domain, then the individual was considered to be of a low acculturation level. Scoring above 2.5 on both scales indicated biculturalism. The internal consistency of the Anglo domain is 0.97 and for the Hispanic domain is 0.93 in Mexican American adults (Marin & Gamba, 1996).

BMI. Body weight was assessed to the nearest 0.1kg using a Tanita TBF 310 scale. Height was assessed to the nearest 0.1cm using a height rod without shoes. Weight and height were used to calculate BMI scores using the Quetelet's index [body weight (kg)/ height (m^2)]. Mothers with a BMI $< 25kg \cdot m^{-2}$ were classified as having a normal weight. Mothers with BMI $\geq 25kg \cdot m^{-2}$ and $< 30 kg \cdot m^{-2}$ were considered overweight and mothers with a BMI $\geq 30 kg \cdot m^{-2}$ were considered obese.

Neighborhood park perceptions, park visits, and park distance. Perceptions of safety, comfort and convenience and general satisfaction in neighborhood parks were assessed using 39 items on a 46 item environmental perceptions questionnaire. Items

were rated on a Likert response scale. Perceptions of safety were assessed using 14 survey items related to 8 common environmental risks (such as too much traffic, speeding cars, no sidewalks, no lighting, gangs, strangers, and stray dogs). The safety subscale was reliable for this population ($r = .69$). Perceptions of comfort and convenience were assessed using 19 items related to crowding, shade, noise, equipment, and amenities. The reliability of this subscale was high for this sample ($r = .81$). Satisfaction with the park was assessed using 16 items related to the overall quality and conditions of the park. The satisfaction scale was reliable for this population ($r = .93$). Perception scores were obtained by calculating the mean scores in each scale. A mean score of three indicated that perceptions were neutral, scores greater than three indicated positive perceptions and scores less than three indicated negative perceptions.

Monthly park visits was determined by the following question “How often do you usually visit or use the park with your child.” Participants who indicated that they visited the park with their child at least once in the past 30 days were classified as park users. Participants who indicated that they did not visit the park with their child in the past 30 days were classified as park non-users. Descriptors of visits to the most frequently used parks were determined by six questions. These questions assessed the total parks visited, the most frequent park visited, the day participants usually visit the park, mode of arrival at the park, social companion at the park, and activities performed while at the park. Park distance was determined by mapping the closest drive distance in miles from participants’ home addresses to all parks most frequently visited using Google Maps.

Physical activity. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ). The questionnaire consisted of 27 items that assessed

energy expenditure during work, travel, domestic duties, leisure time, and while sitting. A summation of the energy expenditure scores during work, travel, domestic duties, and leisure time was used to determine total weekly energy expenditure and is expressed as total MET-min/week. The International Physical Activity Questionnaire (IPAQ) has a reliability of 0.80 and criterion validity of 0.30 (Taylor et al., 2008). The IPAQ has been a widely used self-report measure of physical activity levels among Hispanics (Cronan et al., 2008).

Procedures

Data collection for the UHPEAK study was conducted during 2008 to 2009. Surveys were administered and anthropometric measurements were taken at the targeted schools. Each assessment session lasted approximately 1 hour.

Data Analysis

Descriptive statistics including frequencies, means, and standard deviations were performed to describe the sample characteristics. Chi square analyses and t tests were used to determine differences between park users and non- users according to demographic variables, acculturation categories, park distance, energy expenditure, and perceptions. Pearson product moment correlations were calculated to examine associations among acculturation, park perceptions, energy expenditure, park distance, and monthly park visits. Multiple linear regression modeling was used to assess the unique contribution of park distance, acculturation (using mean scores), and physical activity in predicting park visits. Assumptions of normality, linearity, and

homoscedasticity were evaluated. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 20.

