

ACCULTURATION, PHYSICAL ACTIVITY, AND FAST-FOOD CONSUMPTION AMONG ASIAN-AMERICAN AND HISPANIC ADOLESCENTS

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ABSTRACT: Previous studies have implicated acculturation to the US as a risk factor for unhealthy behaviors among Hispanic and Asian-American adolescents, including substance use, violence, and unsafe sex. This study examined the association between acculturation and obesity-related behaviors—physical activity and fast-food consumption—among 619 Asian-American and 1385 Hispanic adolescents in Southern California. Respondents completed surveys in 6th and 7th grade. The 6th grade survey assessed acculturation with the AHIMSA acculturation scale and a measure of English language usage. The 7th grade survey assessed frequency of moderate-to-intense physical activity and frequency of eating fast-food. Multiple regression analyses included acculturation and demographic covariates as predictors of physical activity and fast-food consumption. Acculturation to the US, assessed in 6th grade, was significantly associated with a lower frequency of physical activity participation and a higher frequency of fast-food consumption in 7th grade. The significant associations persisted after controlling for covariates and were consistent across gender and ethnic groups. Results suggest that acculturation to the US is a risk factor for obesity-related behaviors among Asian-American and Hispanic adolescents. Health promotion programs are needed to encourage physical activity and healthy diets among adolescents in acculturating families.

KEY WORDS: acculturation; adolescence; diet; ethnicity; physical activity.

INTRODUCTION

The prevalence of childhood overweight in the US is increasing rapidly.¹⁻³ In 2001, 24% of high school students in the US were classified

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as overweight or at risk for overweight.⁴ Overweight is especially prevalent among some ethnic minority and immigrant groups in the US, including Hispanics and African-Americans.⁴ Although Asian-Americans have a low prevalence of overweight relative to other ethnic groups, their risk of overweight increases with acculturation to the US.⁵

Overweight/obesity is one of the leading causes of morbidity and mortality in the US.^{6,7} However, it might be possible to reverse recent trends because two of the major causes of obesity—diet and physical activity—are behavioral risk factors that can be modified. Because those health habits begin to develop during childhood and adolescence,^{8–13} it is important to understand the psychological and sociocultural factors that influence diet and physical activity prior to adulthood.

Insufficient physical activity is common among adolescents in the US. Approximately 35% of adolescents in the US do not engage in vigorous physical activity for at least 20 min at least 3 days per week, as recommended by the Centers for Disease Control and Prevention.⁴ The prevalence of adequate physical activity is particularly low among Hispanic and African-American adolescents.^{4,14} Recent studies also have found that Asian-American adolescents are at risk for insufficient physical activity.¹⁴

Fast-food comprises an increasing proportion of the US diet. Food prepared away from home accounted for 32% of the total calories consumed by US adults and children in 1994–1996.^{15,16} Meals and snacks prepared away from home typically contain more total calories and a higher percentage of fat, as compared with food prepared at home.¹⁵ Portion sizes are larger in fast-food restaurants than in other restaurants.¹⁷ The higher calorie and fat consumption among fast-food eaters likely contributes to their increased risk of obesity.^{18,19}

The Role of Acculturation in Adolescents' Health Behaviors

Across multiple ethnic groups, acculturation to the US culture has been implicated as a risk factor for unhealthy behaviors among adolescents, including alcohol and other drug use,^{20,21} smoking,²² violence,²³ suicidality,²⁴ eating disorders,²⁵ and high-risk sexual behavior.^{26,27} Although multiple studies have found associations between acculturation and risky behaviors among adolescents, little research has focused on the effects of acculturation on physical activity, diet, and overweight.

