INDIVIDUAL, FAMILY, AND ENVIRONMENTAL FACTORS RELATED TO PARK USE INTENT AND FAST FOOD CONSUMPTION AMONG LATINO ADULTS AND THEIR CHILDREN IN SAN DIEGO

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Individual, Family, and Environmental Factors Related to Park Use Intent and Fast Food Consumption Among Latino Adults and Their Children in San Diego

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What lies behind us and what lies before us, are tiny matters compared to what lies within us.

-Ralph Waldo Emerson
ABSTRACT OF THE THESIS

Individual, Family, and Environmental Factors Related to Park Use Intent and Fast Food Consumption among Latino Adults and their Children in San Diego
by
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Childhood obesity rates have substantially increased in the last thirty years, especially in Latinos. The Latino population is the fastest growing minority population in California, and with a significantly elevated prevalence of obesity it is important to understand the social determinants of obesity among Latinos. To better understand the predictors of overweight and obesity rates, varying levels of the environment, including, individual, family and community environment and their impact on nutrition and physical activity must be considered. This cross-sectional analysis used baseline data from the physical activity intervention Cambios con Fe/Changes with Faith, surveying 75 participants from 5 churches in Chula Vista, San Diego. This paper examines the association between the individual child, the parents’ role in physical activity and diet choices, the community environment, park use, and fast food consumption. This study will expand on the existing research examining the association between the varying levels of a child’s environment and the impact the environment has on the development of childhood obesity.
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CHAPTER 1

INTRODUCTION

Childhood obesity rates have increased substantially in the last thirty years, especially in Latinos (Center for Disease Control [CDC], 2009b; Fuentes-Afflick & Hessol, 2008; Johnston et al., 2007; Sussner, Lindsay, Greaney, & Peterson, 2008). To better understand the rise of overweight and obesity rates, researchers are adapting a socioecological perspective and taking into account multiple levels of influence, including, individual, family and community environment. A more comprehensive understanding of the development of childhood obesity may yield more influential and comprehensive physical activity and nutrition interventions.

OBESITY

Over the last several decades, obesity rates have climbed substantially in the United States (CDC, 2009c). In 2007, the Centers for Disease Control and Prevention (CDC) reported that 72 million people age 20 and older were obese in the U.S., and the surgeon general has described the obesity epidemic as a “national crisis” (Carmona, 2003). Obesity is defined as a range of weight measured by body mass index (BMI); in adults, a BMI between 25 – 29 is considered overweight, and 30 or over is considered obese (CDC, 2009b; World Health Organization [WHO], 2006). A person’s height and weight are used to calculate BMI and provide an approximate value of body fat. Unlike BMI categories for adults, child weight status is based on both age and sex specific percentile for BMI (CDC, 2009d). Falling between the 85th percentile and 95th percentile is considered overweight, and above the 95th percentile is considered obese.

Like adults, the prevalence of obesity in children has also increased drastically among all age groups in the last 30 years (CDC, 2009d). Approximately 31.9% of children aged 2-19 are above the 85th percentile (Ogden, Carroll, McDowell, & Flegal, 2007). With high prevalence rates of overweight and obesity in both children and adults, chronic diseases associated with obesity pose a significant health concern. Obesity can lead to several serious
health conditions including: coronary heart disease, type 2 diabetes, several cancers, hypertension, stroke, liver and gallbladder disease, high cholesterol, sleep apnea, osteoarthritis, gynecological problems and several more (CDC, 2009b; Johnston et al., 2007; Lutfiyya, Garcia, Dankwa, Young, & Lipsky, 2008). Studies show that obese children are up to 80% more likely to be obese as adults, and thus are also at risk for developing these serious chronic diseases (CDC, 2009d; Lutfiyya et al., 2008). In addition to the potential for future chronic diseases, childhood obesity has many short-term metabolic effects; impeding proper growth and affecting blood pressure, and lipid and glucose levels. Children who are overweight or obese are also at an increased risk for respiratory and musculoskeletal problems. Moreover, the psychosocial consequences of obesity like loneliness, sadness and nervousness, can result in children engaging in risky behaviors including abusing drugs or alcohol (Lutfiyya et al., 2008).

CHILDHOOD OBESITY AND LATINOS

Various racial/ethnic populations face an increased risk for many chronic diseases, and much of this is due to an increased prevalence of obesity in these populations (CDC, 2009a). Data from the Behavioral Risk Factor Surveillance System (BRFSS) 2006-2008 indicate that the prevalence of obesity in Latinos is 21% higher than in non-Hispanic whites (CDC, 2009a). This increase in obesity prevalence also poses an increased risk for the development of serious chronic diseases (CDC, 2009a; Ogden et al., 2007). As a result, the diseases associated with obesity contribute to approximately 60% of all deaths among Latinos (Center for Health Statistics, 2003).

Across the United States, the Latino population has a 28.7% prevalence of obesity (CDC, 2009a). Compared to non-Hispanic black (35.1%) and non-Hispanic white (33.5%) children, there is a higher prevalence of children (37%) at risk for overweight and obesity among Latino children, and within the 6-11 year old age range, this prevalence can be as high as 42.9% (Fuentes-Afflick & Hessol, 2008; Johnston et al., 2007; Sussner et al., 2008). The highly elevated prevalence of obesity in Latino children is positively correlated with an increase in type 2 diabetes; it is speculated that half of Latino newborns will develop diabetes in their lifetime (Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003). The Latino population is the fastest growing minority population in California (Matheson, Robinson,
Varady, & Killen, 2006), and with a significantly elevated prevalence of obesity it is important to understand the social determinants of obesity among Latinos (Voorhees & Young, 2003). A better understanding of the determinants of childhood obesity may help in the development of more effective obesity prevention interventions. Unhealthy eating habits and lack of physical activity are major contributing factors in the obesity epidemic (Giammattei, Blix, Marshak, Wollitzer, & Pettitt, 2003; Lutfiyya et al., 2008).

**Physical Activity and Childhood Obesity**

Many Latinos report a diet high in fat and sugar and low consumption of fruits and vegetables (Giammattei et al., 2003) as well as less of an emphasis on physical activity (Lutfiyya et al., 2008). Data from the 2003-2004 National Survey of Children’s Health indicate that compared to non-Hispanic white children, approximately 36.9% of overweight or obese Latino children did not meet the recommended levels of physical activity (Lutfiyya et al., 2008). The CDC recommends that children participate in at least 60 minutes of physical activity each day, consisting mostly of aerobic activity (CDC, 2008a). The benefits of participating in physical activity include but are not limited to: weight control, reducing risk for cardiovascular disease, reducing risk of developing type 2 diabetes, strengthening bones and muscles, improving mental health and mood, and increasing longevity (CDC, 2008b). Despite the documented benefits, physical activity rates are decreasing, especially in Latinos, with inactivity rates higher than any other ethnic or racial group (Marquez & McAuley, 2006).

Because research on determinants of physical activity has primarily focused on Caucasian populations, studies are needed to understand contributors of physical activity in Latino populations to better inform the development of obesity intervention/prevention programs for Latinos (Marquez & McAuley, 2006). Research is needed in the Latino population to understand if the correlates for Latinos are similar to Caucasian populations. Given the increasing rates of obesity in the Latino population (CDC, 2009a; Lutfiyya et al., 2008), it is imperative that future studies consider this population and their unique characteristics when developing obesity interventions targeting physical inactivity.
NUTRITION AND CHILDHOOD OBESITY

The relationship between the foods Latinos eat and obesity is complex, and diet is an important determinant of obesity and other chronic health conditions (Ayala, Baquero, & Klinger, 2008). Compared to other ethnic and racial groups in the U.S., Latinos follow a less healthy diet, resulting in increased rates of obesity in both children and adults (Ayala et al., 2008). Proper nutrition can significantly decrease the risk of becoming overweight or obese, but evidence suggests that many Latino children’s diets do not conform to the 2005 Dietary Guidelines for Americans (Wilson, Adolph, & Butte, 2009). Much of the research examining child nutrition suggests that compared to other children, Latino children eat foods that are higher in fat and drink more sweetened beverages while consuming less fruits and vegetables (Ayala et al., 2008, Giammattei et al., 2003; Troiano, Briefel, & Bialostosky, 2000).

A combination of factors contribute to an unhealthy diet including reduced access to healthy foods, low SES (Ayala et al., 2008), increased access to fast food (Bowmen, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004) and acculturation (Ariza, Chen, Binns, & Christoffel, 2004; Ayala et al., 2008; Yeh et al., 2008). Fast food consumption has increased drastically in the last thirty years, especially in Latino children (Bowman et al., 2004). Fast food can have detrimental effects on a child’s health and cause excessive weight gain due to oversized portions and high content of saturated and trans fat, carbohydrates and added sugars (Bowman et al, 2004). There is an increased availability of fast food restaurants and convenience stores in low-income neighborhoods across the U.S. (Holsten, 2007; Jeffery, Baxter, McGuire, & Linde, 2006) and a high percentage of Latinos settle in low-income neighborhoods with limited access to healthy foods (Lindsay, Sussner, Greaney, & Peterson, 2009). Latino children are thus exposed to an increased availability of energy dense fast foods and decreased access to healthy alternatives, which can have severe consequences for child nutrition. In the Viva La Familia, a cross-sectional study examining dietary intake in 993 Hispanic children in Houston, Texas, Wilson et al. (2009) interviewed participants to obtain dietary intake information at the USDA Agricultural Research Service Children’s Nutrition Research Center on two separate occasions. They found that while Latino children typically received adequate nutrients (vitamins A, B, C, iron etc.), their diets exceeded the guidelines for percent total fat and saturated fat, cholesterol, added sugar, and sodium, and
low intake of fruits and vegetables diminished opportunity for a healthy diet (Wilson et al., 2009).

Several studies also suggest that acculturation can impact nutrition in Latinos, especially in second and third generation Latinos (Ariza et al., 2004; Ayala et al., 2008; Morales, Lara, Kington, Valdez, & Escarce, 2002; Wilson et al., 2009; Yeh et al., 2008). Yeh and colleagues (2008) conducted 12 focus groups consisting of African American, Hispanic and Caucasian adult participants in North Carolina, and Hispanic participants reported negative effects of US culture on their diet including decreased access to fruits and vegetables and excessive advertising of unhealthy food. NHANES data from 1988-1994 indicate that compared to all racial and ethnic groups in the U.S., acculturation of Latino children is associated with higher energy and sodium intakes and a higher percentage of energy from fat and saturated fat (Dixon, Sundquist, & Winkleby, 2000). Existing research suggests that traditional Hispanic diets consist of a higher percentage of carbohydrates, protein and fiber than non-Hispanic whites, but a lower percentage of total and saturated fats than non-Hispanic whites (Morales et al., 2002). Morales and colleagues (2002) found that the traditional Hispanic diet is closer to meeting the national cholesterol guidelines but intake of traditional foods declined after immigration to the U.S. While there were positive nutritional changes with acculturation like incorporating milk and salads and decreased use of lard and cream, the detrimental increased uses of butter, margarine, oil, mayonnaise and desserts and reduction in homemade fruit juices and vegetable soup far outweigh the positive changes. However, the effects of acculturation on diet are still unclear and many studies report inconclusive results (Ariza et al, 2004; Kaiser, Melgar-Quinonez, Lamp, Johns, & Harwood, 2001; Olvera, Suminski, & Power, 2005).

