HHS Public Access
Author manuscript
Soc Sci Med. Author manuscript; available in PMC 2018 October 01.

Published in final edited form as:
Soc Sci Med. 2017 October ; 191: 125–133. doi:10.1016/j.socscimed.2017.09.004.

Effects of Latino children on their mothers' dietary intake and dietary behaviors: The role of children's acculturation and the mother-child acculturation gap

Sandra Soto[a,b,1], **Elva M. Arredondo**[b,c], **Bess Marcus**[d], **Holly B. Shakya**[e], **Scott Roesch**[f], and **Guadalupe X. Ayala**[b,g]

[a]San Diego State University (SDSU)/University of California, San Diego (UCSD) Joint Doctoral Program in Public Health (Health Behavior), 5500 Campanile Drive, San Diego, CA 92182, USA (SDSU) and 9500 Gilman Drive, La Jolla, CA 92093, USA (UCSD)

[b]Institute for Behavioral and Community Health, 9245 Sky Park Court, Suite 221 San Diego, CA 92123, USA

[c]San Diego State University, College of Health and Human Services, Graduate School of Public Health, Division of Health Promotion and Behavioral Science, 5500 Campanile Drive, San Diego, CA 92182, USA

[d]University of California, San Diego, Department of Family Medicine and Public Health, Division of Behavioral Medicine, 9500 Gilman Drive, La Jolla, CA 92093, USA

[e]University of California, San Diego, Department of Medicine, Division of Global Health, 9500 Gilman Drive, La Jolla, CA 92093, USA

[f]San Diego State University, College of Sciences, Department of Psychology, 5500 Campanile Drive, San Diego, CA 92182, USA

[g]San Diego State University, College of Health and Human Services, 5500 Campanile Drive, San Diego, CA 92182, USA

Abstract

Rationale—Research shows that acculturation is important to Latinas' dietary intake and related behaviors. Although evidence suggests children may also play a role, it remains unclear whether children's acculturation is related to mothers' dietary intake/behaviors.

Objectives—We examined the relationship between Latino children's acculturation and mothers' dietary intake/behaviors. We also examined the mother-child acculturation gap to identify dyad characteristics associated with mothers' diet.

---

[1]Institute for Behavioral and Community Health, 9245 Sky Park Court, Suite 221 San Diego, CA 92123, USA, sandra.soto@mail.sdsu.edu, phone: 01-619-483-1281, fax: 01-619-594-2998.

Methods—Baseline surveys were collected in 2010 from 314 Latino mother-child (7 to 13 years old) dyads of Mexican-origin enrolled in a family-based dietary intervention in Southern California, USA. Mother's daily intake of fruits, vegetables, and sugary beverages, percent of calories from fat, weekly away-from-home eating, and percent of weekly grocery dollars spent on fruits and vegetables were assessed via self-report. Mothers' and children's bidimensional acculturation were examined using acculturation groups (e.g., assimilated, bicultural) derived from Hispanic and non-Hispanic dimensions of language. We also assessed the acculturation gap between mothers and children with the a) difference in acculturation between mothers' and children's continuous acculturation scores and b) mother-child acculturation gap typologies (e.g., *traditional* mothers of *assimilated* children).

Results—Findings show that having an assimilated versus a bicultural child was negatively associated with mothers' vegetable intake and positively associated with mothers' sugary beverage intake, percent of calories from fat, and frequency of away-from-home eating, regardless of mothers' acculturation. Traditional mothers of assimilated children reported more sugary beverage intake, calories from fat, and more frequent away-from-home eating than traditional mothers of bicultural children.

Conclusion—Results suggest that children's acculturation is associated with their mothers' dietary intake/behaviors and traditional mothers of assimilated children require more attention in future research.

Keywords

Latinas; mothers; diet; acculturation; children

1. Introduction

Theoretical models including the Ecological Model (Bronfenbrenner, 2009) posit the role of family members in individuals' dietary intake/behaviors; however, most research has focused on how family and parental factors influence children's outcomes (Collins, et al., 2014; Mazarello Paes, et al., 2015; Pinquart, 2014). For example, even though a well-established literature suggests that children regularly influence their parents' food-purchasing behaviors (Atkin, 1978; Gaumer & Arnone, 2009; Turner, et al., 2006; Wingert, et al., 2014), few studies have examined how child-related factors impact their parents' health practices and outcomes (Fisher, 2006). Understanding family influences on the health practices of family members are particularly relevant among Latinos given the importance of family and the interdependence observed among family members in the traditional Latino culture (Galanti, 2003).

Acculturation can also influence health behaviors, including dietary intake, among immigrant and US-born Latinos. Acculturation refers to the changes in beliefs, values, norms, and behaviors (e.g., dietary intake) that occur when individuals come into continuous and prolonged contact with a dominant culture that differs from their traditional culture (Berry, 2003). Some believe that the *bidimensional model* best describes the process of acculturation, where aspects of the dominant culture are adopted or rejected, while aspects of the traditional culture are simultaneously retained or shed (Berry, 1997). According to this model, there are four possible acculturation typologies: (a) *bicultural*, or maintaining elements of the traditional culture while simultaneously adopting elements of the dominant culture; (b) *assimilated*, or shedding the traditional culture and adopting aspects of the dominant culture; (c) *traditional*, or maintaining aspects of one's culture of origin and rejecting the new dominant culture; and (d) *marginalized*, or rejecting both cultures.

Evidence suggests that Latinos who adopt the US culture and/or shed their traditional culture have a lower diet quality than those who reject the US culture and/or retain their traditional culture. In one systematic review, Latinos who were born in the US, spoke predominantly English, and/or adopted the dominant US culture (i.e., measured by acculturation measurement scales) consumed fewer fruits and vegetables, more salt, added sugar, and calories from fat, and engaged in more frequent away-from-home eating than their less assimilated counterparts (Perez-Escamilla, 2011). In another systematic review, Latinos who spoke predominantly English, were born in the US, or had spent more years in the US, consumed more fast food and snacks containing added fats than their Latino counterparts (Ayala, Baquero, et al., 2008). Latinos who were acculturated to the dominant US culture consumed less fried foods but prepared more food using added fat than their less acculturated counterparts (Ayala, et al., 2008).

