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The purpose of this research was to explore dietary acculturation in Hispanic males in the context of the Operant Theory of Acculturation. This was a qualitative study using grounded theory to guide methodological procedures. Semi-structured interviews, a focus group, the Acculturation-Rating Scale for Mexican-Americans-II and the Marginality Scale, and photovoice with follow-up interviews were used to explore dietary acculturation in the participant sample. Thirty-five first- and second-generation Hispanic males residing in Mississippi were recruited and categorized into one of three different bidimensional acculturation groups as determined by the Acculturation-Rating Scale for Mexican-Americans-II and the Marginality Scale. Main dietary influencing themes identified were intrapersonal and environmental dietary factors. The subthemes included values, attitudes, beliefs, knowledge, and preference for the intrapersonal factors and availability; living structure; accessibility; food preparation skill; and time for the environmental factors. The factors are not mutually exclusive and show the complexity of the dietary acculturation process. This research can be used to guide future research and inform nutrition intervention development for this population.

Keywords: dietary acculturation, bidimensional acculturation, Hispanic, grounded theory, Operant Theory of Acculturation

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Introduction

Acculturation is defined as the adoption of behaviors, norms, and values of a host culture (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). Dietary behaviors are typically one of the first effects of acculturation, and within the United States Hispanic population, in particular, such changes in dietary behaviors have been associated with negative health outcomes (Lara et al., 2005; Marín, 1992; Pérez-Escamilla, 2011; Wiley et al., 2014). A traditional Hispanic diet, which is generally high in fiber, fruits, and vegetables and low in animal protein, begins to be replaced with a Western dietary pattern, which consists of refined sugar, processed foods, fatty meats, and dairy products (Cordain et al., 2005; Dixon, Sundquist, & Winkleby, 2000; Duffey, Gordon-Larsen, Ayala, & Popkin, 2008; Han & Powell, 2013; Montez & Eschbach, 2008; Neuhouser, Thompson, Coronado, & Solomon, 2004; Norman, Castro, Albright, & King, 2004). The Western diet is associated with such nutrition-related diseases as heart disease, diabetes, obesity, and cancer (Cordain et al., 2005). Due in part to the dietary acculturation process, higher rates of these nutrition-related chronic diseases have been reported in Hispanic males residing in the U.S. compared to those residing in Mexico (Angel, Angel, & Hill, 2008). Further, the Centers for Disease Control and Prevention (CDC, 2014) reported U.S. Hispanics are twice as likely to have diabetes compared to non-Hispanic Whites, and this number is increasing. Moreover, Hispanic males have the highest rate of overweight and obesity compared to all other ethnic groups (Ogden, Carroll, Kit, & Flegal, 2013). Based on these data, the dietary acculturation process may substantially influence these disparities among Hispanics.

Acculturation to a poorer quality Western diet may be more common in men. Although Courtenay, McCreary, and Merighi (2002) did not find any significant difference in dietary intake between gender groups, other studies suggest differences (Akresh, 2007; Han & Powell, 2013; Pareo-Tubbeh et al., 1999). For example, Akresh (2007) found that Hispanic males have a higher increase in junk food consumption and lower intake of fruit after immigration when compared to Hispanic females. Further, Hispanic males have the highest intake of sugar-sweetened beverages when compared to Hispanic females and all other ethnic groups (Bremer, Byrd, & Auinger, 2011; Drieling, Rosas, Ma, & Stafford, 2014; Han & Powell, 2013; Miller et al., 2013).

Currently, there is limited dietary-related research and intervention specific to Hispanic males. However, there are several arguments for the exploration of dietary behaviors in the Hispanic male population. From the cultural perspective, Hispanic women often make the food decisions for the household and therefore have been the target of dietary behavior studies and interventions (Kieffer et al., 2014; Lee, Misra, & Kaster, 2012; Osuna et al., 2011). Yet, studies indicate males largely influence the overall household food decisions (Cuéllar, Arnold, & González, 1995a; Schmied, Parada, Horton, Madanat, & Ayala, 2014). Further, single Hispanic males residing in the U.S. make their own food choices due to the absence of a woman in the household (Chavez-

Martinez et al., 2010). Finally, studies have found that Hispanic males are interested in changing dietary habits to influence overall health but have poor nutrition knowledge (Martinez, Powell, Agne, Scarinci, & Cherrington, 2012; Sharma, Gernand, & Day, 2008). Thus, it is important to understand dietary behaviors specific to this population before developing targeted interventions.