**Socio-Ecological Framework**

Many studies on childhood obesity have not focused on the varying levels of influence in the development of risk factors (Elder et al., 2010). However, several studies are recognizing the benefits of socio-ecologically based childhood obesity prevention programs. Socio-Ecological Frameworks posit that development occurs in an individual as a result of the individual’s interaction with the contextual environment (Davison & Birch, 2001; Elder et al., 2010; Sallis & Owen, 2001). Davison and Birch (2001) developed a socio-ecological
model pertaining directly to children suggesting a child’s environmental niche includes the child’s own individual characteristics, the family, and environmental characteristics including community, demographic and society characteristics. Davison and Birch’s model aids in the explanation of the development of childhood overweight and obesity and highlight the complexity of risk factors across multiple levels of influence. Multiple levels of influence may include individual dietary and activity patterns, and how parents and the environment can impact these patterns (Cullen, Baranowski, Rittenberry, & Olvera, 2000; Davison & Birch, 2001).

Several studies have identified the benefits of using a socio-ecologic perspective when designing childhood overweight and obesity interventions (Collie-Akers, Schultz, Carson, Fawcett, & Ronan, 2009; Naylor, Macdonald, Reed, & McKay, 2006). In a time series design conducted over 6 years in Kansas City, Collie-Akers and colleagues (2009) examined the impact of the REACH 2010 program to reduce health disparities in African Americans and Latinos and its ability to facilitate community change through neighborhood and faith organizations. Community change was measured by the activities and accomplishments facilitated by participants in the neighborhood and faith sectors and included awareness events and distribution of resources about cardiovascular disease and diabetes. Collie-Akers and colleagues (2009) found that the program resulted in increased rates of change. The intervention was replicated in a second group of participants, which substantiates the conclusion that incorporating neighborhood and faith organizations may be influential routes in reducing creating community level change to reduce health disparities in minority groups.

In a review of the literature examining parents’ role in preventing childhood obesity, Lindsay, Sussner, Kim, and Gortmaker (2006) argued that to prevent and intervene in childhood obesity it may be necessary to implement multifaceted interventions utilizing community programs and policies and a child’s environment, such as the school, and parents. Lindsay et al. (2006) suggest that incorporating parents into comprehensive interventions may significantly impact obesity prevention in children. In a study merging NHANES III and census tract-level data, Dubowitz et al. (2008) highlight the importance of examining childhood obesity from an ecological perspective and recognize the significance of the neighborhood environment and how it can impact obesity levels. According to the authors,
there were several limitations of the study including, difficulty in geographically defining neighborhoods, sorting residents into specified neighborhoods, and limited overlap in the distributions of neighborhood SES across racial and ethnic groups. However, exploring the relationship between neighborhood SES and dietary habits may eventually encourage policy changes that increase the availability of healthy food options in lower SES neighborhoods (Dubowitz et al., 2008). Overall, childhood obesity is a complex and prominent crisis and interventions stemming from an ecological perspective may help explain the multitude of factors that contribute to childhood overweight and obesity, and while many interventions are adopting this approach more research is necessary, especially in Latino populations.

**INDIVIDUAL LEVEL**

Several studies indicate that Latino children consume diets higher in fat and sweetened beverages and less fruit and vegetables than other children (Ayala et al., 2008; Giammattei et al., 2003; Troiano et al., 2000). The following section addresses the association between sweetened beverages and fast food.

**SWEETENED BEVERAGES AND FAST FOOD ASSOCIATIONS**

Several studies indicate that Latino children consume diets higher in fat and sweetened beverages and less fruit and vegetables than other children (Ayala et al., 2008; Giammattei et al., 2003; Troiano et al., 2000). Both soda and fast food consumption have significantly increased in the last thirty years and parallels the rising childhood obesity rates, especially in Latino children (Bowman et al., 2004; Warner, Harley, Bradman, Vargas & Eskenazi, 2006). In a cross-sectional study in Santa Barbara, California, Giammattei and colleagues (2003) surveyed 385 middle school students about various health behaviors and height and weight measurements were recorded to determine the BMI for each participant. Results indicated that Latino adolescents were more likely to be overweight, and reported drinking more soda, and watching more television than the non-Hispanic white or Asian students observed in this study. Watching television is considered sedentary behavior and suggests less time being afforded to physical activity (Giammattei et al., 2003). This association is similar to other studies that report increased sedentary behaviors and decreased physical activity rates in Latino children (Lutfiyya et al., 2008).
There is a lack of research on the association between fast food consumption and sweetened beverages (i.e. soda, sweetened fruit juices) and how they can impact obesity. In general, children who eat fast food are more likely to consume more total energy, total fat, total carbohydrates, added sugar, and sweetened beverages, like soda (Sallis & Glanz, 2006; Warner et al., 2006). Using data from the US Department of Agriculture’s Continuing Survey of Food Intakes by Individuals (CSFHI) and the Supplemental Children’s Survey, Bowman et al. (2004) examined the effects of fast-food consumption on energy intake and diet quality among 6,212 ethnically diverse U.S. children. Results indicated that children who ate more fast food were also likely to drink more sugar-sweetened beverages than children who did not eat fast food. Results also indicated a positive association between sweetened beverages and obesity, suggesting that increased consumption may increase the odds of becoming overweight or obese as a child or young adult. In a longitudinal study, Ludwig, Peterson and Gortmaker (2001) followed an ethnically diverse group of 548 middle school children in four Massachusetts communities. Ludwig et al. (2001) found that over a 19-month period each additional serving of a sweetened beverage resulted in 60% increased risk for obesity. Welsh et al. (2005) also found that children doubled their risk of obesity when consuming one or more sweetened beverages per day.

Studies addressing the effect of sweetened beverage and fast food intake on overweight status in children are limited, and very few have examined the effects on Latino children. A study by Warner and colleagues (2006) investigated the effects of soda consumption on overweight status in 354, 2-year old Latino children in the U.S. Results indicated that soda and fast food consumption might be contributory factors in the development of overweight and obesity in Latino children. Sixty percent of children in the study ate fast food at least once a week and were significantly more likely to drink soda than children who did not eat fast food. Over 50% of the children drank soda regularly and 12% drank one or more sodas per day. Children increased their odds of becoming overweight or obese threefold when consuming at least one soda per day, even in children as young as two (Warner et al., 2006). Ariza et al. (2004) conducted a cross-sectional survey in two inner city Chicago elementary schools assessing risk factors for childhood overweight in five to six year old Hispanic-American children. Mother’s and their children were surveyed and results indicated that overweight children consume significantly more sweetened beverages than
non-overweight children. These findings also suggest that sweetened beverages may contribute to the development of obesity in Latino children (Ariza et al., 2004).

**FAMILY LEVEL**

The following section examines how parents impact their children’s physical activity levels.

**Parents’ Role in Impacting Physical Activity**

While research on how the family can impact childhood obesity is still limited, studies examining the influence of parents on their children’s weight status have increased in recent years (Ventura & Birch, 2008). Parents can impact how often their children engage in physical activity or play in parks (Jain et al., 2001). Parents are commonly identified as influential role models for children, specifically impacting diet, physical activity and weight status (Moag-Stahlberg, Miles, & Marcello, 2003; Wrotniak, Epstein, Paluch, & Roemmich, 2005). A number of studies also suggest that if parents model, participate in, and encourage physical activity their children demonstrate higher levels of physically activity (Davison, Cutting & Birch, 2003; Wrotniak et al., 2005). Conversely, in an online survey of 615 parents and 615 children age 10-18, Moag-Stahlberg and colleagues (2003) found that sedentary activities in children were often modeled after the sedentary activities of their parents. Eckstein and colleagues (2006) surveyed parents of children aged 2-17 years in pediatric practices and found that the majority of parents reported that they felt they could play a role in their child’s weight status by offering healthy food choices and encouraging physical activity. However, select parents of overweight children were unable to accurately assess their child’s weight status and they reported an inability to impact their child’s physical activity levels. If parents are unable to identify when their child is at risk for overweight, they may not identify the need to utilize their influence as parents and introduce healthier food options and increase physical activity. While the study sample size was relatively small with only 223 participants, the findings may still offer significant insight in understanding when parents state they can impact their child’s health.

Arredondo et al. (2006) examined the association between parenting style and children’s health practices (diet and physical activity) in parent-child dyads from 13 middle schools in southwest San Diego. Results indicated that when parents played an active role in
monitoring their children’s dietary habits and physical activity levels, their children were more likely to eat healthier foods and lead more active lifestyles. While the findings are correlational and cannot infer causation, the results offer insight to how parents can shape children’s health behaviors. Snethen, Beauchamp-Hewitt and Petering (2007) conducted in depth focus groups in an urban Latino community and found that parents recognized the importance of taking their children to parks and believed they can help manage their children’s weight by doing so. Participants’ responses suggested that environmental barriers may reduce the opportunity for children’s physical activity despite the parents’ good intentions. Parents often report significant barriers that may adversely affect their children’s physical activity levels including: cold weather, safety concerns, lack of parental time due to work demands and other family schedule conflicts (Lindsay et al., 2009). While parents identifying their role in their children’s physical activity levels may serve as a protective factor against the development of childhood overweight and obesity, environmental factors may counteract their efforts and therefore must also be addressed when developing physical activity interventions.

**Parents’ Role in Impacting Nutrition**

Parents play a significant role in developing a healthy home environment for their children that encourages healthy, balanced diets and physical activity (Cullen et al., 2000; Lindsay et al., 2006; Ventura & Birch, 2008). Parents, especially mothers, are crucial mediators in obesity prevention; they can impact when and what their children eat, portion size, and the context in which eating occurs (Jain et al., 2001; Ventura & Birch, 2008), and when they do monitor their children’s diet, their children eat healthier foods (Arredondo et al., 2006). A study in Westchester County, New York surveyed parents in pediatric practices with children age 4-8 years to assess parental attitudes about excess weight, knowledge of healthy eating habits and perceptions about weight status (Etelson, Brand, Patrick, & Shirali, 2003). The majority of parents reported concern about childhood obesity and a desire to provide a healthy environment for their children by limiting juice box consumption to no more than two per day and offering fast food meals only once a week or less.

