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Research report

Maternal employment, acculturation, and time spent in food-related behaviors among Hispanic mothers in the United States. Evidence from the American Time Use Survey ☆

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ABSTRACT

Employment is a major factor underlying im/migration patterns. Unfortunately, lower diet quality and higher rates of obesity appear to be unintended consequences of moving to the US. Changes in food preparation practices may be a factor underlying dietary acculturation. The relationships between employment, acculturation, and food-related time use in Hispanic families have received relatively little attention. We used cross-sectional data collected from Hispanic mothers (ages 18–65) with at least one child <13 years old participating in the 2003–2011 American Time Use Survey (n = 3622) to estimate the relationship between employment, acculturation (US-born vs. im/migrant), and time spent in food preparation and family dinner. Regression models were estimated separately for the employed and the non-working and were adjusted for Hispanic origin group, socio-demographic and household characteristics. Working an eight-hour day was associated with spending 38 fewer minutes in food preparation (–38.0 ± SE 4.8, $p < 001$). Although being US-born was associated with spending fewer minutes in food preparation, this relationship varied by origin group. Acculturation did not appear to modify the relationship between hours worked and time spent in food preparation or family dinner. Mothers who worked late hours spent less time eating the evening meal with their families (–9.8 ± SE 1.3). Although an eight-hour workday was associated with a significant reduction in food preparation time, an unexpected result is that, for working mothers, additional time spent in paid work is not associated with the duration of family dinner later that day.

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Introduction

Over the next four decades, Hispanic immigrants and migrants (i.e., im/migrants) and their children will continue to drive population growth: between 2010 and 2060, the US Hispanic population, already the largest minority population in the US, is expected to increase from 17% of the total population to 31% (U.S. Census Bureau, 2012). Many im/migrants who come to the US seek work to improve their economic standing and opportunities for their families. As workers, im/migrants play a vital role in the US economy. As parents they play a central role in shaping household food behaviors. Unfortunately, lower diet quality and weight-gain have been identified as unintended consequences of im/migration among Hispanic populations (Ayala, Baquero, & Klinger, 2008; Oza-Frank & Cunningham, 2010; Pérez-Escamilla, 2011).

This context highlights the need to better understand the relationships among employment, time in the United States, and food related behaviors (e.g., preparation, procurement, and consumption) among Hispanic mothers. Even in households where mothers are employed and the spouse/partner is not, mothers typically invest more time in meal preparation and childcare responsibilities than fathers (Cawley & Liu, 2012). Accordingly, mothers' food-related time use has the potential to influence their own diets as well as those of family members. Family meals have been associated with numerous positive outcomes for youth, including increased fruit and vegetable consumption among adolescents (Gilman et al., 2000; Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003; Videon & Manning, 2003) and lower prevalence of overweight – although

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evidence of longitudinal benefits of family meals on weight status is mixed (Fulkerson, Neumark-Sztainer, Hannan, & Story, 2008; Gable, Chang, & Krull, 2007; Taveras et al., 2012). Yet time is a constraint, and family meals are briefer and less likely when the mother is employed (Cawley & Liu, 2012; Neumark-Sztainer et al., 2003). As there are only 1440 minutes in a day, time at work comes at the expense of other activities (Cawley, 2004).

Hispanic women have themselves noted that work contributes to feeling pressed for time, and have identified a busy, fast-paced, lifestyle in the US among factors contributing to changes in eating behaviors (Dubowitz et al., 2007; Lindberg & Stevens, 2011; Sussner, Lindsay, Greaney, & Peterson, 2008; Tovar et al., 2012). Increased demands on one's time are also believed to increase the reliance on convenience foods and fast food (Ayala et al., 2008; Van Wieren, Roberts, Arellano, Feller, & Diaz, 2011). These choices may have deleterious health consequences. Foods prepared away from home are frequently higher in total calories and fat than foods consumed at home (Bowman & Vinyard, 2004; Guthrie, Lin, & Frazao, 2002) and frequent fast food consumption has been associated with weight gain among adults (Pereira et al., 2005). In contrast, time spent in food preparation has been inversely associated with women's BMI (Zick, Stevens, & Bryant, 2011).

Through the multidimensional process of acculturation, im/migrants may learn, acquire, and select aspects of "host" practices while retaining preferences from their country of origin (Berry, 2003; Yeh, Viladrich, Bruning, & Roye, 2009; Zambrana & Carter-Pokras, 2010). The specific behaviors adopted likely vary by place and related contextual factors (Portes & Zhou, 1993). Longer time in the US and greater English language skills have been associated with greater self-reported dietary change (Roshania, Narayan, & Oza-Frank, 2008), lower diet quality, and higher prevalence of overweight and obesity among Mexican–American and other Hispanic populations (Ayala et al., 2008; Batis, Hernandez-Barrera, Barquera, Rivera, & Popkin, 2011; Pérez-Escamilla, 2011). It is theorized that the "obesogenic" environment encountered in the US (Giskes, van Lenthe, Avendano-Pabon, & Brug, 2011; Hill, Wyatt, Reed, & Peters, 2003) plays a role in the rising rates of obesity among im/migrant (Tovar et al., 2013). These relationships are not without nuance; dietary quality may improve with acculturation among Puerto Ricans (Van Rompay et al., 2012) for whom some evidence suggests that weight may trend downward over generations on the US mainland (Bates, Acevedo-Garcia, Alegría, & Krieger, 2008), although another study indicates a pattern of weight gain (Himmelgreen et al., 2004).

Both dietary acculturation and the timesaving strategies adopted by working mothers (Jabs & Devine, 2006; Jabs et al., 2007) can foster an eating pattern that features more readymade items and foods eaten away from home. These relationships may be especially relevant for Hispanics, who have the highest labor force participation rate of minority populations in the US (U.S. Department of Labor, 2012), and a high female-to-male earnings ratio (90% compared to 79% among whites) (Bureau of Labor Statistics, 2012), which may further incentivize women to join the workforce. Further, Mexican American women are over-represented in occupations that offer employees limited control and power (Allensworth, 1997), characteristics that may make it challenging to plan and prepare meals (Devine, Connors, Sobal, & Bisogni, 2003). Control over one's work schedule has been associated with family meal frequency among working mothers (Hill, Tranby, Kelly, & Moen, 2013).

This paper seeks to characterize how employment is associated with time spent in food preparation and family dinner among US-born and im/migrant Hispanic mothers, and to establish whether acculturation influences the relationship between employment and time spent in food preparation, or if these are independent processes. The central hypothesis is that employment and being US-born are inversely associated with time spent in food preparation and family dinner, and that employment and nativity jointly influence food-related time use. A secondary hypothesis is that the association between nativity and food-related time use varies by Hispanic origin group. This information can be of use to researchers and practitioners seeking to make nutrition recommendations or to design interventions that resonate with the time-use decisions made by working mothers.

Methods

Data source

The American Time Use Survey (ATUS) is a nationally representative, continuous, cross-sectional survey that randomly selects participants from households that have completed their last round of the Current Population Survey (CPS). The ATUS oversamples households with children and/or a Hispanic householder.

ATUS designated respondents receive an advance mailer assigning them a specific interview day on which they are asked to recall the events of the previous 24 hours (from 4 am to 4 am) via computer-assisted telephone interviewing. Participants identify their primary activity – the main thing they are doing, where and with whom. Activities are coded using a three-tiered, hierarchical, system. Location of the activity and persons present during the activity (i.e., who was in the room with you, who accompanied you) are assigned "Where" and "Who" codes. Secondary activities (e.g., watching television while eating dinner) are not recorded through the ATUS, with the exception of secondary childcare. Detailed survey methodology has been published elsewhere (Bureau of Labor Statistics, 2013).

