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The Effects of Parent-Adolescent Communication and Parenting Style on the Physical Activity and Dietary Behaviors of Latino Adolescents

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The Effects of Parent-Adolescent Communication and Parenting Style on the Physical Activity
and Dietary Behaviors of Latino Adolescents

by

Dianna Mary Boone

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
Department of Rehabilitation and Mental Health Counseling
College of Behavioral and Community Sciences
University of South Florida

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Abstract

The obesity epidemic among children and adolescents has been growing rapidly over the past 10 years, particularly in Latino children. Multiple researchers have found support for positive associations between parent-child communication and healthy nutrition and exercise behaviors. The present study examined the relations between parent-adolescent communication and parenting style and the dietary and exercise behaviors of Latino adolescents. The study included 79 adolescents between the ages of 13 and 18 years and their parents (100% are Latino). Correlation and hierarchical regression analyses were conducted to determine which parenting style and communication variables are significantly associated with adolescents' dietary and physical activity behaviors. Based on the Pearson correlation and hierarchical regression analyses, parent reported 'problems in communication' was the only variable significantly associated with adolescents' fast food intake. Overall, the results of this study demonstrate the value of considering family functioning in childhood obesity research and including the family in childhood obesity interventions.

Chapter One: Introduction

Context of the problem

Obesity during adolescence is a serious public health problem in the United States (Ogden, Carroll, Kit, & Flegal, 2014). Obesity has been linked to an increasing prevalence of precursors for many diseases including cardiovascular disease, type 2 diabetes, metabolic syndrome, orthopedic complications, and certain cancers (Davis, Tung, Chak, Ventura, Byrd-Williams, Alexander, Lane, Weigensberg, Spruit-Metz, & Goran, 2009; Limbers, Young, Grimes, 2014; Romero, 2012;). The obesity epidemic among children and adolescents has been growing rapidly over the past 10 years, particularly in Latino children (Ogden et al., 2014). Latinos are the fastest growing minority group in the United States and prominent ethnic disparities in obesity have been documented (Houston, Waldrop, & McCarthy, 2011; Lichter, 2012).

Latino children have the highest prevalence of obesity, BMI greater than the 95th percentile for age and gender (22.4%) compared to blacks (20.2%) or whites (14.3%), controlling for sociodemographic factors (Ogden et al. 2014). Although interventions for obesity in children in general have been shown to be successful (Kelly, Mazzeo, Evans, Stern, Thacker, Thornton, & Laver, 2011; Barkin, Gesell, & Poe, 2011; Romero 2012), the effectiveness of these practices with specific sub-populations, such as Latinos remains unclear. Some researchers postulate that successful generalization to specific ethnic groups is dependent upon thoughtful

and informed efforts to modify interventions so that they are culturally appropriate (Chen, Kakkad, & Balzano, 2008)

Most of these interventions have primarily focused on diet and physical activity; however, studies examining Latino adolescents posit that the adolescents' families need to be incorporated as well (Jelalian, Hadley, Sato, Kuhl, Rancourt, Oster, & Lloyd-Richardson, 2014; Ornelas, Perreira, & Ayala, 2007). This would suggest that interventions that only focus on diet and physical activity are insufficient in reducing obesity in Latino adolescents (Barkin et al., 2013; Johnston, Tyler, McFarlin, Poston, Haddock, Reeves, 2010; Romero, 2012). A critical component that might be missing from these interventions is the recognition of cultural factors. Culturally sensitive interventions are needed that emphasize the importance of cultural factors (i.e. familismo and respeto) in addition to improving diet and level of physical activity (Calzada, Fernandez, & Cortes, 2010).

Given the influence of adolescents' dietary and physical activities on their current and future health, it is essential to examine the ways in which these positive physical activity and dietary behaviors can be encouraged (Palan, Damhorst, Ogle, Hausafus, Reitmeir, & Marquis, 2007). One promising avenue is to study the impact of family characteristics on adolescents' nutrition and exercise behaviors. The familial influence is particularly important to focus on in Latinos as culturally the family is given great prominence (Jelalian et al., 2014; Vander Wal, 2012; Boutelle, Cafri, & Crow, 2012). The ways in which parents and adolescents interact, particularly concerning the topics of nutrition and exercise, are crucial to the development of adolescents' health-related behaviors (Palan et al., 2007). Multiple researchers have found support for positive associations between parent-child communication and healthy nutrition and exercise behaviors (Jelalian et al., 2014; Ackard, Neumark-Sztainer, Story, & Perry, 2006;

Vander Wal, 2012; Boutelle et al., 2012). The purpose of this thesis is to examine the relations between parent-adolescent communication and parenting style and the dietary and exercise behaviors of Latino adolescents.

To provide a context for examining the impact of adolescent-parent communication and parenting style on adolescent exercise and dietary behaviors, this thesis begins with a review of the prevalence of adolescent obesity in the United States as well as the prevalence of obesity in Latino adolescents. Next, the literature on parent-adolescent communication as well as cultural factors related to parent-adolescent communication is reviewed. Parenting style and cultural factors (e.g., familismo, respeto) that affect adolescent health behaviors are then explored. Finally, two theoretical frameworks, Bronfenbrenner's Ecological Systems Theory and the Triadic Influence Theory, are discussed.

Latinos and obesity

Based on recent national figures for rates of obese (BMI greater than the 95th percentile) and overweight (BMI above the 85th percentile and below the 95th percentile for age and gender) children combined, 29.2 % of Caucasian girls are overweight or obese compared to 36.1% of Black and 37 % of Latino girls (Ogden et al., 2014). Approximately 40 % of Latino boys are overweight or obese, compared to 34.4 % and 27.8 % of Black and Caucasian boys, respectively (Ogden et al., 2014). Obesity rates are the highest for 12-19 year old Latino boys (39.6 %) and 12-19 year old Black girls (42.5 %) (Ogden et al., 2014). Although biological factors may contribute significantly to children's risk for becoming overweight, evidence suggests that a child's environmental contexts such as the home and school settings also increase these risks (Jelalian et al., 2014). Because children's physical activity and dietary habits develop in the home setting and are highly dependent on parents' choices and views regarding eating and

exercise, the home environment can have long-lasting effects on children's weight trajectories (Arredondo, Elder, Ayala, Campbell, Baquero, & Duerksen, 2006; Jelalian et al., 2014). Parents are central to many of the risk factors associated with childhood obesity, such as making the family food purchases and their modeling of eating and physical activity behavioral choices (Birch & Ventura, 2009), therefore, understanding their role is critical to countering the rising childhood obesity epidemic.

Acculturation and obesity in Latinos

Acculturation, defined as a measure of “the phenomena that result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups” (Cueller, Arnold, Maldonado, 1995) has been linked to increased rates of obesity in Latinos (Wiley, Cloutier, Wakefield, Hernandez, Grant, Beaulieu, & Gorin, 2014; Buscemi, Beech, Relyea, 2011; van Rompay, McKeown, Castaneda-Sceppa, Falcon, Ordovas, Tucker, 2012). The connection between acculturation and obesity can be explained by a concept known as the Immigration Paradox, which posits that as children and adolescents acculturate to the United States, their developmental outcomes will become less optimal (Marks, Ejesi, & Garcia-Coll, 2014). Many studies have found a connection between higher levels of acculturation to the United States and increased rates of obesity (Creighton, Goldman, Pebley, & Chung, 2012; Zambrana & Carter-Pokras, 2010; Hunt, Schnieder, Comer, 2010). Researchers postulate that prolonged exposure to the obesogenic environment in the United States, which is conducive of diets rich in energy dense foods and low physical activity, is associated with increased obesity rates in Latinos. The present study contributes to existing research by examining the association between acculturation and the physical activity and dietary behaviors of Latino adolescents.

Healthy eating and physical activity

It is widely accepted that physical activity has numerous positive health outcomes such as increased cognitive functioning, lowered risk of obesity, strengthened heart and lung functioning, and lowered risk of many diseases (National Institute of Health, 2008). According to the National Institutes of Health (NIH), it is recommended that children and adolescents engage in a minimum of 60 minutes of physical activity per day. Aerobic activity of moderate intensity is recommended (e.g., walking, running, skipping, playing on the playground, playing basketball, and biking) with vigorous aerobic activity at least 3 days a week (e.g., running, doing jumping jacks, and fast swimming). For the purposes of this thesis, healthy physical activity is defined as engaging in at least thirty minutes of moderate to vigorous physical activity per day three days per week.

Experts recommend eating five to thirteen servings (2.5 to 6.5 cups) of fruits and vegetables per day (United States Department of Agriculture, 2005). Eating fruits and vegetables can help ward off disease and stroke, control blood pressure, prevent some types of cancer, and reduces the risk of becoming overweight or obese. For the purposes of this thesis, healthy eating is defined as eating at least five servings of fruits and vegetables per day.

Parent-adolescent communication about health behaviors

During childhood and adolescence, families are a major influence on their children's physical activity and dietary behaviors (Ornelas et al., 2007). Parents model behaviors for their children, engage in activities with them, monitor their children's behaviors, and provide support and encouragement that can result in behavior change and positive health outcomes (Ornelas et al., 2007). Previous research has revealed that a key factor in promoting healthy behaviors in adolescents is parent-adolescent communication (Jelalian et al., 2014; Ackard et al., 2006;

Vander Wal, 2012; Boutelle et al., 2012). Communication, defined as an exchange in which individuals openly express and receive ideas (Robin, 1979), is an important feature of the parent–adolescent relationship (St. George, Wilson, Schneider, & Alia, 2013). Positive parent-adolescent communication may foster an adolescent’s sense of autonomy by including them in the decision-making process (Grolnick, 2003). Positive communication is characterized by open expression of ideas and feelings, satisfaction with the family system, family caring, and ability to manage conflict (Jelalian et al., 2014). It has been suggested that effective communication may facilitate the health behavior change process by reducing risk factors, modifying parenting practices, and facilitating discussion about factors that lead to involvement in health behaviors (Riesch, Anderson, & Krueger, 2006). Developmentally appropriate communication for adolescents that focuses on negotiation and shared decision-making (e.g., parent including the adolescent when making important decisions) may be especially important in positively shaping adolescent autonomy specific to health behaviors (Bassett et al., 2008).

Understanding how communication between Latino adolescents and their parents can positively impact adolescents’ physical activity and dietary behaviors is important. To foster positive parent-adolescent communication, it is recommended that parents include their adolescent in the decision-making process, share ideas and feelings openly, and manage conflict effectively. With improved parent-adolescent communication, adolescents are more likely to adopt parental suggestions to increase physical activity and improve dietary habits (Jelalian et al., 2014; Boutelle, 2010). Similarly, if parents do not demonstrate positive dietary and physical activity behaviors, it is more likely that their children will adopt unhealthy behaviors (Barkin, Gesell, & Poe, 2011; Johnston et al., 2010). It is essential for parents to demonstrate healthy behaviors in addition to openly communicating with their children about the importance of diet

and physical activity. Although this parent-adolescent relationship has been demonstrated in majority culture studies (Riesch et al., 2006; Ornelas et al., 2007) there is scant research examining how parent-adolescent communication specifically affects the health behaviors of Latino adolescents.

Parenting style and adolescent dietary and physical activity behaviors

Parenting style is defined as “a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent’s behaviors are expressed” (Darling & Steinberg, 1993, p. 488). Parental influence on child and adolescent outcomes is often explained by parenting style, or the context in which parenting practices are implemented. Three parenting styles have been identified based on dimensions of parental warmth and control: 1) authoritative (high warmth and control), 2) authoritarian (low warmth, high control), and 3) permissive (high warmth, low control). Each parenting style and the associated adolescent dietary and physical activity behaviors are described below. For the purposes of the present study, parenting style was measured using two subscales: (1) parental monitoring and (2) parental permissiveness and the relation was examined between each subscale and adolescents’ physical activity and dietary behaviors.