Theoretical Framework

Bidimensional acculturation theory. Researchers across many fields have used both unidimensional and bidimensional models to describe and measure the acculturation process. The unidimensional model is linear and places an individual on a continuum between the traditional culture and host culture (Ryder, Alden, & Paulhus, 2000). However, nutrition and health researchers have suggested that acculturation should be measured using a non-linear bidimensional model to increase the sensitivity and accuracy in identifying correlations between acculturation and diet (Lara et al., 2005; Yeh, Viladrich, Bruning, & Roye, 2009). The bidimensional model indicates that an individual's level of acculturation is a function of the degree to which an individual values and possesses the norms of the traditional culture (Lara et al., 2005). Valuation and possession of the norms of the indigenous culture are assessed across 2 dimensions (Berry, 1997; Buriel, 1993). The first, cultural maintenance, is the extent to which individuals strive to maintain their indigenous culture based on the importance they place on its characteristics (Berry, 1997). The second, contact and participation, is the extent to which an individual becomes involved in the host culture (Berry, 1997). The different subcategories formed across these dimensions are outlined in Table 1.

Table 1. Bidimensional Acculturation Model Subcategories

Subcategory	Definition
<i>Assimilated</i>	a person who has fully become involved with the host culture and does not identify with the indigenous culture
<i>Bicultural</i>	a person who can identify with and interacts well in both the host and indigenous cultures
<i>Traditional</i>	a person who has little to no contact or identification with the host culture but relates with the indigenous culture
<i>Marginalized</i>	a person who has little identification or interaction with either culture
<i>Separated*</i>	a person who has an opportunity to assimilate into the host culture (e.g., opportunity for interaction, speaks the host society's language) but who wishes only to identify with and retain the cultural values, beliefs, and behaviors of the indigenous culture

*The subcategory "separated" is presented in a bidimensional acculturation model developed by Cuéllar and colleagues (1995b).

Despite apparent advantages of a bidimensional acculturation model, existing diet-related acculturation research has primarily utilized unidimensional measures of such simple demographic distinctions as nativity, length of residence, or language, to explore nutritional implications of acculturation. Unfortunately, these measures fail to consider immigrants' adoption of the host culture (Lara et al., 2005; Norman et al., 2004; Yeh et al., 2009).

Operant Theory of Acculturation. The Operant Theory of Acculturation combines bidimensional acculturation theory with constructs of learning and behavior theory (Landrine & Klonoff, 2004). *Operant* is defined as voluntary behavior (i.e., what a person does), while *learning* encompasses the experiences a person has to inform behavior (Glenn, Ellis, & Greenspoon, 1992; Landrine & Klonoff, 2004; Skinner, 1953). The Operant Theory of Acculturation includes behavioral learning as a factor in an individual's decision to adopt or reject new health behaviors within the host culture. Landrine and Klonoff (2004) emphasized that the use of this theory in health promotion allows consideration of the explanatory and predictive value of factors that are influenced by the acculturation process and that may in turn influence or predict changes in behavior that occur during acculturation. Although the authors of this study have proposed the application of the Operant Theory of Acculturation to dietary changes occurring during acculturation of Hispanics and Asians, no research to date has further explored it.

Dietary acculturation. Dietary acculturation describes the adoption of the host culture's dietary norms (Satia-Abouta, Patterson, Neuhouser, & Elder, 2002). Currently, the conceptualization of the dietary acculturation process is limited. There remains a dearth of theoretical frameworks that address the complex array of factors contributing to dietary changes across acculturation groups in individuals who are acculturating at different rates and to different behaviors (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006; Landrine & Klonoff, 2004; Satia-Abouta et al., 2002). There are also no comprehensive frameworks that unite a bidimensional acculturation model with the operant aspects of behaviors occurring during acculturation. Examining dietary intake in acculturation without context inhibits the ability to identify and intervene appropriately on dietary contributing factors (Abraído-Lanza et al., 2006; Landrine & Klonoff, 2004). It is important from a theoretical sense to understand what dimensions affect dietary behavior. Understanding how unhealthy dietary behaviors are learned before and in the midst of the acculturation process can inform researchers and practitioners to intervene in ways that encourage more desirable voluntary behavior. For example, several studies show the use of *abuelas* (i.e., grandmothers) as health educators leads to positive dietary change in Hispanics; for in the Hispanic culture, the *abuela* is looked to for nutrition and health advice (Bell, Hillers, & Thomas, 1999; Palmeri, Auld, Taylor, Kendall, & Anderson, 1998; Schwingel et al., 2015). The purpose of this formative study is to explore the dietary acculturation process in Hispanic men by using grounded theory (GT) methodology. The ultimate goals of the study are to extend the conceptualization of factors that affect dietary intake during acculturation and to provide a basis for dialogue among researchers that will illuminate areas of additional inquiry. In this study, GT was the inductive approach utilized to identify core themes relating to dietary acculturation in the context of the operant theory.