Although an individual's acculturation may partially explain their dietary intake/behaviors, theory suggests that family-level factors may also play an important role (Bronfenbrenner, 2009). One possible salient factor is children's acculturation. The acculturation process is often conceptualized as an individual phenomenon; however, it occurs within the family context with other family members also undergoing similar processes (Basáñez, et al., 2014; Chun, 2006; Nauck, 2001). Research shows that family members tend to acculturate at different rates. For example, Latino immigrant children usually adopt the new dominant culture faster than their parents because children have greater exposure to mainstream media, more readily learn and adopt English in school, and are more susceptible to external social influences than their parents (Hwang, 2006). Children's adoption of "American" foods and/or shedding of their traditional food preferences (e.g., *dietary acculturation*) may also occur more readily than among parents because of children's exposure to these foods at school, through peers, and from the media (Arandia, et al., 2012; Dondero, et al., 2016; Satia-Abouta, et al., 2002). Because family members may affect each other's acculturation processes (Basáñez, et al., 2014; Chun, 2006; Nauck, 2001), it follows that children's acculturation may influence their parents' dietary intake/behaviors by acting as cultural food brokers, introducing their parents to new foods and ways of consuming foods.

Different acculturation rates among family members result in an "acculturation gap" (Szapocznik, et al., 1978), which may have its own role on dietary intake/behaviors. Stemming from Szapocznik and colleagues' work (1978), most research on the parent-child acculturation gap focuses on the resulting family and child maladaptive outcomes (Telzer, 2011). In this literature, the parent-child acculturation gap has been commonly conceptualized in two ways: the extent of the gap and the type of gap (Telzer, 2011). These two conceptualizations examine whether it is the difference in acculturation between parent and child or a specific type of acculturation gap (e.g., dyads consisting of bicultural mothers of assimilated children) that is associated with health behaviors. The parent-child acculturation gap has yet to be examined as potentially important to mothers' diet (Dondero, et al., 2016). Thus, it is unclear which method of conceptualization is the most informative.

In keeping with theoretical models and frameworks that assert the role of family members on an individual's health behaviors (Bronfenbrenner, 2009), this study first examined the role of children's acculturation on mothers' dietary intake/behaviors. Second, the study also investigated the mother-child acculturation gap to identify the gap typologies that were associated with mothers' diet. An innovative aspect of this study is our testing of two of the most common methods for conceptualizing the acculturation gap to examine whether the mother-child acculturation difference scores or mother-child acculturation gap typologies are important in Latina mothers' dietary intake/behaviors (Birman, 2006). Data were derived from 314 mother-child dyads of Mexican-origin enrolled in a randomized controlled trial (RCT) to promote healthier dietary intake. We expected to find mothers of assimilated versus not assimilated children to report a lower quality dietary intake/behaviors (e.g., fewer intake of fruits and vegetables, more frequent away-from-home eating). Furthermore, we expected to find lower quality dietary intake/behaviors among mothers who came from dyads with larger gaps in acculturation and from dyad types that were more culturally assimilated than culturally traditional (e.g., bicultural mothers of assimilated children versus traditional mothers of bicultural children).

Methods

2.1. Study design and sample

Baseline data were collected in 2010 from 361 Latino mother-child dyads of Mexican-origin who participated in the RCT, *Entre Familia: Reflejos de Salud* (Within the Family: Reflections of Health; Ayala, et al., 2011). Participants were residents of Imperial County, California, which is located on the US-Mexico border. In 2010, about 80% of Imperial County residents were Latino and 77% of residents were of Mexican-origin versus 38% of California residents identifying as Latino and 31% who reported being of Mexican-origin (U.S. Census Bureau, 2010). A convenience sampling approach was used to recruit mother-child dyads from health fairs, clinics, and schools. Eligibility criteria for *Entre Familia* included mothers who (a) self-identified as Latina; (b) had a child between the ages of 7–13 years old; (c) were able to speak and read in Spanish; and (d) lived in the same household as their child for at least four days of the week. If a mother had more than one child between the ages of 7–13 years old, the child with the closest birthday to the baseline assessment was chosen to participate in the study. All study instruments and protocols were approved by the Institutional Review Board of San Diego State University.

2.2. Measures

Baseline data from *Entre Familia* were collected via structured in-person interviews in a location that was convenient to the participants (e.g., family homes, community locations). Interviews were conducted in the preferred language of the participants by one of six trained bilingual interviewers (Spanish or English). Mothers self-reported their dietary intake and sociodemographic characteristics and children self-reported their sociodemographic characteristics. Mothers and children self-reported their own acculturation.

2.2.1. Outcome variables: Dietary intake/behaviors

2.2.1.1. Daily fruit and vegetable intake: The National Cancer Institute (NCI) All-Day Screener (Thompson, et al., 2002) assessed daily servings of fruits and vegetables (excluding French fries, potatoes, and beans/legumes). Questions asked mothers to report their frequency of consuming the fruit or vegetable item during a typical day in the past month, followed by an item asking them to estimate the serving size they usually consumed. Consistent with previous research (Ayala, 2006), mothers were provided with 3-dimensional food models to increase their accuracy in estimating their serving sizes. For each food, its frequency was converted to a daily average and then multiplied by the MyPyramid/MyPlate servings size equivalent of the reported serving size. The sum of all fruits and all vegetables was computed separately. In the original validation study, the authors found a moderate correlation between the summary score for the screener and 24-hour dietary recalls among women ($r = .51$; Thompson, et al., 2002).

2.2.1.2. Daily sugary beverage intake: The 5-item subscale from the Youth/Adolescent Questionnaire (YAQ; Rockett, et al., 1995), based on the Willett Food Frequency Questionnaire (FFQ; Willett, et al., 1985) assessed daily servings of sugary beverages in the past month (e.g., non-diet soft drinks, sports drinks). Response options were on a six-point frequency scale, ranging from "Never/less than 1 per month" to "2 or more cans/glasses per day." Responses were converted into daily servings (equivalent to one glass, bottle, or can) and then summed to provide the daily intake of sugary beverages. In the validation study, the correlation between the sugary beverages subscale of the YAQ and the Willett FFQ in adults ages 18–31 years was .62 (Larson, et al., 2012).

2.2.1.3. Percent of calories from fat: The 16-item NCI Multifactor Fat Screener (Thompson, et al., 2007) estimated the daily percent of calories consumed from fat. The first 15 items asked mothers to indicate their frequency of consuming each item (e.g., skim milk, mayonnaise) over the past 12 months. The final item asked mothers to report their frequency of preparing foods with reduced fat margarine. Frequencies were standardized to the midpoint of responses and converted to the number of times per day. Percent calories from fat were calculated by multiplying the frequency by a weighted score based on mother's age. In the validation study, the Fat Screener was moderately correlated with biomarkers (true intake of fat) in women ($r = .58$; Thompson, et al., 2007).

2.2.1.4. Weekly away-from-home eating: Six items assessed the frequency (0 to 7 days per week) that mothers ate foods that were prepared outside the home during a typical week in the last month (Ayala, Rogers, et al., 2008). Items assessed eating away-from-home foods from (a) grocery stores, (b) relatives' or friends' homes, (c) fast food restaurants, (d) other restaurants (including take-out), (e) cafeterias, and (f) other outlets including vending machines and on-street vendors. The frequency of consuming foods and beverages from these sources were summed to obtain a continuous variable.