Authoritative parenting style. Positive youth health outcomes have been associated with an authoritative parenting style (St. George & Wilson, 2012; Alsharairi & Somerset, 2014). Parents who set appropriate limits (i.e. provide structure and boundaries) and reinforcement are more likely to have children who have healthy behaviors related to diet and physical activity (Arredondo et al., 2006). Authoritative parents are described as warm, firm, and accepting of children’s need for autonomy (Steinberg, 2001). Authoritative parenting has been positively associated with more fruit consumption (Kremers, Brug, de Vries, & Engels, 2003; Peters,

Dollman, Petkov, & Parletta, 2013), home availability of fruit and vegetables (Patrick et al. 2005; Kremers et al., 2003), physical activity (Schmitz, Lytle, Phillips, Murray, Birnbaum, & Kubik., 2002), and the lowest risk for child obesity compared to authoritarian and permissive parenting (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Wake, Nicholson, Hardy, & Smith, 2007).

Authoritarian parenting style. Authoritarian parents are firm and they are likely to set strict limits for children and to use punitive actions of enforcement (Dufour, 1997). Patrick and colleagues (2005) found that the availability of fruit and vegetables in the home was negatively associated with an authoritarian parenting style. This study also found that children's vegetable consumption was negatively associated with caregivers who exhibited an authoritarian feeding style. Parental control and restriction have been shown to play a significant role in the development of children's eating behaviors. For example, some studies show that certain child-feeding strategies, that encourage children to consume a particular food, increase children's dislike of that food (Birch, Marlin, & Rotter, 1984). Controlling feeding practices have been demonstrated to have negative consequences for children's weight trajectories by disrupting self-regulation of food intake (Birch & Fisher, 1998; Farrow & Blissett, 2008). The feeding practices that have received particular attention are 'pressure to eat' (either towards overall consumption or just 'healthy' foods), and 'restriction,' which is generally directed towards limiting the child's intake of unhealthy (or snack) foods (Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson, 2001; Faith, Scanlon, Birch, Francis, & Sherry, 2004).

Permissive parenting style. Permissive parents give their children freedom in behavior and decision-making and they are less likely to control the food choices of their children (Dufour, 1997). Vereecken and colleagues (2009) demonstrated that a permissive

parenting style used by mothers of children aged 2.5–7 years was negatively associated with their children’s vegetable consumption. Permissive parents practice low monitoring of their children’s food intake, which impedes their children’s ability to self-regulate their behavior, and potentially increasing their children’s risk of overeating unhealthy foods and having a higher BMI (Blissett & Haycraft, 2008). Permissive parents also allow their children to watch television, which may lead to increased intake of unhealthy foods (Harris & Bargh, 2009)

In summary, the aforementioned studies demonstrate that authoritative parenting has been associated with better health outcomes for children, including a higher intake of fruits and vegetables (Kremers et al. 2003; Patrick et al. 2005; Peters et al. 2013) and lower intake of unhealthy foods (Gable & Lutz, 2000). Conversely, authoritarian and permissive parenting has been associated with children consuming less healthy foods. This thesis examines whether, and which if any, parenting style is significantly associated with the dietary and physical activity behaviors of Latino adolescents, thereby contributing to what we know about how parenting style affects adolescent health behaviors.

Cultural values may also guide parental decisions and parenting practices (Arredondo et al., 2006). Because cultural norms and sociocultural issues influence parents’ attitudes toward child rearing, parenting practices are expected to differ across ethnic groups (Arredondo et al., 2006), highlighting the importance of taking these cultural factors into consideration when examining the relation between parenting styles and dietary and physical activity behaviors in youth.

A limited number of studies have examined the general parenting styles of Latino parents. These studies have focused on individual parenting dimensions (not parenting styles) and have usually characterized them as showing high levels of parental control (Cardona,

Nicholson, & Fox, 2000; Varela, Vernsberg, Sanchez-Sosa, Riveros, Mitchell, & Mashunkashey, 2004). These findings have been interpreted to reflect the importance of respect for authority in Latino cultures (Knight, Virdin, & Roosa, 1994; Calzada et al., 2010). These findings suggest that an authoritarian parenting style may characterize the general Latino parenting approach. Whether or not this assumptive finding will hold in the present study is a question to be addressed, as well as how this parenting style might affect exercise and dietary behaviors in children.

Cultural issues affect parenting style and parent-adolescent communication among Latinos

It is essential to consider cultural and ethnicity issues when examining adolescent–parent relationships (Riesch et al., 2006). Cross-cultural studies have found differences in family communication, conflict, values, and parenting practices among ethnic minority groups (Chao & Tseng, 2002; Harkness & Super, 2002; Knight et al., 1994). Obedience, responsibility, and respect for elders may be stronger values in African American, Native American, Latino, and Asian American families than in European American families where individualism and independence are more highly valued (Grotevant, 1998). Research on Latino parenting highlights an important connection between cultural values and parenting practices. Some of these cultural values are discussed below and include the concepts of familismo and respeto.

Familismo. Familismo is a concept that emphasizes the family as the primary source of social support and identity for Latino youth (Calzada et al., 2010). The cultural value of familismo encompasses strong feelings of family unity and loyalty and prioritizing family over individual needs (Calzada et al., 2010; Cauce & Domenech-Rodríguez, 2002; Lescano et al., 2009). The child has support reaching beyond the nuclear family to include extended family members. When participating in focus groups, Mexican immigrant parents emphasized their

desire to instill values of familismo in their children as a superordinate goal for their parenting (Cruz-Santiago & Ramirez Garcia, 2011). The cultural value of familismo is associated with use of more behavioral control as well as with expressions of greater warmth and support among Latino parents (Cauce & Domenech Rodríguez, 2002; Cruz-Santiago & Ramirez Garcia, 2011).

Respeto. The cultural value of respeto emphasizes obedience and emphasizes that children should be highly considerate of adults and should not interrupt or argue (Delgado Gaitan, 1994). Respeto manifests in four key behaviors: obedience (the expectation that children do as they are told without question), deference (courtesy given to elders and people of high social status), decorum (appropriate behaviors for social interactions), and public behavior (set of boundaries imposed on the behaviors expressed by children in public situations) (Calzada et al., 2010). Harwood and colleagues found that Puerto Rican mothers of infants attended more to dimensions of respect (e.g., obedience, good behavior) than personal development (e.g., self-confidence, independence), discouraged their children's autonomous and exploratory behaviors, asserted their parental authority, and used direct interventions like physical restraint more than European American mothers, who used more modeling, praise and suggestions (Harwood, 1992; Harwood, Schoelmerich, Schulze, & Gonzalez, 1999). Calzada et al. (2010) used focus groups to examine the cultural values that are most important to Dominican and Mexican mothers of preschool children. The results revealed that respeto plays a significant role in child rearing and underlies many of the practices of Dominican and Mexican mothers during the preschool years (Calzada et al., 2010).

The cultural values of familismo and respeto play a significant role in how Latino adolescents and parents communicate. Many studies have demonstrated that parents who emphasize cultural values of familismo and respeto have authoritarian parenting styles that

emphasize hierarchical relationships, including unquestioned respect and obedience, between Latino parents and youth (e.g., Guilamo-Ramos, Dittus, Jaccard, Johansson, Bouris, Acosta, 2007). These traditional cultural values may promote parenting strategies that facilitate Latino parents to be high on behavioral management or control, as well as high on warmth and support (Manongdo & Ramirez Garcia, 2007; Romero & Ruiz, 2007). Cultural factors, such as familismo and respeto, may be important to address when implementing family-based interventions emphasizing the physical activity and dietary behaviors of Latino adolescents (Lescano, Brown, Raffaelli, & Lima, 2009).

Because culture greatly influences the parenting style of Latino parents, it is essential to understand how cultural values (i.e. familismo, respeto) affect how parents raise their children. Research has indicated that Latino parents emphasize hierarchical relationships, including unquestioned respect and obedience. Whether and to what extent this style of parenting relates to adolescents' dietary and physical activity behaviors is a question that has not yet been fully elucidated in the literature. This thesis contributes to the literature examining specifically whether parenting style relates to the dietary and physical activity behaviors of Latino adolescents.

Interventions for Latinos who are obese

Although interventions have been implemented for obese Latino adolescents, cultural values (respeto, familismo) have not typically been taken into consideration. Interventions have primarily focused on the physical activity and dietary behaviors of adolescents (Johnston et al., 2010; Davis et al., 2010). Specific details regarding these interventions can be found in the literature review on page 28. These interventions either incorporated only the adolescent (Romero 2012; Johnston et al., 2010) or incorporated the adolescent-caregiver dyad (Barkin,

Gesell, & Poe, 2011). It is possible that interventions with this population could have been more effective had they also incorporated relevant Latino cultural values (respeto and familismo). For example, an intervention that aims to improve Latino children's dietary behaviors could incorporate the cultural value of respeto by discussing respeto-driven parenting techniques when discussing how parenting style could influence a child's dietary behaviors (Calzada et al., 2010).

Conceptual frameworks

The conceptual frameworks for this study are based upon a combination of the Ecological Systems Theory (EST) (Bronfenbrenner, 1979) and the Theory of Triadic Influence (TTI) (Flay, 1999). These theories were chosen as they consider important environmental factors that contribute to shaping an adolescent's physical activity and dietary behaviors. These theories provide a useful framework for understanding how parent-adolescent communication and parenting style are related to adolescents' dietary and physical activity behaviors. EST examines how environmental interactions (e.g., adolescent's family, parenting style, culture, neighborhood) influence children's overall development. TTI specifically focuses on health promotion and examines various factors that contribute to adolescents' health behaviors (e.g., self-efficacy, the adolescents' peers and family). These theories are described in more detail below.

Ecological Systems Theory. Uri Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979) highlights the significance of parent-adolescent communication in facilitating adolescent's health behaviors. This theory discusses the important impact that environmental interactions have on a child's development. Bronfenbrenner identified four different levels of the environment that influence an adolescent's development, including the microsystem, mesosystem, exosystem, and macrosystem. The microsystem consists of the

immediate environment the adolescent lives in (i.e. the adolescent's immediate family or school the adolescent attends). The theoretical model posits that the relationship between an adolescent's family and school in the microsystem level is bidirectional. In other words, the family influences the school and the school influences the family. The second level, the mesosystem, describes how different parts of an adolescent's microsystem work together to better support the child. Whether parents take an active role in their adolescent's school would be an example of the mesosystem level. The third level, the exosystem, describes other aspects of the environment that the adolescent might not interact with directly (e.g. the workplace of the parent, the family's neighborhood, etc.), yet might have an impact on the adolescent's development. The final level is the macrosystem, which represents the outermost layer in an adolescent's development. This level is comprised of cultural values, laws, and customs (i.e., the economy, freedom, etc.). This outer layer consisting of the cultures and customs of the family greatly influences how children are raised. The cultural values discussed previously (e.g., familismo, respeto) fall under the macrosystem. These cultural values (e.g., incorporating extended family in decision making, children demonstrating obedience toward parents) play a significant role in how Latino parents raise their children (Calzada et al., 2010; Jelalian et al., 2014; Romero, 2012).

According to Bronfenbrenner's theory, all levels of the system are important; however, for the purposes of this study, the component of the model that is specifically examined is the adolescent's microsystem. Research has clearly shown that parent-adolescent communication in Latino families is positively associated with adolescent's exercise and dietary behaviors (Jelalian et al., 2014; St. George & Wilson, 2012; St. George & Wilson, 2013; Ornelas et al., 2007). Studies have shown that Latino families who use monitoring, use of reinforcement,

appropriate limit setting and discipline (e.g., an authoritative parenting style) have adolescents who have healthy behaviors related to diet and physical activity (Flores-Pena et al., 2014). In the context of the present study, the microsystem refers to parent-adolescent communication and the specific parenting style of each parent.

