

Feel American, Watch American, Eat American? Remote Acculturation, TV, and Nutrition Among Adolescent–Mother Dyads in Jamaica

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Globalization prompts remote acculturation toward U.S. culture in Jamaica; this study used a bioecological systems approach to examine its proximal impact on nutrition through U.S. cable TV consumption, and maternal influences in the home. Overall, 330 randomly selected adolescent–mother dyads from schools in Kingston, Jamaica ($M_{\text{adolescent_age}} = 13.8$ years, $SD_{\text{adolescent_age}} = 1.8$) completed questionnaires reporting American identity and behavioral preferences, daily time spent watching U.S.-produced TV programs, and frequency of eating unhealthy foods. Actor–partner interdependence models revealed that girls’ American identity/behavior directly predicted their unhealthy eating, whereas girls’ mothers and boys’ American identity/behavior indirectly predicted unhealthy eating as mediated by their U.S. TV hours. Additionally, mothers’ American identity/behavior predicted daughters’ unhealthy eating as mediated by mothers’ U.S. TV hours. Remote acculturation theory may facilitate more targeted research and prevention/intervention.

For better or worse, globalization is an influential context for adolescent development in the 21st century (Chen, 2015; Jensen & Arnett, 2012). Western culture and media have played a particularly prominent role in social change (e.g., toward western individualistic norms; see Greenfield, 2009) and nutritional change (e.g., toward a western diet high in fat, sugar, and salt; Popkin, Adair, & Ng, 2012), especially in the majority world (i.e., developing countries). There is a crucial need to better understand the implications of these macrolevel changes for majority world adolescents’ identity and health at the individual level, and remote acculturation theory now provides one way to do so. *Remote acculturation* is a modern form of nonmigrant acculturation toward a distant culture via indirect and/or intermittent contact with media, goods, and

tourists originating from that remote culture (Ferguson & Bornstein, 2012). Studies show that at least one in three adolescents and one in ten mothers in Kingston, Jamaica report a part-American identity (e.g., feeling Jamaican and somewhat American), that U.S. cable TV and U.S.-style fast food are now pervasive on the Caribbean island, and that Jamaican mothers view unhealthy “fast food” consumption as related to being “Americanized” (Ferguson & Bornstein, 2012, 2015; Ferguson & Iturbide, 2015, p. 56). Is it possible that for Jamaicans on the island, feeling more American and watching more U.S. cable TV may be linked to eating more unhealthy foods that are high in fat, sugar, and salt, which are features of the prototypical American diet?

As the prevalence of overweight and obesity in Jamaican adolescents rivals U.S. figures—1 in 3 (Barrett & Huffman, 2011; Ogden, Carroll, Kit, & Flegal, 2014)—multidisciplinary research is urgently needed to identify youth at higher risk for poor nutrition to facilitate cost-effective prevention. To this end, the current study examines remote

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acculturation and U.S. cable TV consumption as predictors of unhealthy eating among adolescent–mother dyads in Jamaica. Following the recommendations for research on human development and social change (Pinquart & Silbereisen, 2004), we take a bioecological systems approach using Bronfenbrenner’s final recommendations embodied in the Process–Person–Context–Time model (PPCT, Bronfenbrenner & Morris, 2006; also see Rosa & Tudge, 2013). We investigate how proximal reciprocal interactions between people (adolescents and parents) and objects (U.S. cable TV) in the home microsystem may drive the nutritional development of remotely acculturating nonmigrant Jamaicans, who are simultaneously embedded in broader mesosystem, exosystem, and macrosystem contexts, all of which are uniquely shaped by the 21st century macrotime reality of rapid technological and trade globalization (see Figure 1 for our guiding conceptual bioecological systems [PPCT] model).

Remote Acculturation

Psychological acculturation (henceforth, acculturation) refers to the process of cultural and psychological changes in behavior, identity, and/or values, which individuals experience following contact with new culture(s) (see Sam & Berry, 2016). Acculturation is most commonly studied in migration contexts, but in remote acculturation, nonmigrants experience psychological changes based on contact with geographically and historically distant culture(s) to which they are exposed via globalization including technology and trade (Ferguson, 2013). Said differently, remotely acculturating individuals experience at least two macrosystems when modern globalization forces associated with this historical moment in macrotime bring a remote culture into their locale—the local and the remote macrosystems. Remote acculturation expands the traditional conceptualization of acculturation while adhering to the core principle of dimensionality that individuals can orient toward a new culture without losing their affiliation with the heritage culture (Sam & Berry, 2016). Remote acculturation theory, therefore, captures individual differences in response to contact with a remote culture, noting that some individuals may adopt more of a remote culture than others (regardless of each individual’s ties to the heritage culture).

Adolescence is likely to be a sensitive period for remote acculturation because it is a developmental period characterized by identity explorations, including in the domain of cultural and ethnic

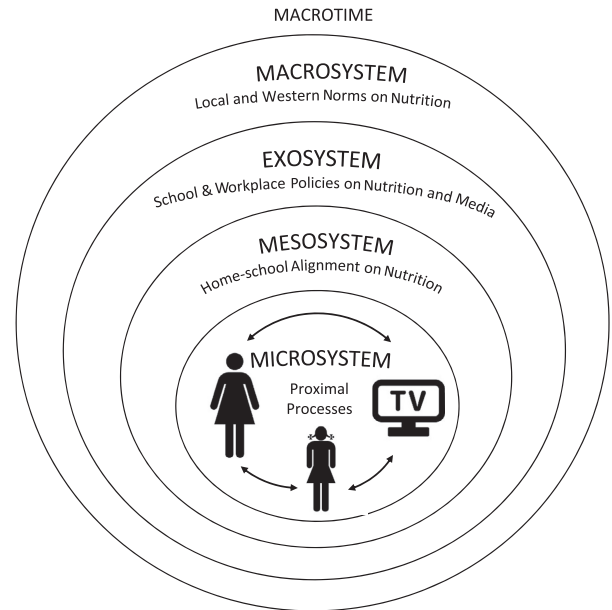


Figure 1. Conceptual bioecological systems model or Process–Person–Context–Time model (PPCT; Bronfenbrenner & Morris, 2006) depicting how microsystem proximal processes of reciprocal interactions between people (particularly mothers and daughters) and objects (particularly U.S. cable TV) in the Jamaican home drive nutritional development of remotely acculturating individuals. These proximal processes in the microsystem are influenced by broader systems of context including the mesosystem, exosystem, and macrosystem, all of which are uniquely shaped by this moment in historical macrotime characterized by rapid globalization in developing countries via technology and trade.

identity (Erikson, 1968; Jensen & Arnett, 2012; Phinney, 1990). In addition, relative to other age groups, adolescents generally have better access to modern technologies such as social media, YouTube, and online gaming, which afford them frequent exposure to remote cultures (Jensen & Arnett, 2012). Majority world adolescents are particularly likely to encounter western remote cultures, particularly U.S. culture, because of its large and well-funded media industry and media exports.

Remote Acculturation in Jamaica

Located in the Caribbean Sea between North and South America, Jamaica is the third largest Caribbean island, and the largest English-speaking Caribbean country. The island has strong transnational ties with the United States as U.S. tourists frequent the island (U.S. is the #1 sending country; Caribbean Tourism Organization, 2013) and many Jamaicans travel to the United States to live, work, and study (U.S. is the #1 receiving country for Jamaican emigrants; HelpAge International, 2010). Despite

having no historical or political ties with the United States, globalization has brought about a strong indirect U.S. presence and bioecological systems changes in Jamaica. In particular, U.S. cable TV is now pervasive across Jamaican homes (microsystem) and is relatively inexpensive; U.S.-style fast food and packaged foods are easily accessible at school, workplace, and home (multiple microsystems); and U.S. products such as clothing and electronics are popular status symbols (micro-, meso-, exosystems) in Jamaica (Ferguson, 2013).