Chapter IV

Results

Demographic Characteristics of Participants

The sample consisted of 105 Hispanic women in their mid-thirties ($M=36.20$ years, $SD= 7.30$ years) who have been residing in the United States for over 10 years ($M=15.72$ years, $SD=7.66$ years). As shown in Table 1, the majority of participants were born in Mexico (60%), married (67%), and had attended high school (78%). Most participants reported that they were not employed outside the home (58%). Approximately, 51% of the participants had family incomes that were less than \$30,000 per annum. Most participants (60%) were classified as having low levels of acculturation and 80% were classified as overweight/obese.

Neighborhood Park Visits and Characteristics of Parks

Park visits. Participants who indicated in the survey that they visited neighborhood parks with their child at least once within the past 30 days were classified as park users. In contrast, park non-users were classified as those who did not visit a park in the past 30 days. Most participants (83%) were classified as park users with an average visit of four times during the month ($SD=4.98$ visits). As shown in Table 1, there were no statistically significant differences concerning demographic variables between park users and park non-users except for marital status [$\chi^2 (4, N=104) =14.2, p=.01 \phi=.37$]. This was due to the fact that park users outnumbered non-users in all marital status categories and all park non-users were married. Furthermore, no significant differences were observed between park users and park non-users as a function of participants' acculturation level and weight status (see Table 1).

Participants indicated that they frequently visited 19 different parks. As illustrated in Table 2, participants visited parks of varied size and amenities. The average park size was 124 acres ($SD= 372.48$ acres). Most parks were equipped with sports facilities (74%), and playgrounds (84%). The three most visited parks all had sports facilities, swimming pools, playgrounds, and community centers. The average distance between the all the parks visited and participant's home was 6.37 miles ($SD=2.15$ miles). Mason Park was the most frequently visited park as 33% of respondents reported that they visited it in the last month. Mason Park was the third largest park (104 acres) out of the 19 park visited and the amenities available at this park included sport facilities, a community center, a lake, and a swimming pool. The average distance from participants' homes to Mason Park was 3.22 miles ($SD=3.13$ miles).

Participants visited parks according to the day of the week, the mode of transportation to the park, and social companion. As illustrated in Table 3, park users were more likely to visit parks on weekends, walk or travel to the park in a motor vehicle, and visit the park with their children and other family members. Most participants reported being sedentary while they were at neighborhood parks. Each participant was asked to select the activities that they usually performed while visiting neighborhood parks with their child. The following percentages represent the frequency at which each activity was indicated. Approximately, 67% indicated that they usually sit and watch their children, 47% indicated that they socialize with other adults, and 29% indicated that they usually eat or drink while they are at the park. Of those participants who engaged in physical activity while they are at the park, 67% indicated that they usually walk or jog and 49% reported that they usually play with their children.

Physical Activity of Park Users and Park Non-Users

Participants' energy expenditure was estimated based on their responses to a physical activity survey. Table 4 illustrates the distribution of energy expenditure between park users and park non-users during work, travel, while at home, during leisure time activities, and different intensities of physical activity. Park users engaged in more light physical activity $t(99) = -3.15, p < .05$ and more physical activity at work, $t(70) = -1.53, p < .05$ than park non-users.

Perceptions of the Most Frequently Visited Parks

To examine if perceptions of park comfort and convenience, safety, and satisfaction differed between park users and non-users, an independent samples t-test was conducted. As illustrated in Table 5, there were no significant differences in perception scores between park users and non-users across perceptions of park comfort and convenience, safety, and satisfaction. Both park users and non-users were likely to have neutral perceptions of safety (park users: $M=3.16, SD=0.71$; non-users: $M=2.96, SD=0.62$), and positive perceptions of comfort and convenience (park users: $M=3.65, SD=0.89$; non-users: $M=3.46, SD=0.63$), and satisfaction (park users: $M=3.54, SD=1.49$; non-users: $M=3.89, SD=0.80$). Thus, it appears that selected park perceptions might not be influencing park visits among Hispanic mothers.