Acculturation to the US also has been associated with shifts from traditional diets of vegetables, meats, and whole grains to the more processed, high-fat, and sugary foods that are popular and easily available in the US. Among Hispanics, acculturation to the US typically is accompa-

nied by a shift from corn tortillas to processed flour tortillas, increased consumption of cookies and high-fat salad dressings, and decreased consumption of beans and fruit drinks.²⁸ Among immigrants from many Asian cultures, adoption of Western diets typically results in increased consumption of fat, processed meats, snack foods,²⁹ between-meal snacks,³⁰ and fast-food,^{30,31} and decreased consumption of fish, vegetables, and whole grains.²⁹

Although some information is available about the effects of acculturation on the physical activity and dietary behaviors of adults, research about those associations among adolescents is sparse. This study examined the association of acculturation to the US with physical activity and fast-food consumption among a sample of 619 Asian-American and 1385 Hispanic 6th grade students in Southern California. We hypothesized that acculturation to the US would be associated with an increase in obesity-related risk behaviors (i.e., higher fast-food consumption and lower physical activity).

METHODS

Sample

The data described in this article are from a longitudinal study of health behaviors among Hispanic and Asian-American adolescents living in an ethnically diverse, urban social context. Respondents were 6th grade students attending 24 middle schools in Southern California. The schools were selected because they contained large proportions of Hispanic and/or Asian-American students. Details of the inclusion criteria and participation rates among school districts and schools are described elsewhere.^{32,33} Respondents completed surveys in 6th grade in 2001 and again in 7th grade in 2002.

Student Recruitment

All 6th-grade students in the participating schools were invited to participate in the study. Consent forms were sent home to the parents/guardians of all 6th-grade students in the school. If a parent provided active written consent, the child was invited to participate in the study. Of the 4427 students invited to participate in the 6th-grade survey, 3319 (75%) provided active parental consent. Some limited anonymous demographic information was obtained from the students whose parents did not respond to the request for consent, as allowed by an IRB-approved

implied-consent protocol. Compared with the students whose parents did not respond to the request for consent, the students who provided active written parental consent were more likely to be female (Chi-square = 49.08, $p < .001$) and had higher grades in school (Chi-square = 43.87, $p < .005$). African-Americans were less likely than the other ethnic groups to provide active consent (Chi-square = 17.78, $p < .005$).

Of the 3319 students with active written parental consent, 3045 (92%) provided complete data in 6th grade on all variables of interest in this analysis. Of those, 2,514 (83%) self-identified as either Hispanic or Asian-American. Of the 2514 Hispanic and Asian-American students who completed the baseline survey, 2004 (80%) also completed the follow-up survey in 7th grade. Those 2004 respondents were included in the longitudinal analyses. Attrition analyses indicated that the students who were lost to follow-up were similar to those who were followed successfully from 6th to 7th grade, with the exception that the students lost to follow-up were more likely to be Hispanic than Asian-American (OR=2.14, 95% CI = 1.63, 2.81). The followed and non-followed students did not differ significantly on age, gender, SES, parents' education, English language usage, or acculturation.

Procedure

For the 6th grade and 7th grade surveys, students completed a self-administered paper-and-pencil survey in their classrooms during a single class period (45–50 min). Trained data collectors, who were not previously acquainted with the students, distributed the surveys. The surveys were identified only by a code number, not with the students' names or any other identifying information. Students were allowed to discontinue their participation at any time or skip any question they did not want to answer.

Measures

Acculturation was assessed with the US Orientation subscale of the AHIMSA acculturation scale for adolescents,³⁴ an acculturation measure for ethnically diverse adolescent populations. The eight items on the AHIMSA are the following: "I am most comfortable being with people from...," "My best friends are from...," "The people I fit in with best are from...," "My favorite music is from...," "My favorite TV shows are from...," "The holidays I celebrate are from...," "The food I eat at home is from..." and "The way I do things and the way I think about