According to bioecological systems theory, proximal processes and interactions, particularly in the home microsystem, are the engines of development (Bronfenbrenner & Morris, 2006), and remote acculturation research aligns with this idea by studying cultural identity and interactions of remotely acculturating adolescent-parent dyads. Ferguson and Bornstein (2012) provided the first quantitative evidence for remote acculturation in urban Jamaican families using questionnaires with 245 adolescents and their mothers. Cluster analyses revealed that 33% of Jamaican adolescents and 11% of mothers had a bicultural "Americanized Jamaican" profile relative to their culturally "traditional Jamaican" peers. Americanized Jamaican adolescents and mothers adopted a European American identity alongside their strong Jamaican identity, reported greater enjoyment of European American media, had more American friends, were less likely to endorse Jamaican culture and family values regarding respect for parents, and reported higher adolescent-parent conflict. Thus, remote acculturation can disrupt family microsystem interactions between adolescents and their mothers, and each individual's remote acculturation profile (i.e., whether Americanized or traditional) is a key person characteristic influencing those interactions.

In fact, Americanized Jamaicans' scores on several of these acculturation indicators resembled the scores of Jamaican immigrants and native-born European Americans in the United States more so than those of local peers' (Ferguson & Bornstein, 2012). Furthermore, although orientation to African American culture was moderately high for all youth when assessed, both quantitative (Ferguson & Bornstein, 2012, 2015) and follow-up qualitative data in Jamaica (Ferguson & Iturbide, 2013) revealed that European American culture is the specific U.S. culture to which Americanized Jamaican youth are more oriented relative to culturally traditional peers. Findings of Ferguson and Iturbide's (2013) study showed a stronger affinity for U.S. media among Americanized Jamaicans, but actual

consumption frequency of U.S. media was not measured.

Remote Acculturation and Television

In a replication and extension study, viewing frequency of U.S. media and local Jamaican media emerged as strong correlates of remote acculturation: Adolescent girls who watched U.S. TV more often, and adolescent boys and girls who watched less local TV, had higher odds of being Americanized Jamaicans (Ferguson & Bornstein, 2015). TV viewing, therefore, facilitates reciprocal interactions between adolescents and their parents (people), and TV (objects) in the home, and represents a core element of the proximal remote acculturation process for developing individuals (see Figure 1 and Bronfenbrenner & Morris, 2006). Theoretically speaking, media may prompt remote acculturation by socializing adolescents into behavioral norms, values, and identities consistent with a remote culture (social learning theory: Bandura, Ross, & Ross, 1963). Alternatively, adolescents whose behavioral preferences, identity, and values have shifted during remote acculturation may selectively consume media from the remote culture (interactionist perspective: Swann, Rentfrow, & Guinn, 2003; uses and gratifications theory: Katz, Blumler, & Gurevitch, 1974). A circular association is also possible (Coynne, Padilla-Walker, & Howard, 2013). Regardless of the mechanism of influence, remote acculturation may have implications beyond the psychosocial domain described previously; it may also be associated with changes in eating habits.

Nutrition Transition

Low- and middle-income countries are experiencing a dramatic "nutrition transition" from traditional to westernized diets featuring refined carbohydrates, added sugars, fats, sodium, and processed animal food products (Popkin et al., 2012). The western diet was embraced by the United States in the 1980s, and American adolescents today consume more than the recommended amounts of dietary fat and sugar, and not enough fruits, vegetables, or micronutrients (Guenther, Dodd, Reedy, & Krebs-Smith, 2006). U.S. food culture and lifestyle (macrosystem) are now exported through globalized media and food industries. Along with declining physical activity and other factors, this nutrition transition is a major contributor in this unique moment of macrotime to rising obesity rates worldwide (Popkin et al., 2012).

The prevalence of adolescent overweight and obesity in Jamaican adolescents in 2006, based on a nationally representative sample of over one thousand three hundred 15- to 19-year-olds, was estimated to be 25%, although girls (31%) and urban youth (23%) had substantially higher rates than boys (19%) and rural youth (14%; Wilks, Younger, McFarlane, Francis, & Van Den Broeck, 2007). A more recent study of nearly 300 randomly selected adolescents across five parishes in Jamaica found that 35% of adolescents were overweight or obese, more so girls (Barrett & Huffman, 2011). Overweight and obesity prevalence among Jamaican adults is even higher but with an equally prominent gender gap (~ 40% men, ~ 60% females; Caribbean Commission on Health and Development, 2006). In addition, Jamaican adolescents and adults hold relatively favorable views of overweight and obesity: 24%–32% of adults see “fatness” as a sign of happiness and many who are overweight or obese do not identify as such (Chutkan, Meeks Gardner, & Wilks, 2001).

Nutrition in Jamaica

The traditional Jamaican diet dates back to the island’s indigenous Taino Arawak peoples, who ate primarily fruits, vegetables, beans, cassava, fish, and meat. Other Jamaican dietary components derive from the Spanish (e.g., goats, cattle, pigs), English (e.g., coffee, spices, puddings, porridge), African (e.g., combining salted meats/fish and boiled tubers), and Indian and Chinese (e.g., curries) newcomers across the centuries (Higman, 2008). Aside from raw fruits and vegetables, traditional food preparation involves soups, stews (e.g., curry goat), spit roasting (e.g., jerk pork), boiling (e.g., yams), sautéing (e.g., ackee and saltfish), and now frying in vegetable oil (e.g., fried chicken). Despite high maternal employment rates, gender scripts in Jamaican culture require that mothers generally manage meal preparation with girls assisting in the kitchen, whereas boys get assigned outdoor chores and more leisure time (Bailey, Branche, McGarrity, & Stuart, 1998). School cafeteria offerings are managed by schools, and typical Jamaican parents have little to no interaction with them regarding school-based nutrition; thus, there are few positive mesosystem influences. The dramatic “nutrition transition” is now, therefore, of significant concern as 90% of Jamaican adolescents frequently consume sweet beverages and less than 20% consume vegetables at or above recommended levels in Jamaica (Wilks et al., 2007), and Jamaican

youth, girls especially, are experiencing similarly high prevalence of overweight and obesity as is the developed world (Ogden et al., 2014).

Nutrition and Television

Among the myriad determinants of obesity, time spent watching TV more than 2 hr a day has been recognized as a major risk factor across countries (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004; Tremblay et al., 2011). There are three proposed mechanisms based on this international literature: (a) reduction of energy expenditure during sedentary activity (Ramos, Costa, Araujo, Severo, & Lopes, 2013), (b) increased energy intake from more high-energy foods (e.g., snacks, fast foods, and soft drinks) and fewer fruits and vegetables (Boulos, Vikre, Oppenheimer, Chang, & Kanarek, 2012; Ramos et al., 2013), and (c) food advertisements, which are typically for highly palatable and calorically dense foods (Boulos et al., 2012; Powell, Szczypka, & Chaloupka, 2007). Food advertising in the United States, for example, comprises 25.7% of total product advertising for adolescents aged 12–17 years (Powell et al., 2007) and constitutes a powerful direct (home microsystem) and indirect (exosystem) influence. More than 80% of the advertisements are for unhealthy products such as fast food, candy, and soft drinks (Powell, Schermbeck, & Chaloupka, 2013), and nutrient-poor foods are advertised at a higher rate during children’s peak viewing times (Kelly et al., 2010). Not surprisingly, there is a high positive correlation between numbers of TV commercials for sweet or fatty foods and the number of overweight people in nine countries (Lobstein & Dobb, 2005). Adolescents are an important market for food advertisers as they influence family food purchases, spend much of their own money to purchase foods, and represent a future market of adult consumers (Boulos et al., 2012; Powell et al., 2007).