The Eating and Health (EH) Module, a five-minute segment that followed all ATUS interviews in 2006–2008, collected additional information on secondary eating and drinking, the respondent's responsibility for food preparation and grocery shopping, and other eating and health-related variables. The information about food-related roles in the EH Module was used to provide additional context for understanding cooking-related time investments. Preliminary analysis found that EH Module respondents did not differ significantly from the entire 2003–2011 ATUS sample across key demographics, employment characteristics, or eating-related behaviors.

We compiled demographic and time use variables of interest using the ATUS-X data extracting system for all survey years 2003–2011 (Abraham, Flood, Sobek, & Thorn, 2009). Analyses were conducted using complex survey procedures in Stata 10.1 (Stata Corporation, College Station TX) and applied the 2006 sample weight, to adjust for differential probabilities of selection (Bureau of Labor Statistics, 2013).

This research was reviewed and approved as an exempted use of secondary data by the Institutional Review Board at Tufts University.

Analytic dataset

The analytic dataset comprises women ages 18 to 65, of self-identified Spanish/Hispanic/Latino origin, who lived with their own child <13 years old. Diary days that fell on holidays (New Year's Day, Easter, Memorial Day, 4th of July, Thanksgiving, and Christmas; n = 72) and interviews flagged with data quality issues (n = 23), or included fewer than 18 hours of coded activity (n = 12) were excluded (Statistics Division, 2005). To focus the sample on respondents from Spanish-speaking Latin American countries, individuals whose birthplace was unknown, or who were born outside the United States, Mexico, Central or South America, or the Spanish-speaking Caribbean were excluded from the analysis (n = 57). Following the application of all exclusion criteria, the final sample included 3622

mothers. The CPS, the parent survey to the ATUS, primarily uses the term Hispanic in its reports; accordingly, we use the term Hispanic in this manuscript when referring to the participants in the sample.

Outcome variable definitions

Food preparation equals the total minutes spent preparing, cooking, and serving food as well as time spent in clean up (e.g., putting away food and drinks, tidying the kitchen) on the diary day (Mancino & Newman, 2007).

Family dinner equals the number of minutes the respondent spent eating in her home or yard, in someone else's home, or at a restaurant or bar, with at least one child <13 years old and the spouse/partner present between 5 pm and 9 pm, which spans common evening eating times (Hamrick, Andrews, Guthrie, Hopkins, & McClelland, 2011). For single-mother households, family dinner involved eating with at least one child <13 years old present during those evening hours. Respondents who spent fewer than five minutes eating family dinner were excluded (n = 8), as eating occasions so brief are unlikely to include the interactions believed to underlie the benefits of family meals (Larson, Neumark-Sztainer, Hannan, & Story, 2007). Sensitivity analyses were conducted with and without these 8 cases and their exclusion does not significantly change results.

Key predictor definitions

Employment is equal to the number of hours worked for pay divided by 8; thus, it is expressed as the proportion of a full-time workday (Cawley & Liu, 2012). This measure is more specific to the diary day in question than an indicator of employment status or typical hours worked (Cawley & Liu, 2012). To reflect the time costs of employment on the diary day, work hours included time spent at a main job, at a second job, waiting at work, in work-related security procedures, and time spent in work-related social activities – identified by the second-tier ATUS codes 0501 and 0502 – but not time spent in other income generating activities, looking for work, or work-related travel. For the majority of respondents, employment reflects time spent working at a primary occupation: just 1.6% of employed mothers reported working at a secondary job on the diary day and 1.0% reported time in work-related activities (e.g., socializing, eating and drinking, sports and exercise, and work-related waiting). We also included a binary variable to identify mothers who worked late (after 6 pm) (U.S. Department of Commerce, 2014).

Separate models were estimated for the employed and the non-working, i.e. the unemployed and those out-of the labor force (Cawley & Liu, 2012; Mancino & Newman, 2007).

Acculturation was characterized using two proxy variables:

Nativity (US-born) is a binary variable, with respondents born in the 50 United States or the District of Columbia coded as 1, and individuals born in Spanish-speaking US territories or Latin American countries coded as 0. Being US-born was treated as a proxy for greater acculturation to the US mainstream culture. Puerto Ricans born on the island of Puerto Rico are US citizens at birth and thus have the same legal status as all people born on the US mainland. Although there is, arguably, no perfect category for Puerto Ricans, a population that is both US-born and migrant, for the purposes of this research, Puerto Ricans were categorized as migrants rather than US-born, owing to the economic, socio-cultural, and linguistic changes that characterize migration within countries as well as immigration from one country to another (Tropp, Erkut, Coll, Alarcon, & García, 1999). Migration is the umbrella term that describes, more generally, the movement of people between and within countries. Immigration more specifically describes movement to another country and implies a greater sense of permanency of that relocation. In this manuscript, we collapse both Puerto Ricans, who are migrants, and immigrants from Spanish-speaking Latin America and the Caribbean under the category im/migrant.

Generational status has been widely used to illustrate changes in diet and weight status across US-born and im/migrant populations living in the US (Bates et al., 2008; Batis et al., 2011). To further explore differences in food-related behaviors by duration of residence in the US, we conducted a generational sub-group analysis among Mexican Americans, the largest Hispanic demographic group in the US and in the ATUS sample, using the following categories: 1st generation (immigrated ≥13 years old), 1.5 generation (immigrated <13 years old), 2nd generation (born in US with at least 1 im/migrant parent), and 3rd plus generation (US-born parents) (Rumbaut & Komaie, 2010).

Covariates

Origin group was constructed from answers to the question "Are you Mexican, Mexican American, Chicano, Puerto Rican, Cuban, Cuban American or some other Spanish, Hispanic, or Latino Group?", which was asked of all respondents who had previously affirmed they were "Spanish, Hispanic, or Latino." The responses Mexican, Mexican American, Chicano, and Mexicano were combined as Mexican origin. To identify whether the relationship between nativity and time in food-related behaviors varied among Hispanic subgroups, a nativity-by-origin interaction was estimated.

Household-level factors: We also adjusted for being a single mother (no spouse or partner present), having a child under the age of six, number of household children, and maternal age, as these factors have been associated with perceived time-scarcity and with time spent in food-related behaviors (Jabs et al., 2007; Mancino & Newman, 2007).

Socioeconomic status: Highest level of education attained was derived by collapsing survey responses into five categories (less than 9th grade, 9th–12th grade, high school diploma or GED, some college, college graduate or more). It was decided a priori to estimate models with and without a measure of household income (income relative to poverty guidelines, ≤130%, 130–185%, >185%). Household income may influence a mother's decision to join the workforce and also the ways in which employment informs decisions around food-related behaviors and its inclusion as a covariate may over-adjust. We present models without income.

Secular trend: We adjusted for survey year (2003–2011) and weekend diary recall (weekend = 1, weekday = 0).

Statistical analysis

Chi-squared analyses and adjusted Wald tests compared weighted proportions and means to describe participant characteristics and behaviors. For common but not necessarily daily activities, like food preparation or family meals, zero values are likely a function of the recall period; to predict time spent in such activities, ordinary least squares regression may be less biased than the Tobit models previously used with time use data (Stewart, 2009). Ordinary least squares models were used for all analyses. The dependent variables were truncated at the right tail to the 99th percentile (330 minutes in food preparation; 75 minutes in family dinner) to temper the influence of plausible extreme values (e.g., 510 min in food preparation).