To assess how the social-environment influences children’s food choices, Cullen and colleagues (2000) conducted in depth focus groups with African American, European
American and Mexican American parents and children. Every parent reported a concern for their children’s weight status and desire to reduce risk factors for childhood obesity. Parents recognized that they play a key role in preventing the development of obesity in their children, and parents who were concerned about their children’s weight status were more likely to provide their children with healthy food choices. Similarly, in a study by Sherry et al. (2004), mothers of Latino children indicated that they played a role in their child’s weight status by controlling portion size and trying to provide nutritious meals. However, many low-income mothers were concerned about their children being underweight and making sure they had enough to eat, which could result in overfeeding. These findings suggest that parents need to be informed on how influential their role in their children’s nutrition can be. If parents are not encouraging proper nutrition their influence may be detrimental to their child’s nutrition and weight. In an in depth focus group study, Jain and colleagues (2001) interviewed 18 low-income mothers about their perceptions of childhood obesity and possible barriers to preventing childhood obesity. Many of the mothers reported feeling that they had little control or influence in their children’s dietary habits and they believed they could not prevent the development of obesity or counteract the influence of heredity. For future obesity prevention programs to be successful, it is crucial that parents, especially mothers, understand the unique role they play in shaping their children’s dietary habits and preventing the development of overweight or obesity (Jain et al., 2001).

In-depth focus groups conducted by Lindsay and colleagues (2009) revealed that many Latino mothers reported being aware of the consequences of giving their children fast food and the unhealthy effects on their diets. However, despite knowledge of the unhealthy effects of fast food, mothers may still purchase inexpensive fast foods due to lack of access to healthy foods (Lindsay et al., 2009). Because participants were recruited through the WIC program in Boston, and it was a convenience sample, the findings are limited in generalizability. However, the multiethnic study population may yield significant implications for Latino population groups (Lindsay et al., 2009). In general, several studies imply that while parents recognize the need to provide their children with healthy food options, the lack of access to healthy foods may prevent them from purchasing these foods (Lindsay et al., 2009; Sallis & Glanz, 2006). This highlights the need to develop socio-ecologically based interventions that target both family influence and the built environment.
ENVIRONMENTAL LEVEL

The following section examines how the environment can impact individual park usage.

Environment and Park Usage

Previous efforts to increase physical activity have often relied on curriculum modification in physical education classes, one-on-one counseling sessions, and promotional materials, (Bedimo-Rung, Mowen, & Cohen, 2005). Recently, an increased emphasis has been placed on environmental factors that influence physical activity rates in adults and children and how to incorporate these factors in future interventions. Increasing access to safe parks could increase the likelihood of physical activity (Bedimo-Rung et al., 2005). Public parks offer an environment to participate in physical activity and are associated with many physical and psychological benefits. Individuals may utilize public parks for walking, jogging and other various sports (Bedimo-Rung et al., 2005; Cohen et al., 2007). In addition to physical health benefits, park usage is associated with many psychosocial benefits; the natural and scenic environment of parks may be soothing for park users and parks may also encourage social interaction among neighbors.

Several studies report a positive association between physical activity and proximity to parks (Bedimo-Rung et al., 2005; Cohen et al., 2006; Cohen et al., 2007; Yanez & Muzzy, 2005). In a study examining 8 parks in Los Angeles, Cohen and colleagues (2007) systemically observed and conducted interviews with park users and found that, compared to people who lived further away, people who lived within one mile of a park where 4 times more likely to visit the park at least once per week. In 2001, the CDC’s Task Force on Community Preventive Services reviewed community physical activity interventions and results indicated that creation of or increased access to parks led to a 25% increase in the percentage of people exercising at least three times per week (CDC, 2001; Yanez & Muzzy, 2005). Access to parks may be especially beneficial in increasing physical activity levels in low SES populations, as they provide individuals with more opportunities for free or low-cost activities (Godbey, Caldwell, Floyd, & Payne, 2005). The availability of and access to parks may be especially important for children as their physical activity is limited to where they can walk or bicycle to (Cohen et al., 2006). This was found in a cross-sectional study in
Australia where members of lower SES were less likely to utilize recreational facilities or gyms and more likely to use informal facilities, such as streets and public open spaces for physical activity (Gilles-Corte & Donovan, 2002). Though the study was cross-sectional and cannot infer causation, the results suggest that parks may be a potential option for physical activity for individuals living in lower SES areas to be physically active.

Despite the benefits associated with park use, many low SES groups face significant barriers to park use (Babey, Diamant, Brown, & Hastert, 2005). Estabrooks, Lee, and Gyuresik (2003) studied accessibility and availability of physical activity resources to determine if they varied by neighborhood SES and found that lower SES neighborhoods had fewer free physical activity resources than higher SES neighborhoods. Many Latino women also report lack of adequate or safe facilities and cost as barriers in leading physical active lives (Evenson, Sarmiento, Macon, Tawney, & Ammerman, 2002) and nearly 30% of Latino adolescents do not have access to safe parks (Babey et al., 2005). While parks and open spaces may be ideal locations for many low-income Latino families to be physically active, significant barriers, including safety and accessibility, may prevent utilization of these cost-free resources (Babey et al., 2005; Gordon-Larsen, McMurray & Popkin, 2000). Access to and safety of recreational spaces, like parks, are important factors to consider when developing socio-ecological interventions targeting childhood obesity.

**Perception of Park Safety and Park Usage**

Perception of park conditions and perceived access are important factors influencing park usage (Bedimo-Rung et al., 2005; Cohen et al., 2007). Research suggests that people utilize parks based on what features are available, and also factor in the condition of the features; well-maintained parks are more likely to be utilized than parks that are not regularly maintained (Bedimo-Rung et al., 2005). Inequalities in socioeconomic status increase the likelihood that low-income neighborhoods will not have safe maintained parks, well-equipped playgrounds to exercise and be active than are more affluent communities (Cohen et al., 2006; Evenson et al., 2002). Many Latino women report inadequate or unsafe facilities as barriers to physical activity and it can be inferred that with limited access to safe well-equipped parks, physical activity rates are likely to be adversely affected (Evenson et al., 2002).
The lack of access to safe places to play may inhibit children from being physically active and encourage sedentary behaviors (Sallis & Glanz, 2006). According to the California Health Interview Survey, approximately 30% of Latino adolescents do not have access to a safe park (Yanez & Muzzy, 2005). Snethen and colleagues (2007) conducted focus groups with both parents and children discussing strategies in addressing childhood overweight in a Latino community in Wisconsin. Both children and parents reported safety issues as a contributing factor to physical inactivity in children. Children reported a lack of desire to play outside in open spaces because there “are people doing drugs or gangsters” and many mothers feared their children may be hurt by playing in unsafe places (Snethen et al., 2007). Cohen and colleagues (2007) reported that perceptions of park safety, especially in children’s play areas, may impact usage and 19% of study participants reported safety concerns in their top 5 requests for improvement of park features. Despite documented concerns about park safety, Cohen and colleagues (2007) found that perception of safety did not predict park usage. However, the study was restricted to only 8 parks limiting the generalizability of the findings.

Gordon-Larsen and colleagues (2000) surveyed 17,776 participants already enrolled in the National Longitudinal Study of Adolescent Health, to assess determinants of physical activity patterns and found that 41.5% of Hispanic participants lived in high crime areas and 52.5% had low family incomes. High crime areas were significantly associated with decreased reported physical activity rates. Although not significant, a positive association between high crime areas and increased physical inactivity was also found. The collective findings of the aforementioned studies suggest that perceived neighborhood and park safety may be significant barriers to physical activity and may be important to consider in future environmental physical inactivity interventions (Cohen et al., 2007; Gordon-Larsen et al., 2000; Snethen et al., 2007).

**Park Usage and Socioeconomic Status**

Several studies suggest a positive association between socioeconomic status and Hispanic children’s physical activity (Harper & Lynch, 2007; Lutfiyya et al., 2008; Newacheck, Hung, Park, Brindis, & Irwin, 2003; Sussner et al., 2008). Data from National Survey of Children’s Health, suggest that compared to overweight or obese white children,
70% of overweight or obese Hispanic children are living in households with an annual income 150% below the federal poverty level (Lutfiyya et al., 2008). Lower SES commonly coincides with low-income communities and poor environmental conditions which are linked to lower levels of physical activity and an increased consumption of energy-dense, low nutrient food (Lindsay et al., 2009).

Living near a park can have beneficial effects on physical activity. Cohen and colleagues (2006) found that living near a park is associated with increased physical activity. Estabrooks et al., (2003) utilized U.S. census tracts to examine physical activity resources according to high, medium, or low SES neighborhoods and found that lower SES neighborhoods have significantly fewer physical activity resources than more affluent neighborhoods. The study findings suggest that low-income children may face additional barriers to physical activity (Estabrooks et al., 2003). Floyd, Spengler, Maddock, Gobster, and Suau (2008) observed park users in both Chicago and Tampa to assess park based physical activity, and found that income characteristics influence park use. Observations of Tampa parks showed the lowest level of energy expenditure among low-income Hispanic neighborhoods and high-income White neighborhoods. In Chicago, the highest levels of energy expenditure were observed in high-income African-American neighborhoods. The study’s findings suggest a link between low levels of physical activity in parks and low-income minority neighborhoods (Floyd et al., 2008). However, each park user was only observed once and this limits the generalizability of the findings.

Winkleby and Cubbin (2003) found that SES, as measured by income, education and employment and may be an important determinant of community environment and adversely impact physical activity levels among Latinos and their children. Duncan, Duncan, Strycker and Chaumeton (2002) collected data from 56 neighborhoods in a metropolitan city to examine neighborhood physical activity opportunities including, playgrounds, parks or gyms, sidewalk structure and traffic. Participants in neighborhoods with more poverty reported fewer neighborhood physical activity opportunities than neighborhoods with less poverty. Duncan and colleagues (2002) also found that physical activity levels were significantly related to perceived neighborhood physical activity opportunities. This association suggests that participants with more neighborhood physical activity opportunities, like parks, may have higher levels of physical activity. While the findings were significant, only 3.2% of
participants were Hispanic, and furthers study is needed to determine if association exists among the Hispanic population as well.

A study by Powell, Slater and Chaloupka (2004) assessed the association between SES and the availability of community-level physical activity-related settings in Chicago. Observations were conducted from February to June in both 2002 and 2003 and Census Bureau data was used to determine SES. Similar to other studies, Powell and colleagues (2004) observed that higher median household incomes and lower poverty rates are associated with an increased availability to community-level physical activity settings. However, as Powell and colleagues (2004) note, this study did not provide evidence of park usage levels. More research is needed to determine if SES variables not only impact physical activity, but more specifically impact park usage.

While several studies have researched the association between employment status and education level on physical activity, there is a lack of research on their impact on park use intent. Harper and Lynch (2007) examined trends in socioeconomic inequalities in adult behaviors in the U.S. and found that as socioeconomic status decreases, measured by education level, physical activity also decreases. Giles-Corti and Donovan (2002) also examined the effects of socioeconomic status on physical activity levels and found that individuals in lower SES groups have insufficient levels of physical activity. Utilizing participants enrolled in NHANES III, Dowda, Ainsworth, Addy, Saunders, & Riner (2003) examined correlates of physical activity among 4,964 adults. Employed women in the study were much less physically active than the women who were unemployed, reporting that school or work as significant barriers to being physically active. While these studies support the association between SES and physical activity, the association between SES and park use intent remains understudied.