things are from...” Each of the 8 items includes four response options: “The US,” “The country my family is from,” “Both,” or “Neither.” The US orientation scale indicates the number of items to which the student responded “The US.” Scores on the US Orientation scale can range from 0 to 8, with 0 indicating that the respondent did not answer “The US” to any items, and 8 indicating that the respondent answered “The US” to all eight items. The AHIMSA was designed to provide scores for Biculturalism, Country of Origin Orientation, and Marginalization, as well. However, in this and other samples of young adolescents in urban Los Angeles, the Biculturalism scale was highly inversely correlated with US Orientation (correlations ranged from $-.80$ to $-.85$), and the Country of Origin Orientation and Marginalization scales had very low variance.³⁴ Therefore, consistent with theories of the rapid acquisition of cultural elements among 1st- and 2nd-generation children and young adolescents,³⁵ the respondents in this sample could be located on a continuum ranging from exclusively US Oriented to Bicultural (i.e., few were oriented exclusively to the culture of origin or alienated from both cultures). Because the Biculturalism scale is essentially the inverse of the US Orientation scale, and the Country of Origin Orientation scale and Marginalization scales had low variance, the decision was made to use the US Orientation scale in this study.

English language usage was used as another indicator of acculturation. Respondents were asked which language they spoke “in general” and “at home,” rated on a 5-point scale: “English only,” “Mostly English,” “English and another language,” “Mostly another language,” and “Another language only.” The two English language items were averaged together and recoded so that the English language score ranged from 0:another language only to 1:English only. Preliminary analyses indicated that the AHIMSA acculturation scale and the language scale were intercorrelated significantly but not highly ($r = .34$, $p < .0001$), so the two scales were included as separate variables in this analysis.

Physical activity was assessed with the question, “On how many of the past 7 days did you exercise or participate in sports or physical activities for at least 20 min that made you sweat or breathe hard?”⁴ Responses were rated on an 8-point scale ranging from “0” to “7 days.” Although this single-item measure is a crude estimate of total physical activity type, duration, and intensity, this question has been used on the Centers for Disease Control and Prevention’s Youth Risk Behavior Surveillance Survey⁴ as an indicator of overall participation in moderate-to-high-intensity physical activity and has been correlated with longer self-report measures and physiological measures.

Fast-food consumption was assessed with two questions: "How many times *during the school week* (Monday–Friday) do you typically get something to eat at MacDonald's, Burger King, Dominoes, Pizza Hut, Taco Bell, or other fast-food restaurants?" and "How many times *during the weekend* (Saturday–Sunday) do you typically get something to eat at MacDonalds, Burger King, Dominoes, Pizza Hut, Taco Bell, or other fast-food restaurants?" Responses were rated on a 4-point scale ranging from "usually none" to "more than five times." The responses to the two questions were rescaled so that 0 = usually none" and 5 = more than five times" and added together, to estimate the frequency of fast-food consumption per week.

Covariates included age, gender, ethnicity (Asian-American or Hispanic), socioeconomic status (SES), and parents' education. SES was estimated as the ratio of the number of rooms in the respondents' residence to the number of people living in the residence.³⁶ Unfortunately, objective data on household income were not available to validate this estimate of SES. However, in a subsample of 1879 students who provided a valid zip code, the correlation between this SES measure and median family income in the student's zip code was .43 ($p < .0001$). The rooms-per-person index was selected as the indicator of SES in this study because (1) data were available at the individual level rather than at the zip code level; (2) fewer students had missing data on the rooms-per-person index than on zip code. Furthermore, post hoc analyses of data from the 1879 students with zip code data indicated that the statistical significance of the results reported here did not change when zip code-level median household income was substituted for the rooms-per-person measure.

To assess parents' education, students were asked whether or not each of their parents had finished high school and/or college. This simplified measure was used because our previous pilot data had indicated that many 6th grade students knew whether or not their parents had gone to college, but they were not able to identify the type of college degrees their parents had earned (e.g., Associate's, Bachelor's, Master's, etc.) Each parent's education was coded as 0 if the parent had not finished high school, 1 if the parent had finished high school but not college, and 2 if the parent was a college graduate. The parents' education score was the maximum of the two parents' scores, i.e., the highest level of education attained by either parent.