Pair-wise tests explored differences in time in food-related behaviors by employment and nativity and between origin groups. Simple models estimated the relationship between the dependent variables, nativity and, among the employed, work hours. Full

models adjust for origin group, maternal education, being a single mother, number of household children, maternal age, survey year, and weekend diary day. An alpha-level of .05 was set for the main effects and interactions.

Results

Table 1 summarizes socio-demographic characteristics and displays how they vary depending on whether participants were born in the US. Nearly two-thirds of mothers were im/migrants (63.4%). The proportion of single mothers was significantly higher among those born in the US (32.8% vs. 19.0%). Socioeconomic position, in terms of educational attainment and income relative to poverty (IRP), varied significantly by nativity. Over one-third (36.6%) of US-born and over one-half (52.8%) of im/migrant mothers were low-income (<130% poverty line). More than one-quarter (26.8%) of im/migrant mothers had less than a 9th grade education; this proportion is 10 times that reported by mothers born in the US (2.6%).

The four most common occupation types among im/migrants were building and grounds cleaning and maintenance (17.2%), production occupations (15.0%), office and administrative support (13.0%), and food preparation and serving (10.5%). Among US born mothers, these were office and administrative support (26.9%), sales (14.3%), management (7.8%), and education, training, and library occupations (7.6%).

Food-related behaviors

Table 2 presents weighted means and standard errors for time spent in employment and food-related activities for those who engaged in them. Presented below is the fraction of the sample that reported spending any time in that activity during the diary day.

More than 75% of respondents spent some time in food preparation on the diary day and proportions differed significantly by employment status and by nativity ($p < .05$). Less than half of mothers (42.0%) reported eating dinner together as a family. Although this proportion was higher among the US-born (46.8% vs. 39.3%, $p < .001$), when im/migrant families ate dinner together they did so for, on average, three minutes longer ($p < .05$). Working mothers ate dinner for roughly three fewer minutes compared to non-working mothers ($p < .05$). Only 6.4% of respondents purchased convenience foods (e.g., foods (non-groceries) purchased at stores and "takeout" (foods bought but not consumed at restaurants)) but purchases were more common among the US-born (11.2% vs. 3.8%, $p < .001$) and the employed (8.4% vs. 4.4%, $p < .001$). Similarly, US-born respondents were nearly twice as likely to eat at a restaurant or bar on the diary day as those born outside the US (15.8% vs. 7.9%, $p < .05$).

In the Eating and Health Module, the majority of the respondents served as the primary meal preparer in the household, but the proportion reporting shared responsibility (14.7% vs. 6.4%), or not having that responsibility (8.8% vs. 3.7%), was more than twice as high among US-born mothers.

Table 1
Sociodemographic and household characteristics among Hispanic mothers with at least one child <13 years old, by nativity (US-born vs. foreign-born): The American Time Use Survey 2003 to 2011 (N = 3634).

Variables	Overall	US-born	Im/migrant
		36.6%	63.4%
	N = 3622	N = 1345	N = 2277
	Mean (SE)	Mean (SE)	Mean (SE)
Age (years)	32.8 (0.2)	31.2 (0.3)	33.7 (0.2)
Number of household members	4.7 (0.4)	4.5 (.09)	4.8 (0.5)
Proportion (%)	%	%	%
Households with child under 6†	66.2%	69.0%	64.6%
Single mother household†	24.0%	32.8%	19.0%
Highest level of completed education†			
<9th grade	17.9%	2.6%	26.8%
Some high school	20.6%	16.2%	23.2%
High school GED or diploma	31.8%	36.5%	29.1%
Some college or associate's	18.8%	29.1%	12.9%
Bachelor's or more	10.8%	15.5%	8.0%
Income relative to poverty ratio†,‡			
≤130% of poverty guideline	46.9%	36.6%	52.8%
>130–185% of poverty guideline	18.3%	16.6%	19.3%
>185% of poverty guideline	34.8%	46.7%	27.9%
Origin group†			
Mexican	70.4%	71.4%	69.9%
Puerto Rican	7.4%	13.1%	4.1%
Cuban	2.0%	1.8%	2.2%
Central/South American	16.3%	5.3%	22.6%
Other US-born Hispanic	3.9%	8.5%	1.3%
Employment status†			
Employed	50.7%	61.2%	44.7%
Unemployed	9.1%	8.9%	9.3%
Not in the labor force	40.0%	29.9%	46.0%
	Among the employed		
	N = 1966	N = 868	N = 1098
Weekly wage (in 2011 dollars) (N = 1840)***	$509.82 (9.96)	$595.31 (16.69)	$440.54 (11.67)
Works more than one job†	4.8%	6.4%	3.6%
Works at night (6 pm and later)	17.6%	19.9%	15.9%
Works full-time	70.2%	68.0%	72.8%

*** $p < .001$ adjusted Wald test.
† $p < .05$ by Chi-squared test.
‡ 7.9% of the sample had missing family income data.

Table 2
Total time spent in food-related behaviors and food-related roles by employment status and nativity among Hispanic mothers with at least one child <13 years old: The American Time Use Survey 2003 to 2011 (N = 3622).

Variable	Overall N = 3622 Mean ± SE	Employed N = 1966 Mean ± SE	Not working N = 1656 Mean ± SE	US-born N = 1345 Mean ± SE	Im/migrant N = 2277 Mean ± SE
Daily food preparation (min)	95.3 ± 1.6	75.1 ± 1.7***	113.0 ± 2.4	70.8 ± 2.1***	107.8 ± 2.0
% Preparing food on diary day	83.50%	76.5%†	90.60%	76.4%†	87.50%
Family dinner (min)	36.6 ± 0.7	35.0 ± 0.8*	38.2 ± 1.1	34.7 ± 1.0*	37.8 ± 0.9
% Eating w/ family	42.00%	41.60%	42.50%	46.8%†	39.30%
Buying convenience food (min)	12.0 ± 0.6	12.9 ± 1.2	11.6 ± 0.7	12.7 ± 0.8	10.9 ± 1.0
% Buying takeout or food (non-groceries) from stores	6.40%	8.40%†	4.40%	11.1%	3.80%†
Eating at restaurant or bar (min)	64.2 ± 2.0	61.0 ± 2.3	68.6 ± 3.3	65.8 ± 2.9	62.3 ± 2.7
% Eating out	10.80%	12.4%†	9.20%	15.8%†	7.90%
Eating and Health Module (2006–2008)					
	N = 1159	N = 637	N = 522	N = 413	N = 746
Meal preparation					
Primary meal preparer	85.20%	80.2%†	90.20%	76.5%†	89.80%
Not primary	5.50%	8.90%	2.10%	8.80%	3.70%
Equally shared role	9.40%	11.00%	7.70%	14.70%	6.40%
Grocery shopping					
Primary grocery shopper	83.20%	82.60%	83.80%	80.70%	84.50%
Not primary	7.10%	7.6	6.5	8.80%	6.20%
Equally shared role	9.70%	9.80%	9.70%	10.50%	9.30%

Note: Table presents 99% Windsorized mean for time in food preparation and family dinner. Sample sizes are based on unweighted and unadjusted data. All analyses and proportions use sample weights to generate national population estimates. Proportions may slightly exceed 100% due to rounding.
*, ***p < .05, <.001 respectively for adjusted Wald tests between working and non-working; between US-born and foreign-born or by nativity.
†Indicates Chi-squared test, p < .05 by employment status or by nativity.