Methodology

Participants

This study included first- ($n = 31$) and second-generation ($n = 4$) Hispanic males residing in southern Mississippi who were recruited using purposive sampling techniques (e.g., snowball and convenience sampling). Participants had to have resided in the U.S. for at least 6 months, speak English or Spanish, be 18-64 years of age, and be first- or second-generation. Participants were recruited from classes in English as a Second Language at a local university and a local church, as well as by word of mouth through participants from a preliminary study (Cuy Castellanos, Connell, & Lee, 2011). Once the recruited individuals verbally agreed to participate, the principal investigator contacted them again, and a time and place were set to obtain signed informed consent and collect data. Recruitment was rolling over a three-month period of time. The data analysis process occurred simultaneously with data collection procedures. Therefore, data saturation was utilized to determine when recruitment was sufficient. However, of the four acculturation groups, one group was underrepresented as described in the Results section. This study was approved by the Institutional Review Board at The University of Southern Mississippi.

Data Collection Procedures

The research team consisted of a bilingual principal investigator and two bilingual trained research assistants who assisted with data collection and analysis. Both research assistants were of Hispanic origin: one female and one male. There were two phases of the research. In the first phase, the principal investigator and one research assistant administered quantitative questionnaires, conducted semi-structured interviews with all but five participants, and conducted one focus group with the five whose work schedule prohibited participation in individual interviews. Before administration of the questionnaires, the research assistant was trained and evaluated in a real data collection setting by the bilingual principal investigator. The quantitative and qualitative instruments and methods have been described in detail elsewhere (Cuy Castellanos et al., 2013). All instruments were translated from English to Spanish and then back-translated into English in order to ensure accuracy (Brislin, 1970). For both quantitative and qualitative approaches, participants chose whether to complete the questionnaires and interview in Spanish or in English.

At the end of the semi-structured interview, the interviewer asked each participant if he would be willing to participate in a phase of the study that entailed photovoice methodology. In this second phase, each participant was provided a digital camera and instructed to take photographs of foods he consumed, his dietary environment, and factors that influenced his dietary intake. Three acculturation groups were formed based on the questionnaire findings, described under results: a traditional group, a bicultural group, and a marginalized/separated group. The research

team examined and chose certain pictures from each participant and administered one focus group with each of the three acculturation groups. During the focus groups, the chosen pictures were arranged for each participant to see, and pre-determined questions were asked. The photographs were utilized as a tool to encourage discussion and explanation.

Instruments

Quantitative measures. Briefly, each participant completed a demographic questionnaire, the Acculturation Rating Scale for Mexican-Americans-II (ARSMA-II) and the Marginality Scale. The ARSMA-II has been shown to be valid and reliable in measuring acculturation level in the U.S. Mexican population and has been adapted and used with other Hispanic populations in the U.S. (Arredondo, Elder, Ayala, & Campbell, 2005; Garcia, Hurwitz, & Kraus, 2005). The ARSMA-II was used to categorize participants by cultural orientation along a continuum from high to low on two subscales, the Hispanic orientation subscale (HOS) and the Anglo orientation subscale (AOS), thus yielding for each individual a non-linear bidirectional acculturation score and one of three typologies as a category: “Traditional Hispanic,” “Integrated (bicultural),” or “Assimilated.” Reliability for this sample was adequate at $> .70$. The Marginality scale assessed the participant’s acceptance of the ideas, customs, values, and beliefs related to three cultural groups—Hispanic, American, and Hispanic-American—by averaging responses on the three corresponding subscales. Each subscale consisted of six items (Cuéllar, Arnold, & Maldonado, 1995b). The reliability of the Marginality Scale for this sample was adequate at $> .70$. The comparison of scores from the ARSMA-II and the Marginality Scale to predetermined cutoff scores, developed by Cuéllar and colleagues (1995b), created distinct acculturation categories paralleling those identified in the bidimensional acculturation model (Berry, 1997; Garcia et al., 2005), allowing each participant to be placed into one of 5 acculturation groups: traditional, marginalized, separated, bicultural, or assimilated.