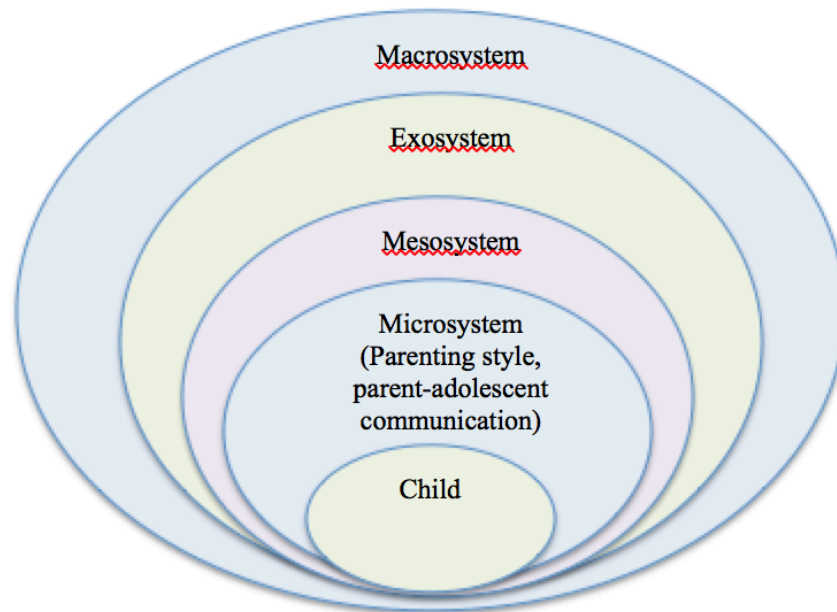


Figure 1. Bronfenbrenner's Ecological Systems Theory

Theory of Triadic Influence. The Theory of Triadic Influence (TTI) provides a unified theoretical framework, which examines a variety of factors that contribute to adolescents' health behaviors (Flay, 1999). The TTI combines proximal (e.g., attitudes toward the behavior, self-efficacy) and distal (e.g., sociocultural environment, interpersonal factors) influences on behavior. For the purposes of this thesis, interpersonal factors were the only component of this framework that was examined because a theory specifically related to health behaviors was needed in addition to Bronfenbrenner's Ecological Systems Theory. Future studies should examine other components of this framework (e.g., self-efficacy, attitudes toward the behavior) and how these components relate to adolescent physical activity and dietary behaviors.

Both of these theoretical frameworks were chosen because each examines how environmental factors shape adolescents' development and health behaviors. Consistent with Bronfenbrenner's emphasis on environmental factors, this study examines family characteristics such as openness in communication, permissiveness, parental monitoring, and problems in communication. Consistent with Flay's emphasis on environmental factors and health decisions, this study focuses on specific family characteristics that influence adolescents' physical activity and dietary behaviors.

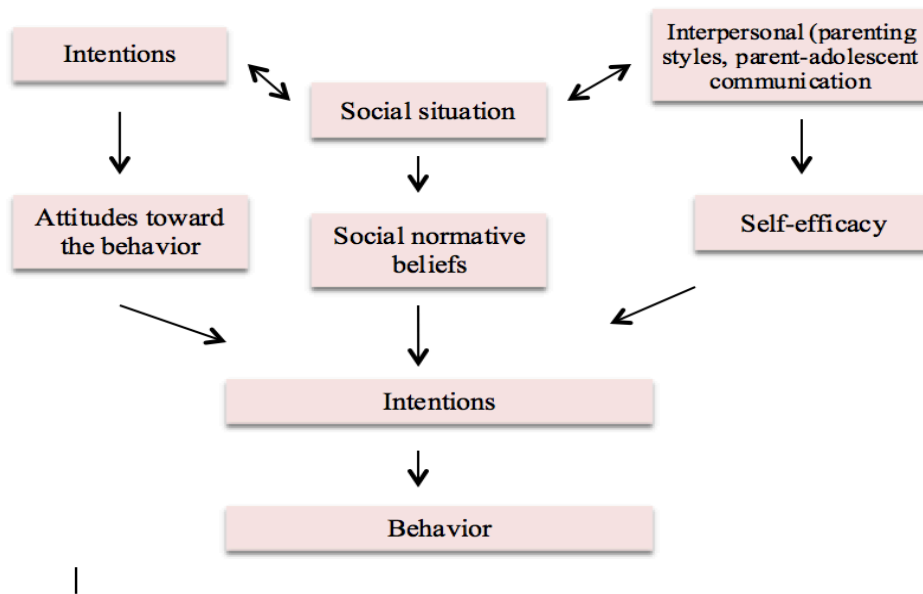


Figure 2. Flay's Triadic Influence Theory

Significance of study

Physical inactivity is increasing among adolescents in the United States, especially among Latino adolescents (Arredondo et al., 2006; St. George & Wilson, 2012). Despite clear evidence that parents are an important influence on adolescents, few studies have actually explored relations between parental-adolescent communication and physical activity of Latino adolescents (Ornelas et al., 2007). An understanding of these relations is essential to the

development of family-focused intervention programs that promote healthy physical activity and dietary behaviors (Ornelas et al., 2007). The purpose of this study is to examine how parenting style and parent-adolescent communication is associated with Latino adolescent exercise and dietary behaviors. Currently, the majority of studies that have examined the impact of parenting styles on children's health practices have included primarily White/Anglo samples, limiting the generalizability of these findings. Understanding the health practices and parental response of children from diverse cultural backgrounds may help researchers develop culturally appropriate parenting intervention/prevention programs targeting childhood obesity.

Research hypotheses

Parent measures:

1. 'Openness to communication' is positively related to adolescents' Fruit and Vegetable Consumption Score and physical activity and negatively related to fast food and junk food consumption
2. 'Problems in family communication' is negatively related to adolescents' Fruit and Vegetable Consumption Score and physical activity and positively related to fast food and junk food consumption,
3. Parents reporting greater parental monitoring (parental monitoring subscale of the Parenting Style Questionnaire) are more likely to have adolescents who show more positive physical activity and dietary behaviors

Adolescent measures:

4. 'Openness to communication' is positively related to adolescents' Fruit and Vegetable Consumption Score and physical activity and negatively related to fast food and junk food consumption,
5. 'Problems in family communication' is negatively related to adolescents' Fruit and Vegetable Consumption Score and physical activity and positively related to fast food and junk food consumption,
6. Adolescents reporting greater parental monitoring (parental monitoring subscale of the PSQ) will show more positive physical activity and dietary behaviors.
7. Adolescents reporting greater parental permissiveness (permissive subscale of the PSQ) will show less positive physical activity and dietary behaviors.

Chapter Two: Literature Review

This chapter reviews the available evidence showing the ways parent-adolescent communication relates to the physical activity and dietary behaviors of adolescents. Next, literature reviewing how parenting styles of Latino parents have been significantly associated with their children's exercise and dietary behaviors is examined as a basis for the present study. Finally, a brief review of interventions for Latino children who are obese is reviewed.

Parent-adolescent communication

Ornelas and colleagues (2007) conducted a longitudinal study, which examined the impact of parent-adolescent interactions on adolescent health behaviors. These researchers evaluated data from the first and second waves of the National Longitudinal Study of Adolescent Health, a nationally representative study of adolescents in grades 6 through 12 in the U.S. The researchers utilized a stratified, cluster sampling design. The measures used assessed the physical activity of adolescents, family cohesion, parental monitoring, and parent engagement. The results of this study demonstrated how parents have a significant influence on adolescent physical activity. Family cohesion, parent-adolescent communication and parental engagement were significant predictors of adolescents meeting recommended physical activity one year later; however, parental monitoring was not associated with subsequent physical activity.

A study was also conducted to examine the relation between environmental (e.g., problems in family communication, teasing) and psychological stressors (e.g., self esteem,

depressive symptoms) and African American adolescents' dietary behaviors (Gerke, Mazzeo, Stern, Palmberg, Evans, & Wickham, 2013). One of the outcome measures used was the Daily Hassles Microsystem Scale, which was comprised of a few questions related to family communication. A mediation analyses demonstrated that daily hassles were positively related to eating pathology (Gerke et al., 2013). This study illustrated that stress processes, including problems in family communication, may be associated with eating pathology among obese adolescents.

St. George and Wilson (2013) conducted a study examining parent-adolescent communication and parental monitoring as moderators for reducing sedentary behaviors in African American adolescents. The adolescents and caregivers were randomized to a 6-week interactive parent-based intervention or a general health education condition. Both parent-adolescent communication and parental monitoring of health behaviors were self-reported by parents. Adolescent sedentary behavior was also self-reported by the adolescents. The results revealed that families in the intervention group who reported more communication around health behaviors showed lower adolescent sedentary behavior than the families in the comparison group. Adolescents in the intervention condition with high frequency and quality of parent-adolescent communication engaged in an average of 83 fewer weekly hours of sedentary behavior compared with the adolescents in the comparison group. These findings indicate health-related parent-adolescent communication may be a potentially important component to integrate into health promotion programs for adolescents (St. George & Wilson, 2013). This study demonstrated that for families engaged in the interactive, parent-based intervention, high levels of positive family communication were associated with the lowest levels of adolescent sedentary behavior (St. George & Wilson, 2013).

This line of research suggests that family-based health promotion approaches that target parent–adolescent interactions through positive communication hold promise for reducing adolescent sedentary behavior (Wilson, 2009). These studies demonstrate the importance of improving communication when developing intervention models that target overweight and obese youth (Wilson, 2009). Family-based interventions that target family health communication, including increasing both the frequency and quality of parent–adolescent communication specific to obesity-related health behaviors, may be effective at reducing adolescent sedentary behavior in African American youth (Wilson, 2009). Because parent-adolescent communication has been demonstrated to influence the dietary and physical activity behaviors of adolescent minority youth, it is critical to examine how it affects the dietary and physical activity behaviors of Latino adolescents as well.

Hadley (2014) and colleagues also examined the association between mother-adolescent communication and adolescent weight loss. Mother-adolescent dyads were randomized to either a standard behavioral treatment (SBT) intervention or a SBT intervention with enhanced parent involvement (Hadley, McCullough, Rancourt, Barker, & Jelalian, 2014). The SBT intervention was comprised of diet, exercise, behavior modification, and cognitive restructuring (Hadley et al., 2014). The SBT plus enhanced parent involvement condition also offered diet, exercise, behavior modification, and cognitive restructuring; however, there was an increased emphasis on parental modeling of healthy weight-control strategies and improved parent-adolescent communication about weight-related behaviors (Hadley et al., 2014). The results indicated that the SBT plus enhanced parent involvement intervention did not demonstrate a significant improvement in communication relative to the SBT intervention (Hadley et al., 2014). Mothers in the SBT intervention received three sessions, which focused on

awareness of weight management strategies, adolescent progress updates, and goal setting.

These three sessions may have provided mothers with sufficient tools to support the teens in their weight loss efforts without the need to address poor communication. It was found, however, that changes in mother-adolescent communication overall were associated with a reduction in adolescents' weight (Hadley et al., 2014). Although the main hypothesis was not supported, these results suggest that an intervention comprised of only psychoeducation related to diet, physical activity, and behavior modification can positively influence mother-adolescent communication. This study provided valuable insight into the important association between mother-adolescent communication and adolescent weight loss. Because this thesis is examining the relation between parent-adolescent communication and adolescent's dietary and physical activity behaviors, results of the Hadley study (2014) support this thesis' hypothesis that openness in communication between parents and adolescents is associated with adolescent's healthy eating and physical activity.

Overall, these studies demonstrate the significance of positive parent-adolescent communication on the physical activity and dietary behaviors of adolescents. Parent-adolescent communication can facilitate long-term, positive changes for adolescents (i.e. more physical activity) (Ornelas et al., 2007). Studies also revealed that even minimal parent involvement can lead to a significant reduction in adolescent weight loss, as long as the communication is positive (Jelalian et al., 2014; Hadley et al., 2014). These findings also suggest that when there is more parental monitoring, adolescents' exercise behaviors increase and high levels of positive family communication are associated with the lower levels of adolescent sedentary behavior (St. George & Wilson, 2012; St. George & Wilson, 2013). However, it is important to note that it is

unknown if the results of these studies would be generalizable for Latino parents and adolescents because none of these interventions involved Latinos exclusively.

Parental influence on physical activity levels. Parental exercise behaviors are significantly associated with the development of their children's exercise behaviors (Adkins, Sherwood, Story, & Davis, 2004; Beets, Cardinal, Alderman, 2007; Ornelas, Perreira, & Ayala, 2007; Prochaska, Rodgers, & Sallis, 2002; Sharma, Hoelscher, Kelder, Day, & Hergenroeder, 2008; Springer, Kelder, & Hoelscher, 2006; Wilson & Dollman, 2007). Parental participation in physical activity (Troost, Kerr, Ward, & Pate, 2001), encouragement of activity (Sallis, Alcaraz, Mckenzie, Hovell, Kolody, & Nader, 1992) and provision of transportation to sporting events (Sallis et al., 1992) have been linked to higher levels of activity among children and adolescents. Erkelenz, Kobel, Kettner, Drenowatz, & Steinacker (2014) examined associations between parental physical activity and their children's BMI percentiles, physical activity, and participation in organized sports. Parent and child BMI were calculated based on self-reported height and body weight (Erkelenz et al., 2014). Children's physical activity, sports participation, and parent physical activity were assessed via parental questionnaires (Erkelenz et al., 2014). Analysis of covariance (ANCOVA), controlling for age and family income was used to examine the association between parent and children's physical activity levels as well as BMI (Erkelenz et al., 2014).