Correlations of Study Variables

Hypothesis one predicted a negative association between park visits with children and park distance. Bivariate correlations among the study variables are presented in Table 6. There was a negative correlation between park visits and the distance to the most frequently visited park ($r = -.21, p < .05$), such that a decrease in distance was associated

with more frequent visits to the park. This association had both practical and statistical significance. Hypothesis two predicted that there would be a positive association between park visits with children and physical activity. An examination of the bivariate correlations among these two variables supports this predicted relationship. Namely, park visits had a positive relationship with total energy expenditure ($r = .26, p < .01$) such that higher energy expenditure was associated with more frequent park visits. This association was both statistically and practically significant. Hypothesis three predicted that there would be a positive association between park visits with children and perceptions of neighborhood parks. Bivariate correlations among the variables did not support this hypothesis. Overall, no significant associations were observed between park visits and perceptions of park comfort and convenience, safety, and satisfaction. Among park perceptions there was an association between park perceived comfort and convenience and satisfaction ($r = .575, p < .01$).

When the association between acculturation and park visits was examined, a negative correlation was observed ($r = -.25, p < .05$) such that increased acculturation to the American culture was associated with less frequent park visits. This association had both practical and statistical significance. In other words, the more acculturated participants were, the less likely they were to visit parks.

Predictors of Park Visits

Preliminary analyses. A standard multiple regression was executed using SPSS 20 with park distance, acculturation level, and physical activity as independent variables and park visits as the dependent variable. Preliminary analyses were conducted to evaluate the assumptions of the data for multiple regression. An examination of bivariate

correlations among the independent variables indicated that there was an absence of multicollinearity among the selected independent variables. Park visits and the three independent variables were all positively skewed. Given the small sample size, no transformations were performed. Four outliers were identified through an examination of Mahalanobis distances values. An analysis of Cook's distance indicated that outliers did not have any undue influence on the results of the regression model and therefore outliers were maintained.

Hypothesis 4 indicated that level of acculturation, park distance, and physical activity would predict park visits. As presented in Table 7, results from the standard multiple regression analysis suggested that only physical activity ($\beta=.22$, $p<.05$) and acculturation ($\beta = -.21$, $p< .05$) contributed significantly to the prediction of park visits, but not park distance. The three independent variables in combination contributed 11% of the variance to predict park visits, $R^2= .14$ (adjusted $R^2= .11$), $F(3, 87) = 4.58$, $p<.05$. Overall, these findings indicate that increases in physical activity and lower levels of acculturation to the mainstream society were associated with more frequent park visits.

Table 1

Characteristics of the Study Participants (N=105)

Characteristic	N (%)	User n=87(83%)	Non-user n=18(17%)	p
Age				.57
20-30	23 (22)	20(23)	3(17)	
31-40	56 (54)	47 (54)	9(50)	
>40	25 (24)	19 (22)	6 (33)	
Refused	1(0.1)	1 (13)	0(0)	
Marital Status				.01*
Single	14 (14)	14(16)	0(0)	
Married	70 (67)	53 (61)	17 (94)	
Living with Partner	9 (9)	9 (10)	0 (0)	
Divorced, Widow, separated	11(11)	11 (13)	0 (0)	
Refused	1 (1)	0 (0)	1 (6)	
Place of Birth n (%)				.77
US/Canada	30 (29)	24(28)	6(33)	
Mexico	63 (60)	54(52)	9(50)	
Central America	11 (10)	9 (10)	2(11)	
Missing	1 (1)	0 (0)	1 (6)	
Years in the US				.42
<5	3 (3)	3 (3)	0 (0)	
5 -10	14 (13)	11(13)	3 (17)	
11-20	31(29)	29 (33)	2 (11)	
21-30	9 (9)	7(8)	2 (11)	
>30	3 (3)	3 (3)	0 (0)	
Missing	45 (43)	33 (38)	12 (67)	
Grade Completed				.69
<9	30 (29)	25(24)	5 (5)	
9-12	51 (49)	44 (51)	7 (39)	
Some College	23 (22)	18 (21)	5 (28)	
Missing	1 (0.1)	0 (0)	1 (6)	
Occupation				.74
Managerial/Professional	9 (9)	7 (8)	2 (11)	
Technician/Sales	3 (3)	3 (3)	0 (0)	
Admin Support	15 (14)	12 (14)	3 (17)	
Service/Skilled Worker	14(14)	13 (15)	1 (6)	
Manual Laborer	3 (3)	3 (3)	0 (0)	
Retired	3 (3)	3 (3)	0 (0)	
Housewife	42 (40)	32 (37)	10 (56)	
Unemployed	16 (15)	13 (15)	2 (11)	
Annual Family Income				.24
<\$10,000	17 (16)	15 (17)	2(11)	
\$10,000-\$20,000	19 (18)	15 (17)	4 (22)	
\$20,001-\$30,000	18 (17)	14 (16)	4 (22)	