Qualitative measures. Participants took part in an individual semi-structured interview (SSI) or in one focus group. The discussion guides for the semi-structured interview and focus group were parallel instruments and were adapted from one previously used to examine dietary behaviors and contributing factors in a diverse population that included Hispanic participants (Wakimoto, Block, Mandel, & Medina, 2006). For question clarity and face validity, the semi-structured interview guide was pre-tested with 5 people representative of the target population.

After the individual interviews were completed, photovoice methodology and focus group interviews were employed to define unclear areas or confirm prior findings from the phase one semi-structured interviews and single focus group. The guide for the group interview was initially developed prior to any data collection and was based on existing literature. It targeted dietary contributing factors and behavior. Subsequent to analysis of the SSI, the guide was revised to explore any unclear themes identified. More details regarding this process are

published elsewhere (Cuy Castellanos et al., 2013). Once all identified themes were defined and clear, recruitment ceased.

Data Analysis

Quantitative data analysis. Item responses from the demographic questionnaire were entered into IBM SPSS Version 18.0, generating frequencies and means. The ARSMA-II and the Marginality Scale scores were calculated in SPSS. As noted above, participants were placed into 1 of 5 acculturation groups determined by comparing each participant score to predetermined cut-off scores as defined by Cuéllar and colleagues (1995b).

Qualitative data analysis. The principal investigator and research assistants ($n = 2$) each brought a different and unique perspective to the analysis process. The principal investigator is Anglo but has extensive interaction with people from the Hispanic population. Each research assistant was Hispanic, but from different subcultures (1 male, 1 female); both attended a series of classes on qualitative research and analysis done by a senior qualitative researcher. During this training process, sample data were analyzed using GT.

Each qualitative data source was analyzed using a GT approach in which data collection and analysis were conducted simultaneously to allow identification of concepts directly “grounded” in the data (Falk, Sobal, Bisogni, Connors, & Devine, 2001). Therefore, as dominant concepts emerged during analysis, they became core components of the emerging conceptual framework. As data were analyzed, the Operant Theory of Acculturation was explored in terms of dietary behavior and participants’ experiences that influenced these behaviors. Core concepts were identified that addressed current and past dietary behavior. For example, change in fruit and vegetable intake since the participants’ migration was indicative of voluntary behavior (operant). Also, categories that identified dietary influencing factors or experiences were extracted from the data to provide information regarding the learning aspect occurring during the process of dietary acculturation. In short, during the data analysis process, participants’ dietary behaviors and their experiential learning of these behaviors set the foundation for the overall proposed conceptual framework.

GT was incorporated into the data analysis as follows. The SSIs and the focus group, as well as the photovoice follow-up group interviews, were transcribed in the language in which they were administered. The bilingual principal investigator and two bilingual research assistants coded the transcriptions and extracted themes (open coding). Each coder analyzed 10-12 SSIs, the focus group, and the three photovoice group interviews, incorporating the information gained from the food screeners into their analysis of dietary intake. Furthermore, all coders analyzed and compared codes from 10% of the SSIs, the focus group, and all of the photovoice group interviews to ensure intercoder reliability. During the open coding process, as new codes

emerged, the three coders discussed the code, defined it, and then added it to the codebook. Codes were not added to the codebook unless there was 100% consensus. If there was not consensus, the code and its proposed definition was discussed and adapted until agreement occurred. Codes within the codebook were then used to continue analysis of data. When few new codes were being added to the codebook due to redundancy, the coders moved into the axial coding process. The coders developed a conditional relationship guide to help categorize codes and identify themes (Scott, 2004). Constant comparison among coders aided the process of theme identification, as well as identification of unclear or ill-defined themes that surfaced during the analysis process. After the SSIs and one focus group were analyzed, the photovoice data was then incorporated into the ongoing analysis, helping to define any unclear or ill-defined themes. The three coders continued to employ constant comparison processes, identifying themes and then extracting core categories from the data. Once there were no new emerging codes or themes and all themes were clear and defined, data saturation was reached, leading to selective coding. The coders organized themes by developing a reflective coding matrix (Glaser, 2007). This process led to the identification of main themes and subthemes relating to the dietary acculturation processes in the target population.