The results indicated that physically active parents (whether both or only one parent) were more likely to have children engaging in organized physical activity than children of inactive parents (Erkelenz et al., 2014). There was a higher prevalence of overweight or obese children when both parents were inactive. These results also remained after controlling for parental BMI. There was also a significant association between perceived parental physical

activity and time spent in organized sports (Erkelenz et al., 2014). This study demonstrated that parental physical activity is a significant predictor of child physical activity and participation in organized sports. The study also indicates that parental support may be a crucial aspect in encouraging children to be physically active (Erkelenz et al., 2014). Parents who perceive themselves as being active may also be more likely to facilitate their children's participation in various activities, which was indicated by a higher participation in organized sports. Further, it can be assumed that active parents have an overall healthier lifestyle that is passed along to their children, and for example is reflected in their child's healthier diet (Davison & Birch, 2001) and lowered BMI. Edwardson and Gorley (2010) also examined relations between parent's physical activity and children's physical activity. The results illustrated that only explicit modeling from fathers was found to be associated with boys' moderate to vigorous physical activity, with no significant associations found with girls' physical activity (Edwardson & Gorley, 2010). Although these studies did not focus on Latino families, other research (Cheng, Mendonca, & de Farias Junior, 2014) suggests that these results may be generalizable to Latino families.

Specifically, similar relations between parent and child physical activity were found in a study examining associations between physical activity and social support from parents on the physical activity of Latino adolescents (Cheng et al, 2014). The results demonstrated that parents have a strong influence on the level of physical activity of adolescents through modeling behavior and providing social support (Cheng et al., 2014). The physical activity of parents was shown to be directly associated with the level of physical activity among adolescents and indirectly, partially mediated by the social support of these groups (Cheng et al., 2014). It is interesting to note that the father's physical activity was positively associated to that of the son,

and the mother's to that of the daughter (Cheng et al., 2014). It is unclear whether this gender based interaction is more common in Latinos families, compared to other groups.

Parental exercise behaviors have been demonstrated to be a major influence in the development of children's exercise behaviors (Edwardson & Gorley, 2010; Erkelenz et al., 2014; Cheng et al., 2014; Van Der Horst, Paw, Twisk, & Van Mechelen, 2007; Pugliese & Tinsley, 2007; Biddle, Whitehead, O'Donovan, & Nevill, 2005; Gustafson & Rhodes, 2006). These studies have illustrated the significance of parental physical activity and parental support as significant predictors of child physical activity and participation in organized sports (Erkelenz et al., 2014; Davidson, Cutting, & Birch, 2003). Through modeling and social support, parents can positively influence their children's physical activity levels (Cheng et al., 2014; Jago, Thompson, Page, Brockman, Cartwright, & Fox, 2009).

Parenting style

Parenting style of Latino parents has also been found to potentially influence adolescents' behaviors related to diet and physical activity (Arredondo, 2006; St. George & Wilson, 2012). Flores-Pena and colleagues (2014) examined the associations between the parenting style of Latino parents and their children's BMI and body fat percentage. It was found that the strategy the mothers used most was reinforcement, which focused on congratulating their children when they practiced healthy eating behaviors with their children (Flores-Pena et al., 2014). The results also revealed that control was frequently utilized by Latino parents and that the use of control was significantly associated with unhealthy eating practices of Latino children (Flores-Pena et al., 2014). One possibility is that use of controlling strategies regarding their children's eating behaviors reduces their child's capacity to regulate their own food intake (Flores-Pena et al., 2014).

Arredondo et al (2006) conducted a study evaluating whether parenting styles are associated with obesity-related behaviors of Latino families. Arredondo et al. (2006) hypothesized that a parenting style characterized by monitoring, use of reinforcement, appropriate limit setting and discipline (i.e., neither severe nor permissive) would be positively associated with children's healthy eating and physical activity behaviors. It was also hypothesized that the use of a controlling style would be negatively associated with children's healthy eating and physical activity. Parents completed various questionnaires regarding their children's health behaviors including dietary intake and physical activity. Parents also completed a questionnaire assessing their parenting style associated with their children's eating and physical activity. Parent and child BMI were also calculated throughout the course of the study.

Results revealed that the children of Latino parents in this study who monitored and reinforced healthy behaviors ate more healthy foods and were more physically active compared to the children of parents who did not use these parenting styles (Arredondo et al., 2006). Parents who engage in a controlling parenting style regarding children's eating had children who ate more unhealthy foods (Arredondo et al., 2006). These findings suggest that parenting styles characterized by the use of appropriate discipline were associated with eating healthier foods and that restrictive parenting has deleterious effects on their children's eating (Arredondo et al., 2006). These results held even after controlling for potentially confounding variables such as parents' age, marital status, employment status and education (Arredondo et al., 2006). However, more research examining these relations are needed to verify whether these findings are consistent among other Latino samples.

Olvera & Powers (2010) longitudinally assessed the relations between the parenting

style of Latino parents and their child's weight status three years later. Mothers completed demographic and parenting measures and children's weight, height, and BMI were assessed annually. The results showed that permissive mothers were significantly more likely than authoritative or authoritarian mothers to have children who became overweight 3 years later. This study provides longitudinal evidence for the role of permissive parenting in predicting obesity in Mexican American children. This finding was particularly noteworthy because literature has indicated that Latino parents emphasize hierarchical relationships, including unquestioned respect and obedience. The authors postulate that this finding may have been due to using within-sample medians to assign mothers to parenting styles. However, other studies (Hughes, Power, Fisher, Mueller, & Nicklas, 2005; Hughes, Shewchuk, Baskin, & Nicklas, 2008) have found that children of mothers with permissive parenting styles have higher BMIs than children of mothers with authoritarian and authoritative parenting styles. Indulgent mothers may show low levels of control and may not provide children with the guidance they need for the development of self-regulation in both eating and non-eating domains (Lengua, Honorado, & Bush, 2007).

Parenting style has been demonstrated to be an important influence on Latino adolescents' nutrition and exercise behaviors. These studies have indicated that parental monitoring is an important aspect of one's parenting style and is positively associated with adolescent's dietary intake and physical activity (Arredondo et al., 2006, Flores-Pena et al., 2014; Olvera & Powers, 2010). Parents who set appropriate limits are also more likely to have healthier children (Arredondo et al., 2006; Flores-Pena et al., 2014; Olvera & Powers, 2010). Generally, research demonstrates that parents who are authoritarian (i.e. highly directive, demanding and strict) regarding health behaviors increase their children's risk for becoming

overweight; however, parents who display a controlling or permissive parenting style also have children who are not as healthy (Arredondo et al., 2006, St. George & Wilson, 2012). Much less research on obesity and physical activity have focused on Latinos, yet it is known how important family and culture (e.g., familismo and respeto) are to this cultural group. Successful interventions for Latino adolescents need to especially build upon and reinforce these cultural values for effective treatment outcomes to occur.

Interventions for Latino adolescents who are obese

Johnston and colleagues (2010) conducted a randomized controlled trial to evaluate the efficacy of a school-based intensive lifestyle based weight management program delivered to Mexican American children. Children received either an instructor led or self-help intervention; however, both interventions aimed to modify behaviors involving physical activity and diet. Changes in BMI were assessed at baseline, year 1, and year 2. Parents were also targeted to receive the information their children learned during each intervention. The children who were randomized to the instructor led intervention achieved significantly greater decreases in BMI than the children who received the self-help intervention. A total of 79% of children randomized to the instructor led intervention had reductions in BMI after one year and a majority of these children maintained this status at two years (Johnston et al., 2010). Results also showed that parents responded to memos and flyers sent home, which suggests that they were aware of the intervention and the changes the children were trying to make.

Barkin, Gesell, & Poe (2011) also conducted a randomized controlled trial to compare an intervention comprised of psycho-educational sessions on behavior modification and physical activity compared to standard counseling for Latino parent-child dyads. The intervention group received 5 monthly 60-minute sessions at a recreation center, which discussed group physical

activity and goal setting (Barkin et al., 2011). The control group included a group health education session at an office setting following a routine exam focused on activity and nutrition. The results revealed that between baseline and 6-month follow-up 47% of children and 63% of parents from both the experimental and control group decreased their BMI. The mean absolute BMI change for children was -0.37 with a standard deviation of 2.48 and the mean absolute BMI change for adults was -0.88 with a standard deviation of 3.53 (Barkin et al., 2011). Contrary to the original hypothesis, the standard of care condition was demonstrated to be more effective than the sessions on behavior modification and physical activity provided at a recreation center. The researchers hypothesize that the control condition was more effective because Latino families of this particular demographic (with limited acculturation from Mexico) perhaps gave more credibility to information provided in an office setting versus a recreation center setting (Barkin et al., 2011).

Romero (2012) investigated the efficacy of a five-week hip-hop dance intervention for low-income Latino adolescents. This program included 10 interactive 50-minute sessions that were delivered twice a week for five weeks. The program curriculum was focused on increasing physical activity and overcoming neighborhood barriers. Using pre and post self-report measures, results demonstrated that the hip-hop program significantly increased vigorous physical activity and dance and increased self-efficacy among girls and decreased perception of neighborhood barriers among boys (Romero, 2012). Davis and colleagues (2009) evaluated a 16-week RCT, which examined the effectiveness of three different psycho-educational interventions (i.e., 1. nutrition only versus, 2. nutrition + strength training versus, 3. strength training + nutrition + aerobic exercise) for Latino females. An ANCOVA analysis was used to examine the effects of the different variables measured across intervention groups. Results

showed significant overall intervention effects for adiposity measures and fasting glucose. The intervention comprised of strength training, nutrition, and aerobic exercise was more effective than nutrition alone or nutrition plus strength training for reducing multiple adiposity outcomes and fasting glucose in overweight Latina girls.

Although there have been only a few studies that have examined the importance of the parent-child dyad in adolescent interventions, the results of these studies have generally demonstrated that this is an important variable to consider when implementing adolescent interventions (Johnston et al., 2010; Barkin et al., 2011). Interventions that incorporate the parent in addition to the adolescent demonstrate more promise because the physical activity and dietary behaviors of parents have a strong influence on their child's behaviors. This line of research also suggests that intense cardiovascular programs practiced by parents can reduce adiposity and increase self-esteem in Latino adolescents (Davis et al., 2011; Romero, 2012). The findings suggest that adolescents may benefit from a community-based intervention, which incorporates cultural values (e.g., familismo, respeto).

Conclusion

In summary, studying the impact of parent-adolescent communication and parenting style on adolescents' nutrition and exercise behaviors is important because familial influences are particularly relative to Latinos (Jelalian et al., 2014; Vander Wal, 2012; Boutelle, Cafri, & Crow, 2012). Interventions for obesity targeting Latino adolescents have not been particularly effective because most of the extant interventions have primarily focused on diet and physical activity without incorporating the adolescent's family (Jelalian et al., 2014; Ornelas, Perreira, & Ayala, 2007). Culturally sensitive interventions are needed that emphasize the importance of cultural factors (i.e. familismo and respeto) in addition to improving diet and level of physical activity

(Calzada, Fernandez, & Cortes, 2010). This thesis addresses some of these gaps in the literature by examining relations among parenting style and communication factors that might be helpful to include in interventions for Latino adolescents.

Chapter Three: Research Methods

This chapter reviews the research methods used in the current study. The participants of the study are described first. This section includes a discussion of the recruitment procedures, inclusion/exclusion criteria, risks to participants, and protection of human subjects. The measures used are described next, followed by a review of the research design and procedures. The chapter ends with a review of the data analysis that is conducted to address the study's research questions. Please note that the data analyzed for the current study were collected as part of a larger study. The parent project focused on health care disparities related to risk behaviors; specifically, the larger study tested an HIV prevention intervention for Latino families. The parent study was conducted at Rhode Island Hospital in 2006 (Lescano, PI, K01MH078783).