Multiple international studies have supported the associations among exposure to TV advertising, consumption of energy-dense foods, and adiposity in children and adolescents. In Portugal, watching TV for more than 2 hr/day was associated with higher intake of total fats and polyunsaturated fatty acids among adolescents (Ramos et al., 2013). Similarly, excessive TV watching and exposure to energy-dense and nutrient-poor advertisements is positively associated with concurrent consumption of energy-dense snacks and beverages among children in Europe and Asia (Lee, Kim, Lee, Yoon, & Chung, 2014; Rey-Lopez et al., 2011). In Australia,

children's exposure to TV advertisements also correlates positively with projunk food attitudes, beliefs, and consumption (Dixon, Scully, Wakefield, White, & Crawford, 2007).

Food consumption and TV viewing are related to several parental characteristics in the microsystem, including socioeconomic status (SES), gender, and attitudes. First, more than 2 hr a day of TV viewing is associated with low SES (e.g., lower parental education and income: Boulos et al., 2012; Ramos et al., 2013; Rey-Lopez et al., 2011). In addition, girls with low-SES mothers have an increased risk of consuming energy-dense drinks while watching TV (Rey-Lopez et al., 2011). Parents also influence adolescent food intake and weight status by exhibiting certain preferences and attitudes, and by shaping food and beverage availability and physical/sedentary activity (Rosenkranz, Bauer, & Dziewaltowski, 2010). In a study on mother-daughter resemblance in body mass index (BMI) and obesity-related behaviors, there was a significant association between mothers' and daughters' eating habits while watching TV (Rosenkranz et al., 2010).

Acculturation-Diet Research

Food acculturation studies among U.S. immigrants reveal that both positive and negative nutritional changes occur following migration (Lv & Cason, 2004). According to a review of 34 quantitative and qualitative studies on this topic, immigrants who are more embedded in U.S. culture (i.e., having stronger U.S. orientation or from successive immigrant generation) have higher intakes of dietary sugar and fast food, and lower consumption of traditional foods (e.g., fruit, beans, and rice), yet sometimes also lower fat intake (e.g., less frying in lard: see Ayala, Baquero, & Klingler, 2008). Experimental evidence also links U.S. acculturation to unhealthy eating: When Asian American college students' American identity was threatened in an experiment, they used their food choices to reinforce this cultural identity by selecting unhealthy American food to eat immediately after (Guendelman, Cheryan, & Monin, 2011).

Of particular relevance to the current study, recent qualitative data from Latino immigrants in California (27 in-depth interviews) demonstrate that globalization-facilitated negative dietary changes begin in urban Latin America as a precondition to migration (Martínez, 2013). Based on this finding, Martínez issued a call to examine dietary changes

through globalization and transnational lenses rather than through a traditional immigrant acculturation lens. The remote acculturation framework does precisely that by combining the societal level lenses of globalization and transnationalism with the targeted individual approach of psychological acculturation. To our knowledge, ours is the first study to investigate the association between remote acculturation and nutritional habits among nonmigrants.

There is some evidence that remote acculturation in Jamaica is linked to different nutritional habits in the family and school microsystems. Ferguson and Bornstein (2015) reported a positive correlation between adolescents' European American orientation and the frequency of consuming U.S. fast food (e.g., Burger King), U.S.-style food for lunch at school (e.g., pizza), and U.S.-style beverages (e.g., Coca-Cola). In addition, "food" was one of four major themes emerging from focus group interviews with a small sample of Jamaican mothers on their perspectives on U.S. influence locally (Ferguson & Iturbide, 2015). Mothers viewed stereotypically American food including fast food as *unhealthy*. For example, one mother explained, "Di fast food tingy to. . .A think fast food its. . .its taking a toll on dem as if they're Americanized." However, American food was also described as *convenient* by working mothers. Given that immigrants experience dietary changes as part of their acculturation process (Ayala et al., 2008), it is reasonable to expect that remotely acculturating nonmigrants may have some similar experiences.

Current Study

Globalization-related changes in social/cultural and nutritional norms are impacting adolescent development in Jamaica, and U.S. influence is predominant. The current study takes a bioecological systems approach in examining associations among remote acculturation to U.S. culture, U.S. cable TV viewing, and unhealthy eating among adolescent-mother dyads in Jamaica. Specifically, we applied Bronfenbrenner's PPCT model with a focus on the *proximal* and *reciprocal influences* in the home microsystem and female gender as a key *person characteristic* in this matrifocal society (Bailey et al., 1998), which are nested within the more distal *contexts* including the local Jamaican and remote U.S. macrosystem norms regarding nutrition (see Figure 1). Most acculturation research has focused on sociocultural adaptation (i.e., social/occupational functioning) and psychological adaptation (e.g., depression), whereas the domain of physical health

has received less attention (see Schwartz & Unger, 2017). Research shows that Caribbean-born Blacks in the United States have fewer diagnosed health conditions such as hypertension and diabetes than U.S.-born Caribbean Blacks and African Americans (Griffith, Johnson, Zhang, Neighbors, & Jackson, 2011). These results support the broader finding that becoming American is a developmental risk for immigrants (García Coll & Marks, 2012). The current study investigates whether this principle may also apply to remotely acculturating nonimmigrants in the Caribbean.

Hypotheses

The word “predict” is used in the Hypotheses and Results sections because this is the language used in structural equation modeling (SEM), the analytic approach used in this article. First, we hypothesized that remote acculturation to European American culture and U.S. TV consumption would predict more unhealthy eating for both adolescents and mothers; however, it was unclear whether remote acculturation or U.S. TV consumption would mediate given that prior remote acculturation research has not been able to specify directionality in the association between these two variables. Second, given that nutrition is a family affair, we expected that individuals’ remote acculturation would predict their own unhealthy eating habits, and also their family member’s unhealthy eating habits. On the one hand, mothers’ remote acculturation may predict adolescents’ nutrition because mothers manage food selection and preparation in most Jamaican households. However, on the other hand adolescents’ remote acculturation may predict mothers’ nutrition because they are three times as likely as mothers to be “Americanized Jamaicans” (Ferguson & Bornstein, 2012). Third, we expected that mother–daughter dyads would demonstrate stronger partner effects due to culturally endorsed domestic work of women and girls (i.e., mothers and daughters generally spend more time in the house doing housework, thus increasing their time spent together and potential mutual influence on each other).

Method

Participants

Participants were recruited in the Fall of 2014 from three large traditional government-run high schools serving a large geographical area in

Kingston and St. Andrew, Jamaica (coeducational, all girls, all boys). A random numbers table was applied to class lists from lower (7th and 8th) and upper (10th and 11th) grades at each school to distribute 806 family invitation letters to randomly selected students who were present in school at the time of distribution of the letters. Families of students outside these grades were excluded. (Some students whose names were selected randomly from class lists provided did not receive an invitation letter because they were either absent from school that day or had moved schools). Altogether, 366 adolescents and 365 mothers completed questionnaires (45% response rate), and 330 adolescent–mother dyads ($M_{\text{adolescent_age}} = 13.8$, $SD = 1.8$, 64% girls; $M_{\text{mother_age}} = 41.5$, $SD = 7.9$) were retained in the analytic sample. From the 365 mothers, we excluded 5 dyads in which only the mother participated, 27 dyads in which the mother or adolescent had > 20% missing data, two dyads containing twins of the same mother, and one dyad wherein a participant (mother) had lived more than half of her life outside of Jamaica. In a minority of these families, students were cared for primarily by a female guardian other than their biological mother (e.g., grandmother, aunt). This is consistent with Wilks and colleagues’ finding from their (2007) nationally representative survey of Jamaican youth, wherein the majority of youth (~ 70%) lived with mothers.