Characteristic	N (%)	User n=87(83%)	Non-user n=18(17%)	p
\$30,001-\$40,000	11 (11)	8 (9)	3 (17)	
>\$40,000	13 (12)	13 (15)	0 (0)	
Not sure/Refused	27(26)	22 (25)	5(27)	
Acculturation Level				.88
High Acculturation	10 (10)	9 (10)	1 (6)	
Bicultural	29 (28)	25 (29)	4 (22)	
Low Acculturation	63 (60)	53 (61)	10 (56)	
Missing	3 (3)	0(0)	3 (17)	
Weight Status				.58
Normal	17 (16)	15 (17)	2 (11)	
Overweight	33 (31)	29 (33)	4 (22)	
Obese	51 (49)	41 (47)	10 (56)	
Missing	4 (4)	2 (2)	2(2)	

Note. * $p < .05$.

Table 2

Characteristics of the Most Frequently Visited Parks

Parks	Users <i>n</i> (%)	Size (acres)	Mean Park Distance in Miles(<i>SD</i>)	Amenities
Mason Park	35 (33)	104	3.22 (3.13)	Baseball field (3), tennis court, soft ball (2), trail system, swimming pool, community center, exercise area, playground, picnic pavilion (2), paved parking, lake
De Zavala Park	14 (13)	2.6	3.11 (3.13)	Basketball court (covered), baseball field, swimming pool, community center, playground
Eastwood Park	5 (5)	10.8	3.52(3.10)	Basketball court (covered), baseball field, tennis court (2),skate facility, trail system, swimming pool, community center, stand- alone swing set
Ingrando	3 (3)	14.87	3.67 (2.69)	Basketball court (11/2), Baseball field (3), tennis court (2), trail system, community center, restrooms, playground, paved parking
Settegast	2 (2)	4.10	4.55 (2.85)	Tennis court, softball, spray ground, community center, playground, picnic pavilion, paved parking
Carillo Elementary School Park	2 (2)	<2	2.79 (3.16)	Basketball court (covered), stand-alone swing set, multipurpose field, playground
Discovery Green	2 (2)	12	5.51 (2.69)	Playground, multipurpose field, trail system, dog facility, restrooms, golf course, picnic areas, restaurant
JP Henderson Elementary School Park	2 (2)	<2	3.04 (2.89)	School playground
Japonica	1 (1)	0.37	3.38 (2.83)	Stand- alone swing sets
Hidalgo	1 (1)	11.6	3.26(3.05)	Baseball field, spray ground, restrooms, picnic pavilion

Parks	Park Users <i>n</i> (%)	Size (acres)	Mean Park Distance in Miles <i>M</i> (<i>SD</i>)	Amenities
Diez	1 (1)	9.37	3.39(2.86)	Baseball field (3), softball, Restroom, Picnic pavilion
Broadmoor-Kretschmar Park	1 (1)	0.6	3.22(3.13)	Playground
Fonde Park	1 (1)	12.7	3.81(2.66)	Basketball court (1 1/2), trail system, playground, paved parking
Gene Green Park	1 (1)	230.05	16.69(2.27)	Bike track, skate facilities, spray park, hiking trail, dog facilities
Memorial Park	1 (1)	1,503.68	12.25(2.58)	Baseball, multipurpose field (2), tennis court (18), softball (5), trail system, swimming pool, gazebo, golf course, restrooms, playground, stand-alone swing set, picnic pavilion, paved parking
North Shore Park	1 (1)	46.4	11.58(2.67)	Baseball field, paved trails, picnic area, playground, restroom, soccer field
Oak Meadows Park	1 (1)	5.3	5.88(2.50)	Basketball court (1/2), softball, trail system, playground
Patterson Elementary School Park	1(1)	<2	6.31(2.63)	School playground
Reveille Park	1 (1)	20.04	4.99(2.62)	Basketball court (1 1/2), multipurpose field, trail system, swimming pool, playground, paved parking