Participants

Participants for this study were recruited as part of a larger project examining the efficacy of an HIV prevention intervention for Latino adolescents (more details about the larger study are provided in the research design). This project includes 79 adolescents between the ages of 13 and 18 years and their parents. All children and parents in the sample are Latino. Demographic information for participants in this study, including both caregivers and participants, is summarized in Table 1 and Table 2 in the 'Results' section, respectively.

Recruitment procedures. One hundred and twenty-four families that self-identified as Latino were recruited from Latino advocacy groups and community centers in Rhode Island. Recruitment occurred through flyers at two Latino serving agencies, attendance by a recruiter at

community-based organization (CBO) events, and directed solicitation. Research assistants recruited all of the participants. One hundred and twenty-one participants were eligible to participate in the study. Thirty-one participants were recruited from community events, 46 by word of mouth, 8 by a CBO event, 4 by flyers, 4 from lab referrals, and 8 participants were recruited by other methods. Seventy-two percent (87 dyads) of participants who were eligible completed baseline measures. 92% (80 dyads) were randomized to either the health promotion or HIV prevention intervention.

Consent and assent. Each adolescent and parent were individually assented and consented by research assistants. After the participants were assented and consented, they were randomized to an intervention group (e.g., health promotion or HIV prevention) and completed various assessments. Participant assignment to intervention group does not affect the present findings because only baseline data were used for the purpose of the current study.

Inclusion/exclusion criteria. Adolescent-caregiver dyads were eligible to participate if they had (a) an adolescent age 13-18 years and (b) at least one parent living in the same household as the adolescent, (c) self-identified as Latino, (d) able to participate in a group, (e), a mental health impairment that could be controlled by medication, (f), were HIV negative. Because the adolescent-caregiver dyads were required to speak English to be included in the study, this sample is more acculturated than other Latino samples. Adolescent-caregiver dyads were ineligible to participate if they (a) were unable to give consent (e.g., due to cognitive limitations, (b) self-reported having an HIV infection, (c) did not speak English, and (d) refused to assent or consent.

Measures

Demographic information. A brief questionnaire was used to collect basic demographic information from both parents and adolescents, including age, gender, sex, race, and family income, relationship to adolescent (e.g., biological, step, etc.), annual household income, and adolescent psychiatric hospitalization was provided by the caregiver. Level of education was also obtained from all adolescents.

Outcome measures

All data for all participants were collected using parent and adolescent surveys. These measures used in the present study were selected from the larger set of measures used for the original, larger-scale study. The parent version and adolescent version of both the Parent-Adolescent Communication Scale and Parenting Style Questionnaire (PSQ) are used for the purposes of the present study. The parent versions and adolescent versions of these questionnaires were used to understand how parenting style and parent-adolescent communication is viewed from the perspective of both the parent and the adolescent. The adolescent/child version of the Health Behaviors Questionnaire (HBQ) were also used. The measures that are used for this thesis are as follows:

Parent-Adolescent Communication Scale (Barnes & Olson, 1982). The Parent-Adolescent Communication Scale (PACS) is designed to assess the views of adolescents and their parents regarding their perceptions and experience of communication with each other (Barnes & Olson, 1982). The 20-item questionnaire consists of items that measure openness in communication and items that measure problems in family communication (Barnes & Olson, 1982). Openness measures the positive aspect of parent-adolescent communication, or the

degree to which parents and adolescents engage in a free-flowing exchange of information, both factual and emotional (Barnes & Olson, 1982).

Openness is characterized by a lack of constraint in parent-adolescent communication, with both parents and adolescents expressing understanding and satisfaction with their communication interactions (Barnes & Olson, 1982). Communication problems reflect negative aspects of parent-adolescent communication such as hesitancy, selectivity, and caution in what is shared (Barnes & Olson, 1982). Responses were measured on a seven-point Likert scale, from Strongly disagree (1) to Strongly agree (7). Higher scores on respective scales indicated more openness in communication or more problems in communication (Barnes & Olson, 1982). Internal consistency (Cronbach's alpha) was computed for two samples ($n = 925$ and 916) and total ($r = 1,841$). The coefficients were found to be good for Open Family Communication ($r = .87$) and the total scale ($r = .88$), and satisfactory for Problems in Family Communication ($r = .78$) (Barnes & Olson, 1982). Coefficient alphas using the present sample were calculated. For the adolescent version of this measure, the internal consistency was .920 for the Open Family Communication subscale and .801 for the Problems in Family Communication subscale. For the parent version, the internal consistency was .73 for the Open Family Communication subscale and .74 for the Problems in Family Communication. This measure can be found in Appendix A.

Parenting Style Questionnaire (PSQ) (Oregon Learning Center, 1990). The parent version of this measure consists of 17 items (Oregon Learning Center, 1990). Items are measured on a five-point scale ranging from “almost never” to “almost always.” The parent version of the PSQ only consists of a parental monitoring subscale. Parents reported parental monitoring (e.g., “How often do you check in with your child after school/work before going

out?”) on a scale from 1 (Never or Almost Never) to 5 (Always or Almost Always) on a scale from 1 (Not at all True/Never) to 5 (Very True) (Oregon Learning Center, 1990). Using the present sample, the internal consistency of the parental monitoring subscale for the parent version of this measure is .74. However, the adolescent version of the PSQ consists of the parental monitoring and parental permissive subscales. Adolescents reported their parents’ permissiveness (e.g., “Your parents/caretakers allow you to go out as often as you please” and parental monitoring (e.g., “How often do you check in with your parents/caretakers or an adult after school/work before going out?”) Internal consistency for the adolescent version is $r = .84$ for monitoring and $r = .63$ for permissiveness (Oregon Learning Center, 1990). Using the present sample, internal consistency for adolescent version of this measure is .76 for the parental permissiveness subscale and .71 for the parental monitoring subscale. Parental monitoring and parental permissiveness were each assessed using 4 items, with a range of 4-20 for each subscale. Items representing parental permissiveness were reversed coded so higher scores represent more monitoring and more permissiveness. This measure can be found in Appendix A.

Health Behaviors Questionnaire (Gordon, 2006). This is an author-developed questionnaire developed for the parent project (Gordon, 2006). The items in this questionnaire are typical of the type that is often used to capture information about adolescent physical activity and dietary behaviors (e.g., see Sallis, 1992). There is no established reliability or validity for this measure. This questionnaire asks questions regarding an adolescent’s physical activity such as, “How many days of the last week did you exercise or participate in physical activity for at least 30 minutes that made you sweat or breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activity?” and “If you did not get strenuous activity for at least 30 minutes a day, would you be concerned about being out of

shape?" Questions on dietary behaviors include questions such as, "How many servings of fruit do you eat on an average day?" and "How many servings of vegetables do you eat on an average day?" A portion of the measure was used (a total of 5 items related to diet and PA) in which a composite score was created based on two items and the other three items were analyzed separately. Composite scores have been used in many studies to examine health behaviors of various populations (Braungart-Rieker, Moore, Planalp, & Lefever, 2014; Miko, Cohen, Conway, Gilman, Seward, & Larson, 2012). A composite score capturing 'Fruit and Vegetable Consumption' was derived by summing the two items of the scale related to fruit and vegetable consumption (Fruit and Vegetable Consumption Score= fruit consumed in average day + vegetables consumed in average day). All of the remaining items related to diet and physical activity in the scale were examined separately. There was one item related to physical activity, one item related to junk food intake, and one item related to fast food intake. Internal consistency of the Fruit and Vegetable Consumption Score was also assessed based on this sample ($r=.71$). This measure can be found in Appendix A.

Multigroup Acculturation Scale (Stephenson, 2000). The Stephenson Multigroup Acculturation Scale (SMAS) is a 32-item acculturation scale developed for use across all ethnic groups (Stephenson, 2000). This scale was completed by the adolescents and assesses both behavioral and attitudinal aspects of acculturation. Responses are based on a four-point Likert scale ranging from true, partly true, partly false, and false. This scale is scored according to two subscales, ethnic society immersion (ESI) and dominant society immersion (DSI) (Stephenson, 2000). Scores range from 1 to 4 and are determined by calculating mean item responses. Lower scores reflect greater acculturation (Stephenson, 2000). Internal consistency is .94 and .75 for

the ESI and DSI subscales, respectively (Stephenson, 2000). Internal consistency was also assessed based on this sample for the DSI ($r=.78$) and ESI subscales ($r=.87$).

Research design

This study is using a secondary data set derived from a larger study (Lescano, PI: K01MH078783), that examined the effectiveness of two interventions (i.e. health promotion and HIV prevention) for Latino adolescents and their caregivers. The health promotion intervention focused on general health behaviors such as smoking, alcohol, drugs, nutrition, and exercise. The HIV prevention intervention focused on topics such as safe sexual behavior, attitudes towards HIV, parent-adolescent communication, parental monitoring, etc. For the purposes of this thesis, only the baseline data for both interventions were used. A correlational design was used to examine if any associations exist between parenting style or adolescent-parent communication and adolescents' physical activity and dietary behaviors.

Procedure

Ethical considerations. There are no potential risks or benefit to the study's subjects because this is a secondary data analysis. Ethical conduct was ensured by: (a) obtaining written informed consent from the parents of all participants, (b) not causing any physical or emotional harm to participants, (c) not using any personal opinions or biases throughout the course of the study, (d) ensuring participants that all data were kept anonymous (i.e. all personal identifiers were removed) and confidential, and (e) obtaining approval from the University of South Florida's Institutional Review Board (IRB). The data were collected through Brown University. IRB approval was also obtained through Brown/Rhode Island Hospital. In consultation with the IRB, it was determined that this project would be exempt from requiring IRB approval.

Data analyses. Pearson correlation analyses using SPSS 22.0 were conducted to test each of the hypotheses. The first step in testing the hypotheses was conducting a series of correlations between each of the main measures (i.e., parent and adolescent reported openness to communication, problems in family communication, permissive parenting, parental monitoring, and parental permissiveness) and adolescents' Fruit and Vegetable Consumption Scores, fast food intake, junk food intake, and physical activity. Those variables that were found to correlate significantly with the outcome variables were further examined in a multiple hierarchical regression. Correlations were also conducted to assess whether demographic (e.g., family income, age, gender) variables were associated with adolescents' exercise and dietary behaviors. Two additional correlations were conducted to examine if two acculturation variables (e.g., ethnic society immersion (ESI) and dominant society immersion (DSI)) were associated with adolescents' physical activity and dietary behaviors as well.

In order to test which of these variables account for the most variance in the Fruit and Vegetable Consumption Scores, junk food intake, fast food intake, and physical activity, hierarchical multiple regressions were conducted using SPSS 22.0. Hierarchical regression can detect unique variance that is added to the model by each variable in each additional step of the model. The predictor variables (i.e., openness to communication, problems in family communication, permissiveness, and parental monitoring) that are found to significantly correlate with the fruit and vegetable composite subscale were entered into a series of multiple regressions. Two acculturation variables were also entered into the regression including ethnic society immersion (ESI) and dominant society immersion (DSI) in order to determine if level of acculturation significantly affects adolescents' composite score on the Health Behaviors

Questionnaire. Several covariates were also included in the multiple regression including age, family income, and gender.

Chapter Four: Results

All data analyses were completed using IBM's Statistical Package for Social Sciences (SPSS) 22nd Edition (IBM Corp, 2013).

Descriptive analyses

Sample characteristics. A total of 79 caregiver participants were included in this study. The majority of the respondents were female (91.1%) and (8.9%) were male. Most of the caregivers were the adolescents' biological parents (96.2%) and 3 caregivers were the adolescents' grandparents (3.8%). All of the caregivers were of Hispanic descent (100%). Information about country of origin was not available. In terms of education, 6.3% completed grades 1-6, 11.4% completed grades 7-9, 31.6% completed some high school, 26.6% graduated high school, and 13.9% graduated college. The majority of the caregivers were married (54.4%), 20.3% of caregivers were divorced, 11.4% of caregivers were single or never married, 6.3% of caregivers were separated, and 5.1% of caregivers were living with a partner. Further, 62.1% of caregivers reported household incomes less than \$30,000 and 29.2% of caregivers reported household incomes greater than \$30,000. Table 1 summarizes the descriptive statistics for sociodemographic characteristics of the caregiver participants.