**FAST FOOD CONSUMPTION AND SOCIOECONOMIC STATUS**

Emerging research suggests a strong association between health disparities and racial compositions in urban and rural neighborhoods (Larson, Story, & Nelson, 2009). Across the United States there is an increased availability of cheap, convenient fast food of large portions, and research suggests an increased availability of fast food in low-income neighborhoods with limited access to healthy alternatives (Holsten, 2007; Jeffery et al.,
2006). In recent years, obesity researchers have begun to examine the relationship between neighborhood food availability and levels of obesity, and research suggests that there is a link between increased obesity levels and unhealthy environments (Holsten, 2007; Jeffery et al., 2006; Larson et al., 2009; Li, Harmer, Cardinal, Bosworth, & Johnson-Shelton, 2009; Spence, Cutumisu, Edwards, Raine, & Smoyer-Tomic, 2009). Obesity and unhealthy eating have been linked to populations composed of a higher minority population and reduced access to healthy alternatives in nutrition. Inequalities in socioeconomic status result in a high percentage of Latinos settling in low-income neighborhoods with limited access to healthy foods (Lindsey et al., 2009). Low-income neighborhoods are more likely to consist of liquor stores and mini marts rather than affordable health food options and supermarkets offering ready-to-eat healthy foods.

In addition to reduced access to healthy food options, minority and low-income neighborhoods also face an increased availability of fast food restaurants containing energy dense foods, taco wagons, and street vendors (Larson et al., 2009). Larson et al. (2009) suggest that increased access to convenience stores and mini marts and decreased access to supermarkets tend to result in residents having unhealthier diets and increased levels of obesity. This overabundance of fast food is coupled with decreased opportunities to engage in physical activity and thus yields an environment that significantly impacts the obesity epidemic (Holsten, 2007). A study in Canada found that proximity to fast food restaurants and convenience stores increased the odds of being obese, where as living near supermarkets with healthy alternatives decreased the odds of obesity, suggesting that proximity to the obesogenic environment is in fact a risk factor for obesity (Spence et al., 2009). Jeffery and colleagues (2006) also found an association with proximity of fast food and obesity and speculated that easy access to unhealthy foods increases the likelihood for poor eating habits. Fast food and convenient stores are often overly abundant in low-income neighborhoods suggesting an increased risk for families living in these neighborhoods.

In addition to low-income, employment and education level have been implicated in fast food consumption (Ayala, Mueller, Lopez-Madurga, Campbell, & Elder, 2005; Kranz & Siega-Riz, 2002; Lindsay et al., 2009; North & Emmett, 2000). In the United Kingdom, North and Emmett (2000) surveyed 10,000 adults and children already enrolled in the Avon Longitudinal Study of Pregnancy and Childhood about their consumption of a variety of
foods in both adults and children. Their results indicated that children of higher educated parents consumed healthier foods compared to those of less educated children. Their findings may be limited in generalizability given that the majority of the study population was Caucasian and any other race was categorized as “non-white.” Using matched mother-child data from the National Longitudinal Survey of Youth (NLSY) Anderson, Butcher, and Levine (2003) investigated the effect of maternal employment on children’s obesity levels and concluded that mothers’ who worked more hours per week may be more likely to have an overweight child. Working more hours per week takes away from the time mothers may spend shopping or cooking, and children’s diet may not be monitored as closely. However, this effect was only discovered among children and mothers in higher socioeconomic status households (Anderson et al., 2003). Xie, Gilliland, Li, and Rockett (2003) surveyed an ethnically diverse group of 3,000 adolescents in the Children’s Health Study and also examined the effects of parental education on children’s diets. Study findings indicated that adolescents of parents who had a higher education had higher intake of healthy nutrients such as protein, fiber, folate, vitamin A, and calcium and lower consumption of total fat. While there have been many of these studies are substantial, more research is necessary specifically focusing on Latino populations.

While research on employment status and the association with fast food consumption is limited, there are some significant findings. French, Harnack, and Jeffery (2000) surveyed women enrolled in the Pound Prevention Study in Minneapolis, Minnesota on their fast food restaurant use. Results showed that women who were employed ate significantly more fast food than women who are unemployed. Using data from the National Longitudinal Survey of Youth, Anderson et al. (2003) examined the impact of maternal employment on childhood obesity. Their findings suggest that mothers who were employed and worked more hours per week were more likely to have an overweight child, implying that employed mothers may have less time to spend shopping or cooking than unemployed mothers. However, SES appeared to be a moderating factor in that association was not discovered among low-income households, but rather in households with higher SES. Ayala and colleagues (2005) found that Latino women who were employed were more likely to choose a fast food restaurant over other types of restaurants than women who were unemployed. Latino women reported that fast food restaurants are inexpensive, convenient and have child friendly play areas and
menu’s, making it easier to frequent fast food restaurants rather than a more expensive restaurant. Despite these significant findings, research on the association between fast food consumption and employment status is still limited, especially in Latino populations; to substantiate the association, more research is needed.

**AIM OF STUDY AND HYPOTHESES**

The aim of this cross-sectional study is to describe the association between varying levels of a child’s environment and intended park usage and diet choices among Latino children living in Chula Vista. Participants were recruited from the following faith based organizations: (1). Chula Vista Presbyterian Church, (2). Community Congregational Church, (3). Our Lady of Guadalupe Church, (4). St. Rosa de Lima Church, and (5). Church of the Most Precious Blood. The study also examined perceptions of safety and use of five parks, nearby each of the churches. The parks included were: (1) Hilltop Park, (2). Friendship Park, (3). Otay Park, (4). Memorial Park, and (5). Lauderbach Park. The present study examines the association between the individual child, the parents’ role in physical activity and diet choices, the community environment, park use, and fast food consumption (see Figure 1).

![Theoretical model](image)

Figure 1. Theoretical model.
The research on childhood overweight and obesity in Latino populations is significantly limited and this study aims to better understand the multiple levels of influence that can impact childhood overweight and obesity in Latinos. Understanding nutrition in Latino children may suggest that an increased consumption of unhealthy food and drink, like sweetened beverages, may impact fast food consumption as well. Parents’ play a significant role in the development of a healthy lifestyle in children and examining their role in their child’s nutrition and physical activity may explain significant risk factors in the development of obesity (Cullen et al., 2000; Jain et al., 2001; Lindsay et al., 2006; Ventura & Birch, 2008). It has been well documented that parents may influence their children’s diets and physical activity levels but more research is need to understand if a proactive parenting role may serve as a protective factor in preventing the development of childhood obesity. This study aims to evaluate the association between parents’ beliefs of their role in preventing childhood obesity and how that impacts their child’s nutrition and park use. It is hypothesized that if parents’ believe they play a large role in their child’s weight, they may be more inclined to take their children to the park more and take their children to fast food less often than parents’ who do not feel they play a role.

In addition, this study also examines the association between the perception of park safety and park usage. While studies are beginning to examine the relationship between perception of park safety and park usage, findings are mixed and additional research is needed to better understand the relationship (Cohen et al., 2007; Gordon-Larsen et al., 2000). This study aims to add to the growing body of literature about park safety and intended park use. In addition to perception of park safety, this study will assess the association between SES and park usage and SES status and fast food consumption. Given that a large majority of the Latino population lives in lower SES areas, it is important to understand the role SES plays in impacting park usage and fast food consumption (Lindsay et al., 2009). A better understanding of the association between children’s diet, parents’ role, perception of park safety, and SES and how they impact park usage and fast food consumption will contribute and add to the current research. A thorough socio-ecologic understanding of the complexity of the childhood obesity epidemic may lead to more effective preventive interventions.
Main Hypotheses:

1. Sweetened beverage intake will be positively associated with fast food consumption.
   - Soda consumption is positively associated with fast food consumption
   - Flavored beverage consumption is positively associated with fast food consumption
2. The belief that parents’ play a large role in their children’s weight will be positively associated with the frequency in which parents take their children to nearby parks.
3. The belief that parents play a large role in their children’s weight will be inversely related to with the frequency in which parents take their children to fast food restaurants.
4. Perception of park safety will be positively associated with intended park usage over the next 6 months
5. SES will be positively associated with intended park usage over the next 6 months
   - Education level will be positively associated with park use intent over the next 6 months.
   - Unemployed parents will be more likely to use the park over the next 6 months.
   - Average monthly income will be positively associated with park use intent over the next 6 months.
6. SES will be negatively associated with how often parents give their children fast food
   - Education will be negatively associated with how often parents give their children fast food.
   - Employed parents will be more likely to give their children fast food
   - Average monthly income will be negatively associated with how often parents give their children fast food.
CHAPTER 2

METHODS

This cross-sectional analysis used baseline data from the physical activity intervention *Cambios con Fe/Changes with Faith*. *Cambios con Fe/Changes with Faith* is a church based multi-level intervention aimed at improving the built environment, increasing psychosocial correlates of healthy eating and physical activity, and parenting practices related to healthy nutrition and physical activity. Baseline data were collected between June 2009 and July 2009. Theses analyses examine the relationship between demographic characteristics, children’s sweetened beverage and fast food intake, parents’ perceived role in preventing childhood obesity, and parents’ perception of park safety and park usage.

**CHURCH RECRUITMENT**

To be eligible to participate, each church had to be located in Chula Vista, San Diego and have at least one Spanish speaking service. The *Cambios con Fe* project manager identified church leaders in the community and informed them of the goals of the program and the 2-year commitment if they chose to participate. The selected churches were the following: Chula Vista Presbyterian Church, Community Congregational Church, Our Lady of Guadalupe Church, St. Rosa de Lima Church, and Church of the Most Precious Blood.

**PARTICIPANT RECRUITMENT**

Both Latino men and women were recruited to participate in the study. Inclusion criteria included being at least 18 years of age, attending church services at least twice per month, planning to attend the church over the next 2 years and have a child that is younger than 18 years of age. However, due to challenges in recruiting families with small children the criteria was widened and participants need not have a child to participate in the study. Latino men and women over the age of 18 were recruited through flyers, announcements made during the church service and word of mouth from the parish members. At the time of baseline measurement, 149 men and women completed the survey, and only 1 parent per household was allowed to complete the survey. Of the 149 participants, only 26 were male
and 123 were women. However, for the purpose of this study the sample will only include the 73 participants who indicated they had a child under the age of 18. Of the sample of 73, 9 men completed the survey and 64 women.

**Survey**

Bilingual project staff administered the survey to participants; the 6-page questionnaire was available in both English and Spanish (See Appendix). Mean length to complete the survey was 20 minutes. The survey assessed number of hours per week spent watching television/playing on the computer, fast food and sweetened beverage consumption, past advocacy efforts, neighborhood cohesion, past and intended park usage, perceptions of safety and desired environmental changes, attitudes and beliefs about childhood obesity, the faith organizations health program, church attendance and participation in church activities, and demographic information. Of 73 surveys for the purpose of this study, 6 were written in English and 67 were in Spanish.