2.2.1.5. Percent of weekly grocery dollars spent on fruits and vegetables: Although grocery shopping has become a shared household responsibility (Food Marketing Institute (FMI), 2016), mothers remain the primary grocery shoppers. Mothers were asked to estimate how much their family spent on groceries and how much (or what proportion) of that was spent on fruits and vegetables per week in the past month (Dubowitz, et al., 2015). The amount spent on all groceries was divided by the amount spent on fruits and vegetables to obtain the percent of grocery dollars spent on fruits and vegetables.

2.2.1.6. Validity of dietary intake/behavior variables: Research shows that healthy (and unhealthy) dietary behaviors tend to cluster in diverse samples (Newby & Tucker, 2004; Sauvageot, et al., 2017). To better understand the validity of the diet variables, we explored correlations between the healthy (fruit and vegetable intake, and percent spent on fruits and vegetables) and unhealthy (sugary beverage intake, percent calories from fat, frequency of away-from-home eating) behaviors) dietary variables. With the exception of a positive correlation between daily fruit and sugary beverage servings ($r = .25$, $p < .001$), the healthy behaviors were positively correlated with each other and negatively correlated with unhealthy behaviors. Similar findings were observed with unhealthy dietary behaviors in the expected directions (Supplement Table 1).

2.2.2. Predictor variables: Acculturation and mother-child acculturation gap

2.2.2.1. Acculturation: The acculturation status, for both mothers and children, was assessed with the 24-item Bidimensional Acculturation Scale for Hispanics (BAS; Marín & Gamba, 1996). Mothers and children responded to questions separately to obtain separate scores. The BAS has previously found important associations between acculturation and dietary intake among Latinos (Ayala, Baquero, et al., 2008). This primarily language-based acculturation scale assesses language use, linguistic proficiency, and language of electronic media in English and Spanish to generate two dimension scores: Hispanic/Spanish-language dimension and non-Hispanic/English-language dimension. Twelve items measure each dimension. Depending on the item, response options range from “Almost always” to “Almost never” and “Very well” to “Very poorly,” on a 4-point Likert scale, with higher scores indicating greater Spanish/English language use. Based on theoretical and practical purposes, the developers recommend using 2.5 as the cutoff score for adherence to each dimension. In the current sample, internal consistency for the BAS on the Hispanic and non-Hispanic dimension among mothers was .77 and .96, respectively and among children was .85 and .73, respectively. The recommended cutoff score was used to place participants into one of Berry’s (1997) four acculturation groups: (a) *bicultural* (aka, integrated), or adherent to both dimensions (scores ≥ 2.5); (b) *assimilated*, or adherent to the non-Hispanic dimension but not to the Hispanic dimension; (c) *traditional* (aka, separated) or adherent to the Hispanic dimension but not the non-Hispanic dimension; and (d) *marginalized*, or not adherent to either dimension. Of the original sample of 361 mothers, only seven mothers were assimilated and one was marginalized; furthermore, thirty-two children were traditional and seven were marginalized. These participants were removed from the sample, leaving mothers who were either traditional or bicultural and children who were either bicultural or assimilated (N=314).

2.2.2.2. Acculturation gap

Differences between mother’s and child’s acculturation: The absolute value of the difference score is the most frequently used conceptualization method in the family dysfunction and child maladjustment literature (Telzer, 2011). This method is concerned with examining the role of the difference in acculturation between mothers and their children on mothers' dietary intake/behaviors, regardless of the direction of the acculturation gap. The acculturation gap was computed by subtracting children's from mothers' continuous acculturation score for each dimension (Hispanic and non-Hispanic).

Mother-child acculturation gap typologies: The following gap typologies were created based on Berry's (1997) acculturation groups: a) bicultural mothers of assimilated children; b) bicultural mothers of bicultural children; c) traditional mothers of assimilated children; and d) traditional mothers of bicultural children. These typologies were used to assess whether the type of mother-child acculturation gap was associated with mothers' dietary intake/behaviors.

2.2.3. Sociodemographic characteristics and body mass index (BMI)—We collected sociodemographic characteristics posited to be associated with acculturation and dietary intake/behaviors based on previous research (Ayala, et al., 2008; Hiza, et al., 2013; Wang, et al., 2014). Mothers reported their age (continuous variable), marital status (dichotomized as married/living as married versus single, divorced, and widowed), education (dichotomized as completed high school education versus < high school education), employment status (dichotomized as employed versus not employed; 88.3% of the latter were homemakers), household monthly income (four income brackets ranging from < $1,000 to ≥ $3,000), and the number of children living in the home (continuous variable). Children reported their age (continuous variable) and gender (male/female). Because other proxies for acculturation have been found to have unique relationships with dietary intake (Ayala, et al., 2008), mothers and children reported the number of years they have lived in the US (continuous variable). Finally, mothers' and children's BMI were measured by evaluation staff and calculated as usual (kg/m^2). Continuous BMI was used for mothers and BMI categories using the CDC's age- and gender-adjusted cut points for normal weight, overweight, and obese was used for children (Kuczmarski, et al., 2002).

2.3. Data analyses

Because the dietary variables were count variables, distributions were treated as either negative binomial if overdispersion was present or as Poisson if there was no overdispersion present. Correlations between sociodemographic and acculturation variables of at least 0.50 or variance inflation factors of 5 or greater were used to determine the presence of multicollinearity (Neter, et al., 1996). We observed a moderate correlation ($r = .57$, $p < .001$) between child's age and child's number of years living in the US because most children were born in the US and thus age was used in place for the number of years living in the US. Therefore, child's age was not included as a covariate.

First, to examine the role of children's acculturation on mothers' dietary intake/behaviors, children's acculturation group variables were tested (i.e., bicultural versus assimilated acculturation). A stepped approach was used to demonstrate the association of both the children's and the mothers' acculturation on mothers' diet. In the first step, separate bivariate associations of children's and mothers' acculturation with dietary variables were modeled. In the second step, children's and mothers' acculturation were simultaneously entered into the model. In the third step, sociodemographic variables were introduced into the model. A two-sided probability value of $p < .05$ was considered statistically significant (Rice, 1989).