Results

Participants

Of the 35 participants completing the quantitative questionnaires, 30 completed the SSIs and 5 participated in a focus group. Using the ARSMA-II and the Marginality Scale, the 35 participants were categorized as: traditional ($n = 19$), bicultural ($n = 8$), separated ($n = 6$), marginalized ($n = 1$), or assimilated ($n = 1$). Due to low group membership, the separated and marginalized participants were collapsed into 1 group, and the assimilated participant was removed from further analysis. The decision to combine the marginalized participant with the separated group was based on 2 considerations. First, the participant in the marginalized group had similar socioeconomic and demographic characteristics to the participants in the separated group. Socioeconomic and demographic characteristics of each group are described below and in Table 2. Second, participants categorized as separated or marginalized scored above predetermined cutoffs on the Marginality Scale, whereas those in the other three categories scored below those cutoffs (Cuéllar et al., 1995b). Furthermore, 12 of the original 35 participants completed the photovoice portion of the study.

Traditional group. Sixteen of the 19 men in this category migrated from Mexico, and three from Central American countries, to the U.S. voluntarily to seek better employment opportunities. Furthermore, this group was the least educated and had the lowest incomes compared to the other groups.

Bicultural group. The bicultural group ($n = 8$) included men who had emigrated from Mexico ($n = 1$), Central America ($n = 2$), South America ($n = 4$), and Puerto Rico ($n = 1$). The majority were professionals ($n = 5$), and three were studying for an undergraduate or graduate degree at a local university. The primary reason for migration was to seek a better education than the education they perceived they could receive in their native country. Participants that were not students earned more than \$1,500 per month. All married participants in this group resided with their spouses in the U.S.

Marginalized/Separated group. Among the three acculturation groups, only this group included second-generation Hispanics ($n = 3$). Others in this group had migrated from Mexico ($n = 2$) or South America ($n = 2$) as children with their parents, so the decision to migrate was not theirs. Participants in this group resided alone or with their spouse/girlfriend and/or children, and they had been in the U.S. longer than those in the other acculturation groups.

Table 2. Sociodemographics of Study Participants Across Acculturation Groups

Descriptive	Traditional ($n = 19$)		Bicultural ($n = 8$)		Marginalized/Separated ($n = 7$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	31.9	6.8	41.4	13.5	33.6	9.4
Years in the U.S.	7.6	4.9	15.0	13.1	23.7	6.9
Number living in home	5.1	4.6	2.1	1.1	1.9	1.6
Frequencies	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Married	12	63%	6	75%	5	71%
Spouse/girlfriend in the U.S.	5	26%	5	63%	5	71%
Income						
≤ \$1500/month	12	63%	4	50%	3	43%
> \$1500/month	7	37%	4	50%	4	57%
Education						
< 9 th grade	5	26%	0 (0.0%)	0%	0	0%
9-12 th grade	10	53%	0 (0.0%)	0%	1	14%
Some college	0	0%	1 (12.5%)	12.5%	1	14%
Technical	1	5%	1 (12.5%)	12.5%	3	43%
> Bachelor's	3	16%	6 (75.0%)	75%	2	29%

Note: Bicultural signifies a person who can identify with and interacts well in both the host and indigenous cultures; a person in the traditional subcategory is a person who has little to no contact or identification with the host culture but relates with the indigenous culture; and one who is in the marginalized/separated subcategories is a person who denies the host culture or who does not identify with either culture.

Dietary Intake

Triangulation of data from the SSIs, focus group, and photovoice interviews revealed that participants in each acculturation group had unique experiences, attitudes, and knowledge that

contributed to dietary changes and shaped current dietary intake. Main food categories influenced by these contributing factors that emerged from the analyses were traditional foods, fruits and vegetables, processed foods, meat, and alcohol. Table 3 illustrates dietary intake similarities and differences among acculturation groups.