The three participating schools were selected to obtain a diverse sample in terms of SES, which was measured by adolescents’ report of the number of rooms in the house (0–24 rooms; $M = 7.73$, $SD = 3.82$) and the number of household possessions such as appliances and vehicles (of 16 key household possessions, range = 0–16, 79.1% of adolescents reported having 6+ possessions; Jamaican Youth Risk and Resiliency Behaviour Survey; Wilks et al., 2007). Our sample had slightly higher SES than Wilks et al. (2007) nationally representative sample in which 65.4% of adolescents had 6+ possessions. Based on maternal reports, the education levels of the primary household earners were 3% “less than seventh grade,” 10% “seventh, eighth, or ninth grade,” 23% “10th or 11th grade,” 4% “sixth form (Grade 12/13),” 13% “technical/vocational,” 23% “some college (1 year+) or training program,” 16% “first degree/bachelor’s degree from university,” and 8% “graduate/professional degree (e.g., MA, MD, PhD)” (scale adapted from Hollingshead, 1975). All three schools used a standard government-determined “Health and Family Life Education” curriculum covering healthy lifestyles including nutrition. Two of the schools operated

their own cafeterias, whereas one school contracted with a popular local franchise. All three cafeterias offered a similar core of food options including Jamaican patties, meatloaves with cocoabread, cooked lunches (e.g., barbecued chicken, rice, and carrot slaw), assorted crackers, assorted sodas and sweetened flavored drinks, and natural or flavored bottled water. Cafeterias were generally open before and after school and during break/lunch periods.

Procedure

Following Institutional Review Board approval in the United States and Jamaica, randomly selected adolescents took home envelopes containing a consent form and a mother questionnaire with a pre-labeled sealable envelope to return documents confidentially to the investigator at school that week. Only adolescents who returned a signed parental consent form, a completed mother questionnaire, and completed an assent form were given a student questionnaire to complete in designated rooms after school. The research team remained in the rooms to answer questions. Each participant received prepaid phone credit: ~U.S.\$3 value for students in lower grades, ~U.S.\$4 for students in upper grades, and ~U.S.\$5 for mothers.

Measures

Three months before data collection, the questionnaire was piloted with 10 girls and 10 boys from the single-sex participating schools to ensure clarity of wording, appropriate formatting for the Jamaican context, and students' accurate interpretation of questions (i.e., brief cognitive questionnaire testing; see Alaimo, Olson, & Frongillo, 1999). Students were selected by the school guidance counselors based on student availability during the specific period of the school day when piloting was scheduled on the school campus. After completing the pilot questionnaire, each student provided qualitative feedback on their thought processes and answer choices in brief individual interviews with the researcher during which the completed questionnaire was reviewed page by page. The researcher queried any items left unanswered (suggesting confusion) with particular attention to measures not previously used in Jamaica, and students were asked to point out items that were difficult to understand, explain why (e.g., instructions, phrasing, format, or response choices), and suggest ways to make these items most comprehensible and locally relevant. The pilot study revealed that all measures were clear.

Remote Acculturation

Like the vast majority of acculturation studies, this study is cross-sectional and operationalizes remote acculturation as a point-in-time assessment of cultural orientation and cultural identity of each adolescent and mother studied. Cultural orientation was assessed in the domains of behavioral preferences and identity. Based on prior research and associations among variables in the current data, this study focused solely on the remote culture—European American culture—rather than the local Jamaican culture. Prior globalization-based acculturation research using the bidimensional model of acculturation has found that cultural orientation to the remote culture is uniquely related to *negative* adolescent adaptation, whereas orientation to the local culture is not (Cheung-Blunden & Juang, 2008; Ferguson & Bornstein, 2012). Therefore, we expected the remote cultural dimension to be related to unhealthy eating. This was, indeed, the case: In the larger data set, Jamaican orientation and Jamaican identity scores were not correlated with unhealthy eating (nor healthy eating), thus, were excluded. For prudence, we went one step further. Confirmatory factor analyses (CFAs) showed that Jamaican identity and behavioral preference variables did not load onto the latent factor for remote acculturation; therefore, for this reason also, these variables were dropped. (This may have occurred if the Jamaican culture variables were largely independent from the European American culture variables, which supports expectations of acculturation theory.) Thus, the remote acculturation factor constituted American identity and behavioral preferences, which provided a strong test of the primary hypothesis.

Behavioral preferences. For brevity, a three-item version of the original nine-item European American orientation (sub)scale from the Acculturation Rating Scale Jamaican Americans was used (ARSJA; Ferguson, Bornstein, & Pottinger, 2012). These items were selected based on an item response theory analysis using collated data from our previous remote acculturation studies in Jamaica. A full information adaptive factor analysis was conducted on all 35 ARSJA items (i.e., all subscales) in IRT Pro 2.1 (Scientific Software International, Skokie, Illinois, USA). Using -2 likelihood statistics (comparable to the chi-square distribution), seven factors were retained for mothers and eight for adolescents based on theoretical consistency and having significantly lower $\Delta\chi^2$ values than other 3- to 10-factor solutions. A quartimax rotation, which produced

virtually identical results to promax, was used. A three-item factor (I enjoy White American TV, I enjoy listening to White American music, I enjoy White American movies) was chosen for use in this dyadic study because it had identical items across adolescents and mothers as well as acceptable factor loadings for adolescents (.94, .55, .83, respectively) and mothers (.92, .44, .88, respectively; Cronbach's $\alpha_{\text{adolescent}} = .73$, $\alpha_{\text{mother}} = .77$). Participants responded on a 5-point scale ranging from 1 (*none or not at all*) to 5 (*very much or always*).

This three-item scale specifically captures media enjoyment, which is a standard component of acculturation orientations. Although expected to be somewhat conceptually and empirically related constructs, media enjoyment (e.g., "I enjoy White American TV") is meaningfully different from media consumption frequency (variable below, e.g., "How much did you... Watch American-produced TV programs"). This subtle but important distinction allowed us to assess how one's acculturation orientation (i.e., enjoyment of a culture) is associated with the degree to which one seeks out more experiences in that culture (i.e., frequency of consumption of cultural products). Accordingly, as shown in Table 1, these two measures were correlated only at $r = .18-.30$. Our approach is very much akin to conceptualizing and studying how preferences/attitudes are associated with behavior,

which is not uncommon in acculturation research or in dyadic studies.

Identity. An adapted version of the four-item American Identity subscale of the Language, Identity and Behavioral Acculturation Scale ($\alpha_{\text{adolescent}} = .88$, $\alpha_{\text{mother}} = .78$; Birman & Trickett, 2001) was used. Participants responded on a 4-point scale from 1 (*not at all*) to 4 (*very much*) (e.g., "I think of myself as being American").

U.S.-Produced Cable TV Consumption

Using two items adapted from the HABITS questionnaire (Wright et al., 2011), participants reported the daily time spent watching U.S.-produced cable TV on a typical weekday and on a weekend in the past month, for example, "In the past month, how much did you... Watch American-produced TV programs on a WEEKDAY? (e.g., Scandal, The Voice)." A 4-point Likert-type scale was used: 1 (0-1 hr), 2 (1 hr), 3 (2 hr), and 4 (3+ hr). The pilot study showed that participants were easily able to distinguish between U.S.-produced TV and Jamaican-produced TV, and study data confirmed participants' ability to parse out time spent watching U.S. TV from time spent watching non-U.S. TV. For example, there was a much lower correlation between the frequency of consuming U.S. TV and Jamaican TV on weekdays ($r \leq .20$) than the

Table 1
Means, Standard Deviations, and Correlations for Study Variables for (Top) Adolescent Girls and Their Mothers and (Bottom) Adolescent Boys and their Mothers

	Girls		Mothers		1	2	3	4	5
	M	SD	M	SD					
1. European American behavioral preferences	3.67	1.03	2.88	1.03	.33***	.23***	.28***	.30***	.25***
2. European American identity	1.39	0.67	1.26	0.62	.18**	.33**	.04	.07	.09
3. U.S. TV hours weekdays	2.40	1.16	2.27	1.19	.28***	.00	.10	.41***	.14*
4. U.S. TV hours weekends	2.48	1.26	1.87	1.10	.19**	-.07	.45**	.16*	.16*
5. Unhealthy eating	1.90	0.71	1.39	0.64	.24***	.03	.21**	.15*	.31**