On average, adolescents were 14.7 years of age ($SD=1.47$, range=13-18), 50.6% of the adolescents were female and 49.4% were male. All of the adolescents were of Hispanic descent (100%). On average, the highest education the adolescents received was 8th grade ($SD= 1.55$,

range= 5-12). Table 2 summarizes the descriptive statistics for sociodemographic characteristics of the adolescent participants.

Table 1. Demographic characteristics of caregivers (n=79)

Variable	Value
Gender, N (%)	
Male	7 (8.9)
Female	72 (91.1)
Hispanic or Latino descent, N (%)	79 (100)
Education, N (%)	
Elementary school (grades 1-6)	5 (6.3)
Secondary school (grades 7-9)	9 (11.4)
Some high school	7 (8.9)
Graduated high school/ GED	25 (31.6)
Some college or technical school	21 (26.6)
Graduated college	11 (13.9)
Other	1 (1.3)
Marital status, N (%)	
Single/Never married	9 (11.4)
Married	43 (54.4)
Separated	5 (6.3)
Divorced	16 (20.3)
Living with a partner	4 (5.1)
Other	2 (2.5)
Relationship to the adolescent, N (%)	
Biological parent	76 (96.2)
Grandparent	3 (3.8)
Income level, N (%)	
\$0-10,000	14 (17.7)
\$10,000-20,000	19 (24.1)
\$20,000-30,000	16 (20.3)
\$30,000-40,000	18 (22.8)
\$40,000-50,000	3 (3.8)
\$50,000-60,000	1 (1.3)
\$60,000-70,000	1 (1.3)
Didn't answer	7 (8.9)

Table 2. Demographic characteristics of adolescents (n=79)

Variable	Value
Age, mean (SD)	14.7 (1.47)
Gender, N (%)	
Male	39 (49.4)
Female	40 (50.6)
Hispanic or Latino descent, N (%)	79 (100)
Most recent grade completed, mean (SD)	8.6 (1.55)
Number of adults living in the home, mean (SD)	1.89 (.744)
Dropped out of school, N (%)	0 (0)

Type 1 Error correction

A Bonferroni correction was used to control for Type I error for both the Pearson correlations and hierarchical regressions. Because twelve comparisons were made between the parent-adolescent communication and parenting style variables from the adolescents' perspective and adolescents' physical activity and dietary behaviors, an alpha level of .05 was divided by twelve to yield a corrected alpha of .00416. Because sixteen comparisons were made between the parent-adolescent communication and parenting style variables from the caregivers' perspective and adolescents' physical activity and dietary behaviors, an alpha level of .05 was divided by sixteen to yield a corrected alpha of .00313. For the correlations between the demographic and acculturation variables and adolescents' physical activity and dietary behaviors, an alpha of .05 was divided by twenty to yield a corrected alpha of .0025. Bonferroni adjusted alpha levels also were used in each hierarchical regression to control for Type 1 error.

Assumptions of multiple regression

The assumptions of a multiple regression analyses were verified through statistical analysis. Assessment for normality of the distribution was completed and no violation of normality was detected. The distribution of responses to the dietary composite score is displayed

in Figure 3; upon examination, it appears that the scores are normally distributed.

Multicollinearity of target variables was also assessed to ensure that the same construct was being measured. This was evaluated with Pearson correlations. The data were screened for outliers, influential values, and violation of assumptions. There were no influential data points and all of the assumptions of multiple regression were reasonably met. Descriptive information, including details of the internal consistency of each measure are first described, followed by the tests for each of the hypotheses.

Table 3. Means, Standard Deviations, and Ranges of Scales and Subscales

Instrument	Mean	SD	Minimum- Maximum
Parent-Adolescent Communication Scale (Adolescent)			
Openness in communication	34.84	9.94	12-54
Problems in communication	30.02	7.84	14-54
Parent-Adolescent Communication Scale (Parent)			
Openness in communication	40.95	5.91	25-50
Problems in communication	26.56	7.72	14-46
Parenting Style Questionnaire (Adolescent)			
Parental permissiveness	9.72	3.76	4-20
Parental monitoring	15.70	3.80	4-20
Parenting Style Questionnaire (Parent)			
Parental monitoring	37.92	5.14	19-45
Multigroup Acculturation Scale			
Dominant society immersion	49.44	6.49	21-58
Ethnic society immersion	57.08	8.97	28-69

Table 3 (Continued).

Instrument	Mean	SD	Minimum- Maximum
Health Behaviors Questionnaire			
Days of exercise in last week	2.44	1.62	1-8
Fruit intake in average day	2.05	.601	1-4
Vegetable intake in average day	2.18	.597	1-4
Junk food intake in average day	1.77	.643	1-4
Days of fast food intake in last week	2.06	.902	1-5

Correlation analyses

Hypothesis 1: ‘Openness to communication’ is positively related to adolescents’ Fruit and Vegetable Consumption Score and physical activity and negatively related to fast food and junk food consumption.

Using the Bonferroni correction for Type 1 error, ‘openness to communication’ was not significantly related to adolescent Fruit and Vegetable Consumption Score, $r=.174$, $p=.127$, adolescent exercise, $r=.098$, $p=.394$, servings of junk food eaten per day, $r=-.090$, $p=.435$, or frequency of fast food eaten in the past month, $r=-.067$, $p=.561$. Results are displayed in Table 4.

Hypothesis 2: ‘Problems in family communication’ is negatively related to adolescents’ Fruit and Vegetable Consumption Score and physical activity and positively related to fast food and junk food consumption.

Using the Bonferroni correction for Type 1 error, a negative significant association between parent-reported ‘problems in family communication’ and monthly adolescent fast food consumption, $r=-.349$, $p=.002$ was found. However, parent-reported ‘problems in family communication’ was not significantly related to adolescent Fruit and Vegetable Consumption,

$r=.225$, $p=.047$, to adolescent exercise, $r=-.064$, $p=.580$, or junk food consumption, $r=-.110$, $p=.339$. Results are displayed in Table 4.

Hypothesis 3: Parents reporting greater parental monitoring (parental monitoring subscale of the Parenting Style Questionnaire) are more likely to have adolescents who show more positive physical activity and dietary behaviors. Results are displayed in Table 4.

Self-reported parental monitoring was not significantly related to adolescent Fruit and Vegetable Consumption Score, $r=.098$, $p=.392$, monthly junk food consumption, $r=-.009$, $p=.934$, adolescent exercise, $r=.157$, $p=.169$, or frequency of fast food eaten in the past month, $r=.043$, $p=-.711$.

Hypothesis 4: ‘Openness to communication’ is positively related to adolescents’ Fruit and Vegetable Consumption Score and physical activity and negatively related to fast food and junk food consumption. Results are displayed in Table 5.

Adolescent-reported ‘openness to communication’ and the adolescent Fruit and Vegetable Consumption Score were not correlated, $r=.018$, $p=.873$. When correlations were examined for specific diet-related items, ‘openness to communication’ was not related to servings of junk food eaten per day, $r=-.116$, $p=.312$, adolescent exercise, $r=.036$, $p=.753$, or frequency of fast food eaten in the past month, $r=-.141$, $p=.218$.

Hypothesis 5: ‘Problems in family communication’ is negatively related to adolescents’ Fruit and Vegetable Consumption Score and physical activity and positively related to fast food and junk food consumption. Results are displayed in Table 5.

A trend association between adolescent reported problems in communication and daily junk food consumption, $r=-.251$, $p=.027$ was found after using the Bonferroni correction to control for Type 1 error. However, adolescent-reported ‘problems in communication’ and

adolescent Fruit and Vegetable Consumption Score were not correlated, $r=.114$, $p=.332$. Junk food consumption was not significantly correlated with adolescent exercise, $r=.099$, $p=.388$ or frequency of fast food eaten in the past month, $r=-.169$, $p=.140$.

Hypothesis 6: Adolescents reporting greater parental monitoring (parental monitoring subscale of the PSQ) will show more positive physical activity and dietary behaviors.

Adolescent-reported parental monitoring and overall Fruit and Vegetable Consumption Score were not significantly correlated, $r=.161$, $p=.158$. Further, adolescent-reported parental monitoring was unrelated to servings of junk food eaten per day, $r=-.164$, $p=.151$, adolescent exercise, $r=.168$, $p=.140$, or frequency of fast food eaten in past month, $r=-.088$, $p=.443$.

Hypotheses 7: Adolescents reporting greater parental permissiveness (permissive subscale of the PSQ) will show less positive physical activity and dietary behaviors.

Using the Bonferroni correction, a trend between adolescent-reported 'parental permissiveness' and overall Healthy Eating Score, $r=-.236$, $p=.038$, was found. However, no associations were found between parental permissiveness and the number of servings of junk food eaten per day, $r=.248$, $p=.028$, fast food consumption, $r=.125$, $p=.237$, or adolescent exercise, $r=-.014$, $p=.904$.

Correlation matrix

The first correlation matrix includes all parenting style (parental monitoring) and parent-adolescent communication variables (e.g., openness in communication, and problems in family communication) from the caregiver's perspective, as seen in Table 5. The matrix shows how these variables are associated with adolescents' physical activity and dietary behaviors. The second correlation matrix depicts all parenting style and parent-adolescent communication

variables from the adolescents' perspective, as seen in Table 6. The third correlation matrix shows how demographic variables (e.g., age, gender, family income) and acculturation variables (ethnic society immersion, dominant society immersion) are associated with adolescents' physical activity and dietary behaviors.

Table 4. Correlations between parent-adolescent communication and parenting style variables from the caregiver's perspective and adolescents' physical activity and dietary behaviors (n=79)

	Parental monitoring	Openness in communication	Problems in family communication
Fruit and Vegetable consumption	.098	.174	.225
Monthly junk food consumption	-.009	-.090	-.116
Frequency of fast food consumption per month	.043	-.067	-.349*
Daily exercise	.157	.098	-.064

*p<.00416 (Bonferroni-adjusted alpha level)

Table 5. Correlations between adolescent-communication and parenting style variables from the adolescents' perspective and adolescents' physical activity and dietary behaviors (n=79)

	Parental monitoring	Parental Permissiveness	Problems in communication	Openness in communication
Fruit and vegetable consumption	.161	-.236	.114	.018
Monthly junk food consumption	-.164	.248	-.251	-.116
Frequency fast food consumption per month	-.088	.135	-.169	-.141
Daily exercise	.168	-.014	.099	.036

*p<.00313 (Bonferroni-adjusted alpha level)

Table 6. Correlations between demographic and acculturation variables and adolescents' physical activity and dietary behaviors (n=79)

	Age	Gender	Family income	Dominant society immersion	Ethnic society immersion
Fruit and vegetable consumption	.147	.145	.094	.036	.146
Monthly junk food consumption	-.032	.254	.006	.003	.028
Frequency fast food consumption per month	-.089	-.022	-.028	-.114	-.264
Daily exercise	-.178	.165	-.102	.157	.004

*p<.0025 (Bonferroni-adjusted alpha level)

Summary of correlation analysis results

As shown in Table 4, parent reported ‘problems in communication’ is significantly correlated with adolescent fast food consumption; however, this variable is not significantly correlated with adolescent fruit and vegetable or junk food intake. Parent reported parental monitoring and openness in communication were not significantly correlated with adolescent fruit and vegetable, junk food, or fast food consumption. As shown in Table 5, none of the adolescent reported parenting style or communication variables were significantly correlated with adolescent dietary behaviors. Because parent reported ‘problems in communication’ was the only variable significantly correlated with adolescent dietary behaviors (e.g., fast food consumption), it was the only variable included in the hierarchical regression analyses.