Table 3. Summary of Similarities and Differences for Dietary Intake Among Acculturation Groups

	Similarities Between Two or More Groups*	Difference Between Groups
<i>Traditional Foods</i>	Preference for traditional foods	Main foods consumed by traditional group
	Considered mother's cooking as the best	Emotional attachment to these foods in traditional group
	Indicated foods tasted different in the U.S. due to decreased use of fresh and increased use of processed ingredients	
	Decreased consumption of traditional Hispanic foods	
<i>Processed Foods</i>	Increased consumption since migrating to U.S./leaving parent's home, due to availability, cost, and time constraints	Intake of these foods by marginalized group was common
	Viewed as unhealthy	Traditional group's intake included canned and packaged Hispanic ingredients and ready to eat cereals; bicultural group's intake included frozen foods and packaged foods; marginalized group's intake included microwaveable/pre-cooked frozen meals and packaged foods
<i>Fruits and Vegetables</i>	Believed fruits and vegetables lacked variety and freshness in the U.S.	Marginalized group indicated an increase or no change in consumption compared to pre-migration
	Traditional and bicultural groups indicated their intake had decreased compared to pre-migration	
<i>Meats</i>	Meats reported as fresher in country of origin	Increased consumption reported in the traditional group due to increased income and different meats consumed in U.S.
		Bicultural group reported consuming more lean meats in the U.S. for health reasons
<i>Alcohol</i>	Social drinking reported in traditional and marginalized group	Bicultural group reported less liquor in U.S.
	Traditional and bicultural group reported increased intake in beer due to increased exposure and cheaper in U.S.	

*Similarities are among all 3 groups, except where otherwise specified.

Briefly, some highlighted generalizations that emerged from the data relating to dietary intake in each subgroup are presented here. The traditional group, for example, continued to follow a more traditional Hispanic diet as compared to the other groups; however, traditional participants indicated using more processed and prepared Hispanic foods and ingredients now as compared to when they resided in their countries of origin. Two common dietary themes from the marginalized/separated group were a diet high in processed and convenience foods and the consumption of meat. Eating out was also often mentioned in this group. Participants in the bicultural group were more diverse in their food selection compared to the other two groups. They continued to enjoy traditional foods but also consumed foods from various cultures. Overall, participants categorized as bicultural placed high importance on consuming foods that were perceived as healthy, whether or not the foods were traditional foods. In terms of consumption changes of specific food groups, the traditional and bicultural groups often discussed that their intake of fruits and vegetables had decreased since immigrating to the U.S., and the traditional group often reported an increase in meat and alcohol post-migration. The marginalized/separated group reported a slight increase in fruit and vegetable intake due to spousal influence, but they continued to consume meat frequently.

Dietary-Related Factors

Factors influencing diet that reflected participants' experiences and voluntary learning emerged from the data and were categorized into one of two main themes: diet-related intrapersonal factors and food environmental factors. Both factors were similar for participants within a particular bidimensional acculturation group (see Table 4). This suggests that the diet-related influencing factors, intrapersonal and environmental, may themselves be determined by contact and interaction with the host culture and the degree of cultural maintenance (i.e., bidimensional acculturation). Further, each main theme had subthemes that defined and explained it.

The diet-related intrapersonal factors that emerged from the data included values, attitudes, beliefs, preferences, and knowledge, and these were either formed by the participant while still in the country of origin, after the migration process, or both. Host culture's food environmental factors included food availability and access, living structure, food procurement/preparation skill, and time. Migration into the U.S., or within different regions in the U.S., exposed participants to a new food environment and social norms.

Furthermore, various factors were similar between groups, specifically the variables related to environment, such as food availability, accessibility, and time. All participants were recruited from the same region in the southern U.S. and therefore resided in a similar physical environment. For example, participants who immigrated to the U.S. indicated, in general, that fresh produce was more inexpensive in their country of origin than in the U.S. Another similarity between groups was their similar living structure pre-migration. A person in the house

who did not work outside of the home and who did the food preparation was commonly discussed in terms of pre-migration. Also, among all acculturation groups, the amount of time available for food preparation in the U.S. was seen as lacking because of the task-oriented nature of the U.S. culture and because there was no person in the home full-time to prepare the food.

However, in spite of these similarities of dietary influencers observed among acculturation groups, there were notable differences between groups in terms of diet-related intrapersonal factors and several environmental factors. For example, data emerged showing that the traditional group placed high value on eating a traditional diet and felt that food preparation was a woman's responsibility, whereas the bicultural group placed value on health and felt that food preparation should be shared between the male and female. Furthermore, the marginalized/separated group placed importance on convenience and taste, and this group also felt that responsibility of food preparation should be shared.