Subset analyses conducted among Mexican–Americans found that participation in food-related activities differed by generation. The proportion of Mexican–American mothers reporting primary responsibility for food preparation generally declined across generations in the US, but increased between the 2nd and 3rd generation (1st generation 93.0%, 1.5 generation 82.7%, 2nd generation 69.2%, 3rd+ generation 77.5%; p < .001; not shown). The same pattern was seen for grocery shopping (1st generation 87.2%, 1.5 generation 74.2%, 2nd generation 74.1%, 3rd+ generation 81.0%, p < .05; not shown).

Among Mexican–Americans (see Fig. 1), there was a significant decline in proportions of mothers spending time in food preparation across generations; by contrast, proportions of mothers eating out and purchasing convenience food increased with each generation living in the US. The proportion of mothers reporting time in family dinner appears to increase across generations.

Characteristics associated with total time in food preparation

Table 3 presents the results of the full models predicting time in food preparation, adjusted for covariates. For employed women, working an eight-hour workday was associated with spending 38 fewer minutes in food preparation compared to women who did not work on the diary day. Being US-born was associated with spending less time spent in food preparation, and origin group influenced the relationship between nativity and time spent in food preparation. For mothers of Mexican, Central-South American, and other Hispanic origins, being born in the US was associated with spending significantly fewer minutes in food preparation, whereas the opposite was true for US-born mothers of Cuban and Puerto Rican origin (see Fig. 2). For Puerto Rican mothers, time spent in meal preparation did not meaningfully vary (less than a minute difference)

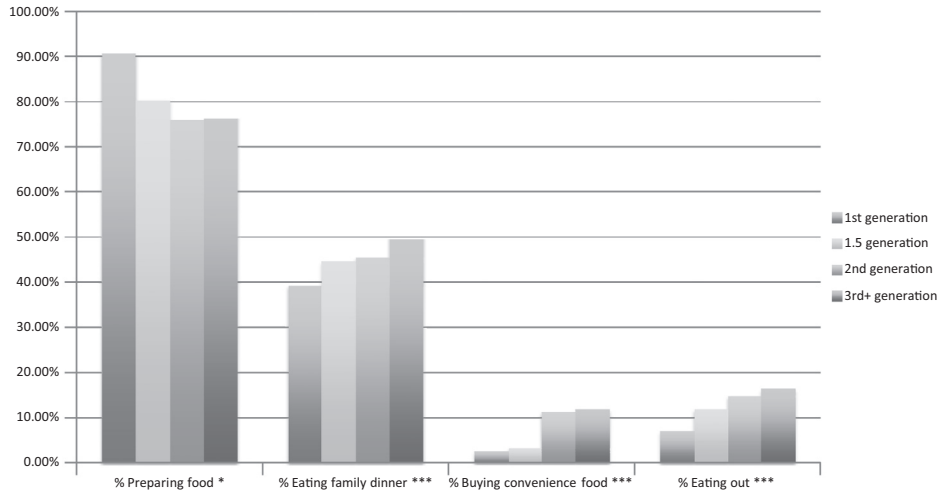

Fig. 1. Proportion of Mexican–American mothers (ages 18–65) engaging in food-related behaviors by generation in the US: American Time Use Survey (N = 2467).
*p < .05, ***p < .001 for significant differences across generations.

Table 3
Total daily time (min) in food preparation is associated with hours worked and nativity among Hispanic mothers (ages 18–65) in the ATUS (N = 3622).

Time spent in food preparation (min)	Working (N = 1966)				Non-working (N = 1656)			
	Coefficient	Standard error	p value	95% Confidence interval	Coefficient	Standard error	p value	95% Confidence interval
Work day (hours worked/8)	−38.02	4.80	p < .001	(−47.43, −28.62)	–	–	–	–
Worked late hours	0.13	3.68	0.97	(−7.08, 7.34)	–	–	–	–
Origin group								
Mexican	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
Puerto Rican	−26.97	7.17	p < .001	(−41.01, −12.92)	−36.15	9.87	p < .001	(−55.49, −16.81)
Cuban	−40.85	8.90	p < .001	(−58.30, −23.41)	22.38	21.98	0.31	(−20.71, 65.46)
Central-South American	−7.16	4.66	0.12	(−16.29, 1.97)	−0.29	7.09	0.97	(−14.18, 13.6)
Other Hispanic	−8.45	12.46	0.50	(−32.86, 15.97)	−35.18	11.86	p < .001	(−58.42, −11.94)
US-born	−27.08	5.65	p < .001	(−38.14, −16.01)	−30.68	5.76	p < .001	(−41.98, −19.38)
Nativity × origin interaction								
US born × Mexican	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
US born × Puerto Rican	27.40	8.46	p < .001	(10.83, 43.98)	25.64	13.55	0.06	(−0.92, 52.21)
US born × Cuban	37.27	11.31	p < .001	(15.11, 59.44)	−39.68	29.37	0.18	(−97.24, 17.89)
US born × Central-South American	2.32	6.99	0.74	(−11.38, 16.03)	4.15	14.75	0.78	(−24.76, 33.06)
US born × Other Hispanic	11.98	13.62	0.38	(−14.71, 38.67)	30.53	15.79	0.05	(−0.42, 61.49)
Nativity × employment interaction	4.30	5.40	0.43	(−6.28, 14.88)	–	–	–	–
Education								
<High school education	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
9th–12th grade education	−7.95	6.23	0.20	(−20.15, 4.26)	−7.60	6.66	0.25	(−20.67, 5.46)
High school diploma/GED	−18.10	5.48	p < .001	(−28.85, −7.36)	−1.51	6.67	0.82	(−14.6, 11.57)
Some college	−18.21	5.69	p < .001	(−29.36, −7.06)	−7.71	8.99	0.39	(−25.34, 9.91)
College or more	−25.21	5.87	p < .001	(−36.72, −13.7)	−27.28	8.45	p < .001	(−43.85, −10.71)
Single mother	−11.55	2.90	p < .001	(−17.24, −5.87)	−19.63	5.35	p < .001	(−30.1, −9.15)
Number of household children	3.81	1.45	0.01	(0.96, 6.66)	7.22	2.26	p < .001	(2.78, 11.65)
Presence of child <6	−1.49	3.27	0.65	(−7.90, 4.91)	10.11	5.63	0.07	(−0.92, 21.14)
Constant	83.26	11.56	p < .001	(60.59, 105.93)	56.97	16.06	p < .001	(25.49, 88.44)
	R2 = 0.21				R2 = 0.16			

Note: Models also adjust for maternal age, weekend diary day, and survey year (2003–2011).

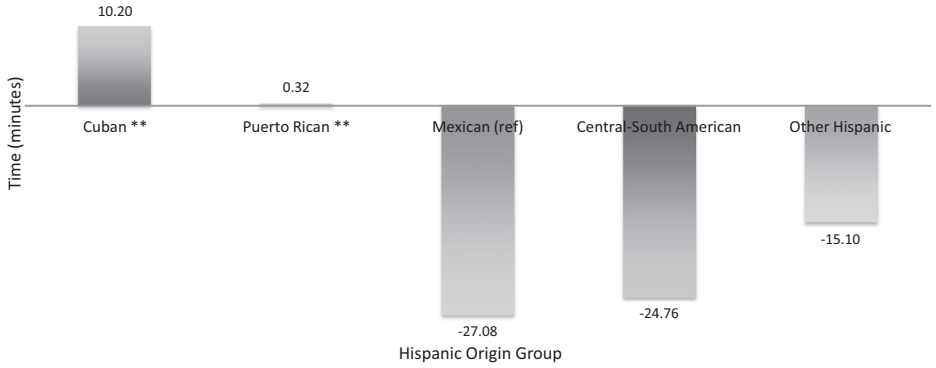

Fig. 2. The association between time in food preparation and being US-born varies by origin group among employed Hispanic mothers (ages 18–65) in the American Time Use Survey 2003–2011 (n = 1966).
*p < .05, **p < .01 difference between Mexican origin. Model adjusts for hours worked, late work hours, educational attainment, being a single-mother, number of household children, maternal age, weekend recalls, and survey year (2003–2011).

between those born on the island and those born in the US. For working Mexican–American mothers, being US-born was associated with spending 27 fewer minutes in food preparation than their Mexican-born counterparts. Among non-working mothers, being US born was associated with spending 30 fewer minutes in food preparation; however, the interaction between origin group and nativity was attenuated after adjusting for household characteristics.