Table 3

Description of Park Visits (n=87)

Descriptor	Frequency <i>n (%)</i>
Day of visit	
Mostly weekdays	30 (35)
Mostly weekends	40 (46)
Both weekends and weekdays	16 (18)
Transportation Mode	
Walk	40 (46)
Bike	1 (1)
Car	44 (51)
Bus	1 (1)
Social Companion	
Family members	65 (75)
Friends	6 (7)
Friends and their children	9 (10)
Child's friends	9 (10)
Pets	10 (12)
Just mother and children	6 (7)
Participants' Activities	
Physical Activities	
Walk/Jog	58 (67)
Bike	5 (6)
Play soccer	1 (1)
Play with my child	43 (49)
Sedentary Activities	
Sit and watch child	58 (67)
Socialize with other adults	41(47)
Read or relax alone	15 (17)
Eat or drink	25 (29)

Table 4

Weekly Energy Expenditure (METmin) at Work, Travel, Home, and Recreation

Category	Park Users (n=87)		Non- Users (n=18)		<i>p</i>
	<i>M</i> (METmin/week)	<i>SD</i>	<i>M</i>	<i>SD</i>	
Work	4469.90	8043.07	1507.92	3102.75	.011*
Transportation	723.79	1966.55	564.68	1180.26	.742
Home	5073.20	5372.81	3985.56	4984.92	.431
Recreation	1132.51	2915.20	667.50	1794.49	.517
Light	2452.62	4383.71	750.75	1130.90	.002*
Moderate	5220.32	5410.55	4418.89	5994.28	.576
Vigorous	1627.59	3984.99	626.67	1267.66	.296
Total IPAQ Score	9300.53	10323.15	5796.31	6512.88	.170

Note. * $p < .05$

Table 5

Perceived Safety, Comfort and Convenience, and Satisfaction among Study Participants (n=93)

Perception	Users <i>M (SD)</i>	Non -Users <i>M (SD)</i>	95% CI	<i>t</i>	<i>df</i>	<i>p</i>
Safety	3.16 (0.71)	2.96 (0.62)	(-0.69, -0.29)	.797	91	.428
Comfort Convenience	3.65 (0.89)	3.46 (0.63)	[- 0.70, 0.31]	.766	92	.446
Satisfaction	3.54 (1.49)	3.89 (0.80)	[-1.02, -1.73]	-.623	91	.555

Note. 1= Strongly Disagree, 5=Strongly Agree

Table 6

Bivariate Correlations Among Individual and Environmental Variables

Variable	1	2	3	4	5	6	7	8	9
1. Acculturation Hispanic Domain	-								
2. Acculturation Anglo Domain	-.622**	-							
3. BMI	-.07	-.012	-						
4. Total Energy Expenditure	.133	-.085	-.031	-					
5. Park Distance	-.148	.190	.030	-.180	-				
6. Perceived safety	.086	-.065	.316**	.027	-.047	-			
7. Perceived comfort and convenience	.111	-.148	.134	.098	.025	.021*	-		
8. Perceived satisfaction	-.058	.068	.110	.098	-.038	-.013	.575**	-	
9. Park Visits	.157	-.250*	.119	.260**	-.211*	.096	.180	.126	-

Note. * $p < .05$. ** $p < .01$

Table 7

Predictors of Monthly Park Visits among Hispanic Mothers

Predictor	B	SE B	β
Park Distance	-.211	.164	-.132
Acculturation	-1.03	.508	-.206*
Physical Activity	.001	.001	.219*
R^2		.107	
F		4.58**	
<i>Df</i>		3	