**Demographics**

The demographic characteristics for the survey were adapted from the Caminando con Fe survey, which used the demographic characteristics from the Behavioral Risk Factor Surveillance System (BRFSS) and the San Diego Prevention Research Center (SDPRC). Demographic characteristics collected included age, birth date, marital status, number of children under the age of 18 living in the household, current employment status, years of formal education, country of birth, length of residency in the U.S., average monthly income, number of children diagnosed with obesity by a physician, and number of children in total. For the purpose of this study employment status, years of formal education and average monthly income were examined to determine a participants’ socioeconomic status.

Employment status was assessed by the question “What is your current employment status?” Response items were based on an 8 item scale ranging from (1) = Employed outside the home full-time, (2) = Employed outside the home part-time, (3) = Self-employed, (4) = Homemaker, (5) = Student, (6) = Retired, (7) = Unable to work, and (8) = Unemployed. Responses were re-categorized into dichotomous responses (0) = Employed and (1) = Unemployed. The Employed category included the original scale responses of 1 through 3, and the Unemployed category included answers ranging from 4 through 8.
Education was assessed by the question “How many years of formal education did you complete?” Response items were based on an 8 item scale ranging from (1) = Never attended school or only kindergarten, (2) = Elementary through 6th grade, (3) = Middle School (secondary), (4) = High School (preparatory), (5) = 1-2 years of College including Community and Tech colleges, (6) = 3-4 years of College, (7) = College graduate, and (8) = Post graduate work. Responses were re-categorized into dichotomous responses (0) = High school education or less and (1) = At least some college.

Average monthly income was assessed using continuous income intervals from (1) less than $500, (2) $501-1,000, (3) $1,001-1,500, (4) $1,501-2,000, (5) $2,001-2,500, (6) $2,501-3,000, (7) $3,001-3,500, and (8) more than $3,501. Responses were re-categorized into dichotomous responses (0) = Less than or equal to $2,000 and (1) = More than $2,000.

**Sweetened Beverage and Fast Food Consumption**

Sweetened beverage intake was measured by two questions: “How often do your children drink regular soda (Coke, Sprite, Orange Soda)” and “How often do your children drink flavored drinks (Kool-aid, Tampico, Hi-C)?” Response items were based on a 10 item scale ranging from (1) = Never, (2) = 1-3 times per month, (3) = 1-2 times each week, (4) = 3-4 times each week, (5) = 5-6 times each week, (6) = 1 time each day, (7) = 2 times each day, (8) = 3 times each day, (9) = 4 times each day, and (10) = 5 or more times each day. Fast food consumption was measured by the question, “How often does your family go out to eat at a fast food restaurant?” Response items were based on a 5 item scale ranging from (1) = Never, (2) = Less than once a week, (3) = 1-2 times per week, (4) = 3-4 times per week, (5) = 5-7 times per week. For both questions, responses were re-categorized into dichotomous responses (0) = Less than once a week and (1) = At least once a week. These questions were adapted from a modified eating frequency scale used in the Adventuras Para Niños study.

**Parents’ Beliefs about Childhood Obesity**

Parents’ role in preventing childhood obesity was assessed by the question, “Do you believe that parents play a large role in their children’s weight?” Response items were based on a 3 item scale ranging from (1) = Yes, (0) = No, and (8) = I don’t know. This question was created for the purpose of this study.
INTENDED PARK USE

Intention of park use was assessed by the question, “Over the next 6 months how likely are you to go to the park?” This question was adapted for the current survey. Response items were based on a 4 item scale ranging from (1) = Very Unlikely, (2) = Somewhat Unlikely, (3) = Somewhat Likely, and (4) = Very Likely. Participants were asked about a specific nearby park based on the church they attended. Members from Chula Vista Presbyterian answered questions about Hilltop Park, Community Congregational Church members responded to questions about Friendship Park, Our Lady of Guadalupe Church members answered questions about Otay Park, St Rosa de Lima church members responded to questions about Memorial Park, and church of the Most precious Blood members answered questions about Lauderbach Park. However, for the purpose of this study results will include all five parks, rather than be broken down by a specific park. Responses were re-categorized into dichotomous responses (0) = Unlikely and (1) = Likely. This question does not address whether or not parents intend to bring their children to the park with them. However, as all of the participants included in the analyses reported having a child 18 years or younger, the current study is assuming they will be taking their children with them to the park. This question was created for the purpose of this study. Previous park usage was examined by the questions “Within the past 3 months, how often have you attended nearby parks (outdoor recreational facilities)?” and “Within the past 3 months, how often have you taken your child with you to nearby parks?” Response items were based on a 5 item scale ranging from (1) = Never, (2) = Less Than Once a Month, (3) = Less Than Once a Week, (4) = 1-3 Times/Week, (5) = 4-7 Times/Week.

PERCEPTION OF PARK SAFETY

Overall perception of park safety was measured by the question, “Do you feel safe in the park?” Response items were dichotomous (1) = Yes and (0) = No. Again, the park in question depended on which church the participant attended. This question was created for the purpose of this survey.

STATISTICAL ANALYSIS

Statistical Package for the Social Sciences (SPSS) software, version 18 for Macintosh was used for all analysis. Alpha levels were set at .05 for all significance tests. Independent
variables used in analysis included the following dichotomized variables: weekly sweetened beverage consumption, parents’ beliefs about their role in their child’s weight, perception of park safety, and SES (comprised of education level, employment level, and average monthly income). Logistic regression was used to test the primary outcome variables of intention to use the park in the next 6 months and how often parents’ give their children fast food, per week.
CHAPTER 3

RESULTS

This chapter will describe about characteristics of the study sample, survey responses, and results from the analysis performed on the data.

CHARACTERISTICS OF SAMPLE

The study sample includes 73 Latino men and women who participated in the physical activity intervention *Cambios con Fe*/Changes with Faith. Sample characteristics taken from the baseline survey are presented in Table 1. The mean age for the sample was 40.72 (SD = 8.43; range = 18 – 75) and 40% had a mean monthly income equal to, or less than, $2,000 per month. Eighty percent reported being born in Mexico or another country other than the United States and mean length of residence in the United States for the sample was approximately 18 years (SD = 10.80; range = 2 – 47). Twenty-four percent of the sample had been told by a doctor that one or more of their children were overweight or obese.

Table 1. Demographic Characteristics of Sample (N=73)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>40.72 (8.43)</td>
<td>-</td>
</tr>
<tr>
<td>Number of Children Under 18 in Household</td>
<td>1.99(1.01)</td>
<td></td>
</tr>
<tr>
<td>Born in Mexico or country other than U.S.</td>
<td>-</td>
<td>80%</td>
</tr>
<tr>
<td>Average Length of Residence in U.S. (years)</td>
<td>18 (10.8)</td>
<td>-</td>
</tr>
<tr>
<td>Percent told by a doctor that their child is overweight/obese</td>
<td>-</td>
<td>24%</td>
</tr>
</tbody>
</table>

The breakdown of the average monthly incomes of the study participants is highlighted in Table 2. More than 21% of the participants fell in the more than $3,500 per month category. The income category with the second highest percentage of participants was the $1,001-$1,500 per month with 15.2% of participants. The participants' level of
Table 2. Monthly Income of Sample (N=73)

<table>
<thead>
<tr>
<th>Monthly Income Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $500</td>
<td>9.1%</td>
</tr>
<tr>
<td>$501-$1,000</td>
<td>12.1%</td>
</tr>
<tr>
<td>$1,001-$1,500</td>
<td>15.2%</td>
</tr>
<tr>
<td>$1,501-$2,000</td>
<td>9.1%</td>
</tr>
<tr>
<td>$2,001-$2,500</td>
<td>10.6%</td>
</tr>
<tr>
<td>$2,501-$3,000</td>
<td>10.6%</td>
</tr>
<tr>
<td>$3,001-$3,500</td>
<td>12.1%</td>
</tr>
<tr>
<td>More than $3,500</td>
<td>21.2%</td>
</tr>
</tbody>
</table>

completed education is outlined in Table 3. Nearly 35% of participants indicated they had completed high school (preparatory) and 18.7% had completed at least 1-2 years of college, including community and tech colleges. Approximately 9% of participants were college graduates and 6.7% had completed post-graduate work. The employment characteristics of the sample are noted in Table 4. Forty-four percent of the study population qualified themselves as “homemakers” and approximately 26% work full-time outside of the home.

Table 3. Education Level of Sample (N=73)

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never Attended School or Kindergarten</td>
<td>1.3%</td>
</tr>
<tr>
<td>Elementary Through 6th Grade</td>
<td>2.7%</td>
</tr>
<tr>
<td>Middle School (Secondary)</td>
<td>18.7%</td>
</tr>
<tr>
<td>High School (Preparatory)</td>
<td>34.7%</td>
</tr>
<tr>
<td>1-2 Years of College Including Community and Tech Colleges</td>
<td>18.7%</td>
</tr>
<tr>
<td>3-4 Years of College</td>
<td>8.0%</td>
</tr>
<tr>
<td>College Graduate</td>
<td>9.3%</td>
</tr>
<tr>
<td>Post Graduate Work</td>
<td>6.7%</td>
</tr>
</tbody>
</table>
Table 4. Employment Status of Sample (N=73)

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed Outside the Home Full-Time</td>
<td>26.7%</td>
</tr>
<tr>
<td>Employed Outside the Home Part-Time</td>
<td>12.0%</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>6.7%</td>
</tr>
<tr>
<td>Homemaker</td>
<td>44.0%</td>
</tr>
<tr>
<td>Student</td>
<td>4.0%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

Descriptions of the dependent variables are described in Table 5. Approximately 78.7% of participants reported they were likely to use the park in the next 6 months and 45.3% of participants reported eating out at a fast food restaurant at least once per week and only 16% report never eating out at a fast food restaurant. Descriptions of the independent variables used in analysis are noted in Table 6. Approximately 48% of participants reported that their children drink soda at least once a week, and 46.7% drank flavored beverages at least once per week. Nearly 55% of participants were unemployed and 57.3% had a high school education or less. The majority of participants reported feeling safe in the park.