	Boys		Mothers		1	2	3	4	5
	M	SD	M	SD					
1. European American behavioral preferences	3.48	1.04	2.90	0.96	.14	.22*	.17 ⁺	.39***	.20*
2. European American identity	1.43	0.72	1.19	0.41	.30**	.29**	.16 ⁺	.13	.30**
3. U.S. TV hours weekdays	2.26	1.13	2.29	1.19	.00	-.05	.22*	.41***	.39**
4. U.S. TV hours weekends	2.59	1.20	1.97	1.14	.30**	.13	.38***	.26**	.33***
5. Unhealthy eating	2.02	0.76	1.33	0.70	.06	.01	.08	.08	.34**

Note. Correlations between variables for girls above the diagonal, girls' mothers below, and between girls and their mothers in italics along the diagonal. Correlations between variables for boys above the diagonal, boys' mothers below, and between boys and their mothers in italics along the diagonal.
* $p < .05$. ** $p < .01$. *** $p < .001$. + $p < .10$.

correlation between consuming U.S. TV on weekdays versus weekends ($r \geq .40$).

Unhealthy Eating

Four items were adapted from the national Jamaican Youth Risk and Resiliency Behaviour Survey 2006 ($\alpha_{\text{adolescent}} = .53$, $\alpha_{\text{mother}} = .57$; Wilks et al., 2007) on which participants rated the frequency of eating four categories of unhealthy foods regardless of the setting in which it was consumed: soda/sweetened drinks, pastries, fried meats, and fast food (e.g., "How many times do you eat food at fast food places such as Burger King, Juici, Tastee, Pizza Hut, Kentucky Fried Chicken?"). A 6-point scale was used: 0 (*none*), 1 (*1 time every week*), 2 (*a few times every week*), 3 (*1 time every day*), 4 (*2–4 times every day*), 5 (*5+ times every day*). Cronbach's α for the unhealthy eating scale was not high ($\alpha = .53$ and $.57$), likely due to the fact that this is an index rather than a true "scale." In other words, participants may engage in one of these eating behaviors without necessarily engaging in others (indeed, participants consumed soda more frequently than the other categories). However, there was high content validity for this measure because items were taken from the national Jamaican Youth Risk and Resiliency Survey and contained response options tailored to the local Jamaican diet, and there was high structural validity based on CFAs. As a final validity check, analyses using a summed index score showed identical results to reported results using the mean scale score. Therefore, the mean scale score was retained in reported results.

Control Variables

In addition to SES (described earlier), frequency of viewing "TV programs, websites, or magazines focusing on healthy eating" was measured for all participants on weekdays and on weekends as a covariate using the rating scale used for U.S.-produced cable TV viewing.

Plan of Analysis

There was a small amount of missing data ($< 4\%$ of values for adolescents, 8% for mothers). Little's missing completely at random (MCAR) test was significant for adolescents, $\chi^2(39,243) = 40,323.50$, $p < .001$, but not for mothers, $\chi^2(39,296) = 39,722.31$, $p < .05$. Because chi-squared analyses are sensitive to sample size, we also computed and evaluated the normed χ^2 ($\chi^2/df = 1.03$ for adolescents, 1.01 for

mothers), which was excellent being under 2 (see Schwartz et al., 2013). Thus, data were treated as MCAR, and missing values were imputed by regression. A single regression-based imputation was used instead of a multiply imputed data set because the statistical analysis program used, AMOS (IBM, Armonk, New York, USA), works best with single imputations.

Analysis was conducted using SEM via AMOS (Arbuckle, 1995–2009) and actor–partner interdependence mediation models (APIMeM; Ledermann, Macho, & Kenny, 2011). APIMeM was used to disentangle actor and partner effects in the dyadic relationship, which is essential for understanding family processes (Rayens & Svavardottir, 2003) and to assess bidirectional effects. In addition, this analytic approach accounted for possible interdependence in the dyadic data while also providing total, direct, and indirect effects.

For mediation analyses, bootstrapping (2,000 samples) was used to account for the fact that indirect effects have non-normal distributions even if the direct effects are normally distributed (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008). Conclusions regarding mediation were based on whether or not indirect pathways were statistically significant when examining 95% confidence intervals for bias-corrected bootstrapping estimates around all unstandardized indirect associations. Although previous works have examined separate models to first examine a "main effect" from the predictor to the outcome with a subsequent model that introduces the mediator, this approach is not recommended when using SEM, especially with latent variables (Iacobucci, Saldanha, & Deng, 2007). Because this is a cross-sectional mediation analysis, directionality cannot be concluded, but this approach provides useful information for future longitudinal studies. Interdependence within the dyad was modeled by specifying correlated error terms between mothers and adolescents. All analyses were based on the distinguishable dyad of adolescent–mother since they are distinguishable by roles. Thus, the adolescent–mother dyad was used as the unit of analysis and both models controlled for SES and viewing healthy eating media. Adolescent age was uncorrelated with all study variables; therefore, it was excluded from analyses.

The multigroup approach was used to test for gender differences because it is a recommended way of testing moderation in SEM especially with latent variables and with categorical moderators (Kline, 2011). Each model included four latent variables and two observed variables (see Figure 2): adolescents'

Table 2
Unstandardized (Standard Error) and Standardized Structural Coefficients for Model Parameters

Parameter estimate	B	SE B	β
Actor associations for girls			
Adolescent remote acculturation → Adolescent U.S. cable TV consumption (a1a)	.24***	.07	.38
Adolescent U.S. cable TV consumption → Adolescent unhealthy eating (a2a)	.10	.11	.09
Adolescent remote acculturation → Adolescent unhealthy eating (a3a)	.11*	.06	.16
Mother remote acculturation → Mother U.S. cable TV consumption (a1m)	.31***	.08	.34
Mother U.S. cable TV consumption → Mother unhealthy eating (a2m)	.13 ⁺	.07	.19
Mother remote acculturation → Mother unhealthy eating (a3m)	.12*	.05	.18
Partner associations for girls			
Adolescent remote acculturation → Mother U.S. cable TV consumption (p1a)	.06	.08	.07
Adolescent U.S. cable TV consumption → Mother unhealthy eating (p2a)	.09	.11	.09
Adolescent remote acculturation → Mother unhealthy eating (p3a)	-.04	.05	-.07
Mother remote acculturation → Adolescent U.S. cable TV consumption (p1m)	.06	.06	.10
Mother U.S. cable TV consumption → Adolescent unhealthy eating (p2m)	.16*	.08	.22
Mother remote acculturation → Adolescent unhealthy eating (p3m)	.01	.05	.02
Actor associations for boys			
Adolescent remote acculturation → Adolescent U.S. cable TV consumption (a1a)	.26***	.08	.44
Adolescent U.S. cable TV consumption → Adolescent unhealthy eating (a2a)	.72***	.23	.60
Adolescent remote acculturation → Adolescent unhealthy eating (a3a)	-.06	.08	-.08
Mother remote acculturation → Mother U.S. cable TV consumption (a1m)	.12 ⁺	.07	.23
Mother U.S. cable TV consumption → Mother unhealthy eating (a2m)	.09	.18	.06
Mother remote acculturation → Mother unhealthy eating (a3m)	.03	.07	.05
Partner associations for boys			
Adolescent remote acculturation → Mother U.S. cable TV consumption (p1a)	.08	.06	.15
Adolescent U.S. cable TV consumption → Mother unhealthy eating (p2a)	.32 ⁺	.18	.28
Adolescent remote acculturation → Mother unhealthy eating (p3a)	-.11	.08	-.16
Mother remote acculturation → Adolescent U.S. cable TV consumption (p1 m)	-.07	.07	-.11
Mother U.S. cable TV consumption → Adolescent unhealthy eating (p2m)	-.15	.18	-.10
Mother remote acculturation → Adolescent unhealthy eating (p3m)	.04	.07	.05

Note. $\chi^2(122) = 180.52$, $p = .000$, $\chi^2/df = 1.48$, CFI = .92, GFI = .94, and RMSEA = .038 (see Figure 1 for path notation references). ⁺ $p < .10$. * $p < .05$. *** $p < .001$.

and mothers' remote acculturation as independent latent variables, adolescents' and mothers' consumption of U.S. cable TV hours as latent mediator variables, and adolescents' and mothers' consumption of unhealthy food as observed outcome variables. Due to unclear directionality from previous research regarding whether remote acculturation or U.S. TV consumption would be the mediator, an alternate model was also tested where U.S. cable TV hours was the independent variable and remote acculturation was the mediator.