Second, to identify the dyad characteristics that were associated with mothers' diet, two conceptualization methods were used to examine the acculturation gap: 1) absolute value of differences in acculturation dimension scores and 2) acculturation gap typologies. Due to these multiple comparisons, a two-sided probability value of $p < .03$ was considered statistically significant (Rice, 1989). In a similar stepped approach described above, bivariate associations with each dietary variable were first assessed, followed by adjusted models, controlling for the sociodemographic variables. When testing the absolute value of the difference in mother-child acculturation, both the Hispanic and non-Hispanic dimension difference scores were entered into the model together. When modeling the acculturation gap typologies, the reference group for the typology variable was the most traditional type of dyad in the sample: dyads in which mothers were traditional and children were bicultural.

We observed five missing cases for the percent of calories from fat variable, one missing case for the percent of groceries spent on fruits and vegetables variable, and one or two missing cases for several covariates. Missing data were treated as missing in analyses and not imputed. Analyses were performed using SAS® Version 9.4.

3. Results

3.1. Demographic characteristics and mothers' dietary intake/behaviors

Table 1 provides the demographic characteristics of mothers and children and mothers' dietary intake/behaviors.

3.2. Acculturation and acculturation gap variables

Among mothers, the mean score for the Hispanic dimension was higher than the non-Hispanic dimension score. In contrast, among children, the mean score for the Hispanic dimension was lower than the non-Hispanic dimension score. Using Berry's (1997) acculturation groups, more mothers were traditional than bicultural and more children were bicultural than assimilated. Using raw difference scores to describe the sample, we observed a positive difference score on the Hispanic dimension indicating that on average, mothers scored higher than children on this dimension, whereas a negative difference score was observed on the non-Hispanic dimension, indicating that on average, mothers scored lower than children on this dimension. The largest acculturation gap typology was comprised of traditional mothers of bicultural children followed by traditional mothers of assimilated children, bicultural mothers of assimilated children and bicultural mothers of bicultural children (Table 1).

3.3. Association between child's acculturation and mother's diet

In bivariate models, having an assimilated versus a bicultural child was at least marginally ($p < .10$) associated with lower quality intake on all dietary variables except for daily servings of fruits in bivariate models (Step 1; Table 2). Furthermore, mothers who were traditional versus bicultural were marginally associated with less frequent away-from-home eating. Regardless of mothers' acculturation and after adjusting for sociodemographic characteristics (Step 3), having an assimilated (versus a bicultural) child was associated with fewer daily servings of vegetables, more daily servings of sugary beverages, higher percent of calories from fat, and more frequent away-from-home eating. Traditional (versus bicultural) mothers were likely to consume more daily servings of vegetables and daily servings of sugary beverage, though these associations were marginally significant.

3.4. Association between mother-child acculturation gap and mother's diet

3.4.1. Differences between mother and child's acculturation—To test whether the distance in acculturation between mothers and children was related to mothers' dietary intake/behaviors, we assessed the acculturation difference scores (Table 3). The smaller the gap in mother-child *non-Hispanic* dimension scores, the more frequently mothers consumed away-from-home foods before and after adjusting for sociodemographic characteristics.

3.4.2. Mother-child acculturation gap typologies—Table 4 shows the results of the role of the acculturation gap typologies on mothers' dietary intake/behavior. In bivariate models (Step 1), traditional mothers of assimilated children (versus traditional mothers of bicultural children) were at least marginally associated with lower quality dietary intake/behaviors across all variables except fruit intake. After adjusting for sociodemographic characteristics (Step 2), traditional mothers of assimilated children consumed more daily servings of sugary beverages, a greater percent of calories from fat, and more frequent away-from-home foods than traditional mothers of bicultural children.

4. Discussion

To our knowledge, this study is the first to examine the role of children's acculturation and the mother-child acculturation gap on mother's dietary intake/behaviors. As hypothesized, children's acculturation was associated with mother's diet. Our findings suggest that Mexican-origin mothers of children who are assimilated to US culture, regardless of their own level of acculturation, may be at greater risk for consuming a diet that is of lower quality than mothers of children who are less assimilated. Furthermore, we found that the difference in acculturation between mothers and children was not as important as the type of mother-child acculturation gap typology in explaining mothers' dietary intake/behaviors. Contrary to what we hypothesized, our findings suggest that traditional mothers of assimilated children may consume a lower quality diet than other mothers.

Children who have shed their traditional Latino culture and adopted the US culture may play a negative role in Latina mothers' diet. Our findings indicate that regardless of Latina mothers' traditional or bicultural acculturation, mothers of assimilated versus bicultural children consumed fewer daily servings of vegetables, more daily servings of sugary beverages, more calories from fat, and more frequent away-from-home eating. Research has shown that compared to first-generation Latino children and adolescents, those who are second and third generation consume fewer vegetables, more sugary beverages, more calories from fat (Liu, et al., 2012) and lower dietary quality (Martin, et al., 2015). One hypothesized mechanism that would need to be corroborated with longitudinal data may be that that as children acculturate and possibly adopt unhealthy "American" dietary practices (Van Hook, et al., 2016), they may also influence their mothers' dietary intake/behaviors, above and beyond mothers' own acculturation. Studies are needed to explore exchanges between Latina mothers and their children through observation or qualitative methods to examine whether these exchanges impact mothers' dietary intake/behaviors. It may also be important to investigate how children's exposure to foods outside the home (e.g., from schools or other establishments) impact children's role as cultural food brokers at home.

We found that having an assimilated versus a bicultural child is associated with lower quality dietary intake, regardless of mothers' acculturation status. However, *traditional* mothers of assimilated children were the dyads of greatest concern for lower quality dietary intake/behaviors. Traditional mothers may be less familiar with "American" foods and their nutritional content than bicultural mothers. A traditional mother of an assimilated child who makes frequent requests for lower quality foods may readily give in to these requests due to the mother's lack of knowledge of the dietary quality of such foods. Furthermore, a power differential that occurs when children are more acculturated than their mothers results when the mother has to rely on her child not just for food knowledge but for many other matters (e.g., health information; Martinez, et al., 2008; Weisskirch & Alva, 2002). This power differential may be a strong moderator in our findings and an important area for future research. Another potential explanation for why traditional mothers of assimilated children had the most concerning outcomes may be the potential conflict that arises when children adopt the US culture faster than their parents (Telzer, 2011). Traditional mothers experiencing culturally driven conflict with their assimilated children may try to appease their children by accommodating requests for the adoption of new, non-traditional foods and food-related customs. Our findings are important because children's assimilation to US culture may undermine the protective role that mothers' traditional cultural practices (including the type of food she will prepare for her family) may have on her dietary intake/behaviors. Moreover, our sample largely consisted of homemakers, who are expected to have more time for grocery shopping and meal preparation and thus higher quality food intake (Colby, et al., 2009; Devine, et al., 2006), and yet even in this sample, having an assimilated child was associated with lower quality dietary intake/behaviors among mothers. Future research should replicate and extend these findings to discern why traditional mothers of assimilated children are at higher risk for consuming lower quality foods. Moreover, interventions could help with empowering mothers to respect their own food knowledge, resolve conflict with their assimilated children, and educate mothers about non-traditional foods.