Table 5. Characteristics of Dependent Variables Used in Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>N=73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall intention to use the park in the next 6 months</td>
<td></td>
</tr>
<tr>
<td>Unlikely*</td>
<td>21.3%</td>
</tr>
<tr>
<td>Likely</td>
<td>78.7%</td>
</tr>
<tr>
<td>How often family goes out to eat at a fast food restaurant</td>
<td></td>
</tr>
<tr>
<td>Less than once per week*</td>
<td>54.7%</td>
</tr>
<tr>
<td>At least once per week</td>
<td>45.3%</td>
</tr>
</tbody>
</table>

*Indicates reference category (coded as 0)

Given that the dependent variable assessing park use intent did not specifically ask if parents intended to take their child to the park with them, the variables “Within the last 3 months, how often have you attended nearby parks (outdoor recreational facilities)” and “Within the last 3 months, how often have you taken your child with you to nearby parks” were examined to assess weather previous parental park use was associated with parents
Table 6. Characteristics of Independent Variables Used in Analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>N=73</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Park Safety</td>
<td></td>
</tr>
<tr>
<td>No*</td>
<td>28.6%</td>
</tr>
<tr>
<td>Yes</td>
<td>71.4%</td>
</tr>
<tr>
<td>Soda Consumption</td>
<td></td>
</tr>
<tr>
<td>Less than once week*</td>
<td>52%</td>
</tr>
<tr>
<td>At least once a week</td>
<td>48%</td>
</tr>
<tr>
<td>Flavored Beverage Consumption</td>
<td></td>
</tr>
<tr>
<td>Less than once week*</td>
<td>53.3%</td>
</tr>
<tr>
<td>At least once per week</td>
<td>46.7%</td>
</tr>
<tr>
<td>Belief that Parents’ Play a Large Role in Their Children’s Weight</td>
<td></td>
</tr>
<tr>
<td>No*</td>
<td>0%</td>
</tr>
<tr>
<td>Yes</td>
<td>100%</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
</tr>
<tr>
<td>Employed*</td>
<td>45.3%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>54.7%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>High school or less*</td>
<td>57.3%</td>
</tr>
<tr>
<td>At least some college</td>
<td>42.7%</td>
</tr>
<tr>
<td>Average Monthly Income</td>
<td></td>
</tr>
<tr>
<td>Less than or equal to $2,000*</td>
<td>40%</td>
</tr>
<tr>
<td>Greater than or equal to $2,001</td>
<td>60%</td>
</tr>
</tbody>
</table>

*Indicates reference category (coded as 0)

Taking their children with them. A Pearson Correlation test identified an $r = .887$ (p < .001). How often parents have gone to the park in the last 3 months was positively associated with how often they took their children with them. Given this association, it may be more likely that parents who intend to use the park in the next 6 months will be taking their children with them.

**Logistic Regression**

Separate logistic regression models were used to test the association between dichotomous dependent variables: intention to use the park and weekly fast food consumption and dichotomous independent variables: perception of park safety, soda and flavored beverage consumption, and demographic characteristics including: average monthly income, education, and employment status. Due to lack of variability in response to the question “Do you believe that parents play a large role in their children’s weight,” logistic
regression could not be used to examine if parents’ beliefs in their role in their children’s weight was associated with park usage or fast food consumption.

**HYPOTHESIS 1**

1a. *Weekly soda consumption is positively associated with weekly fast food consumption* (Table 7).

**Table 7. Logistic Regression of Association of Soda and Flavored Beverage Consumption on Fast Food Consumption**

<table>
<thead>
<tr>
<th>Variables*</th>
<th>OR</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Soda Consumption</td>
<td>At least once per week</td>
<td>3.5</td>
<td>1.36-9.2</td>
</tr>
<tr>
<td>Weekly Flavored Beverage Consumption</td>
<td>At least once per week</td>
<td>1.3</td>
<td>.51 – 3.18</td>
</tr>
</tbody>
</table>

* Dependent variable is weekly fast food consumption and is coded as 0 = less than once per week 1 = at least once per week

Weekly soda consumption was significantly associated with weekly fast food consumption. Participants who reported giving their children soda at least once per week were more likely to report taking their children to fast food at least once per week than those who gave their children soda less than once per week (OR = 3.5, 95% CI = 1.36, 9.2, p < .010).

1b. *Weekly flavored beverage consumption is positively associated with weekly fast food consumption* (Table 7).

Weekly flavored beverage consumption was not significantly associated with weekly fast food consumption (OR = 1.3, 95% CI = .51, 3.18, p = .598).

**Hypotheses 2 and 3**

*Parents’ who believe that they play a large role in their children’s weight will take their children to the park more frequently.*

*Parents’ who believe that they play a large role in their children’s weight will give their children less fast food.*
When parents were asked if they believed they played a large role in their children’s weight, all 73 participants responded yes. Due to lack of variability in response, this variable could not be used in logistic regression to test for an association between parents’ role and fast food consumption and parents’ role and intended park use.

**Hypothesis 4**

*Perception of park safety is positively associated with park usage intent over the next 6 months* (Table 8).

**Table 8. Logistic Regression of Association of Perception of Park Safety on Intended Park Use**

<table>
<thead>
<tr>
<th>Variables*</th>
<th>OR</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Park Safety</td>
<td>Yes</td>
<td>2.3</td>
<td>.67 – 7.62</td>
</tr>
</tbody>
</table>

*Dependent variable is intended park use over next 6 months and is coded as 0 = Unlikely 1 = Likely

Perception of park safety was not significantly associated with intention to use the park over the next 6 months (OR = 2.3, 95% CI = .67, 7.62, p = .192).

**Hypothesis 5**

5a. *Education is positively associated with park use intent over the next 6 months* (Table 9).

Education was not significantly associated with intended park usage over the next 6 months (OR = 1.3, 95% CI = .42, 4.09, p = .638).

5b. *Unemployed parents will be more likely to use the park over the next 6 months* (Table 9).

Employment status was negatively associated with intended park usage over the next 6 months. Participants who were unemployed were more likely to intend to use the park over the next 6 months than participants who were employed (OR = 7.84, 95% CI = 2.01, 30.67, p < .003).

5c. *Average monthly income is positively associated with park use intent over the next 6 months* (Table 9).
Table 9. Logistic Regression of Association of Socioeconomic Status on Intended Park Use

<table>
<thead>
<tr>
<th>Variables*</th>
<th>OR</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1.3</td>
<td>.42 – 4.09</td>
<td>.638</td>
</tr>
<tr>
<td>Employment Status</td>
<td>7.84</td>
<td>2.01 – 30.67</td>
<td>&lt; .003</td>
</tr>
<tr>
<td>Average Monthly Income</td>
<td>1.22</td>
<td>.39 – 3.72</td>
<td>.730</td>
</tr>
</tbody>
</table>

* Dependent variable is intended park use over next 6 months and is coded as 0 = Unlikely 1 = Likely

Average monthly income was not significantly associated with intended park usage over the next 6 months (OR = 1.22, 95% CI = .39, 3.72, p = .730).

HYPOTHESIS 6

6a. Education level is negatively associated with how often parents give their children fast food (Table 10).

Table 10. Logistic Regression of Association of Socioeconomic Status on Fast Food Consumption

<table>
<thead>
<tr>
<th>Variables*</th>
<th>OR</th>
<th>95% Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level</td>
<td>.89</td>
<td>.36 – 2.25</td>
<td>.812</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.71</td>
<td>.28 – 1.77</td>
<td>.460</td>
</tr>
<tr>
<td>Average Monthly Income</td>
<td>.73</td>
<td>.29 – 1.85</td>
<td>.508</td>
</tr>
</tbody>
</table>

* Dependent variable is fast food consumption and is coded as 0 = Less than once per week 1 = At least once per week

Education was not significantly associated with how often parents give their children fast food (OR = .89, 95% CI = .36, 2.25, p = .812).
6b. Employed parents will be more likely to give their children fast food (Table 10.)

Employment status was not significantly associated with how often parents give their children fast food (OR = .71, 95% CI = .28, 1.77, p = .460).

6c. Average monthly income is negatively associated with how often parents’ give their children fast food (Table 10).

Average monthly income was not associated with how often parents’ give their children fast food (OR = .73, 95% CI = .29, 1.85, p = .508).

**Summary**

In conclusion, weekly soda consumption was significantly associated with weekly fast food consumption, and those who were unemployed were significantly more likely to report using their nearby park over the next 6 months. Perception of park safety, education level, and average monthly income were not significantly associated with intended park usage. Flavored beverage consumption, education level, employment status, and average monthly income were also not significantly associated with weekly fast food consumption.
CHAPTER 4

DISCUSSION

This study examines the association between varying levels of a child’s environment and the impact they have on park use intent and fast food consumption. Physical activity and nutrition research that examines multiple levels of the environment for potential impact is important as it provides an in depth account for the numerous factors that influence childhood overweight and obesity. The majority of research has not factored in the multiple risk factors that can influence a child’s weight status; however emerging research has recognized the benefits of a socio-ecologic perspective in designing more effective obesity prevention programs (Cullen et al., 2000; Dubowitz et al., 2008; Elder et al., 2010; Lindsay et al., 2006). Findings from the current study found associations at the individual and environmental level that impacted park usage intent and fast food consumption.

Several studies indicate that Latino children consume diets higher in fat and sweetened beverages and less fruit and vegetables than other children (Ayala et al., 2008; Giammattei et al., 2003; Troiano et al., 2000). While both sweetened beverage (especially soda) and fast food consumption have significantly increased over the last thirty years (Bowman et al., 2004; Warner et al., 2006), there is a lack of research on the association between sweetened beverages and fast food consumption and how it impacts overweight and obesity in Latino children. Latino children typically consume more foods higher in fat and sweetened beverages more than other children (Ayala et al., 2008; Giammattei et al., 2003; Troiano et al., 2000), suggesting that their dietary intake may significantly impact Latinos’ risk for obesity. The current study found that parents who gave their children soda at least once per week were also more likely to take their children to fast food restaurants at least once per week. This finding supports prior research showing positive associations between soda and fast food consumption (Bowman et al., 2004; Warner et al., 2006). Using data from the CSFH and the Supplemental Children’s Survey, Bowman and colleagues (2004) surveyed 6,212 ethnically diverse children and found an association between fast food consumption and sugar-sweetened beverages. Warner and colleagues (2006) studied the effects of soda
consumption in 354, 2-year old Latino children and also found a positive association between fast food and soda consumption. While both Warner and colleagues (2006) and Bowman and colleagues (2004) found that increased fast food consumption may lead to increased soda consumption, the current study found that increased soda consumption may lead to increased fast food consumption. However, given that these are correlational studies, the directionality of the association between the two cannot be determined. In the current study, the association between flavored beverages and fast food consumption was also examined, although a significant relationship was not found. This study hypothesized that if parents are giving their children unhealthy beverages, like soda, it is likely they are providing their children with other unhealthy sugar sweetened beverages, like Kool-aid, Tampico or Hi-C. While flavored beverages contain a high added sugar content, a known contributor in the obesity epidemic (Bowman et al., 2004; Ludwig et al., 2001; Welsh et al., 2005) it did not significantly influence fast food consumption in this study. While Bowman et al. (2004) found an association between fast food and sugar-sweetened beverages, the majority of the studies have has focused specifically on soda consumption (Giammattei et al., 2003; Warner et al., 2006). It is possible that a significant finding was not discovered between flavored beverages and fast food due to the fact that fast food is more commonly served alongside soda than other flavored beverages might be.