Table 4. Contributing Dietary Factors to Dietary Acculturation Across Group

	Traditional	Bicultural	Marginalized/Separated
Dietary Intrapersonal Factors			
<i>Values</i>	Important to eat a traditional diet	Important to eat a healthy diet	Important to eat what tastes good
<i>Attitudes</i>	Negative perception of Western foods and agricultural practices impacting food taste; Meat associated with privilege/luxury	Health is a priority; Negative perception of lack of social interaction around meal times; Accepting of new foods	Negative perception of available foods; Health and nutrition are not of priority
<i>Beliefs</i>	Belief that women are responsible for food purchasing and preparation	Belief that women and men share responsibility for food purchasing and preparation	Belief that women and men share responsibility for food purchasing and preparation
<i>Preference</i>	Preference for food prepared by Mother and traditional Hispanic foods	Preference for healthy foods, foods from traditional culture, as well as foods of other cultures	Preference for foods that taste good, meat, and meals that are convenient
<i>Knowledge</i>	Disconnect between nutrition and disease; Misconceptions about nutrients and foods	Connects nutrition to disease states	Understands nutrition and disease connection
Quotes			
	“No, because you can't get it to taste the same. Because they (moms) make it with love and here you just do it because you are hungry and want to fill your stomach.”	“Yeah, so basically I know that I need to eat my vegetables and eat my fruits and so that is what I buy first. And then I start to get my pastas and other stuff that I consume.”	“Well because that is what I like. I eat what I like, I don't eat what I don't like.”

Host Culture Food Environment			
<i>Availability</i>	Decreased availability of fresh fruits and vegetables, traditional Hispanic ingredients; Increased availability of processed and convenience foods, fast foods and beer	Decreased availability of fresh fruits and vegetables, traditional Hispanic ingredients; Increased availability of processed and convenience foods and fast foods	Decreased availability of traditional Hispanic ingredients.
<i>Living structure</i>	Lack of woman in the Household; Reside with other Hispanic males or alone	Reside with wife, children, or alone	Reside with wife, children, or alone
<i>Accessibility</i>	High cost of fruits and vegetables; Inexpensive processed and convenience foods; Increased income for meats and beer; Lack of transportation to food markets	High cost of fruits and vegetables; Inexpensive processed and convenience foods	High cost of fruits and vegetables; Inexpensive processed and convenience foods
<i>Food preparation skill</i>	Lacking cooking skill; Lacking wife/mother in house to cook	Has limited cooking skill; Wife does or helps with the cooking	Grills; Preparation of traditional Hispanic foods; Wife prepares most non-traditional foods
<i>Time</i>	Lack of time for meal preparation	Lack of time to prepare traditional meals	Lack of time to prepare homemade meals

Note: Bicultural signifies a person who can identify with and interacts well in both the host and indigenous cultures; a person in the traditional subcategory is a person who has little to no contact or identification with the host culture but relates with the indigenous culture; and one who is in the marginalized/separated subcategories is a person who denies the host culture or who does not identify with either culture.

Interplay Between Core Categories

An interplay between exposure to the host culture's food environment, change or maintenance of diet-related intrapersonal factors, and bidimensional acculturation was apparent. In this study, the diet-related intrapersonal factors (i.e., voluntary learning) determined how a person reacted to the new food environment (i.e., new experience), and the new food environment influenced changes in diet-related intrapersonal factors.

The interplay of a person's bidimensional acculturation (i.e., the degree of cultural maintenance and interaction with the new host culture) defined the diet-related intrapersonal and host culture's food environmental factors operant for each person. These factors in turn influenced the degree of dietary acculturation, that is, the voluntary adoption or rejection of the host culture's dietary behaviors.

Discussion

Within each acculturation group, sociodemographic factors and reasons for migration were similar; however, there were differences between groups. Second, in terms of dietary intake, the bicultural and traditional groups indicated a decrease in fruit and vegetable intake post-migration. An interesting finding was the increase in meat intake in the traditional group and its link to social class perception and cost of meat in the U.S. Here, there was a disconnect between knowledge of the health detriments of high meat intake and behavior. Further, the traditional group attempted to continue to consume a traditional diet, although participants of this group indicated consuming more meat, less fruits and vegetables, and more processed foods post-migration. The adherence to a traditional diet was not as important to participants of the other two acculturation groups. The bicultural group was more concerned with health, and they discussed incorporating different ethnic foods and including lean meats and limiting processed foods. The marginalized/separated group reported convenience as a major factor in consuming processed foods and eating outside the home.