Higher levels of education and being a single-mother were associated with spending significantly less time in food preparation for both employed and non-working mothers.

Characteristics associated with time spent in family dinner

The length of the evening meal did not vary by the length of a mother's workday; however, the timing of work was significant (see Table 4). Mothers who worked into the evening spent 10 fewer minutes in family dinner compared to employed mothers who did not work past 6 pm. Household (e.g., number of children, presence of younger children), but not socioeconomic factors were positively associated with time spent in family dinner. Income relative to poverty was not a significant predictor of time spent in food preparation or family dinner and its inclusion did not improve model fit (data not shown).

Discussion

Using a nationally representative dataset, we estimated the relationship between employment and acculturation with time spent in food-related behaviors among employed Hispanic mothers, and found that an eight-hour workday was associated with spending 30 fewer minutes in food preparation. Although mothers with longer workdays spent less time in food preparation, the positive association that we observed between hours worked and time spent in family dinner suggests that time may be transferred away from the kitchen and toward eating dinner. Working mothers may prioritize the evening meal as a means of spending time together.

In showing that time in food preparation was inversely associated with employment, higher levels of education, US nativity,

Table 4
Characteristics associated with spending time (minutes) in family dinner among Hispanic mothers (ages 18–65) with at least one child <13 years old, by employment status: American Time Use Survey 2003 to 2011 (N = 3622).

Time eating family dinner (min)	Working (N = 1966)				Non-Working (N = 1656)			
	Coefficient	Standard error	p value	95% Confidence interval	Coefficient	Standard error	p value	95% Confidence interval
Work day (hours worked/8)	1.41	1.42	0.32	(−1.38, 4.20)	–	–	–	–
Worked late hours	−9.88	1.29	p < .001	(−12.40, −7.34)	–	–	–	–
Origin Group								
Mexican	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
Puerto Rican	−3.08	1.95	0.11	(−6.91, 0.74)	−7.41	2.71	p < .001	(−12.72, −2.09)
Cuban	−1.27	3.22	0.69	(−7.60, 5.05)	−1.90	4.66	0.68	(−11.03, 7.24)
Central-South American	−4.11	1.44	p < .01	(−6.94, −1.28)	−3.33	1.79	0.06	(−6.84, 0.18)
Other Hispanic	1.39	2.30	0.55	(−3.11, 5.89)	0.35	3.82	0.93	(−7.14, 7.85)
US-born	<−0.01	1.33	1.00	(−2.61, 2.60)	2.76	1.62	0.09	(−0.41, 5.93)
Single mother	−0.99	1.16	0.40	(−3.26, 1.29)	5.53	2.30	0.02	(1.02, 10.04)
Number of household children	1.11	0.56	0.05	(−0.01, 2.20)	0.75	0.76	0.32	(−0.73, 2.23)
Presence of child <6	0.61	1.30	0.64	(−1.94, 3.17)	7.32	1.86	p < .001	(−3.67, 10.97)
Education								
<High school education	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
9th–12th grade education	−0.41	2.24	0.86	(−4.80, 3.99)	0.98	2.21	0.66	(−3.35, 5.30)
High school diploma/GED	0.01	1.89	0.99	(−3.70, 3.73)	0.95	1.93	0.62	(−2.82, 4.72)
Some college	2.17	1.99	0.27	(−1.72, 6.07)	1.13	2.22	0.61	(−3.22, 5.48)
College or more	4.28	2.14	0.05	(−0.08, 8.48)	7.15	2.85	0.01	(1.55, 12.74)
Constant	8.33	4.12	0.04	(0.26, 16.41)	−7.26	4.91	0.14	(−16.88, 2.37)
	R^2 = .05				R^2 = .04			

Note: Models also adjust for maternal age, weekend diary day, and survey year (2003–2011).

and being a single mother, our results are consistent with time use research among mothers and women overall in the general US population (Cawley & Liu, 2012; Mancino & Newman, 2007). Attributes unique to this deliberately selected sample were also associated with time in food preparation.

Among working mothers, Hispanic origin group modified the relationship between nativity and time in food preparation; notably, we estimated relationships of different magnitude and direction between Puerto Ricans and Mexican–Americans by nativity. US born Mexican–American mothers spent roughly a half-hour less in food preparation than Mexican-born mothers; by contrast, there was virtually no difference in food preparation time by nativity for Puerto Ricans. This discrepancy may speak to the greater similarities between the island of Puerto Rico and the mainland US than those seen between other countries of origin and the US. Previous research has shown different patterns of dietary acculturation and weight-status among Puerto Ricans and Mexican–Americans (Bates et al., 2008; Van Rompay et al., 2012). Our findings suggest that time in food preparation may be one of the mechanisms underlying these documented dietary differences. Many researchers have highlighted the need to recognize distinct demographic groups within broad pan-ethnic categories (Bates et al., 2008; Gordon-Larsen, Harris, Ward, & Popkin, 2003; Oza-Frank & Venkat Narayan, 2008; Singh, Siahpush, Hiatt, & Timsina, 2011). This is especially relevant given differences across region of origin in im/migrants' socioeconomic position and legal status, which has further implications for educational attainment and employment (Motel & Patten, 2012, 2013; Rumbaut & Komaie, 2010). Moreover, Hispanics more frequently identify with their country of origin than with a pan-ethnic label (e.g., Hispanic, Latino) (Taylor, Lopez, Martinez, & Velasco, 2012). Our findings support the importance of making such distinctions.

The 1.5 generation, those who moved to the US before age 13, are raised in im/migrant families and educated in US school systems. They have been described as "classic in-betweeners" as they fall between the 1st and 2nd generation with regard to educational attainment, transitions to adulthood (e.g., full time employment, marital status), and a host of other indicators (Rumbaut & Komaie, 2010). Consistent with this pattern, we found that the proportion of 1.5 generation Mexican–Americans preparing food, purchasing convenience foods, and eating out, lies between 1st generation and 2nd generation, rather than mirroring either. These behavioral trends may contribute to the high levels of dietary change that have been previously reported among im/migrants who were younger at the age of arrival (Roshania et al., 2008). In these sub-analyses, we also found that, among Mexican–Americans, acculturation may influence the extent to which a spouse or partner takes on food-related roles and responsibilities. Engaging a spouse or partner in food preparation and procurement may contribute to a more equitable distribution of domestic tasks, but may adversely influence diet quality if shared decision-making leads to more frequent eating away from home (Arredondo, Elder, Ayala, Slymen, & Campbell, 2006).

We did not find evidence supporting the hypothesis that nativity and employment jointly influenced time in food preparation or family dinner. It remains plausible that acculturation, defined using a more nuanced measure, does modify the relationship between employment and time in food-related behaviors. A longitudinal data set would be better positioned to estimate this relationship. Another possibility is that acculturation and employment influence food-related behaviors in non-linear ways. For example, acculturation (e.g., via greater English language skills and broader social networks) may influence employment opportunities and employment, in turn, can increase exposure to US social norms and accelerate acculturation (e.g., via the extent to which the work is social, the diversity of co-workers, workplace food environments. etc.). This dynamic feedback loop could influence food-related behaviors in ways that standard regression techniques cannot adequately estimate. The application of a systems approach to modeling the relationships among acculturation, employment, and food-related behaviors would make a valuable contribution to this area of research.