Data Analysis

Multilevel linear regression models evaluated the association between acculturation and the dependent variables (physical activity and

fast-food), controlling for the covariates. School was included as a Level 2 random effect covariate to control for clustering of similar students within schools. After the main effects of the covariates, acculturation, and language usage were entered into the regression model, interaction terms were added hierarchically to determine whether the association between acculturation and the dependent variables varied by gender and/or ethnicity. The interaction terms were Acculturation \times Gender, Acculturation \times Ethnicity, and Acculturation \times SES. Analyses were conducted with the MIXED procedure in SAS.

RESULTS

Table 1 shows the demographic characteristics of the respondents. Compared with the Asian students, the Hispanic students were significantly older, had significantly lower SES and parents' education, and had significantly higher acculturation scores and fast-food consumption. There were no ethnic differences in English language usage or physical activity. There were no significant gender differences in age, SES, acculturation, English language usage, parents' education, or fast-food consumption. However, boys reported significantly more frequent physical activity than did girls.

Table 2 shows the results of the multiple regression analysis of physical activity and fast-food frequency in 7th grade. Acculturation to the US was significantly associated with a lower frequency of physical activity ($B = -.089$, $p < .001$) and a higher frequency of fast-food consumption ($B = .078$, $p < .001$). Female gender also was associated with a lower frequency of physical activity ($B = -.093$, $p < .001$), and Asian-American ethnicity was associated with a lower frequency of fast-food consumption ($B = -.097$, $p < .001$). The significant associations between acculturation and the outcome variables (physical activity and fast-food consumption) persisted even after controlling for age, gender, ethnicity, SES, parents' education, and English language usage.

The interaction terms (Gender \times Acculturation, Ethnicity \times Acculturation, and SES \times Acculturation) were entered into the model hierarchically after the main effects. However, none of the interaction terms were significant, so they were not retained in the final regression models. The nonsignificant interaction terms indicate that there were no gender, ethnic, or SES differences in the magnitudes of the association between physical activity and acculturation and the association between fast-food consumption and acculturation.

TABLE 1
Demographic Characteristics of Respondents

	Hispanic boys (N = 625)		Hispanic girls (N = 760)		Asian boys (N = 303)		Asian girls (N = 316)	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Age (years) ^a	11.35	(0.51)	11.35	(0.51)	11.28	(0.50)	11.18	(0.40)
SES (rooms per person) ^a	0.92	(0.64)	0.85	(0.52)	1.42	(0.79)	1.39	(0.64)
Acculturation (0:low, 8:high) ^a	3.73	(2.42)	3.35	(2.35)	2.94	(1.99)	3.04	(2.03)
English language usage (0:other language only, 1:English only)	0.65	(0.17)	0.66	(0.15)	0.66	(0.16)	0.66	(0.14)
Parents' education (0:less than high school, 2:college grad) ^a	0.78	(0.84)	0.70	(0.79)	1.44	(0.79)	1.47	(0.78)
7th grade Physical activity (days per week) ^b	4.53	(2.32)	4.19	(2.15)	4.72	(2.03)	4.19	(2.01)
7th grade Fast-food consumption (0:never, 10:10 or more times per week) ^a	3.08	(2.31)	3.18	(2.19)	2.85	(2.16)	2.50	(1.74)

^aEthnic difference p < .05.

^bGender difference p.

TABLE 2

Associations Between Acculturation and Physical Activity and Fast-Food Consumption

<i>Predictor</i>	<i>Physical activity</i>		<i>Fast-food</i>	
	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>
Age	.027	.264	.039	.083
Female (vs. male)	-.093	.001	-.004	.864
Asian (vs. Hispanic)	-.021	.409	-.097	.001
SES	.038	.123	.006	.818
Parents' education	.046	.070	.021	.392
English language usage	.020	.415	.002	.941
Acculturation	-.089	.001	.078	.001

Note. Standardized beta coefficients are shown, controlled for the random effect of school. The interactions of Acculturation \times Gender, Acculturation \times Ethnicity, and Acculturation \times SES were not retained in the final model because they were not significant at $p < .05$.