Hierarchical multiple regression

Using the correlation matrix as a guide, those variables that were correlated significantly (e.g., parent reported problems in family communication) were entered into a multiple hierarchical regression model to examine whether they predicted adolescents’ dietary behaviors (e.g., fast food consumption). Hierarchical regression can detect unique variance that is added to the model by each variable in each additional step of the model (Raudenbush & Bryk, 2002). For the hierarchal regression, in the first step, demographic variables (e.g., age, gender, family income) were entered to determine the unique influence that they have on adolescents’ fast food consumption. In the second step, demographic, acculturation variables, and family variables (e.g., parent reported ‘problems in family communication’) were entered into the model. A Bonferroni adjusted alpha level of .00833 was used to determine the significance of these predictor variables. The model demonstrated that ‘problems in family communication’ did significantly predict adolescent fast food consumption, $R^2=.188$, $F(6, 71)= 2.741$, $p<.05$. See

Table 7 for results. Acculturation variable, age, family income, nor gender was significantly associated with adolescent fast food consumption. See Table 8.

Table 7. Multiple regression analysis of predictors significantly correlated with fast food consumption

	Unstandardized coefficients	Standard Error	Beta	t	Significance (p-values)
Parent report of problems in family communication	-0.040	0.013	-0.337	-2.994	0.004*

*p< .00833 (Bonferroni adjusted alpha)

Table 8. Multiple regression analyses of demographic and acculturation variables that did not significantly predict adolescent fast food consumption

	Unstandardized coefficients	Standard Error	Beta	t	Significance (p-values)
Gender	-.234	.355	-.075	-.661	.511
Age	-.013	.103	-.014	-.129	.898
Family income	.014	.037	.044	.384	.702
Dominant society immersion	-.018	.015	-.129	-1.190	.238
Ethnic society immersion	-.021	.011	-.205	-1.879	.064

Summary of the results

Based on the Pearson correlation analyses, none of the parenting style or communication variables were significantly associated with adolescents' fruit and vegetable consumption. None of the demographic variables (e.g., gender, age of adolescent, family income) were significantly associated with adolescents' dietary behaviors. Level of acculturation was also not significantly associated with adolescents' fruit and vegetable consumption. However, the exploratory analyses illustrated that parent reported 'problems in

family communication' was significantly associated with adolescent fast food consumption. The hierarchical regression model also demonstrated that 'problems in family communication' did significantly predict adolescent fast food consumption.

Chapter Five: Discussion

The current study was designed to examine relations between parent-adolescent communication, parenting style, and the physical activity and dietary behaviors of Latino adolescents. The results of the preceding analyses indicated that parent- reported ‘problems in communication’ was the only variable that was significantly associated with adolescents’ Fruit and Vegetable Consumption Scores. This discussion examines the results of the analyses in the context of the extant literature and the Ecological systems (Bronfenbrenner, 1947) and triadic influence (Flay, 1999) theoretical conceptual frameworks. The Ecological Systems Theory (Bronfenbrenner, 1947) and the Triadic Influence Theory (Flay, 1999) provide a conceptualization for how multiple environmental factors can affect a child’s development and physical activity and dietary decisions. This thesis examined environmental factors including parent-adolescent communication and parenting style. The discussion identifies these relevant findings and highlights the connection to both conceptual frameworks. Strengths, limitations, and future directions for research are also examined.

Overview of specific aims and findings

Parent and adolescent reported ‘openness to communication.’ A series of data analyses yielded limited findings. Contrary to the hypotheses suggesting a positive association between both parent and adolescent reported ‘openness to communication’ and adolescent Fruit and Vegetable Consumption Scores and physical activity, the present findings did not reveal any significant associations. A negative relation between openness to communication and adolescent junk food and fast food consumption was also hypothesized and no significant associations were

found. These results are inconsistent with the findings from many studies that examined the impact of parental support and communication on adolescents' physical activity and dietary behaviors. Prior research has found parental involvement, emotional support, appropriate granting of autonomy, and clear, bidirectional communication to be positively associated with more healthful behavior in children and adolescents (Pearson, Atkin, Biddle, Gorely, & Edwardson, 2009). Brown and colleagues (2012) also found that adolescents who reported more frequent family discussions consumed more fruits and vegetables. However, a 2013 study examined the association between family support and fruit and vegetable intake in minority families; no significant results were found, suggesting that these prior findings might be more common in non-minority groups (Franko, Cousineau, Rodgers, Roehrig, & Hoffman, 2013).

It is possible that a relation between openness in communication and positive adolescent physical activity and dietary behaviors was not found due to economic stress the families may have been experiencing. The majority of the families in the study were low-income families (i.e. 60% of families earned less than \$30,000 per year), it is possible that the caregivers worked full time and were unable to spend as much time with their children. Research has demonstrated that the family meal (i.e., children or adolescents with at least one parent present) may provide a regular, structured time for parents and children to foster clear, direct, and empathetic parent-child communication (Fulkerson, Pasch, Stigler, Farbakhsh, Perry, & Komro, 2010). It is possible that due to parents' work schedules, there wasn't enough time to have regular family meals, which would foster more frequent parent-adolescent communication.

Parent and adolescent-reported 'problems in family communication.' A negative relation between problems in family communication and adolescent fruit and vegetable intake and physical activity was hypothesized. A positive relation between problems in family

communication and junk food and fast food intake was also hypothesized. The Pearson correlation and multiple regression analyses did not support these postulations. Parent reported 'problems in family communication' was not found to be related to adolescent Fruits and Vegetable Consumption. Not finding support for this hypothesis of such a relation stands in contrast to the extant literature, which postulates that poor family communication is associated with poor adolescent dietary behaviors (Berge, Wall, Larson, Law, & Neumark-Sztainer, 2013; Dinsmore & Stormshack, 2003). These studies also demonstrate that poor family functioning and communication is related to higher BMI's in adolescents (Wen, Simpson, Baur, Rissel, & Flood, 2011; Zeller, Reiter-Purtill, Modi, Gutzwiller, Vannatta, & Davies, 2007). However, two studies that examined this trend in minority populations found that poor family communication was not related to a high BMI in adolescents. These studies, in combination with the present study, suggest that this expected relation (or lack thereof) might be due to acculturation or cultural perceptions (Brijnath, Browne, Halliday, Renzaho, 2011; Wang & Beydoun, 2007). The lack of support in the present study also could have resulted from the failure to use standardized measures to assess these factors. Further exploration of this possibility is considered below.

In line with prior research, 'problems in family communication' was significantly correlated with adolescent fast food consumption. Parents reporting greater 'problems in family communication,' were more likely to have adolescents who consumed more fast food. This finding is more consistent with the results of other studies, which have found that family communication problems are associated with obesity-related behaviors in adolescents (Cromley, Neumark-Sztainer, Story, & Boutelle, 2010; Gerards, Sleddens, Dagnelle, de Vries, & Kremers, 2011; Hasenboehler, Munsch, Meyer, Kappler, & Vogege, 2009; Mendelson, White, & Schliecker, 1995; Rhee, 2008). This finding could be due to parents not buying fruits and

vegetables because fruits and vegetables could be perceived as an inconvenient snack food as they have to be washed, dried, peeled or cooked before consumption (Monje-Rojas, Garita, Sanchez, & Munoz, 2005; Gellar, Schrader, & Nansel, 2007). Lack of convenience emerged as a key barrier to eating fruit and vegetables in several studies (Monje-Rojas et al., 2005; O’dea, 2003). This finding could be due to families being of lower socio-economic status and might have limited access to resources that might otherwise promote healthy lifestyle, such as a safe neighborhood to exercise in, or finances to purchase and store healthy foods (Pampel, Krueger, & Denny, 2011). This relation could also be due to parents not cooking due to hectic work schedules. Because parents might be working long hours, parents might not be cooking family meals every night and fast food might be consumed more frequently. It is also possible that parents and their adolescents are going to fast food restaurants together. Future studies should examine the relation between parents’ work schedules and skill level of work and adolescent fast food intake.

Parent and adolescent-reported parental monitoring. A positive relation was expected between parental monitoring and adolescents’ fruit and vegetable consumption and physical activity. A negative relation was also expected between parental monitoring and adolescents’ junk food and fast food intake. However, these relations were not supported by the Pearson correlation and hierarchical regressions. These findings (or lack thereof) are actually consistent with many studies that have examined this topic; however, the literature on the association between strict parenting practices and adolescent dietary behaviors has yielded conflicting results (Kremers et al., 2003). Numerous studies demonstrate that higher levels of parental monitoring may have adverse effects, such as increasing adolescents’ preferences for the intake of restricted foods (Birch & Fisher, 2000; Fisher & Birch, 1999). Alsharairi & Somerset

(2015) found that mothers' high level of control over their children's dietary behavior was associated with low fruit and vegetable consumption. Parents who practiced high control over their children's dietary behaviors may use some pressure tactics such as ridicule and manipulation, which may result in children's reduced consumption of fruits and vegetables (Lessard, Greenberger, and Chen 2010).

However, extant literature illustrates that adolescents have a healthier diet when more food-related rules exist in the family (Jackson, Bee-Gates, & Henriksen, 1994; Young & Fors, 2001). These studies demonstrate that adolescents who described their parents as authoritative ate more fruit, fewer unhealthy snacks per day than adolescents who described their parents as neglectful (Pearson et al., 2009). Lescano et al., (2009) illustrated that parents of Latino adolescents who demonstrate parental monitoring practices (i.e. keeping track of their children's whereabouts) have adolescents who engage in healthier behaviors as well. The current study illustrated that neither the parents nor adolescents reported that parental monitoring was associated with adolescent exercise, junk food, or fast food intake. This was a surprising finding as it has been shown that a parenting style consisting of parental monitoring is positively associated with physical activity in adolescents (Schmitz et al., 2002). However, it is possible that the measure used (PSQ) was not a valid measure of parents' monitoring efforts specifically regarding adolescent physical activity and dietary behaviors.

Adolescent-reported parental permissiveness. Given prior research, it was expected that parental permissiveness would be negatively associated with adolescent fruit and vegetable intake and physical activity. It was also expected that parental permissiveness would be positively associated with adolescent fast food and junk food intake. A weak but non-significant overall effect between adolescent reported parental permissiveness and their Fruit and

Vegetable Consumption Scores was found. It was also revealed that parental permissiveness was not significantly associated with adolescent junk food consumption. These findings are inconsistent with prior research, which postulates that a permissive parenting style is associated with children's poor dietary behaviors (Blissett & Haycraft, 2008; Vereecken, Keukelier, Maes, 2004). Permissive parents practice low monitoring of their children's food intake, which impedes their children's ability to self-regulate their behavior, and potentially increasing their children's risk of overeating unhealthy foods and BMI (Blissett & Haycraft 2008; Johnson et al. 2012).

Demographic variables and adolescent physical activity and dietary behaviors

The correlation and hierarchical regression analyses demonstrated that the demographic variables (e.g., age, gender, family income) were not significantly associated with adolescent fruit and vegetable consumption, junk food consumption, or adolescent exercise, or fast food consumption. These results are consistent with prior research, reporting no difference between males and females in fruit and vegetable intake (Young & Fors, 2001). However, one study conducted in Canada did find a significant positive association between fruit and vegetable intake and family income (Riediger, Shooshtari, & Moghadasian, 2007). Other epidemiological studies have also reported a positive association between family income and fruit and vegetable consumption with adolescents and adults as well (Gary, Baptiste-Roberts, Gregg, Williams, Beckles, Miller, & Engelgau, 2004; Larson, Story, Eisenberg, & Neumark-Sztainer, 2006; Oliver & Hayes, 2005). The present study's finding that ethnicity was not significantly associated with adolescents' dietary behaviors are supported by other studies as well. Cullen and colleagues (2002) found no ethnic differences in consumption of fruit, fruit juice, and vegetables for parents or children in Texas. Devine, Wolf, Frongillo, and Bisogni (1999) also found no significant

association between fruit and vegetable consumption and ethnicity in adults from three ethnic groups (white, black, Hispanic).

Acculturation variables and adolescent physical activity and dietary behaviors

Results demonstrated that neither of the acculturation variables (ethnic society immersion nor dominant society immersion) were significant predictors of adolescents' fruit and vegetable consumption. These acculturation variables were not significant predictors of adolescent exercise or junk food consumption. These results are contrary to many studies examining this topic. Many studies have found acculturation to be associated with adolescents' consumption of unhealthy foods, including fast food consumption (Unger et al., 2004; Calzada et al., 2010). It is possible that a more refined measure of acculturation that could identify people with different degrees of acculturation could reveal different patterns of association. Using a broader sample may be important to capture the breadth of acculturation as well. Gordon-Larsen, Harris, Ward, & Popkin (2003) found that acculturation and overweight among Hispanic adolescent immigrants to the US from Puerto Rico, Cuba, and Mexico displayed different profiles.