The large proportion of mothers serving the roles of primary meal-preparer and grocery-shopper speaks to their ability to influence the home food environment and children's dietary behaviors. We found that working in the evening was associated with spending less time in family dinner. This finding is consistent with women's identification of working late as a barrier to providing home-cooked food for their children (Devine et al., 2003; Jabs et al., 2007). A series of interviews conducted with low-wage mothers found that those who identified home-cooked meals as a priority "found" time to cook; moreover, mothers who were more confident in their cooking skills perceived having more time to cook (Jabs et al., 2007). The availability of time, whether objectively or subjectively assessed, may influence the types of food prepared and consumed. For mothers who work in food service, bringing food home from work may save time in food preparation. These strategies merit further consideration, as the nutritional benefits of family meals seem to depend on how frequently meals comprise home-cooked foods as opposed to foods purchased via delivery, takeout, or from fast-food establishments (Boutelle, Fulkerson, Neumark-Sztainer, Story, & French, 2007; Fulkerson et al., 2011). Time spent in meal preparation may be an important antecedent to nutritionally high quality family meals. In addition to having nutritional benefits, family meals may also be protective against high-risk behaviors (e.g., substance abuse, violence, antisocial behaviors) among youth and adolescents (Fulkerson et al., 2006).

Among children of higher socioeconomic status, maternal employment has been associated with lower diet quality (Crepinsek & Burstein, 2004), and higher BMI (Anderson, Butcher, & Levine, 2003; Lee et al., 2012; Morrissey, Dunifon, & Kalil, 2011; Ruhm, 2008). Work related time-tradeoffs have been proposed as a mechanism underlying this observed relationship. The association between maternal employment and child overweight among minority populations remains underexplored and is likely complex; among Hispanic families the association appears to differ by place of birth and socioeconomic status such that maternal employment may be protective for im/migrant families and for low-income US-born families, but positively associated with child BMI among high income families (Baker, Balistreri, & Van Hook, 2009). Our findings support the importance of considering nativity and region of origin when estimating the relationship between maternal employment and household food-related behaviors among Hispanic populations. Linking maternal food-related time use to both maternal and child dietary intake and BMI/BMi-z is an important area for future research.

Limitations

Several limitations associated with this study are noteworthy. The cross-sectional study design enables us to confirm a relationship between maternal employment and food-related time investments but precludes inferences about directionality. Data are limited to a one-day diary recall and participants did not report whether their activities that day were typical. It is possible that respondents, having been assigned an interview day, modified their behavior and choice of activities on the diary day. Further, where food-related behaviors (e.g., cooking, grocery shopping) are often influenced by the time allocations of previous days, the ATUS presents only a partial picture of respondents' food-related behaviors. We are able to quantitatively estimate time allocation to food preparation activities; however, we cannot assess mothers' perceptions of time adequacy or time-control. Although the ATUS deliberately

oversamples diverse Hispanic populations, estimates of the association between nativity and time spent in food preparation among Cuban–Americans may be imprecise owing to the small sample.

Our family dinner definition was based on having, at minimum, the mother, at least one child <13, and partner/spouse (where relevant) present in the room when eating in the evening. This objective definition of family dinner differs from the respondent-defined survey responses typically used to study family mealtime (Anderson & Whitaker, 2010; Gilman et al., 2000; Neumark-Sztainer et al., 2003) or supervised meals (Baker et al., 2009; Videon & Manning, 2003). Notably, ours lacks a measure of frequency and may not match the respondent's conceptualization of a family meal. Similarly, the ATUS "WHO" classification focuses on the presence of other family members in the room when an activity occurred; the extent to which this describes family togetherness may vary. Other contextual factors that may be of interest to researchers studying family meal routines (e.g., whether family members eat at the dinner table, eat the same foods, etc.) are not addressed in the ATUS. In addition, without information about secondary activities, we are unable to know whether the family watches television while eating, a behavior associated with lower family meal diet quality (Andaya, Arredondo, Alcaraz, Lindsay, & Elder, 2011; Feldman, Eisenberg, Neumark-Sztainer, & Story, 2007; FitzPatrick, Edmunds, & Dennison, 2007).

Nevertheless, our family-meal definition, derived from a broad recall of time use, may be less susceptible to social desirability bias than variables created using more narrowly focused instruments.

The challenges and limitations of conceptualizing and measuring acculturation have been extensively noted (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006; Berry, 2003; Hunt, Schneider, & Comer, 2004; Lopez-Class, Castro, & Ramirez, 2011; Pérez-Escamilla, 2009; Zambrana & Carter-Pokras, 2010). Although nativity and generational status are limited in their ability to reflect the nuances of the acculturative experience, they have been previously associated with dietary change (Bates et al., 2008; Duffey, Gordon-Larsen, Ayala, & Popkin, 2008; Gordon-Larsen et al., 2003) and were therefore relevant to the outcomes of interest.

Lastly, the R^2 values for our models (4–21%), especially those for family dinner, indicate that the individual and household characteristics included explained only a small fraction of the variation in time spent preparing food and eating family dinner. Other factors, including the neighborhood food retail environment, personal preferences, self-efficacy around cooking, and acculturative stress may further influence these food-related behaviors.

Conclusions

Our findings contribute to an emerging body of research that examines the relationship between maternal employment and food-related behaviors by focusing on Hispanic families, a demographic group that will be increasingly established in the US population but is also vulnerable to deteriorating diet quality with increased time in the US. In several qualitative studies, Hispanic women have identified work and work-related time pressures among barriers to healthy eating (Dubowitz et al., 2007; Lindberg & Stevens, 2011; Sussner et al., 2008; Tovar et al., 2012). Here, we use quantitative data to confirm that working a full-day was inversely associated with time investments in food preparation. Although the total time in food preparation was lower for women who worked longer hours, daytime work hours did not adversely influence the duration of the evening meal. Interventions that seek to promote family meals should consider addressing barriers to food preparation, including the time constraints faced by working mothers.

References

Abraham, K. G., Flood, S. M., Sobek, M., & Thorn, B. (2009). *American Time Use Survey data extract system. Version 1.0 [Machine-readable database]*.

Abraído-Lanza, A. F., Armbrister, A. N., Flórez, K. R., & Aguirre, A. N. (2006). Toward a theory-driven model of acculturation in public health research. *American Journal of Public Health*, *96*, 1342.

Allensworth, E. M. (1997). Earnings mobility of first and "1.5" generation Mexican-origin women and men. A comparison with US-born Mexican Americans and non-Hispanic Whites. *International Migration Review*, *31*, 386–410.

Andaya, A. A., Arredondo, E. M., Alcaraz, J. E., Lindsay, S. P., & Elder, J. P. (2011). The association between family meals, TV viewing during meals, and fruit, vegetables, soda, and chips intake among Latino children. *Journal of Nutrition Education & Behavior*, *43*, 308–315.

Anderson, P., Butcher, K., & Levine, P. (2003). Maternal employment and overweight children. *Journal of Health Economics*, *22*, 477–504.

Anderson, S. E., & Whitaker, R. C. (2010). Household routines and obesity in US preschool-aged children. *Pediatrics*, *125*, 420.