Results

Preliminary Analyses

Model fit was assessed using the chi-squared significance test, comparative fit index (CFI), goodness-of-fit index (GFI), and root mean square error of approximation (RMSEA). Acceptable fit was

defined as: $\chi^2/df < 3$, CFI > .90, GFI > .90, and RMSEA < .06-.08 (Byrne, 2010; Hu & Bentler, 1999; Kline, 2011). Confirmatory factor analyses of the final measures were first used to ensure acceptable construct validity and measurement modeling. All measures had adequate to excellent fit (i.e., $\chi^2/df \leq 3$, CFI $\geq .94$, GFI $\geq .92$, RMSEA $\leq .07$). All factor loadings were significant ($p < .05$). Measurement invariance across adolescents and mothers was also demonstrated using multigroup CFAs following recommendations of ΔCFI and $\Delta RMSEA < .010$ across models (Cheung & Rensvold, 2002).

For adolescent gender, multigroup SEM analyses revealed that the chi-square test was not significant when comparing the unconstrained model to the constrained model $\Delta \chi^2(df = 37) = 43.90$. However, more recently, researchers have argued that the chi-square difference test is an excessively stringent test and have called for the use of ΔCFI instead (Cheung & Rensvold, 2002; MacCallum, Roznowski, &

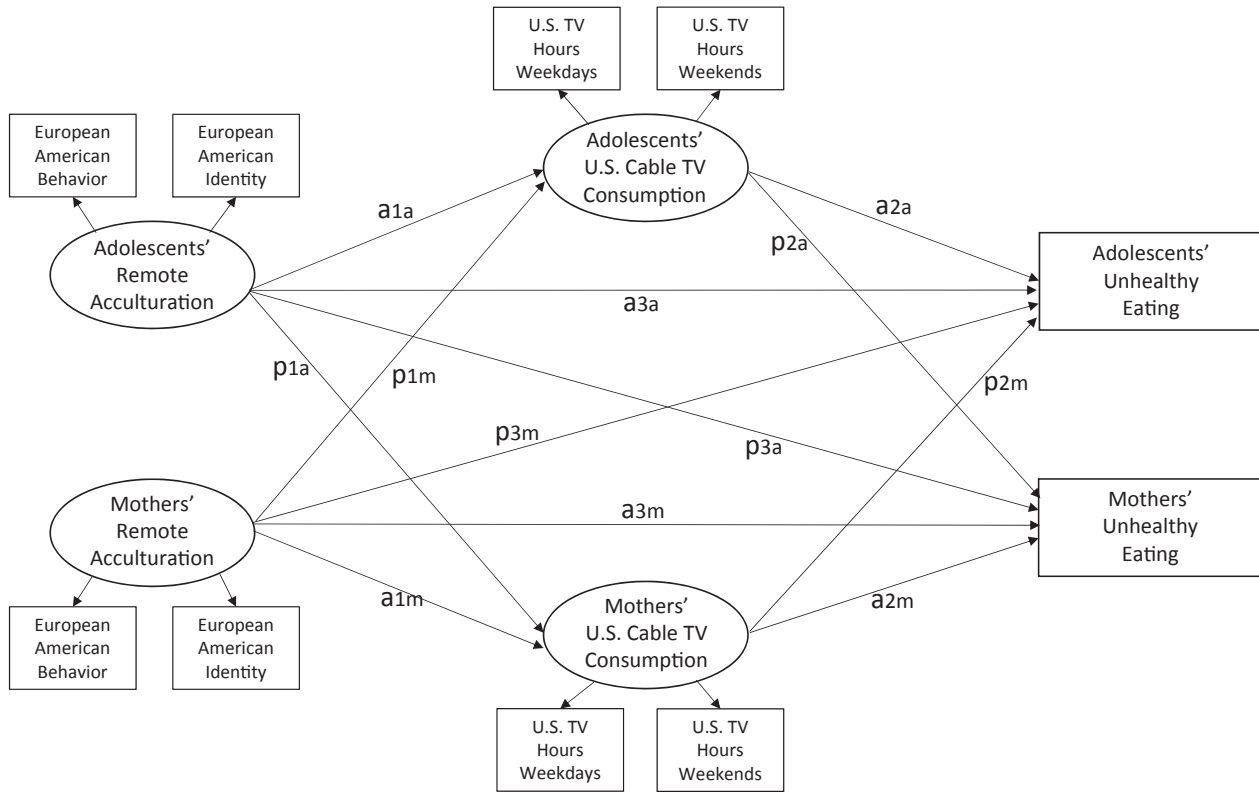


Figure 2. Theorized actor-partner interdependence mediation model (APIMeM) examining the effects of remote acculturation on unhealthy eating through U.S. cable TV consumption in adolescent-mother dyads. Actor effects were denoted as “a” at the beginning of each coefficient, and partner effects were denoted as “p.” At the end of each coefficient, “a” refers to adolescent and “m” refers to mother.

Necowitz, 1992). This criterion is increasingly reported in literature (Byrne, 2010). Using the cutoff of $\Delta CFI > .01$, the groups resulted in a $\Delta CFI = .013$, indicating a difference between girls’ and boys’ models.

Main Results

The overall (multigroup) model depicted in Figure 2 had good fit with $\chi^2(122) = 180.52, p = .000, \chi^2/df = 1.48, CFI = .92, GFI .94, \text{ and } RMSEA = .038, 90\% \text{ CI } [.026, .050]$. See Table 1 for means, standard deviations, and intercorrelations of major study variables for girls and boys. Model fit when remote acculturation was the mediator was unacceptable, that is, $\chi^2(122) = 209.95, p = .000, \chi^2/df = 1.72, CFI = .88, GFI .79, \text{ and } RMSEA = .047, 90\% \text{ CI } [.036, .057]$. See Table 2 for structural coefficients for model parameters.

Results for Girls

Significant direct actor effects (adolescent on adolescent) were observed for adolescent girls’ remote acculturation on daily U.S. cable TV viewing

($\beta = .38, p < .001$) and on unhealthy eating ($\beta = .16, p < .05$). Specifically, the more Americanized the girls were, the higher their daily consumption of U.S. cable TV and unhealthy food. There were no indirect effects for girls. However, for mothers of adolescent girls, the indirect actor effect was significant ($B = .05, 95\% \text{ CI } [.004, .137], p < .05$). Specifically, mothers who were more Americanized indicated longer daily viewing of U.S. cable TV ($\beta = .34, p < .001$) and in turn more frequent consumption of unhealthy food ($\beta = .19, p < .10$). Given that the direct actor effect from mothers’ remote acculturation to her unhealthy eating was also significant ($\beta = .18, p < .05$), this indicates a partial actor-actor mediation. In addition, the indirect partner effect from mothers’ remote acculturation to adolescent girls’ unhealthy eating was significant ($B = .06, 95\% \text{ CI } [.002, .165], p < .05$). Specifically, mothers who were more Americanized indicated higher daily consumption of U.S. cable TV ($\beta = .34, p < .001$), which in turn was associated with their adolescent daughters’ consumption of unhealthy food ($\beta = .22, p < .05$). Given the non-significant direct partner effect from mothers’ remote acculturation to adolescent girls’ unhealthy