The present study offers a beginning to understanding the complex collage of dietary factors in the Hispanic male population in the context of the Operant Theory of Acculturation. Past research suggests that acculturation may mediate the relationship between socioeconomic factors and dietary behavior (Ayala, Mickens, Galindo, & Elder, 2007; Dubowitz et al., 2008; Fitzgerald, Damio, Segura-Pérez, & Pérez-Escamilla, 2008; Ford, Giles, & Dietz, 2002; Gregory-Mercado et al., 2006; Hanson & Chen, 2007; Mazur, Marquis, & Jensen, 2003; Monsivais & Drewnowski, 2009; Scott & Howell, 2008). In terms of the present study, this would indicate that the degree of interaction a person has with his or her new host culture compared to the degree of maintenance of his or her traditional culture determines the extent of experiences and learning that influences dietary-related intrapersonal and environmental factors and that ultimately affects dietary behavior. For example, the bicultural group placed a high value and preference on healthy foods and did their best to consume a diet perceived as healthy in the midst of a perception of high cost and limited availability of desirable foods. The marginalized group valued convenience and taste of food and felt traditional foods were limited in availability although at times desired. The examples show the interplay of the different factors affecting dietary behavior and suggest knowing a person's acculturation group may be important to better understand these factors.

Research generally suggests that Hispanics who continue and maintain a relationship with their traditional culture and who are less exposed to the host culture have more positive dietary outcomes (Ayala et al., 2007; Dubowitz et al., 2008; Fitzgerald et al., 2008; Ford et al., 2002; Gregory-Mercado et al., 2006; Hanson & Chen, 2007; Mazur et al., 2003; Monsivais & Drewnowski, 2009; Scott & Howell, 2008). Diet-related intrapersonal factors such as values and attitudes toward certain dietary behaviors may contribute to some of these differences (Dubowitz

et al., 2008; Hanson & Chen, 2007; Mazur et al., 2003; Monsivais & Drewnowski, 2009; Scott, & Howell, 2008). For example, in the present study, participants from the traditional group had a negative attitude towards processed foods, preferring fresh and homemade meals instead; in contrast, the marginalized/separated group preferred to eat out and preferred convenience foods.

Due to the male cultural role in the target culture and factors associated with immigration (e.g., possibly immigrating without a family, reasons for immigration), determining factors influencing dietary behavior in the Hispanic male population can inform future health practice. Factors in this present study that were observed and are specific to the Hispanic male gender, particularly in the traditional acculturation subgroup, included the reliance on women for food procurement and preparation, lack of cooking skill, having to purchase and/or prepare food, and preference for food prepared by a mother or wife figure. Interventions with this population may include these factors. For example, an intervention that includes a discussion around gender roles in food preparation or a cooking class that includes traditional foods and a grocery store tour may help to address unhealthy dietary behaviors. Further exploration of the identified constructs in influencing dietary behavior in a larger sample of Hispanic males from different acculturation groups is warranted.

Prior research suggests that this dietary acculturation process may be similar in other ethnic and gender groups. Satia-Abouta (2003) completed a review of dietary acculturation in a Korean-American female population and developed a comprehensive dietary acculturation framework. In the present study, a bidimensional measure of acculturation was used that allowed for the process of acculturation to go beyond being operationalized only unidimensionally and may provide a more integrated understanding of the complex acculturation process. However, future studies may benefit by examining dietary behavior and the acculturation process longitudinally to provide a clearer picture of what and where different diet-related intrapersonal and environmental factors change and how they affect dietary behavior.

One limitation in the study is that the acculturation instrument used was originally developed for the Mexican-American population and may be limited in identifying cultural nuances among other Hispanic subgroups. As a result, this study provides overall generalizations of acculturation subgroups in terms of dietary behavior and influencing factors relating to only one small Hispanic sample. Therefore, as aforementioned, these results are meant to provide an initial foundation for understanding the dietary acculturation process bidimensionally and should prompt further exploration into other Hispanic populations.

Although this research offers a start to understanding dietary acculturation in this particular population, several areas require further and more refined empirical investigation. Specifically, additional research is needed to confirm the findings from this study and then to test the findings' generalizations with a broader Hispanic population. Also, because the assimilated group was not

represented, it is important to gain an understanding of this subgroup's dietary acculturation process to better address its dietary issues.

In conclusion, this formative study provides a beginning foundation for understanding the complex dietary acculturation process for Hispanic males residing in the U.S.

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