Although previous studies have identified associations between adult Latinas' acculturation and dietary intake (Ayala, et al., 2008; Perez-Escamilla, 2011), we identified only marginal associations with vegetable and sugary beverage intake, after adjusting for covariates. One possibility for our findings is our method of operationalizing acculturation. Rather than using either the continuous score for the Hispanic or non-Hispanic scale, as is common in the literature, we used acculturation groups based on the bidimensional model of acculturation (Berry, 1997), which have previously provided valuable insight into other health behaviors (e.g., breastfeeding; Chapman & Pérez-Escamilla, 2013). Further research can test whether our findings are consistent across methods of assessing acculturation.

4.1. Study limitations

Our study should be considered in light of its limitations. Primary among them, mothers in this sample were required to speak and read Spanish, limiting our ability to examine mothers who were assimilated. Similarly, our sample was too homogenous to examine children who were traditional. Future research should include a more heterogeneous sample of Latina mothers and children to investigate the association of mothers' dietary intake/behaviors across other acculturation groups. Another limitation is that the BAS primarily measures language use and thinking; it does not measure cultural traditions, the extent of social interactions with dominant culture individuals, or other factors that may be important indicators of culture (Cabassa, 2003). However, the BAS is a well-researched and validated tool that applies to various Spanish-speaking ethnic groups (Wallace, et al., 2009). Other methods of computing the acculturation gap were not explored in the present study (e.g., latent profile analysis by using mother-child acculturation scores to create dyad profiles). Yet, the methods tested here reflect those most commonly used in the literature (Birman, 2006). Moreover, using latent profile analysis may create profiles that are suitable for the present sample but do not generalize to other populations who may differ on their distribution of acculturation scores. Finally, the use of screeners to measure dietary intake has several limitations (Thompson, et al., 2008). Screeners do not capture total intake of diet or detailed information about foods consumed, potentially excluding other important sources of intake and limiting our ability to accurately estimate dietary intake. Recall accuracy and social desirability bias may have affected mothers' reported frequency and estimate of portion sizes, possibly resulting in underestimating the intake of unhealthy foods/behaviors or overestimating the intake of healthy foods/behaviors. Moreover, the screeners used in this study were adapted to include foods commonly found in a Mexican diet, which may not generalize to other Latino populations. Interpretation of the results should be treated with caution; the findings indicate trends that can be used for future hypothesis testing. Other methods of assessing dietary intake that can provide more accurate estimates of intake (e.g., 24-hour recall and biomarkers) should be considered in future work. Furthermore, although we assessed total percent of calories from fat, the 2015 Nutritional Guidelines for Americans have recommendations for saturated fat, not total fat (USDA, 2015). Future studies should examine how children's acculturation relates to Latina mothers' saturated fat intake. In contrast, a strength of our study was the use of multiple methods for assessing diet including screeners of fruit, vegetable, fat, and sugary beverage intake, an estimate of weekly away-from-home eating, and an estimate of families' grocery dollars spent on fruits and vegetables. The advantages of adding behavioral indicators of diet (i.e., away-from-home eating and fruit and vegetable spending) are that these variables can corroborate our assessment of dietary intake to help validate the screeners and they provide a more comprehensive understanding of participants' behaviors.

4.2. Conclusions

This study reinforced theoretical notions that family-level factors are important to individuals' health behaviors. Just as previous research has identified the influence of parents on their children's dietary intake, our study finds that children may also influence their mothers in this aspect. Further research is needed to investigate the associations found here, and researchers should design interventions that consider the role of children's acculturation on mothers' dietary intake/behaviors.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Research reported in this manuscript was supported by the American Cancer Society (ACS; #RSGPB 113653) and the National Institute of Nursing Research (#F31NR015965) of the National Institutes of Health (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the ACS or NIH.

References

Arandia G, Nalty C, Sharkey JR, Dean WR. Diet and acculturation among Hispanic/Latino older adults in the United States: A review of literature and recommendations. [Electronic version]. Journal of Nutrition in Gerontology and Geriatrics. 2012; 31(1):16–37. [PubMed: 22335438]

Atkin CK. Observation of parent-child interaction in supermarket decision-making. [Electronic version]. The Journal of Marketing. 1978:41–45.

Ayala GX, Baquero B, Klinger S. A systematic review of the relationship between acculturation and diet among Latinos in the United States: Implications for future research. [Electronic version]. Journal of the American Dietetic Association. 2008; 108(8):1330–1344. [PubMed: 18656573]

Ayala, GX., Ibarra, L., Arredondo, E., Horton, L., Hernandez, E., Parada, H., et al. Cancer Disparities: Causes and Evidence-Based Solutions. Springer; US: 2011. Promoting healthy eating by strengthening family relations: Design and implementation of the Entre familia: Reflejos de salud intervention. [Electronic version]; p. 237-252.

Ayala GX, Rogers M, Arredondo EM, Campbell NR, Baquero B, Duerksen SC, et al. Away-from-home food intake and risk for obesity: Examining the influence of context. [Electronic version]. Obesity. 2008; 16(5):1002–1008. [PubMed: 18309297]

Ayala GX. An experimental evaluation of a group- versus computer-based intervention to improve food portion size estimation skills. [Electronic version]. Health Education Research. 2006; 21(1): 133–145. [PubMed: 16100228]

Basáñez T, Dennis JM, Crano WD, Stacy AW, Unger JB. Measuring acculturation gap conflicts among Hispanics: Implications for psychosocial and academic adjustment. [Electronic version]. Journal of Family Issues. 2014; 35(13):1727–1753. from the PsycINFO database. [PubMed: 26855464]

Berry JW. Conceptual approaches to acculturation. [Electronic version]. American Psychological Association. 2003

Berry JW. Immigration, acculturation, and adaptation. [Electronic version]. Applied Psychology. 1997; 46(1):5–34.

Birman, D. Acculturation and parent-child relationships: Measurement and development. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, Mahwah, NJ; 2006. Measurement of the "acculturation gap" in immigrant families and implications for parent-child relationships; p. 113-134.http://search.proquest.com/docview/621093965?accountid=14524

Bronfenbrenner, U. The ecology of human development: Experiments by nature and design. Harvard University press; 2009.

Cabassa LJ. Measuring acculturation: Where we are and where we need to go. [Electronic version]. Hispanic Journal of Behavioral Sciences. 2003; 25(2):127–146.