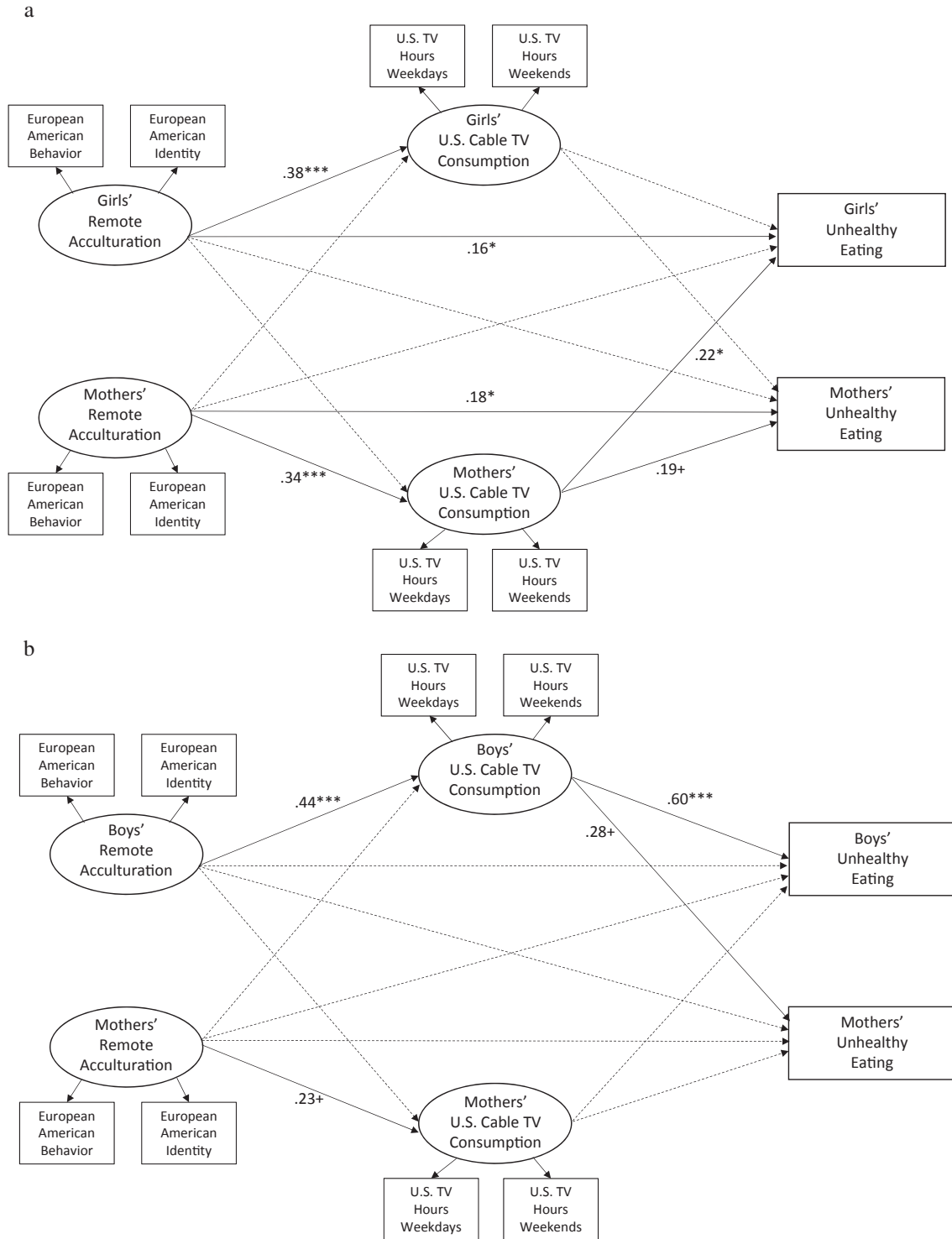


Figure 3. Actor-partner interdependence mediation models (APIMeM) model for girls (a, top) and boys (b, bottom) examining the effects of remote acculturation on unhealthy eating through U.S. cable TV consumption in mother-adolescent dyadic relationship. Significant paths (with standardized estimates) are shown in bold lines, whereas nonsignificant paths are shown in dashed lines. Note. Socioeconomic status (SES) and daily hours watching healthy eating TV programs were controlled. + $p < .10$. * $p < .05$. *** $p < .001$.

eating, this indicates a full actor–partner mediation (see Figure 3a for the full mother–daughter model).

Results for Boys

For adolescent boys there was a significant indirect actor effect (adolescent on adolescent) from remote acculturation to their unhealthy eating ($B = .18$, 95% CI [.031, .576], $p < .05$). Specifically, adolescent boys' American identity/behavior was positively associated with their daily viewing of U.S. cable TV ($\beta = .44$, $p < .001$), which in turn was associated with their higher consumption of unhealthy food ($\beta = .60$, $p = .001$). The nonsignificant direct actor effect from adolescent boys' remote acculturation to their unhealthy eating indicates a full actor–actor mediation. There were also some trends that did not meet the .05 probability threshold: a direct partner effect from boys' consumption of U.S. cable TV to mothers' unhealthy eating ($\beta = .28$, $p < .10$), and a direct effect of mothers' remote acculturation on their own consumption of U.S. cable TV ($\beta = .23$, $p < .10$; see Figure 3b for the full mother–son model).

Discussion

We took a bioecological systems approach using Bronfenbrenner's PPCT model (Bronfenbrenner & Morris, 2006) to investigate the proximal interactions of remote acculturation, U.S. TV viewing, and nutrition in Jamaica. We focused on the reciprocal influences among adolescents, mothers, and TV in the home microsystem, nested within distal macrosystem contexts involving both local Jamaican norms and remote U.S. norms on nutrition brought to the island by modern globalization avenues (see Figure 1). Study findings supported our expectations—adolescent girls, boys, and girls' mothers in Jamaica who had stronger American identity/behavioral preferences due to remote acculturation also ate more unhealthy food. Moreover, these effects were mediated by one's U.S. cable TV consumption (for boys, and girls' mothers), and by mothers' U.S. cable TV consumption (for girls). Each set of results will be discussed below followed by implications, limitations, and future directions.

Feel American, Watch American, Eat American

As expected (Hypothesis 1), stronger American identity/behavior was associated with unhealthy eating for boys, girls, and girls' mothers, both

directly and indirectly as explained by daily U.S. cable TV viewing. This finding supports and expands upon prior remote acculturation findings in Jamaica showing that "Americanized Jamaican" adolescents watched more U.S.-produced TV and consumed more U.S.-style food and beverages (Ferguson & Bornstein, 2015). Given that the alternate APIMeM model was rejected (i.e., U.S. cable TV consumption as independent variable and remote acculturation as mediator), findings better support the explanation that adolescents and mothers whose behavioral preferences, identity, and values have shifted during remote acculturation selectively consume media from that remote culture (interactionist perspective: Swann et al., 2003; uses and gratifications theory: Katz et al., 1974). Of course, a bidirectional association is also possible (Coyne et al., 2013) and longitudinal research is needed to tease apart these possibilities. It was unexpected, however, that U.S. TV consumption would mediate the actor effect only for boys' and girls' mothers but not for girls. Apparently, watching U.S. cable TV is not the pathway to unhealthy eating among U.S.-oriented girls in Jamaica; rather, the link between remote acculturation and unhealthy eating appears more direct or could possibly be mediated by an unmeasured variable.

Qualitative work with Jamaican mothers has indicated that they associate unhealthy food options with being Americanized, but this is the first quantitative study to demonstrate that mothers' U.S. orientation is also linked to their own eating habits. Americanized Jamaican mothers who watch more U.S. TV may view more unhealthy food advertisements and be more drawn to unhealthy foods.