DISCUSSION

In this longitudinal study of Asian-American and Hispanic adolescents in Southern California, acculturation to the US reported in 6th grade was associated with a lower frequency of physical activity and a higher frequency of fast-food consumption in 7th grade. These associations persisted even after controlling for possible confounding variables. These results indicate that among Asian-American and Hispanic adolescents living in a diverse urban social context, acculturation to the US culture might increase the risk of engaging in obesity-promoting behaviors. Understanding the risk factors for sedentary behavior and fast-food consumption is important because those are two important risk factors for overweight among adolescents.³⁷

Why would acculturation lead to unhealthy obesity-related behaviors among adolescents? It is possible that acculturation to the US among Hispanic and Asian-American adolescents manifests as a preference for activities and foods classified as "American," including sedentary activities such as watching TV and playing video games, and eating fast-foods such as hamburgers and pizza. In an attempt to become American and fit in with their peers, ethnic minority adolescents might increase their involvement in these activities. Because the typical US urban environment contains many elements that increase the likelihood of obesity-related

behaviors among adolescents (e.g., easy availability of high-calorie, high-fat foods, popularity of sedentary activities, fewer opportunities and locations for physically active play, less physical labor required for subsistence; 38), greater involvement in the activities that are most popular among adolescents likely involves higher consumption of unhealthy food and lower physical activity levels.

In this study, acculturation was associated with physical activity and fast-food consumption, but English language usage was not. The acculturation measure used in this study, the US Orientation subscale of the AHIMSA acculturation scale,³⁴ assesses adolescents' preferences for the US culture across several life domains (e.g., friends, media preferences, celebration of holidays, ways of thinking, favorite foods, etc.) These dimensions of acculturation represent adolescents' choices and preferences. Adolescents' use of English and/or another language, in contrast, could represent the preferences of the adults in their lives. For example, adolescents might speak another language at home to communicate with household members who do not speak English. Parents also might insist that their children learn their language of origin and speak it in the home. Conversely, parents who want the family to acculturate rapidly might insist that the family speak only English at home to improve their English language proficiency. At school, because California law prohibits extended bilingual education, teachers might insist that their students speak English as much as possible in the classroom. Furthermore, in ethnically diverse classrooms, English probably is the only language that all students share, so speaking English is necessary for communication. Measures of English language usage, therefore, might not represent the adolescents' own cultural preferences.

Family processes also might play a role in the observed associations. Some of the adolescents who identify with the US culture might have parents who are less US-oriented and more oriented toward the culture of origin. When children acculturate to the US more rapidly than their parents do, the children become more adept at navigating the US culture than are their parents.^{35,39} This situation can lead to a role reversal in which the parents are dependent on their children to help them communicate with service providers and obtain information about policies and procedures in the US.⁴⁰ This role reversal can undermine parental authority and might limit the parents' ability to control their children's activities. In the absence of parental authority and monitoring, adolescents might be more likely to select activities such as watching television, playing video games, and eating fast-food.

It is possible that the associations between acculturation and obesity-related behaviors might have been confounded by socioeconomic status. Families who are less acculturated might be more likely to live in low-income neighborhoods where safe areas for physical activity are not available, fast-food restaurants are more prevalent, and healthy foods are less easily available. However, in this study the associations persisted even after controlling for the number of rooms per person in the home (a proxy measure of overcrowding and SES) and parents' education. Additional analyses of zip code-level income data among a subset of respondents who provided zip code information found similar results. Measuring SES accurately among adolescents is a difficult task because many adolescents cannot report their parents' precise occupations, levels of education, or incomes. Further research is needed to disentangle SES from neighborhood characteristics such as proximity to fast-food restaurants and recreational facilities.