Parents play a significant role in nurturing a healthy home environment for their children by encouraging healthy, nutritional meals and physical activity (Cullen et al., 2000; Jain et al., 2001; Lindsay et al., 2006; Moag-Stahlberg et al., 2003; Ventura & Birch, 2008; Wrotniak et al., 2005). Previous studies have found that parents who monitor their children’s weight status tend to have children who eat healthier diets and engage in more physically activity (Arredondo et al., 2006; Cullen et al., 2000; Davison et al., 2003; Wrotniak et al., 2005); many parents also report that they recognize that they play an important role in preventing the development of overweight or obesity in their children (Eckstein et al., 2006; Sherry et al., 2004; Snethen et al., 2007). This study hypothesized that parents who believed they played a large role in their children’s weight were more likely to take their children to the park and provide them with less fast food than parents who stated not playing a role. However, because all of the parents reported taking a role in their children’s weight, the lack of variability in the responses precluded the analyses of this question. Based on a study that
involved low-income African American and non-Hispanic white participants (Jain et al., 2001), it was expected that some participants would report not playing a large role in their children’s weight. Focus group data suggest that many mothers reported they had little control over their children’s eating habits and they could not prevent obesity and counteract the influence of heredity. While the study sample did not include Latino women, the inclusion of other low-income minority women suggested results may generalize to low-income Latino women as well. In the current study, social desirability may have influenced the participants’ responses and parents may have been hesitant to admit not playing a large role in their children’s weight.

The results from studies examining perception of park safety and park usage have varied (Bedimo-Rung et al., 2005; Cohen et al., 2006; Cohen et al., 2007). Unexpectedly, no significant association was found between perception of park safety and park use intent in this study. In several studies, participants report park safety to be a barrier to physical activity (Evenson et al., 2002; Snethen et al., 2007; Voorhees & Young, 2003). In previous focus group studies, Latino women have reported park safety as a concern and barrier to physical activity within parks (Evenson et al., 2002). Snethen and colleagues (2007) also conducted focus groups with Latino parents and children and found that both children and parents reported unsafe environments prevented children from playing in parks and lack of time precluded parents from taking their children to play at safe parks that were further away. Despite documented concerns, perception of park safety was not significantly associated with park use intent in this study, which is similar to other quantitative data. Cohen and colleagues (2007) interviewed park users about their park usage in 8 parks in Los Angeles and 19% of participants reported safety concerns among their top 5 requests for improvement of park features. However, results did not yield a significant relationship between perception of park safety and park usage. Though park safety is implicated as a barrier to park usage in some qualitative studies, when analyzed quantitatively, park safety has not consistently been identified as a significant predictor of park usage; the current study is consistent with previous quantitative findings.

Several socio-demographic factors have been examined in multiple studies investigating motivation for physical activity and park usage (Ayala et al., 2005; Dowda et al., 2003; Gordon-Larsen et al., 2000). In the current study, education level, income, and
employment status were analyzed separately to evaluate the unique effect of each variable and how it impacts intention to use a nearby park over the next 6 months. While education level and income did not yield any significant associations, employment status was significantly related to park use intent. The current study found that parents who are unemployed were more likely to use the park in the next 6 months. Approximately 44% of the study population are homemakers, which was fall into the “Unemployed” category. One possible explanation may be that parents who are homemakers and in terms of this study, unemployed, have more time available to go to the park than parents who are employed. Research on parental employment status and parental education level and their association with park use intent is extremely limited. Given that several other key socio-demographic factors have been shown to influence park usage, like income, the current study expanded socio-demographic factors to include employment and education.

Based on previous research, the current study hypothesized that both monthly income and education level would be positively associated with levels of park use intent. Living near a park can have beneficial effects on children’s physical activity levels, however 70% of overweight or obese Hispanic children are living in low-income houses, which commonly coincides with poorer environmental conditions and reduced access to parks (Estabrooks et al., 2003; Lindsay et al., 2009; Lutfiyya et al., 2008; Sussner et al., 2008). In an observational study by Floyd and colleagues (2008), income characteristics were found to influence park based physical activity in Chicago and Tampa parks. In low-income Hispanic neighborhoods in Tampa, park users showed the lowest level of energy expenditure. While the study is limited because each park user was observed only once, the observed link between low levels of physical activity in parks and low-income minority neighborhoods may have important implications for park use. Similarly, Duncan and colleagues (2002) analyzed neighborhood physical activity options in 56 neighborhoods in a metropolitan city. Neighborhood physical activity opportunities were considered parks or gyms and playgrounds, and sidewalk structure, traffic, stray dogs, and streetlights were considered. Participants living in neighborhoods with more poverty reported fewer neighborhood physical activity opportunities, like parks. The study results indicate a significant relationship between physical activity levels and perceived neighborhood activity.
opportunities, which also suggests that low income neighborhoods will have reduced access to neighborhood activity opportunities like parks or playgrounds.

Several parental socio-demographic variables have also been shown to impact fast food consumption in children (Ayala et al., 2005; Kranz & Siega-Riz, 2002; Lindsay et al., 2009; North & Emmett, 2000). Again, education level, income, and employment status were analyzed independently to test for an association with how often parents’ take heir children to fast food restaurants each week. Unexpectedly, no significant associations were found in the current study.

Previous studies have implicated that higher parental education is associated with more health conscious food choices for their children (Kranz & Siega-Riz, 2002; North & Emmett, 2000; Xie et al., 2003). As a part of the Avon Longitudinal Study of Pregnancy and Childhood in the United Kingdom, North and Emmett (2000) examined the consumption of a variety of foods in over 10,000 three-year-old children and found that children of higher educated parents consumed more healthy food options. Kranz and Siega-Riz (2002) found that when mothers had a higher education level their children consumed less added sugars than mothers with a lower education level. However, in this particular study, Latino preschoolers had a lower level of added sugar intake than the non-Hispanic white and non-Hispanic black preschoolers. This finding is not consistent with other studies showing that Latino children typically consumed more added sugars than other children (Ayala et al., 2008; Giammattei et al., 2003; Troiano et al., 2000). Xie and colleagues (2003) administered surveys to over 3,000 multi-ethnic adolescents in the Children’s Health Study and found that adolescents whose parents had a higher education also had higher intakes of healthy vitamins and nutrients including: carbohydrates, protein, fiber, folate, vitamin A, and calcium. Results also indicated that adolescents consumed less total fat, saturated fat and monounsaturated fat, and cholesterol levels decreased as parents’ education increased. While some of these studies had ethnically diverse study populations, none of them examined the effects of parental education in Latinos, specifically. While some of the previous research suggests an association between parental education and children’s dietary habits, very few, if any have specifically studied Latino parental education and the association with children’s fast food consumption. Parental education may not be a significant factor influencing children’s fast
food consumption in this population, but more research needs to be conducted prior to drawing conclusions.

Inequalities in SES result in the majority of Latinos settling in low-income neighborhoods without access to healthy foods (Lindsey et al., 2009). This study assumed, based on previous research, that lower average monthly income would be associated with increased fast food consumption in children; however, the association in the present study was not significant. Xie and colleagues sampled over 3,000 multi-ethnic adolescents and (2003) found an association between higher intake levels of calcium, protein, folate, and polyunsaturated fats as family income increased. Kranz and Siega-Riz (2002) found that family income influenced sugar consumption preschoolers. Study results indicated that children from families in lower income group (total household income <185% of poverty line) consumed less added sugar than children living in higher income groups. However, many of the participants in the low-income group participated in the WIC program, which suggests that nutrition and lifestyle education may significantly impact children’s nutrition. Using baseline data from a study group of 357 Latinas in Southern California, Ayala et al. (2005) examined restaurant and food shopping preferences of these women and their families. The women in the study were more likely to select fast food restaurants if they had lower incomes and/or were employed. The current study’s results are inconsistent with previous research. It is possible that similar to the study conducted by Kranz and Siege-Riz (2002), the current study’s participants may be enrolled in a government assistance program that provides nutrition education as well, which may encourage participants to make healthier food choices.

The association between parental employment status and fast food consumption has not been examined as frequently compared to parental income and education, (Anderson et al., 2003). Based on previous research showing associations between other socio-demographic variables and fast food consumption, the current study hypothesized that employed parents are more likely to give their children more fast food each week than parents who are unemployed. However, results did not yield any significant findings. Previous research is extremely limited and many not directly applicable to the current study. In a study investigating fast food restaurant use among women involved in the Pound of Prevention study, French et al. (2000) found a significant relationship between fast food
consumption and employment. Fast food consumption was categorized into three frequency
groups, with low being at least one visit per week, medium was at least 2 visits per week, and
high was 3 or more visits per week. The women with the highest frequency of fast food
consumption were more likely to be employed than women in the lower two frequency
groups. One study by Ayala et al. (2005) specifically studied restaurant preferences of
Latino women and their families and found that employed Latino women were more likely to
select fast food restaurants than unemployed women. The lower cost of food, convenience of
fast food restaurants, child friendly menus and play areas are likely contributory factors in
selecting fast food restaurants rather than healthier food options (Ayala et al., 2005). Lack of
research and mixed results suggest that this area needs further study.

LIMITATIONS

Participants in the study were volunteers in the physical activity intervention,
Cambios con Fe/Change with Faith, at Chula Vista Presbyterian Church, Community
Congregational Church, Our Lady of Guadalupe Church, St. Rosa de Lima Church and
Church of the Most Precious Blood. As voluntary participants in a faith-based physical
activity intervention, the study population may have been systematically different than the
general Latino population in Chula Vista. Participants could be more knowledgeable about
the benefits of physical activity and a healthy diet, or be more motivated than the general
public to increase their physical activity. Further, participants were asked to report the
amount of fast food and sweetened beverages their children consumed, which may have led
to reporting bias as they may have underreported how often they actually give their children
fast food and sweetened beverages. Participants could also fall subject to a social desirability
bias and felt pressure to report a higher level of intention to use the park in the next six
months than their true intention to use the park. Social desirability bias may have also
impacted reporting when participants were asked if they believed parents play a large role in
their children’s weight, as all 73 participants answered “yes.” Participants may have reported
a higher level of involvement in their children’s weight than they actually practice. An
additional limitation is the use of the question “In the next 6 months how likely is it you will
go to the park,” which is only asking about the participant’s park use intent, and it does not
specifically ask if they are taking their children to the park as well. All 73 participants used
in the current study’s sample had at least one child under 18 in their household, and it was assumed that if the parents indicated they were going to the park they would also take their children as well. However, this is in assumption and therefore more concrete conclusions about their children’s park use cannot be drawn. Another limitation is the survey did not assess for the age of the participants’ children. If the survey had asked for more information about the ages of the children, or if the children went to the park alone, a better explanation intended park usage

Other limitations include the large confidence intervals on in the logistic regression analysis of weekly soda consumption and fast food consumption, perception of park safety and park use intent, and employment status and park use intent. The large confidence intervals in the analysis of park use intent were mostly likely due to the variation in the distribution of the park use intent variable; over 75% of participants indicated it was likely they would use the park in the next 6 months. The large confidence interval in the weekly soda consumption and fast food analysis may be due to insufficient sample size. A sample size larger than 73 participants would aid in substantiating any significant findings.