Chapman DJ, Pérez-Escamilla R. Acculturative type is associated with breastfeeding duration among low-income Latinas. [Electronic version]. Maternal & Child Nutrition. 2013; 9(2):188–198. [PubMed: 21787375]

Chun KM. Conceptual and measurement issues in family acculturation research. [Electronic version]. Acculturation and Parent-Child Relationships: Measurement and Development. 2006:63–78.

Colby SE, Morrison S, Haldeman L. What changes when we move? A transnational exploration of dietary acculturation. [Electronic version]. Ecology of Food and Nutrition. 2009; 48(4):327–343. [PubMed: 21883072]

Collins C, Duncanson K, Burrows T. A systematic review investigating associations between parenting style and child feeding behaviours. [Electronic version]. Journal of Human Nutrition and Dietetics. 2014; 27(6):557–568. [PubMed: 24386994]

Devine CM, Jastran M, Jabs J, Wethington E, Farell TJ, Bisogni CA. "A lot of sacrifices:" Work-family spillover and the food choice coping strategies of low-wage employed parents. [Electronic version]. Social Science & Medicine. 2006; 63(10):2591–2603. from the PsycINFO database. [PubMed: 16889881]

Dondero M, Van Hook J. Generational status, neighborhood context, and mother-child resemblance in dietary quality in Mexican-origin families. [Electronic version]. Social Science & Medicine. 2016; 150:212–220. [PubMed: 26773704]

Dubowitz T, Zenk SN, Ghosh-Dastidar B, Cohen DA, Beckman R, Hunter G, et al. Healthy food access for urban food desert residents: Examination of the food environment, food purchasing practices, diet and BMI. [Electronic version]. Public Health Nutr. 2015; 18(12):2220–2230. [PubMed: 25475559]

Fisher L. Research on the family and chronic disease among adults: Major trends and directions. [Electronic version]. Families, Systems, & Health. 2006; 24(4):373.

Food Marketing Institute (FMI). U.S. grocery shopper trends. Arlington, VA: 2016.

Galanti G. The Hispanic family and male-female relationships: An overview. [Electronic version]. Journal of Transcultural Nursing. 2003; 14(3):180–185. [PubMed: 12861920]

Gaumer CJ, Arnone C. Grocery store observation: Parent-child interaction in family purchases. [Electronic version]. Journal of Food Products Marketing. 2009; 16(1):1–18.

Hiza HA, Casavale KO, Guenther PM, Davis CA. Diet quality of Americans differs by age, sex, race/ethnicity, income, and education level. [Electronic version]. Journal of the Academy of Nutrition and Dietetics. 2013; 113(2):297–306. [PubMed: 23168270]

Hwang W. Acculturative family distancing: Theory, research, and clinical practice. [Electronic version]. Psychotherapy: Theory, Research, Practice, Training. 2006; 43(4):397.

Kuczmarski RJ, Ogden CL, Guo SS, Grummer-Strawn LM, Flegal KM, Mei Z, et al. 2000 CDC growth charts for the United States: Methods and development. [Electronic version]. Vital and Health Statistics. Series 11, Data from the National Health Survey. 2002; 246(246):1–190.

Larson N, Harnack L, Neumark-Sztainer D. Assessing dietary intake during the transition to adulthood: A comparison of age-appropriate FFQ for youth/adolescents and adults. [Electronic version]. Public Health Nutrition. 2012; 15(04):627–634. [PubMed: 21929844]

Liu JH, Chu YH, Frongillo EA, Probst JC. Generation and acculturation status are associated with dietary intake and body weight in Mexican American adolescents. [Electronic version]. The Journal of Nutrition. 2012; 142(2):298–305. [PubMed: 22223572]

Marín G, Gamba RJ. A new measurement of acculturation for Hispanics: The bidimensional acculturation scale for Hispanics (BAS). [Electronic version]. Hispanic Journal of Behavioral Sciences. 1996; 18(3):297–316.

Martin MA, Van Hook JL, Quiros S. Is socioeconomic incorporation associated with a healthier diet? dietary patterns among Mexican-origin children in the United States. [Electronic version]. Social Science & Medicine. 2015; 147:20–29. [PubMed: 26523786]

Martinez CR, McClure H, Eddy J. Language brokering contexts and behavioral and emotional adjustment among latino parents and adolescents. [Electronic version]. The Journal of Early Adolescence. 2008

Mazarello Paes V, Ong KK, Lakshman R. Factors influencing obesogenic dietary intake in young children (0–6 years): Systematic review of qualitative evidence. [Electronic version]. BMJ Open. 2015; 5(9) e007396-2014-007396.

Nauck B. Intercultural contact and intergenerational transmission in immigrant families. [Electronic version]. Journal of Cross-Cultural Psychology. 2001; 32(2):159–173.

Neter, J., Kutner, MH., Nachtsheim, CJ., Wasserman, W. Applied linear statistical models. Irwin; Chicago: 1996.

Newby PK, Tucker KL. Empirically derived eating patterns using factor or cluster analysis: A review. [Electronic version]. Nutrition Reviews. 2004; 62(5):177–203. [PubMed: 15212319]

Perez-Escamilla R. Acculturation, nutrition, and health disparities in Latinos. [Electronic version]. The American Journal of Clinical Nutrition. 2011; 93(5):1163S–7S. [PubMed: 21367946]

Pinquart M. Associations of general parenting and parent-child relationship with pediatric obesity: A meta-analysis. [Electronic version]. Journal of Pediatric Psychology. 2014; 39(4):381–393. [PubMed: 24756228]

Rice WR. Analyzing tables of statistical tests. [Electronic version]. Evolution. 1989; 43(1):223–225. [PubMed: 28568501]

Rockett HR, Wolf AM, Colditz GA. Development and reproducibility of a food frequency questionnaire to assess diets of older children and adolescents. [Electronic version]. Journal of the American Dietetic Association. 1995; 95(3):336–340. [PubMed: 7860946]

Satia-Abouta J, Patterson RE, Neuhouser ML, Elder J. Dietary acculturation: Applications to nutrition research and dietetics. [Electronic version]. Journal of the American Dietetic Association. 2002; 102(8):1105–1118. [PubMed: 12171455]

Sauvageot N, Schritz A, Leite S, Alkerwi A, Stranges S, Zannad F, et al. Stability-based validation of dietary patterns obtained by cluster analysis. [Electronic version]. Nutrition Journal. 2017; 16(1):4. [PubMed: 28088234]

Szapocznik J, Scopetta MA, Kurtines W, Aranalde MD. Theory and measurement of acculturation. [Electronic version]. Revista Interamericana De Psicologia. 1978

Telzer EH. Expanding the acculturation gap-distress model: An integrative review of research. [Electronic version]. Human Development. 2011; 53(6):313–340. from the PsycINFO database.