Arredondo, E. M., Elder, J. P., Ayala, G. X., Slymen, D., & Campbell, N. R. (2006). Association of a traditional vs shared meal decision-making and preparation style with eating behavior of Hispanic women in San Diego County. *Journal of the American Dietetic Association*, *106*(1), 38–45.

Ayala, G. X., Baquero, B., & Klinger, S. (2008). A systematic review of the relationship between acculturation and diet among Latinos in the United States. Implications for future research. *Journal of the American Dietetic Association*, *108*, 1330–1344.

Baker, E., Balistreri, K. S., & Van Hook, J. (2009). Maternal employment and overweight among Hispanic children of immigrants and children of natives. *Journal of Immigrant and Minority Health*, *11*, 158–167.

Bates, L. M., Acevedo-Garcia, D., Alegría, M., & Krieger, N. (2008). Immigration and generational trends in Body Mass Index and obesity in the United States. Results of the National Latino and Asian American Survey, 2002–2003. *American Journal of Public Health*, *98*, 70–77.

Batis, C., Hernandez-Barrera, L., Barquera, S., Rivera, J. A., & Popkin, B. M. (2011). Food acculturation drives dietary differences among Mexicans, Mexican Americans, and Non-Hispanic Whites. *The Journal of Nutrition*, *141*, 1898–1906.

Berry, J. W. (2003). Conceptual approaches to acculturation. In K. M. Chun, P. Balls Organista, & G. Marín (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 17–37). Washington, DC, US: American Psychological Association. xxvii, 260 pp.

Boutelle, K. N., Fulkerson, J. A., Neumark-Sztainer, D., Story, M., & French, S. A. (2007). Fast food for family meals. Relationships with parent and adolescent food intake, home food availability and weight status. *Public Health Nutrition*, *10*, 16–23.

Bowman, S. A., & Vinyard, B. T. (2004). Fast food consumption of US adults. Impact on energy and nutrient intakes and overweight status. *Journal of the American College of Nutrition*, *23*, 163–168.

Bureau of Labor Statistics. (2012). Women's earnings as a percent of men's in 2010. The Editor's desk. Washington, DC: U.S. Department of Labor.

Bureau of Labor Statistics. (2013). *American Time Use Survey user's guide. Understanding ATUS 2003 to 2011*. Washington, DC: U.S. Department of Labor.

Cawley, J. (2004). An economic framework for understanding physical activity and eating behaviors. *American Journal of Preventive Medicine*, *27*, 117–125.

Cawley, J., & Liu, F. (2012). Maternal employment and childhood obesity. A search for mechanisms in time use data. *Economics & Human Biology*, *10*, 352–364.

Crepinsek, M. K., & Burstein, N. R. (2004). *Maternal employment and children's nutrition. Vol. II. Other nutrition-related outcomes* (p. 153). Economic Research Service.

Devine, C. M., Connors, M. M., Sobal, J., & Bisogni, C. A. (2003). Sandwiching it in. Spillover of work onto food choices and family roles in low-and moderate-income urban households. *Social Science & Medicine*, *56*, 617–630.

Dubowitz, T., Acevedo-Garcia, D., Salkeld, J., Cristina Lindsay, A., Subramanian, S. V., & Peterson, K. E. (2007). Lifecourse, immigrant status and acculturation in food purchasing and preparation among low-income mothers. *Public Health Nutrition*, *10*, 396–404.

Duffey, K. J., Gordon-Larsen, P., Ayala, G. X., & Popkin, B. M. (2008). Birthplace is associated with more adverse dietary profiles for US-born than for foreign-born Latino adults. *The Journal of Nutrition*, *138*, 2428–2435.

Feldman, S., Eisenberg, M. E., Neumark-Sztainer, D., & Story, M. (2007). Associations between watching TV during family meals and dietary intake among adolescents. *Journal of Nutrition Education and Behavior*, *39*, 257–263.

FitzPatrick, E., Edmunds, L. S., & Dennison, B. A. (2007). Positive effects of family dinner are undone by television viewing. *Journal of the American Dietetic Association*, *107*, 666–671.

Fulkerson, J. A., Farbakhsh, K., Lytle, L., Hearst, M. O., Dengel, D. R., Pasch, K. E., et al. (2011). Away-from-home family dinner sources and associations with weight status, body composition, and related biomarkers of chronic disease among adolescents and their parents. *Journal of the American Dietetic Association*, *111*, 1892–1897.

Fulkerson, J. A., Neumark-Sztainer, D., Hannan, P. J., & Story, M. (2008). Family meal frequency and weight status among adolescents. Cross-sectional and 5-year longitudinal associations. *Obesity*, *16*, 2529–2534.

Fulkerson, J. A., Story, M., Mellin, A., Leffert, N., Neumark-Sztainer, D., & French, S. A. (2006). Family dinner meal frequency and adolescent development. Relationships with developmental assets and high-risk behaviors. *Journal of Adolescent Health*, *39*, 337–345.