**CONCLUSION**

This study contributes to the expanding evidence base exploring the impact of the varying levels of a child’s environment and how they impact park use intent and fast food consumption. A socio-ecological perspective exploring the complexity of childhood obesity in Latinos is an emerging area of research but currently remains under studied. The benefits of physical activity in parks have been well documented (Bedimo-Rung et al., 2005; Cohen et al., 2007), but studies specifically measuring intention to use the park and the relationship with socioeconomic status and perception of park safety are less documented. Public parks are a valuable resource within a community, especially for low-income neighborhoods (Gilles-Corte & Donovan, 2002). However, some research suggests that public parks are not fully utilized (Cohen et al., 2006). Understanding why and when individuals intend to go to the parks and the factors that influence park usage may be valuable in creating future park-based physical activity interventions. The current study is unique from previous research in that it explores the relationship between socio-demographic variables, like employment status and education level and how they impact park use intent. Findings from this study
suggest that employment status can impact an individual’s park use intent, but additional research is needed to explore this relationship. The current study also further substantiates the association between child soda consumption and fast food consumption and adds to the existing literature. Future health promotion efforts could assess for an association between reported fast food consumption and child BMI, or have children wear accelerometers to measure their physical activity and see if the levels are correlated with their physical activity levels reported by their parents. This may help identify gaps between reported nutrition and physical activity and actual indicators of health, like BMI and physical activity levels. Identifying these gaps may help inform individuals who believe they are leading healthy lives that perhaps they are not, and then educate them on the ways they can improve their health. The results of the current study can provide further evidence into the role that nutrition and park based physical activity can play in reducing childhood overweight and obesity rates in at risk populations, like the Latino community.
REFERENCES


Gilles-Corte, B., & Donovan, R. J. (2002). Socioeconomic status differences in recreational physical activity levels and real and perceived access to a supportive physical environment. *Preventive Medicine, 35*(6), 601-611.


APPENDIX

CHURCH SURVEY – ENGLISH VERSION
A-Family Activity Habits

1. How many hours per week on average do you and your family watch television and/or play computer games?

<table>
<thead>
<tr>
<th></th>
<th>Mother</th>
<th></th>
<th></th>
<th>Father</th>
<th></th>
<th></th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B-Monitoring Diet and Exercise

2. How often do your children drink the following?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>1-3 times</th>
<th>1-2 times</th>
<th>3-4 times</th>
<th>5-6 times</th>
<th>1 time</th>
<th>2 times</th>
<th>3 times</th>
<th>4 times</th>
<th>5 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Regular Soda (Coke, Sprite, Orange Soda)?</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
<td>□ 8</td>
<td>□ 9</td>
<td>□ 10</td>
</tr>
<tr>
<td>b. Diet Soda?</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
<td>□ 8</td>
<td>□ 9</td>
<td>□ 10</td>
</tr>
<tr>
<td>c. Flavored drinks (Kool-aid, Tampico, Hi-C)?</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 6</td>
<td>□ 7</td>
<td>□ 8</td>
<td>□ 9</td>
<td>□ 10</td>
</tr>
</tbody>
</table>

3. How often does your family go out to eat at a…?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Less than once a week</th>
<th>1-2 times/week</th>
<th>3-4 times/week</th>
<th>5-7 times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Fast food restaurant</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
<tr>
<td>b. Sit down restaurant</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
</tr>
</tbody>
</table>

C-Advocacy Within the Community
How often did you do the following in the past **THREE MONTHS**

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1 time</th>
<th>2-4 times</th>
<th>5 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wrote a letter or made a telephone call to influence policy within your community</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Attended a public meeting to gather information about a neighborhood issue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Worked to improve health related conditions within the community, such as access to farmers markets, pedestrian friendly sidewalks, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**D-Neighborhood Cohesion**

Now, I’d like to ask you about the feelings you have about your neighborhood

<table>
<thead>
<tr>
<th>Very true</th>
<th>Sort of true</th>
<th>Not at all true</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel like I fit in with the people in my neighborhood.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The relationships I have with my neighbors mean a lot to me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I believe my neighbors would help me in an emergency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Most people who live in my neighborhood would be able to tell if someone was a stranger to the neighborhood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. In the past few months, things in my neighborhood have gotten worse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. In general, people in my neighborhood do not watch out for each other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**E-Park Usage**

Within the past 3 months, how often .....

<table>
<thead>
<tr>
<th>Never</th>
<th>Less than once a month</th>
<th>Less than once a week</th>
<th>1-3 times/week</th>
<th>4-7 times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Have you attended nearby parks (outdoor recreational facilities)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Have you taken your child with you to nearby parks?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If so, what are the name(s) of the nearby parks you attend?

___________________________________________________________

The next few questions are about **LAUNDERBACH PARK** *(373 Park Way, Chula Vista)*

<table>
<thead>
<tr>
<th>Very Unlikely</th>
<th>Somewhat Unlikely</th>
<th>Somewhat Likely</th>
<th>Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1. Over the next 6 months, how likely are you to go to LAUNDERBACH PARK?

If you are **NOT** likely to go to the park please skip to question 9.

<table>
<thead>
<tr>
<th>Never</th>
<th>At least once a month</th>
<th>Once a week</th>
<th>More than once a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. If very or somewhat likely, how often do you plan to go to LAUNDERBACH PARK?

Of the list I am about to read to you, please say yes, or no, to the activities you would (or would not) do in the park (please chose one of each one)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

3. Exercise

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Relaxation

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

5. Spending time with family

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

6. Attend Birthday parties

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

7. Attend church events

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

8. Community Events

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

9. Do you feel safe in LAUNDERBACH PARK?
Of the list I am about to read please **PICK THREE** changes would you like to see in LAUDERBACH PARK?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Additional lighting</td>
<td>☐</td>
</tr>
<tr>
<td>11. Less graffiti</td>
<td>☐</td>
</tr>
<tr>
<td>12. Less homeless</td>
<td>☐</td>
</tr>
<tr>
<td>13. Walking path</td>
<td>☐</td>
</tr>
<tr>
<td>14. Adequate children’s play area</td>
<td>☐</td>
</tr>
<tr>
<td>15. Green grass</td>
<td>☐</td>
</tr>
<tr>
<td>16. Safety fencing around play area</td>
<td>☐</td>
</tr>
<tr>
<td>17. More trees</td>
<td>☐</td>
</tr>
<tr>
<td>18. New Bathrooms</td>
<td>☐</td>
</tr>
<tr>
<td>19. Drinking fountains</td>
<td>☐</td>
</tr>
<tr>
<td>20. More coverage/park shelter gazebos</td>
<td>☐</td>
</tr>
<tr>
<td>21. More swings</td>
<td>☐</td>
</tr>
<tr>
<td>22. BBQ grills</td>
<td>☐</td>
</tr>
</tbody>
</table>

### F-Attitudes and Beliefs

1. Do you believe that childhood obesity is a modifiable problem? (it is preventable)
   - ☐ Yes
   - ☐ No
   - ☐ I don’t know

2. Do you believe that parents play a large role in their children’s weight?
   - ☐ Yes
   - ☐ No
   - ☐ I don’t know

3. Do you believe that part of your church’s mission is to promote a healthy body?
   - ☐ Yes
   - ☐ No
   - ☐ I don’t know
G-Faith Organization Health Assessment

1. Does your faith organization have an active health ministry or committee?
   □ 1 Yes  □ 0 No  □ 8 I don’t know
   If yes, who serves on this committee?____________________________

2. Does your faith organization have a person appointed to be responsible for health related activities?
   □ 1 Yes  □ 0 No  □ 8 I don’t know
   If yes, who?_________________________________________________

3. Has your faith organization sponsored a health fair within the past year?
   □ 1 Yes  □ 0 No  □ 8 I don’t know
   If yes, who was responsible for organizing it?_____________________
   Did you attend? □ 1 Yes  □ 0 No

4. Has your faith organization offered an adolescent/child BMI screening test within the past year?
   □ 1 Yes  □ 0 No  □ 8 I don’t know
   If yes, who was responsible for organizing it?_____________________
   Did you attend? □ 1 Yes  □ 0 No

5. Does your faith organization have guidelines for meals requiring that fruits and vegetables be offered?
   □ 1 Yes  □ 0 No  □ 8 I don’t know

6. Does your faith organization have guidelines for meals requiring that low fat items be offered?
   □ 1 Yes  □ 0 No  □ 8 I don’t know

7. Does your faith organization offer beverage vending machines on site?
   □ 1 Yes  □ 0 No  □ 8 I don’t know
   If yes, is bottled water an option?
If yes, how likely are you to choose water when purchasing a beverage from this vending machine?

- 1 Very likely
- 2 Somewhat likely
- 3 Not very likely
- 4 Not at all

8. During the past year, has your faith organization distributed any nutrition guides or healthy recipes?

- 1 Yes
- 0 No
- 8 I don’t know

If yes, who was responsible?________________________________________

9. Does your faith organization have a garden that is maintained by the membership?

- 1 Yes
- 0 No
- 8 I don’t know

10. Within the past year, has your faith organization participated in any of the following activities?

- Conducted exercise classes?  1 Yes  0 No  8 I don’t know
- Promoted physical activity during a service?  1 Yes  0 No  8 I don’t know

---

**H-Church attendance**

1. How long have you been attending this church? ____________________
   (months/years—circle one)

2. In the last 3 months, on average per MONTH, how often have you attended Most Precious Blood?
   
   ____________________ # times per month for service
   ____________________ # times per month for walking program/aerobics
   ____________________ # other occasions, services, visits

---

**I-Demographics**

1. What is your age |__|__| years

   .... 1a. What is your date of birth? |__|__|__|__|__|__|__|__|
   Month   Day   Year
2. What is your marital status? ........................................................

□ 1 Married
□ 2 Divorced
□ 3 Widowed
□ 4 Separated
□ 5 Never been married
□ 6 Living as married

3. How many children under age 18 live in your household? ........... [__] [__] Number of children

4. What is your current employment status? ...........

□ 1 Employed outside the home full-time
□ 2 Employed outside the home part-time
□ 3 Self-employed
□ 4 Homemaker
□ 5 Student
□ 6 Retired
□ 7 Unable to work
□ 8 Unemployed

5. How many years of formal education did you complete?

□ 1 Never attended school or only kindergarten
□ 2 Elementary through 6th grade
□ 3 Middle School (Secondary)
□ 4 High School (Preparatory)
□ 5 1-2 yrs of College including Community & Tech colleges
□ 6 3-4 yrs of College
□ 7 College graduate
□ 8 Post graduate work

6. Where were you born? □ 1 Mexico or another country________________
7. How long have you lived in the United States? ................ [___] Number of years
   OR
   [___] Number of months

8. Which of the following best describes your family’s **monthly** income from all sources?
   □ 1. less than $500
   □ 2. $501-1000
   □ 3. $1001-1500
   □ 4. $1501-2000
   □ 5. $2,001-2,500
   □ 6. $2,501-3,000
   □ 7. $3,001-3,500
   □ 8. more than $3,500
   □ 88. I don’t know

9. Has your physician ever told you that one or more of your children are overweight or obese?
   □ 1. Yes
   □ 0. No
   □ 8. I don’t know

10. If so, how many have this problem?_______ How many children do you have total?_______