Thompson FE, Midthune D, Subar AF, Kipnis V, Kahle LL, Schatzkin A. Development and evaluation of a short instrument to estimate usual dietary intake of percentage energy from fat. [Electronic version]. Journal of the American Dietetic Association. 2007; 107(5):760–767. [PubMed: 17467371]

Thompson FE, Subar AF, Coulston A, Boushey C. Dietary assessment methodology. [Electronic version]. Nutrition in the Prevention and Treatment of Disease. 2008; 2:3–39.

Thompson FE, Subar AF, Smith AF, Midthune D, Radimer KL, Kahle LL, et al. Fruit and vegetable assessment: Performance of 2 new short instruments and a food frequency questionnaire. [Electronic version]. Journal of the American Dietetic Association. 2002; 102(12):1764–1772. [PubMed: 12487538]

Turner JJ, Kelly J, McKenna K. Food for thought: Parents' perspectives of child influence. [Electronic version]. British Food Journal. 2006; 108(3):181–191.

U.S. Census Bureau. 2010 demographic profile. 2010. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

United States Department of Agriculture (USDA). Scientific report of the 2015 dietary guidelines advisory committee. 2015.

Van Hook J, Quiros S, Frisco ML, Fikru E. It is hard to swim upstream: Dietary acculturation among Mexican-origin children. [Electronic version]. Population Research and Policy Review. 2016; 35(2):177–196. [PubMed: 27152059]

Wallace PM, Pomery EA, Latimer AE, Martinez JL, Salovey P. A review of acculturation measures and their utility in studies promoting Latino health. [Electronic version]. Hispanic Journal of Behavioral Sciences. 2009

Wang DD, Leung CW, Li Y, Ding EL, Chiuve SE, Hu FB, et al. Trends in dietary quality among adults in the United States, 1999 through 2010. [Electronic version]. JAMA Internal Medicine. 2014; 174(10):1587–1595. [PubMed: 25179639]

Weisskirch RS, Alva SA. Language brokering and the acculturation of Latino children. [Electronic version]. Hispanic Journal of Behavioral Sciences. 2002; 24(3):369–378.

Willett WC, Sampson L, Stampfer MJ, Rosner B, Bain C, Witschi J, et al. Reproducibility and validity of a semiquantitative food frequency questionnaire. [Electronic version]. American Journal of Epidemiology. 1985; 122(1):51–65. [PubMed: 4014201]

Wingert K, Zachary DA, Fox M, Gittelsohn J, Surkan PJ. Child as change agent. the potential of children to increase healthy food purchasing. [Electronic version]. Appetite. 2014; 81:330–336. [PubMed: 24996593]

Research Highlights

- We modeled associations between children's acculturation and Latina mothers' diet
- Mothers of assimilated versus bicultural children had a low diet quality
- Culturally traditional mothers of assimilated children had the lowest quality diet
- Future work should consider the role of children and culture on adult Latinas' diet

Table 1

Demographic Characteristics of Mothers and Children and Mothers' Dietary Intake and Dietary Behaviors (*N*=314).

Characteristics	Mothers	Children
Demographic characteristics	**% (*n*) or mean ± *SD***	
Age	39 ± 8	10 ± 2
Married	93.6 (294)	–
Did not complete high school	51.0 (160)	–
Household monthly income		–
< $1,000	15.7 (49)	
$1,000-$1,999	41.4 (129)	
$2,000-$2,999	28.5 (89)	
≥ $3,000	14.4 (45)	
Not employed	65.3 (205)	–
Number of children living in the home	3 ± 1	–
Female child	–	50.0 (157)
Foreign-born	83.8 (263)	17.8 (56)
Number of years living in the US	20 ± 11	9 ± 3
Mother BMI	31.3 ± 7.0	
Child BMI [a]		
Normal weight		47.0 (147)
Overweight		16.3 (51)
Obese		36.7 (115)
Acculturation		
Acculturation dimension scores		
Hispanic dimension score	3.5 ± 0.3	2.6 ± 0.6
Non-Hispanic dimension score	2.1 ± 0.9	3.3 ± 0.4
Acculturation groups		
Traditional	68.5 (215)	–
Bicultural	31.5 (99)	56.1 (176)
Assimilated	–	44.0 (138)
Mothers' dietary intake and behaviors	*Median (min - max)*	
Daily servings of fruits	1.0 (0.0 – 12.5)	
Daily servings of vegetables	0.9 (0.0 – 10.1)	
Daily servings of sugary beverages	1.4 (0.0 – 8.6)	
Percent calories from fat	30.7 (17.9 – 67.3)	
Weekly away-from-home eating	3.0 (0.0 – 24.0)	
Percent of weekly grocery dollars spent on fruits and vegetables	29.4 (6.7 – 80.0)	

Table 2

Separate regression model associations between having an assimilated child (versus bicultural) and mothers' dietary intake variables.

Group	Step 1 [a] *n*	Step 1 [a] *β (SE)*	Step 1 [a] *p*	Step 2 [b] *n*	Step 2 [b] *β (SE)*	Step 2 [b] *p*	Step 3 [c] *n*	Step 3 [c] *β (SE)*	Step 3 [c] *p*
Mothers' daily servings of fruits[1]									
Child assimilated†	314	0.05 (0.11)	0.61	314	0.07 (0.11)	0.52	310	0.05 (0.11)	0.67
Mother traditional†	314	0.07 (0.12)	0.55		0.09 (0.12)	0.47		0.22 (0.14)	0.12
Mothers' daily servings of vegetables[2]									
Child assimilated†	314	**−0.24 (0.11)**	**0.02**	314	**−0.22 (0.11)**	**0.04**	310	**−0.26 (0.11)**	**0.02**
Mother traditional†	314	0.13 (0.11)	0.24		0.09 (0.12)	0.46		0.25 (0.14)	0.08
Mothers' daily servings of sugary beverages[2]									
Child assimilated†	314	0.17 (0.09)	0.06	314	**0.20 (0.09)**	**0.03**	310	**0.21 (0.09)**	**0.03**
Mother traditional†	314	0.13 (0.10)	0.19		0.17 (0.10)	0.08		0.21 (0.12)	0.08
Mothers' percent calories from fat[1]									
Child assimilated†	309	**0.04 (0.02)**	**0.04**	309	**0.04 (0.02)**	**0.04**	306	**0.05 (0.02)**	**0.03**
Mother traditional†	309	−0.01 (0.02)	0.82		0.004 (0.02)	0.84		0.01 (0.03)	0.62
Mothers' frequency of weekly away-from-home eating[1]									
Child assimilated†	314	**0.20 (0.08)**	**0.02**	314	**0.18 (0.09)**	**0.04**	310	**0.20 (0.09)**	**0.02**
Mother traditional†	314	**−0.16 (0.09)**	**0.07**		−0.13 (0.09)	0.16		−0.06 (0.11)	0.56
Percent of weekly dollars spent on fruits and vegetables[1]									
Child assimilated†	313	−0.09 (0.05)	0.07	313	−0.08 (0.05)	0.10	309	−0.08 (0.05)	0.15
Mother traditional†	313	0.05 (0.05)	0.34		0.03 (0.06)	0.56		0.05 (0.07)	0.46

Note: SE = standard error; results in **boldface** indicate statistically significant findings ($p < 0.05$).