Note. * $p < .05$. ** $p < .01$

Chapter V

Discussion

The purpose of this study was to: 1) describe neighborhood park usage, park characteristics, and types of activities engaged in parks by Hispanic mothers who visit parks with their children and 2) assess individual (acculturation and physical activity), psychological (perceptions of neighborhood parks), and environmental predictors (park distance) of park visits in a sample of Hispanic mothers residing in an inner city neighborhood located in the city of Houston. On average, participants were in their mid-thirties, married, born in Mexico, lived in the US for over 10 years, had low educational attainment, household incomes, and acculturation levels.

The prevalence of overweight/obesity was high, with 80% of the sample being classified as overweight/obese. This finding is equal to the national prevalence of overweight/obesity for Mexican American women (Flegal, Carroll, Kit, & Ogden, 2012). Given that study participants had low educational attainment and were from households with low incomes, these findings were not surprising. Trends in the prevalence of obesity indicate that obesity rates are high among adults with low educational attainment and socioeconomic status. This trend was more pronounced in females than males (Cawley, 2004; Hammond & Levine, 2010; Schoenborn & Adams, 2010).

Most participants were classified as park users (83%) because they reported that they visited neighborhood parks with their child at least once within the past 30 days. The mean park visit was four times in the past 30 days. It should be noted that in this study park visits were assessed with the question “How often do you usually visit or use

the park with your child in the past 30 days?” It is possible that participants frequently visited neighborhood parks without their children. Thus, total actual park use by participants cannot be determined in this study. Further investigation is needed to describe total park visits among Hispanic mothers. It is also possible that characteristics related to the child such as age, gender, activity level, and parental perceptions of the child’s behavior may affect the frequency of park visits. Further investigations on how the factors related to the child may influence park visits is warranted.

Few studies have examined differences in the demographic characteristics between park users and non-users within Hispanic mothers. Park users shared similar demographic characteristics with non-users. Overall, park users and non- users were between 31 and 40 years, born in Mexico, had attended high school, were homemakers, had low family incomes, were of low acculturation levels, and were overweight/obese. Park users differed from non-users according to marital status because all non-users were married. The general homogeneity in the demographic characteristics between park users and non-users in this study may be attributed to the small sample size. Perhaps a larger and more heterogeneous sample of Hispanic mothers may elucidate possible differences in the demographic characteristics between park users and non-users.

The top three parks that were frequently visited by participants varied in size but all had sporting facilities, a swimming pool, a playground, and a community center. The most frequently visited park (Mason Park) was one of the largest parks visited and offered several sporting facilities, an exercise area, a swimming pool, playground, and a picnic pavilion. Participants visited parks that were at an average distance of 6 miles away from their homes. Although a large proportion (40%) of park users indicated that

they walked to neighborhood parks, almost 50% of park users indicated that they drove to neighborhood parks. This finding was similar to Cronan et al. (2008) who observed that Hispanic adults residing in urban communities generally drove to neighborhood parks that were accessible by bus, foot, bike, and cars. However, the authors also discovered that of the participants who lived in close distances to parks (determined by time taken to travel to parks), almost 50% walked to these parks. It was concluded that the walkability of the environment contributed to the mode of arrival at neighborhood parks that are close to participant's homes. In the current study, the trend of driving to neighborhood parks may have been due to large park distances for some participants. For participants who lived in close distances to the park, the walkability of the streets that connect their neighborhoods to parks may impact their mode of arrival. Future studies might investigate the walkability of the streets surrounding the visited parks in this population and which parks were most popular as walking destinations. Further investigations may also determine if neighborhood parks that participants walked to were more frequently visited than those that were driven to.