Limitations

These results are limited by the accuracy of adolescents' self-reports of their physical activity and fast-food consumption. Although these measures were not validated with objective physiological or observational measures, numerous studies of adolescents have concluded that under confidential survey conditions, adolescents' self-reports of their health risk behaviors tend to be unbiased.⁴¹ In addition, although cultural background and acculturation might increase or decrease the likelihood of social desirability bias, the accuracy of adolescents' self-reports of health risk behaviors such as smoking does not appear to differ significantly across ethnic groups.⁴² Further research is needed to evaluate the accuracy of adolescents' self-reports of physical activity and fast-food consumption across ethnic groups and levels of acculturation.

These results also are limited by the validity of the single-item measures used in this study. Although the physical activity question has been used in the CDC Youth Risk Behavior Surveillance Survey as a brief measure of physical activity for use in survey research with adolescents,⁴ more detailed surveys or physiological measures might have been more precise. However, because this study found significant associations between acculturation and physical activity with an imprecise measure, one might argue that removing the random error from the measure would have resulted in even stronger results. Further research with more extensive measures is warranted.

The validity of the fast-food question also is not known. The purpose of this question was to assess the general habit of eating at fast-food restaurants, not to assess intake of specific nutrients. Previous studies^{18,19} have found that more frequent consumption of fast-food is associated with an increased risk of overweight. However, the definition of a typical fast-food meal likely varies widely among adolescents, so frequency of fast-food dining is by definition an imprecise measure of nutrient and calorie intake. Further research is needed to assess the validity and reliability of those measures. More detailed measures of specific activities and food choices also would provide more comprehensive information.

This sample of Southern California adolescents attending ethnically diverse schools might not be representative of the general population of Hispanic and Asian-American adolescents in the US. The participants in this study were adolescents attending urban middle schools with large proportions of Hispanic and Asian-American students. In addition, the participants in this study were those students who obtained active parental consent and returned to the same school in 7th grade. Further research is needed to determine whether acculturation is associated with physical activity and fast-food consumption among other groups and/or within other social contexts.

Although these results suggest that acculturation to the US is a risk factor for sedentary behavior and fast-food consumption among Hispanic and Asian-American adolescents, they do not explain why this is the case. Further research is needed to determine the attitudes, beliefs, and social norms that change within families and peer groups during the acculturation process.

Implications

Despite these limitations, the results of this study indicate that acculturation to the US could increase adolescents' risk of obesity and its adverse health consequences. School-based and community-based health education and public health programs are needed to encourage appropriate physical activity and nutrition among ethnic minority adolescents as they acculturate to the US culture.

Previous studies of adolescents^{25,43} have reported associations between acculturation to the US and an increased incidence of eating disorders such as anorexia nervosa and bulimia. As ethnic minority adolescents adopt the social norms of the US, they also might internalize the ubiquitous media images that tout extremely slim body image ideals. When encouraging physical activity and healthy diets, it is important not

to encourage unhealthy weight loss techniques such as fasting, purging, or excessive exercise.

Acculturation to the US is a complex process characterized by changes in norms, attitudes, beliefs, and behaviors. As adolescents navigate that process, they could be at increased risk for involvement in obesity-promoting behaviors such as sedentary activities and fast-food consumption. A more comprehensive understanding of the associations between acculturation and obesity-promoting behaviors is needed to help acculturating adolescents avoid obesity and its adverse health and social consequences.