[1] Negative binomial distribution;

[2] Poisson distribution.

[a] Step 1 consists of the separate unadjusted models for mothers' and children's acculturation.

[b] Step 2 includes both mother's and children's acculturation in the model.

[c]Step 3 models are adjusted for mother's age, marital status, mother's education, mother's employment status, household monthly income, number of children in the home, gender of the child, mother's years in the US, child's years in the US, mother's BMI, and child's BMI category.

†Reference = bicultural.

Table 3

Separate regression model associations between the difference in acculturation dimension scores and mothers' dietary intake variables.

Group	Step 1 [a] *n*	Step 1 [a] *β (SE)*	Step 1 [a] *p*	Step 2 [b] *n*	Step 2 [b] *β (SE)*	Step 2 [b] *p*
Mothers' daily servings of fruits[1]						
Difference in Hispanic dimension score	314	0.08 (0.10)	0.40	310	0.07 (0.10)	0.48
Difference in non-Hispanic dimension score		−0.04 (0.07)	0.61		−0.01 (0.09)	0.89
Mothers' daily servings of vegetables[2]						
Difference in Hispanic dimension score	314	−0.05 (0.09)	0.61	310	−0.09 (0.10)	0.34
Difference in non-Hispanic dimension score		0.07 (0.07)	0.31		0.16 (0.09)	0.06
Mothers' daily servings of sugary beverages[2]						
Difference in Hispanic dimension score	314	0.14 (0.08)	0.08	310	0.17 (0.08)	0.04
Difference in non-Hispanic dimension score		0.05 (0.06)	0.39		0.06 (0.07)	0.45
Mothers' percent calories from fat[1]						
Difference in Hispanic dimension score	309	0.002 (0.02)	0.90	306	0.01 (0.02)	0.74
Difference in non-Hispanic dimension score		−0.01 (0.01)	0.53		−0.01 (0.02)	0.70
Mothers' frequency of weekly away-from-home eating[1]						
Difference in Hispanic dimension score	314	0.05 (0.08)	0.52	310	0.08 (0.08)	0.29
Difference in non-Hispanic dimension score		**−0.19 (0.06)**	**0.001**		**−0.19 (0.07)**	**0.01**
Percent of weekly dollars spent on fruits and vegetables[1]						
Difference in Hispanic dimension score	313	−0.09 (0.05)	0.07	309	−0.09 (0.05)	0.07
Difference in non-Hispanic dimension score		0.03 (0.03)	0.37		0.03 (0.04)	0.48

Note: SE = standard error; results in **boldface** indicate statistically significant findings ($p < 0.03$).

[1] Negative binomial distribution;

[2] Poisson distribution.

[a] Step 1 consists of the unadjusted models for mother-child acculturation difference scores. Hispanic and non-Hispanic difference scores included in the same model.

[b] Step 2 models are adjusted for mother's age, marital status, mother's education, mother's employment status, household monthly income, number of children in the home, gender of the child, mother's years in the US, child's years in the US, mother's BMI, and child's BMI category.

Table 4

Separate regression model associations between acculturation gap typologies and mothers' dietary intake variables.

Group	Step 1 [a]			Step 2 [b]		
	n	*β (SE)*	*p*	*n*	*β (SE)*	*p*
Mothers' daily servings of fruits[1]						
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	314	0.004 (0.15)	0.98	310	−0.16 (0.18)	0.36
Mother bicultural/child bicultural		−0.15 (0.18)	0.39		−0.26 (0.19)	0.18
Mother traditional/child assimilated		0.03 (0.13)	0.80		0.03 (0.14)	0.84
Mothers' daily servings of vegetables[2]						
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	314	−0.30 (0.15)	0.05	310	**−0.50 (0.18)**	**0.01**
Mother bicultural/child bicultural		−0.11 (0.16)	0.51		−0.26 (0.17)	0.13
Mother traditional/child assimilated		−0.24 (0.13)	0.07		−0.27 (0.13)	0.04
Mothers' daily servings of sugary beverages[2]						
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	314	−0.002 (0.13)	0.99	310	−0.04 (0.15)	0.82
Mother bicultural/child bicultural		−0.07 (0.15)	0.64		−0.11 (0.16)	0.51
Mother traditional/child assimilated		**0.25 (0.11)**	**0.02**		**0.26 (0.11)**	**0.02**
Mothers' percent calories from fat[1]						
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	309	0.03 (0.03)	0.27	306	0.02 (0.03)	0.50
Mother bicultural/child bicultural		0.02 (0.03)	0.46		0.02 (0.04)	0.66
Mother traditional/child assimilated		**0.06 (0.03)**	**0.02**		**0.07 (0.03)**	**0.01**
Mothers' frequency of weekly away-from-home eating[1]						
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	314	**0.27 (0.12)**	**0.02**	310	0.22 (0.14)	0.11
Mother bicultural/child bicultural		0.25 (0.13)	0.05		0.20 (0.14)	0.16
Mother traditional/child assimilated		**0.26 (0.11)**	**0.01**		**0.29 (0.11)**	**0.01**
Percent of weekly dollars spent on fruits and vegetables[1]						

Group	Step 1 [a]			Step 2 [b]		
	n	***β (SE)***	***p***	***n***	***β (SE)***	***p***
Mother traditional/child bicultural (Ref)						
Mother bicultural/child assimilated	313	−0.10 (0.07)	0.15	309	−0.11 (0.08)	0.20
Mother bicultural/child bicultural		−0.09 (0.08)	0.27		−0.11 (0.09)	0.22
Mother traditional/child assimilated		−0.12 (0.06)	0.06		−0.11 (0.06)	0.07

Note: SE = standard error; results in **boldface** indicate statistically significant findings ($p < 0.03$).

[1] Negative binomial distribution;

[2] Poisson distribution.

[a] Step 1 consists of the unadjusted models for acculturation gap typologies.

[b] Step 2 models are adjusted for mother's age, marital status, mother's education, mother's employment status, household monthly income, number of children in the home, gender of the child, mother's years in the US, child's years in the US, mother's BMI, and child's BMI category.