Overall, park users reported that they were sedentary when they were at the neighborhood park. The findings from this study are also consistent with previous studies that reported minority females being less active in parks than their Caucasian counterparts (Cohen et al., 2007; Floyd et al., 2008; Reed, Price, Grost, & Mantinan, 2012). The predominance of sedentary behavior among participants in this study may be attributed to participants' being accompanied by their children when they visited parks. Neighborhood parks have been shown to be supportive of physical activity among children, but perhaps not of their parents (Lloyd, Burden, & Kieva, 2008; Ries et al.,

2009; Veitch, Salmon, & Ball, 2007, 2008). Participants who visited parks with their children may have preferred to remain sedentary in order to supervise their children as they play at the park.

The sedentarism of study participants at the park may also be attributed to cultural factors. Parents might see parks as avenues for children to be active and for parents to supervise them. Therefore, the caregiving role of Hispanic mothers may serve as a barrier to be active when they are at the park. These findings were consistent with Pichon et al. (2007) who observed that Hispanic homemakers were less active during recreational time than their Caucasian counterparts. Furthermore, in their study Pichon et al (2007) observed that Hispanic females who immigrate to the United States from Mexico and have low acculturation levels, engaged in less physical activity during recreation than their more acculturated counterparts. It was hypothesized that where they were in Mexico, these females were not encouraged to engage in physical activity as a means of maintaining good health. This resulted in a lack of engagement in physical activity during recreation time.

Participants' preference for being sedentary at the park may also be attributed to their pattern of energy expenditure. Park users spent the most energy while performing tasks at work and at home. Furthermore, most park users in this study reported that they visited neighborhood parks on weekends and were accompanied by other members of their family. Thus it is likely that park users in this study used their recreational time on weekends to go to parks to relax, spend quality time with their children or socialize with other family members instead of as an opportunity to engage in physical activity.

If participants were engaged in some kind of physical activity at the park, they preferred to walk or jog. This finding is consistent with that of Cronan et al. (2008) who observed that the preferred mode of physical activity among Hispanic adults in neighborhood parks was walking or hiking. Bedimo-Rung et al. (2005) and Reed et al. (2008) also discovered that walking trails were the most frequently used park amenity among adults of both genders and across all ethnic groups. Overall, these findings contribute to our understanding of park use patterns of Hispanic mothers. Such findings will also be relevant to develop physical activity interventions based on walking programs in the parks designed for Hispanic mothers. Further investigation may determine which neighborhood parks are most popular for the performance of physical activity.

It was hypothesized that park distance would be negatively associated with park visits with children. This hypothesis was supported by findings from this study. The negative association between park distance and park visits is consistent with previous studies which observed that shorter distance between the park and participant's home (as determined by continuous measurements) increased the likelihood of park visits (Cohen et al., 2007; Kaczynski & Henderson, 2007; McCormack et al. 2010). The most frequently visited park was at an average distance of 3 miles from participant's homes.

The positive association observed between physical activity and park visits is consistent with previous findings among a sample of adults indicating that individuals who used parks regularly tended to be more active than non-users (Deshpande et al., 2005; Giles-Corti et al., 2005). However, these previous studies only assessed physical activity performed while at the park. The current findings indicate that frequent park

visits are associated with greater levels of total physical activity. This finding is interesting given that most participants chose to be sedentary while at parks. Furthermore, participants tended to spend more energy during the performance of tasks at home or work than during recreation. Therefore, these findings allude to a possible association between park visits and physical activity performed at work, during transportation, at home as well as during recreation.

The hypothesis that there would be a positive association between perceptions of neighborhood parks and park visits with children was unsupported in this study. Perceptions of park safety, comfort and convenience, and satisfaction were not significantly associated with park visits. This finding is inconsistent with previous research that has revealed a significant association between park visits and park perceptions (Cronan et al., 2008; Leslie et al. 2010; McCormack et al., 2010). Cronan et al. (2008) and Leslie et al. (2010) found that perceptions of park safety were positively associated with park visits. McCormack et al. (2010) reported that positive perceptions of park safety, accessibility and overall perceptions of park quality encourage park visits. The lack of association between park visits and perceptions found in this study may be due to the fact that participants were recruited from a relatively small geographic area and participants' park perception ratings were based on a limited number of parks. Participants' were asked to rate their perceptions of the park they visited frequently and not all parks visited. The majority of participants visited Mason Park which indicated that the perception ratings were generally based on this park. Perhaps if perceptions ratings were also obtained for parks that were visited less frequently an association between

perceptions and park visits may have been revealed. A larger sample of participants may also have yielded more significant findings.