Gable, S., Chang, Y., & Krull, J. L. (2007). Television watching and frequency of family meals are predictive of overweight onset and persistence in a national sample of school-aged children. *Journal of the American Dietetic Association*, *107*, 53–61.
Gilman, M. W., Rifas-Shiman, S. L., Frazier, A. L., Rockett, H. R. H., Camargo, C. A., Jr., Field, A. E., et al. (2000). Family dinner and diet quality among older children and adolescents. *Archives of Family Medicine*, *9*, 235.
Giskes, K., van Lenthe, F., Avendano-Pabon, M., & Brug, J. (2011). A systematic review of environmental factors and obesogenic dietary intakes among adults. Are we getting closer to understanding obesogenic environments? *Obesity Reviews*, *12*, e95–e106.
Gordon-Larsen, P., Harris, K. M., Ward, D. S., & Popkin, B. M. (2003). Acculturation and overweight-related behaviors among Hispanic immigrants to the US. The National Longitudinal Study of Adolescent Health. *Social Science & Medicine*, *57*, 2023–2034.
Guthrie, J. F., Lin, B. H., & Frazao, E. (2002). Role of food prepared away from home in the American diet, 1977–78 versus 1994–96. Changes and consequences. *Journal of Nutrition Education and Behavior*, *34*, 140–150.
Hamrick, K. S., Andrews, M., Guthrie, J., Hopkins, D., & McClelland, K. (2011). *How much time do Americans spend on food?* In United States Department of Agriculture (Ed.), (p. 58). Washington, DC: Economic Research Service.
Hill, J. O., Wyatt, H. R., Reed, G. W., & Peters, J. C. (2003). Obesity and the environment. Where do we go from here? *Science*, *299*, 853–855.
Hill, R., Tranby, E., Kelly, E., & Moen, P. (2013). Relieving the time squeeze? Effects of a white-collar workplace change on parents. *Journal of Marriage and Family*, *75*, 1014–1029.
Himmelgreen, D. A., Pérez-Escamilla, R., Martinez, D., Bretnall, A., Eells, B., Peng, Y., et al. (2004). The longer you stay, the bigger you get. Length of time and language use in the U.S. are associated with obesity in Puerto Rican women. *American Journal of Physical Anthropology*, *125*, 90–96.
Hunt, L. M., Schneider, S., & Comer, B. (2004). Should "acculturation" be a variable in health research? A critical review of research on US Hispanics. *Social Science and Medicine*, *59*, 973–986.
Jabs, J., & Devine, C. M. (2006). Time scarcity and food choices. An overview. *Appetite*, *47*(2), 196–204.
Jabs, J., Devine, C. M., Bisogni, C. A., Farrell, T. J., Jastran, M., & Wethington, E. (2007). Trying to find the quickest way. Employed mothers' constructions of time for food. *Journal of Nutrition Education and Behavior*, *39*, 18–25.
Larson, N. I., Neumark-Sztainer, D., Hannan, P. J., & Story, M. (2007). Family meals during adolescence are associated with higher diet quality and healthful meal patterns during young adulthood. *Journal of the American Dietetic Association*, *107*, 1502–1510.
Lee, S., Young, D. R., Pratt, C. A., Jobe, J. B., Chae, S. E., McMurray, R. G., et al. (2012). Effects of parents' employment status on changes in body mass index and percent body fat in adolescent girls. *Childhood Obesity*, *8*, 526–532.
Lindberg, N. M., & Stevens, V. J. (2011). Immigration and weight gain. Mexican–American women's perspectives. *Journal of Immigrant and Minority Health*, *13*, 155–160.
Lopez-Class, M., Castro, F. G., & Ramirez, A. G. (2011). Conceptions of acculturation. A review and statement of critical issues. *Social Science & Medicine*, *72*, 1555–1562.
Mancino, L., & Newman, C. (2007). *Who has time to cook? How family resources influence food preparation* (p. 25). Washington, DC: United States Department of Agriculture.
Morrissey, T. W., Dunifon, R. E., & Kalil, A. (2011). Maternal employment, work schedules, and children's body mass index. *Child Development*, *82*, 66–81.
Motel, S., & Patten, E. (2012). *The 10 largest Hispanic origin groups. Characteristics, rankings, and top countries*. Washington, DC: Pew Hispanic Center.
Motel, S., & Patten, E. (2013). *Statistical portrait of the foreign-born population in the United States, 2011*. Washington, DC: Pew Research Center.
Neumark-Sztainer, D., Hannan, P. J., Story, M., Croll, J., & Perry, C. (2003). Family meal patterns. Associations with sociodemogpaphic characteristics and improved dietary intake among adolescents. *Journal of the American Dietetic Association*, *103*, 317–322.
Oza-Frank, R., & Cunningham, S. A. (2010). The weight of US residence among immigrants. A systematic review. *Obesity Reviews*, *11*, 271–280.
Oza-Frank, R., & Venkat Narayan, K. (2008). Masked heterogeneity in obesity between immigrant subgroups. *American Journal of Public Health*, *98*, 967.
Pérez-Escamilla, R. (2009). Dietary quality among Latinos. Is acculturation making us sick? *Journal of the American Dietetic Association*, *109*, 988–991.
Pérez-Escamilla, R. (2011). Acculturation, nutrition, and health disparities in Latinos. *The American Journal of Clinical Nutrition*, *93*, 1163S–1167S.
Pereira, M. A., Kartashov, A. I., Ebbeling, C. B., Van Horn, L., Slattery, M. L., Jacobs, D. R., Jr., et al. (2005). Fast-food habits, weight gain, and insulin resistance (the CARDIA study). 15-year prospective analysis. *The Lancet*, *365*, 36–42.
Portes, A., & Zhou, M. I. N. (1993). The new second generation. Segmented assimilation and its variants. *The Annals of the American Academy of Political and Social Science*, *530*, 74–96.
Roshania, R., Narayan, K. M. V., & Oza-Frank, R. (2008). Age at arrival and risk of obesity among US immigrants. *Obesity*, *16*, 2669–2675.
Ruhm, C. J. (2008). Maternal employment and adolescent development. *Labour Economics*, *15*, 958–983.
Rumbaut, R. G., & Komaie, G. (2010). Immigration and adult transitions. *The Future of Children*, *20*, 43–66.
Singh, G. K., Siahpush, M., Hiatt, R. A., & Timsina, L. R. (2011). Dramatic increases in obesity and overweight prevalence and body mass index among ethnic-immigrant and social class groups in the United States, 1976–2008. *Journal of Community Health*, *36*, 94–110.
Statistics Division. (2005). In Department of Economic and Social Affairs (Ed.), *Guide to producing statistics on time use. Measuring paid and unpaid work* (pp. 1–387). New York: United Nations.
Stewart, J. (2009). *Tobit or not tobit?* Bureau of Labor Statistics Working Papers, 27.
Sussner, K. M., Lindsay, A. C., Greaney, M. L., & Peterson, K. E. (2008). The influence of immigrant status and acculturation on the development of overweight in Latino families. A qualitative study. *Journal of Immigrant and Minority Health*, *10*, 497–505.
Taveras, E. M., Rifas-Shiman, S. L., Berkey, C. S., Rockett, H. R. H., Field, A. E., Frazier, A. L., et al. (2012). Family dinner and adolescent overweight. *Obesity Research*, *13*, 900–906.
Taylor, P., Lopez, M. H., Martinez, J., & Velasco, G. (2012). *When labels don't fit. Hispanics and their views of identity* (p. 64). Washington, DC: Pew Hispanic Center.
Tovar, A., Boulos, R., Sliwa, S., Must, A., Gute, D. M., Metayer, N., et al. (2013). Baseline socio-demographic characteristics and self-reported diet and physical activity shifts among recent immigrants participating in the randomized controlled lifestyle intervention. "Live well". *Journal of Immigrant and Minority Health*, *16*, 457–465.
Tovar, A., Must, A., Metayer, N., Gute, D. M., Pirie, A., Hyatt, R. R., et al. (2012). Immigrating to the US. What Brazilian, Latin American and Haitian women have to say about changes to their lifestyle that may be associated with obesity. *Journal of Immigrant and Minority Health*, *15*, 357–364.
Tropp, L. R., Erkut, S., Coll, C. G., Alarcon, O., & García, H. A. V. (1999). Psychological acculturation. Development of a new measure for Puerto Ricans on the US mainland. *Educational and Psychological Measurement*, *59*, 351–367.
U.S. Census Bureau. (2012). *U.S. Census Bureau projections show a slower growing, older, more diverse nation a half century from now*. Washington, DC: Newsroom.
U.S. Department of Commerce. (2014). In Office of Human Resources Management (Ed.), *Night shift differential*. Washington, DC: Compensation and Leave.
U.S. Department of Labor. (2012). *The Latino labor force at a glance* (p. 12). Washington, DC. http://www.dol.gov/_sec/media/reports/HispanicLaborForce/HispanicLaborForce.pdf.
Van Rompay, M. I., McKeown, N. M., Castaneda-Sceppa, C., Falcon, L. M., Ordovas, J. M., & Tucker, K. L. (2012). Acculturation and sociocultural influences on dietary intake and health status among Puerto Rican adults in Massachusetts. *Journal of the Academy of Nutrition and Dietetics*, *112*, 64–74.
Van Wieren, A., Roberts, M., Arellano, N., Feller, E., & Diaz, J. (2011). Acculturation and cardiovascular behaviors among Latinos in California by country/region of origin. *Journal of Immigrant and Minority Health*, *13*, 975–981.
Videon, T. M., & Manning, C. K. (2003). Influences on adolescent eating patterns. The importance of family meals. *Journal of Adolescent Health*, *32*, 365–373.
Yeh, M.-C., Viladrich, A., Bruning, N., & Roye, C. (2009). Determinants of Latina obesity in the United States. *Journal of Transcultural Nursing*, *20*, 105–115.
Zambrana, R. E., & Carter-Pokras, O. (2010). Role of acculturation research in advancing science and practice in reducing health care disparities among Latinos. *American Journal of Public Health*, *100*, 18.
Zick, C. D., Stevens, R. B., & Bryant, K. W. (2011). Time use choices and healthy body weights: multivariate analysis of data from the American Time use Survey. *International Journal of Behavioral Nutrition and Physical Activity*, *8*, 84.