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REFERENCES

1. Freedman D, Srinivasan S, Valdez R, Williamson D, Berenson G. Secular increase in relative weight and adiposity among children over two decades: The Bogalusa Heart Study. *Pediatrics* 1997; 99:420–426.
2. Strauss R, Pollack H. Epidemic increase in childhood overweight. *JAMA* 2001; 286: 2845–2848.
3. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and Trends in Overweight Among US Children and Adolescents, 1999–2000. *JAMA* 2002; 288:1728–1732.
4. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance—United States, 2001. *MMWR* 2002; 51(SS04):1–64.
5. Lauderdale DS, Rathouz PJ. Body mass index in a US national sample of Asian Americans: effects of nativity, years since immigration and socioeconomic status. *Int J Obes Relat Metab Disord* 2000; 24:1188–1194.
6. U.S. Department of Health and Human Services. *Physical activity and health: A report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 1996.
7. U.S. Department of Health and Human Services. *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, 2001.
8. Coutts A. Nutrition and the life cycle: Nutrition and the school child. *Br J Nurs* 2001; 10:26–31.
9. Dietz WH, Gortmaker SL. Preventing obesity in children and adolescents. *Annu Rev Public Health* 2001; 22:337–353.
10. Jeffery A, Voss L, Metcalf B, Wilkin T. Causes of insulin resistance in childhood. *Nurs Stand* 2002; 16:33–37.

11. Kiess W, Reich A, Muller G, Meyer K, Galler A, Bennek J, Kratzsch J. Clinical aspects of obesity in childhood and adolescence—diagnosis, treatment and prevention. *Int J Obes Relat Metab Disord* 2001; 25:S75–S79.
12. Rocchini AP. Pediatric hypertension 2001. *Curr Opin Cardiol* 2002; 17:385–389.
13. Westenhoefer J. Establishing dietary habits during childhood for long-term weight control. *Ann NutrMetab* 2002; 46:18–23.
14. Gordon-Larsen P, McMurray RG, Popkin, BM. Adolescent physical activity and inactivity vary by ethnicity: The National Longitudinal Study of Adolescent Health. *J Pediatr* 1999; 135:301–306.
15. Guthrie JF, Lin BH, Frazao E. Role of food prepared away from home in the American diet, 1977–78 versus 1994–1996: Changes and consequences. *J Nutr Educ Behav* 2002; 34:140–150.
16. Nielsen SJ, Siega-Riz AM, Popkin BM. Trends in food locations and sources among adolescents and young adults. *Prev Med* 2002; 35:107–113.
17. Nielsen SJ, Popkin BM. Patterns and trends in food portion sizes, 1977–1998. *JAMA* 2003; 289:450–453.
18. French SA, Harnack L, Jeffery RW. Fast food restaurant use among women in the Pound of Prevention study: Dietary, behavioral and demographic correlates. *Int J Obes Relat Metab Disord* 2000; 24:1353–1359.
19. Jeffery RW, French SA. Epidemic obesity in the US: are fast foods and television viewing contributing? *Am J Public Health* 1998; 88:277–280.
20. Epstein JA, Botvin CJ, Diaz T. Linguistic acculturation associated with higher marijuana and polydrug use among Hispanic adolescents. *Subst Use Misuse* 2001; 36:477–499.
21. Makimoto K. Drinking patterns and drinking problems among Asian-Americans and Pacific Islanders. *Alc Health Res World* 1998; 22:270–275.
22. Unger JB, Cruz, TB, Rohrbach LA, Ribisl K, Baezconde-Garbanati L, Chen X, Trinidad DR, Johnson CA. English language usage as a risk factor for smoking among Latino and Asian-American adolescents: Evidence for mediation by tobacco-related beliefs and social norms. *Health Psychol* 2000; 19:403–410.
23. Samaniego RY, Gonzales NA. Multiple mediators of the effects of acculturation status on delinquency for Mexican American adolescents. *Am Journal Community Psychol* 1999; 27:189–210.
24. Rasmussen KM, Negy C, Carlson R, Burns JM. Suicidal ideation and acculturation among low socioeconomic status Mexican American adolescents. *J Early Adolesc* 1997; 17:390–407.
25. Gowen LK, Hayward C, Killen JD, Robinson TN, Taylor CB. Acculturation and eating disorder symptoms in adolescent girls. *J Res Adolesc* 1999; 9:67–83.
26. Fraser D, Piacentini J, Van Rossem R, Hien D, Rotheram-Borus MJ. Effects of acculturation and psychopathology on sexual behavior and substance use of suicidal Hispanic adolescents. *Hisp J Behav Sci* 1998; 20:83–101.
27. Kaplan CP, Erickson PI, Juarez-Reyes M. Acculturation, gender role orientation, and reproductive risk-taking behavior among Latina adolescent family planning clients. *J Adolesc Res* 2002; 17:103–121.
28. Romero-Gwynn E, Gwynn D. *Dietary Patterns and Acculturation Among Latinos of Mexican Descent, JSRI Research Report #23*. East Lansing, Michigan: The Julian Samora Research Institute, Michigan State University, 1997.
29. Wang MC, Ho TF, Block G, Lee M, Anderson J, Sabry ZI. Adiposity, dietary and physical activity patterns in ethnic Chinese youths: a cross-country comparison of Singaporean Chinese and Chinese Americans. *Asia Pac J Clin Nutr* 1994; 3:69–82.
30. Satia JA, Patterson RE, Kristal AR, Hislop TG, Yasui Y, Taylor VM. Development of scales to measure dietary acculturation among Chinese-Americans and Chinese-Canadians. *J Am Diet Assoc* 2001; 101:548–553.
31. Lynn LL, Kang KJ, Ludman EK. Korean elderly: Diet, food beliefs, and acculturation. *J Nutr Elderly* 1999; 19:1–16.
32. Unger JB, Gallaher P, Palmer PH, Baezconde-Garbanati L, Trinidad DR, Cen S, Johnson CA. No news is bad news: Characteristics of adolescents who provide neither parental consent nor refusal for participation in school-based survey research. *Eval Rev*, 2004; 28:52–63.
33. Unger JB, Hamilton JE, Sussman S. A family member's job loss as a risk factor for smoking among adolescents. *Health Psychol*, 2004; 23:308–313.
34. Unger JB, Gallaher P, Shakib S, Ritt-Olson A, Palmer PH, Johnson CA. The AHIMSA Acculturation Scale: A new measure of acculturation for adolescents in a multicultural society. *J Early Adolesc* 2002; 22:225–251.