The hypothesis that park distance, acculturation, and physical activity were significant predictors of park visits with children was partially supported in this study. Physical activity and acculturation in the Anglo domain were the only two variables that significantly contributed to the prediction of park visits. The negative association observed between acculturation and park visits indicate that participants who were more acculturated to the US culture were less likely to visit neighborhood parks than less acculturated participants. The lack of ability of park distance to predict park visits was surprising. Given that park distance was correlated to park visits, there may be a moderating factor between park distance and park visits. A possible moderator between park visits and park distance may be the quality of parks. Suminski et al. (2012) discovered that neighborhood parks located within neighborhoods that were occupied by racial/ethnic minorities were of poorer quality than those located in Caucasian neighborhoods. Other moderators between park distance and park visits may include the number and type of amenities at parks and park size. Further investigation to identify moderators of park visits among Hispanic mothers is warranted.

Implications

Overall, findings from this study provide relevant information of Hispanic mothers' neighborhood park visits, park preferences, park perceptions, self-reported physical activity as well as the identification of predictors of park visits. Although the majority of participants in this study were classified as park users (83%) because they

visited neighborhood parks along with children within the last 30 days, park visits were infrequent with an average of four visits per month. Furthermore, park users preferred to be sedentary while they were at neighborhood parks. Therefore, the use of neighborhood parks as a venue for recreational physical activity should be encouraged. This can be achieved with the provision of child care services for individuals who visit the park with their children. If park users are assured that their children are adequately supervised while they are at play in parks they may be more inclined to engage in physical activity. The provision of exercise amenities such as walking trails in close proximity to areas where children play may also encourage participants to walk or jog while maintaining clear vision of their children at play. Educating participants about the benefits of regular physical activity at neighborhood parks may be needed.

This study also revealed that Hispanic mothers with high levels of acculturation, and low levels of physical activity were less likely to visit parks than those with low levels of acculturation and engaged in high levels of physical activity. This indicates that educational campaigns that encourage the use of parks as a venue for regular physical activity should focus on Hispanic mothers with high levels of acculturation and low levels of physical activity.

Limitations

There were several limitations to this study. The small sample size and the homogeneity of the sample restricted the generalizability of the results to other groups of Hispanic mothers of varied demographic characteristics. The fact that total park visits by

participants was not examined and that perception scores were generally based on one park also limited the generalizability of the results of this study.

The use of self- report measure of physical activity was another study limitation. Although the IPAQ has been used in multiple Hispanic populations as a measure of physical activity, it may overestimate levels of physical activity of participants (Craig et al., 2003). A more objective measure of physical activity would be beneficial to obtain more accurate assessment of physical activity. The small percentage of the variance explained by three predictive variables is another limitation of the study. Future studies should employ large sample sizes and other relevant individual, psychological, and environmental variables associated with park visits in this population.

Conclusion

Despite its limitations, this study contributes significantly to the limited evidence of neighborhood park use patterns and activity preferences at parks among Hispanic mothers. The study revealed that a large proportion of Hispanic mothers visited parks at least once with their children within the past 30 days. The participants in this sample indicated that they visited one park more frequently than others in the neighborhood. This park was the third largest park visited and had a variety of amenities. Park visits do not guarantee engagement in physical activity while in the park. Study participants were most likely to engage in sedentary behavior while visiting neighborhood parks. The few participants who were physically active usually walk at neighborhood parks. This study confirmed that living in close distances to parks increased the likelihood of park visits. Park visits were significantly associated with physical activity performed at work, at

home, during transportation, and recreation. No associations were found between park visits and perceived park safety, satisfaction, and comfort and convenience. This study revealed that physical activity and acculturation were significant predictors of park visits.

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