Limitations

While there are numerous strengths associated with the present study, there are some limitations. Due to the correlational design of the study, it is not possible to infer causation. For example, although a permissive parenting style was significantly negatively correlated with adolescent fruit and vegetable consumption, it cannot be inferred that a permissive parenting style causes adolescents to consume more fruits and vegetable. Another limitation is the small sample size used which could overestimate the effect size of the results and reduce the likelihood that a statistically significant result reflects a true effect. The associations between cultural

factors (i.e. familismo and respeto) and adolescent physical activity and dietary behaviors were not specifically examined in the present project. Future studies should examine how these cultural factors relate to adolescent physical activity and dietary behaviors.

Another significant limitation of the present study is the lack of standardized measures utilized for the main outcome measure. Because the Health Behaviors Questionnaire and the Fruit and Vegetable Consumption Score are not typical of the literature examining this topic, and lack any systematic tests of reliability or validity, it is difficult to say whether the lack of findings were due to the lack of effects or to measurement error. However, the coefficient alpha based on the current sample for the Fruit and Vegetable Consumption Score is .712, which implies that this composite score is a reliable measure. Another limitation is that all of the measures used were limited to either to self-reports or parents' reports of their children's physical activity and dietary behaviors. The reliance on parents' and adolescents' self-reported measures may have introduced some bias in over-reporting or underestimating of values (Alsharairi & Somerset, 2015). This could result in reducing the likelihood of finding significant differences when estimating the associations with adolescent dietary behaviors. Furthermore, even though this is a Latino sample, it cannot be assumed that the results found in the present study are indicative of all Latino caregivers, given the variability within this population.

Strengths and implications

Although the present study yielded limited findings, the study provides some insight on how parent-adolescent communication, specifically problems in family communication, influences the dietary behaviors of Latino adolescents (e.g., fast-food intake). Although no major effects were found, Type I error was controlled using a very conservative approach (e.g., Bonferroni correction). If not controlled, a few trends might have been noted as significant.

Taking a more conservative approach to the analyses was deemed appropriate because of the smaller sample size and the unstandardized outcome measure used. Multiple person reports were also used for two of the measures (i.e. PACS and PSQ), which enabled differences in outcomes between parents and adolescents to be examined. This study also examined how acculturation is associated with adolescents' dietary behaviors. Findings from the present study have several implications for future studies and for developing future interventions. If the results from this thesis were replicated and confirmed, the findings may help inform the development of culturally appropriate interventions for Latino adolescents (Arredondo et al., 2006). Although standardized measures were not used in the present study, theoretical frameworks were used to guide the research questions, appropriate statistics were used to analyze the data, and Type I error was controlled for using a conservative method. Although 'problems in family communication' was found to be significantly related to fast food intake, it is important to replicate these findings to ensure the results from the present study are reliable. The results of this study need to be confirmed through other research approaches; however, the findings of this study could lead to possibilities for interventions targeting higher fruit and vegetable consumption.

The study provided insight on how certain family characteristics (e.g., problems in family communication) is significantly related to adolescent fast food consumption. This finding illustrates the importance of parent-adolescent communication and how poor communication between parents and their children can lead to unhealthy dietary behaviors. Future studies should also examine in more detail the association between acculturation and the dietary behaviors of adolescents. There is evidence to suggest that family-based, culturally relevant interventions can be successful for improving adolescent dietary and physical activity behaviors in youth from ethnic minorities. Further research is needed to evaluate the accuracy of

adolescents' self-reports of physical activity and fast-food consumption across ethnic groups and levels of acculturation.

Conclusion

Overall, the results of this study demonstrated the value of considering family functioning in childhood obesity research and including the family in childhood obesity interventions (Lescano et al., 2009). These results have demonstrated that parent-adolescent communication, specifically problems in family communication, is an important variable to consider when implementing adolescent interventions (Johnston et al., 2010; Barkin et al., 2011). Interventions that incorporate the parent in addition to the adolescent demonstrate more promise because the physical activity and dietary behaviors of parents have a strong influence on their child's behaviors. Although the findings from the present study do not suggest that acculturation is associated with adolescents' dietary and physical activity behaviors, other research had demonstrated that adolescents may benefit from a community-based intervention, which incorporates cultural values (e.g., familismo, respeto) (Calzada et al., 2010; Lescano et al., 2009). Overall, the ways in which parents and adolescents interact, particularly concerning the topics of nutrition and exercise, are crucial to the development of adolescents' physical activity and dietary behaviors. (Palan et al., 2007).

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Appendix A:

Measures

Parent-Adolescent Communication Scale (Parent Version)

Response choices

1	2	3	4	5
Strongly Disagree	Moderately Disagree	Neither Agree Nor Disagree	Moderately Agree	Strongly Agree

1. I can discuss my beliefs with my child without feeling restrained or embarrassed.
2. Sometimes I have trouble believing everything my child tells me.
3. My child is always a good listener.
4. I am sometimes afraid to ask my child for what I want.
5. My child has a tendency to say things to me which would be better left unsaid.
6. My child can tell how I'm feeling without asking.
7. I am very satisfied with how my child and I talk together.
8. If I were in trouble, I could tell my child.
9. I openly show affection to my child.
10. When we are having a problem, I often give my child the silent treatment.
11. I am careful about what I say to my child.
12. When talking with my child, I have a tendency to say things that would be better left unsaid.
13. When I ask questions, I get honest answers from my child.
14. My child tried to understand my point of view.
15. There are topics I avoid discussing with my child.
16. I find it easy to discuss problems with my child.
17. It is very easy for me to express all my true feelings to my child.
18. My child nags/bothers me.
19. My child insults me when s/he is angry with me.
20. I don't think I can tell my child how I really feel about some things.

Parent-Adolescent Communication Scale (Adolescent Version)

Response choices

1	2	3	4	5
Strongly Disagree	Moderately Disagree	Neither Agree Nor Disagree	Moderately Agree	Strongly Agree

1. I can discuss my beliefs with my parent without feeling restrained or embarrassed.
2. Sometimes I have trouble believing everything my parent tells me.
3. My parent is always a good listener.
4. I am sometimes afraid to ask my parent for what I want.
5. My parent has a tendency to say things to me which would be better left unsaid.
6. My parent can tell how I'm feeling without asking.
7. I am very satisfied with how my parent and I talk together.
8. If I were in trouble, I could tell my parent.
9. I openly show affection to my parent.
10. When we are having a problem, I often give my parent the silent treatment.
11. I am careful about what I say to my parent.
12. When talking with my parent, I have a tendency to say things that would be better left unsaid.
13. When I ask questions, I get honest answers from my parent.
14. My parent tried to understand my point of view.
15. There are topics I avoid discussing with my parent.
16. I find it easy to discuss problems with my parent.
17. It is very easy for me to express all my true feelings to my parent.
18. My parent nags/bothers me.
19. My parent insults me when s/he is angry with me.
20. I don't think I can tell my parent how I really feel about some things.

Parenting Style Questionnaire (Parent Version)

Response choices

1	2	3	4	5	6
Always or Almost Always	Often	About Half of the Time	Occasionally	Never or Almost Never	Don't Want to Answer

1. How often do you talk with your teen about his/her plans for the coming day (e.g., what's happening with school, work or friends)?
2. How often would you know if your teen came home an hour late?
3. How often would you know if s/he hung out with kids who get into trouble?
4. How often before your child goes out, does s/he have to tell you when s/he will be back?
5. If you or an adult are not home, how often does your child leave a note for you, call you, or communicate with you in some way about where s/he is going?
6. If your teen is home when you're not, how often does s/he know how to get in touch with you?
7. How often would you say that your teen completes his/her homework?
8. When your teen is at a friend's house, how often do you think that the parent(s), or another adult, is there?

1	2	3	4	5	6
Very Seriously	Seriously	50/50	Not Very Seriously	Not at all Seriously	Don't Want to Answer

9. How seriously does your teen take his/her schoolwork/job?

1	2	3	4	5	6
Very Difficult	Somewhat Difficult	Average	Hardly Ever Difficult	Never Difficult	Don't Want to Answer

10. How difficult is it for you to know where your teen is and what s/he is doing, now that s/he is getting older.

1	2	3	4	5	6
Always or Almost Always	Often	About Half of the Time	Occasionally	Never or Almost Never	Don't Want to Answer

11. How often does your teen get away with things that you feel should have been punished?
12. How often do you feel you are having problems managing your teen in general?
13. How often when you discipline your teen, does s/he ignore the punishment?
14. How often do you have to discipline your teen repeatedly for the same thing?

1	2	3	4	5	6
Very Satisfied	Satisfied	50/50	Unsatisfied	Not at all Satisfied	Don't Want to Answer

15. How satisfied are you with your teen's behavior?

1	2	6
True	False	Don't Want to Answer

16. Discipline doesn't seem to work with him/her.

17. S/he doesn't need disciplining more often.

Parenting Style Questionnaire (Adolescent Version)

Response choices

1	2	3	4	5	6
Always or Almost Always	Often	About Half of the Time	Occasionally	Never or Almost Never	Don't Want to Answer

1. How often, before you go out, do your parents/caretakers ask when you will be back?
2. How often do you check in with your parents/caretakers or an adult after school/work before going out?
3. If your parents/caretakers or another adult are not home, how often do you leave a note for them about where you are going?
4. How often do you talk with your parents/caretakers about your plans for the coming day (e.g., what's happening with school or friends)?
5. How often do you get to do things on weekends without telling your parents/caretakers exactly where you are?

1	2	3	4	5	6
Very True	Mostly True	Somewhat True	Not Very True	Not at all True	Don't Want to Answer

6. Your parents/caretakers allow you to go out as often as you please.
7. Your parents/caretakers let you go any place you please without asking.
8. Your parents/caretakers are less strict than most parents/caretakers in letting you have fun with your friends.

Health Behaviors Questionnaire (Adolescent Version)

1. How many days of the last week did you exercise or participate in physical activity for at least 30 minutes that made you sweat or breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activity?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7

2. How many servings of fruit do you eat on an average day?
 - a. 0
 - b. 1-2
 - c. 3-5
 - d. 6 or more

3. How many servings of vegetables do you eat on an average day?
 - a. 0
 - b. 1-2
 - c. 3-5
 - d. 6 or more

4. How many servings of junk food such as cookies, doughnuts, pie or cake do you eat on an average day?
 - a. 0
 - b. 1-2
 - c. 3-5
 - d. 6 or more

5. How many days in the last week have you eaten food from a fast food restaurant?
 - a. 0
 - b. 1-2
 - c. 3-5

Multigroup Acculturation Scale (Adolescent Version)

Response Choices

1	2	3	4	5
Very True	Mostly True	Somewhat True	Not Very True	Not at all True

1. I understand English, but I am not fluent in English.
2. I am informed about current events in the United States.
3. I speak Spanish with my friends and the Latino people I know.
4. 4. I have never learned to speak Spanish.
5. 5.I feel totally comfortable with American people.
6. I eat traditional Latino foods.
7. I know a lot of Americans.
8. I feel comfortable speaking Spanish.
9. I am informed about current events in my native country.
10. I know how to read and write Spanish.
11. I feel at home in the United States.
12. I attend social functions with people from my native country.
13. I feel accepted by Americans.
14. I speak Spanish at home.
15. I regularly read Latino magazines.
16. I know how to speak Spanish.
17. I know how to prepare American foods.
18. I am familiar with the history of my native country.
19. I regularly read and American newspaper.
20. I like to listen to Latino music.
21. I like to speak Spanish.
22. I feel comfortable speaking English.
23. I speak English at home.

24. I speak Spanish with my friends.
25. When I pray, I use Spanish.
26. I attend social functions with American people.
27. I think in Spanish.
28. I stay in close contact with family members and relatives in my native country.
29. I am familiar with important people in American history.
30. I think in English.
31. I speak English with my friends.
32. I like to eat American foods.