35. Portes A, Rumbaut RG. *The story of the immigrant second generation: Legacies*. Los Angeles, University of California Press, 2001.
36. Myers D, Baer WC, Choi SY. The Changing Problem of Overcrowded Housing. *J Amer Planning Assoc* 1996; 62:66–84.
37. Crespo CJ, Smith E, Troian RP, Bartlett SJ, Macera CA, Anderson RE. Television watching, energy intake and obesity in US children. *Arch Pediatr Adolesc Med* 2001; 155:360–365.
38. Hill JO, Wyatt HR, Reed GW, Peters JC. Obesity and the environment: where do we go from here? *Science* 2003; 299:853–855.
39. Szapocznik J, Rio AT, Perez-Vidal A, Kurtines W. Bicultural effectiveness training (BET): An experimental test of an intervention modality for families experiencing intergenerational/intercultural contact. *Hisp J Behav Sci* 1986; 8:303–330.
40. Buriel R, Perez W, DeMent TL, Chavez DV, Moran V. The relationship of language brokering to academic performance, biculturalism, and self-efficacy among Latino adolescents. *Hisp J Behav Sci* 1998; 20:283–297.
41. Dolcini MM, Adler NE, Ginsberg D. Factors influencing agreement between self-reports and biological measures of smoking among adolescents. *J Res Adolesc* 1996; 6:515–542.
42. Wills TA, Cleary SD. The validity of self-reports of smoking: Analyses by race/ethnicity in a school sample of urban adolescents. *Am J Public Health* 1997; 87:56–61.
43. Davis C, Katzman MA. Perfection as acculturation: Psychological correlates of eating problems in Chinese male and female students living in the US. *Int J Eat Disord* 1999; 25:65–70.