Intergenerational Effects of Remote Acculturation: Mothers May Impact Daughters, But Not Sons

Our expectation (Hypothesis 2) that one's remote acculturation would predict another person's unhealthy eating in the family microsystem was supported and, in accordance with Hypothesis 3, in different ways for mother–daughter dyads versus mother–son dyads. Mothers' remote acculturation was positively associated with their daughters' (but not sons') unhealthy eating habits by way of mothers' own U.S. TV viewing. This finding is likely to be explained by the gendered nature of household management in Jamaica (Bailey et al., 1998). Mothers typically manage food selection and preparation and girls are assigned similar domestic responsibilities in the kitchen and home. Therefore, it is likely that daughters are a captive audience for

mothers' U.S. TV shows by virtue of being kept nearby to assist, such that mothers' U.S. cable TV viewing impacts them both in similar ways. Alternatively, girls and mothers may simply have a closer relationship whereby they spend more time together discussing and interacting around the themes of U.S. cable TV shows. In this case, daughters may learn their mothers' food attitudes, or potentially share their mothers' snacks during U.S. cable TV shows, leading to unhealthier eating for both mothers and daughters. Contrary to results for girls, mothers' remote acculturation was not associated with their sons' eating patterns. This finding is likely related to the fact that boys are allowed more independence and higher status in the home (Bailey et al., 1998).

Implications for Policy and Practice

Unhealthy eating is a major modifiable risk factor for obesity (World Health Organization [WHO], 2014), and the former Caribbean Food and Nutrition Institute Obesity Working Group (2001) recommended a multisectoral effort at combating childhood/adolescent obesity involving school (e.g., curriculum, cafeterias), primary care, community (e.g., vendors and restaurants near to schools), and selected prevention components (target messages to susceptible children's families). Current findings suggest that microsystem changes in U.S. cable TV viewing may be a proximal target of intervention to decrease unhealthy eating among adolescents and mothers in Jamaica. TV viewing duration and TV food advertising warrant public health interventions as they have been recognized to be significant contributors to unhealthy food intake and obesity internationally. Successful evidence-based media literacy programs have been designed to teach U.S. youth and families critical evaluation skills about unhealthy U.S. food advertising (Potter, 2013). Unfortunately, media literacy efforts in Jamaica are germinal and overlook the role of U.S. cable TV programming/advertising, although U.S. Cable TV dwarfs local Jamaican TV in volume and popularity (Gordon, 2009). Based on our findings, we cautiously suggest that remote acculturation theory can facilitate selected prevention by identifying and targeting "Americanized Jamaican" youth and mothers who watch more U.S. cable TV because they are at higher risk of unhealthy eating habits. Our findings also suggest that food-focused media literacy training targeting both adolescents and mothers may be particularly useful if it focuses on unhealthy food

messages in U.S. cable TV programming available in Jamaica. Such a media literacy program could be school- or community-based and would complement the Health and Family Life Education curriculum currently used in Jamaican schools and other community-based nutrition education initiatives in Jamaica and the Caribbean. An ideal program might teach youth and their parents in Jamaica how to critique and interpret food media messages, understand persuasive tactics used in food advertising, and evaluate the accuracy and realism of portrayed health outcomes resulting from an unhealthy diet (i.e., do the unhealthy diets glamorized on U.S. TV result in trim, attractive bodies, and healthy, happy lives portrayed by TV actors?).

In addition, the U.S. Centers for Disease Control and Prevention convened an Expert Panel on Children, TV, and weight Status in 2006 and they recommended the following strategies: (a) eliminate TV sets from children's bedrooms; (b) turn off TV while eating, and (c) provide health care professionals with ways in which to help patients reduce TV use (Jordan & Robinson, 2008). However, macrosystem changes in Jamaica and the United States, such as more socially responsible industry practices and stricter government regulations with respect to food advertising, may also be needed (Boulos et al., 2012). In fact, another strategy is to change the food advertising environment such that nutritious foods are promoted more than junk foods in order to reinforce healthy eating (Dixon et al., 2007). An Australian study showed that children exposed to advertisements for healthy foods exhibit higher nutrition knowledge and more favorable attitudes and intentions toward healthy foods as compared to children not exposed to healthy foods advertisements (Dixon et al., 2007). Similarly, a European study showed that exposure to healthy product advertisements was positively linked with increased consumption of fruits and vegetables (Giese et al., 2015).

The findings of our study also support the recommendation of Xuereb et al. (2001) that interventions with Jamaican youth should take gender into account. These scholars were referring to the higher prevalence of overweight and obesity in Jamaican adolescent girls, but current findings go beyond mean differences by suggesting different pathways toward unhealthy eating for girls (i.e., their unhealthy eating is associated with their mothers' U.S. cable TV watching). Results suggest that preventive nutrition interventions should target "Americanized Jamaican" adolescent boys with direct

messages but to include mothers in interventions targeting girls. Mothers themselves should not be overlooked in interventions as findings suggest that they too could benefit from education and support regarding media influences, nutrition, and unhealthy eating. Finally, strengthening mesosystem interactions between parents and schools through active parent-teacher associations could be important in decreasing unhealthy food options in schools.

Limitations and Future Research

Our findings highlight the importance of remote acculturation for eating habits in Jamaica. That said, some sampling and measurement limitations should be considered when interpreting the results. With respect to sampling, only adolescents attending urban traditional high schools were included, meaning that results cannot generalize to youth at other secondary school types, those out of school, or those in rural areas of Jamaica, who may have more salient predictors of unhealthy eating. For manageability, fathers and siblings were not included in this study but may also play a role. This would be an interesting extension of the current study. Importantly, the data are cross-sectional and do not speak definitively about the direction of effects, and they reflect a point-in-time assessment of acculturation rather than the full process; longitudinal mediation and qualitative study designs would deepen our understanding.

There were also measurement limitations. This study focused on two hypothesized predictors of unhealthy eating, but we do not mean to suggest that these act in isolation; there are clearly myriad other influences that were not measured in this study (e.g., genetic or structural levels). Data were self-reported; however, self-report methods are commonly used for intrapsychic aspects of acculturation, and for capturing eating habits, even in longer food frequency questionnaires. In addition, the need for measurement invariance across adolescents and mothers dyadic analyses limited the aspects of behavioral preference related to remote acculturation measured in this study (e.g., U.S. media enjoyment but not U.S. contacts/friendships). Research focusing on individual (rather than dyadic) influences for adolescents or mothers will be able to explore other aspects of behavioral preference related to remote acculturation in relation to nutrition. Future research can also examine additional variables as moderators and outcomes, for example, by exploring the connection between remote acculturation and other obesity-related

behaviors (e.g., physical activity) and health markers (e.g., BMI). Another frontier for future research is to investigate the role of social media as a mediator of the relation between remote acculturation to U.S. culture and nutrition in Jamaica, especially among middle and upper SES families who can afford regular Internet access in their homes. Finally, remote acculturation can be investigated as a predictor of unhealthy eating in other countries with a similarly high level of societal U.S. cultural influence, such as Mexico.

Conclusions

This study demonstrates how two broad global shifts in cultural and nutritional patterns related to modern globalization are reflected in proximal and reciprocal influences between family members and TV in the home microsystem and influence nutritional health of adolescents and parents in Jamaica. Our findings show that even for nonimmigrant youth living in their home countries, higher endorsement of mainstream U.S. cultural orientations is a developmental risk factor. Thus, although virtually all youth and parents in Jamaica are exposed to U.S. cultural influences, those who internalize them through remote acculturation are at even higher risk of obesogenic nutritional habits. Current findings add to the literatures on acculturation, globalization, and human development but also have implications for public health and pediatrics. Given that obesity increases morbidity and mortality and decreases quality of life for youth and adults, it is crucial to identify modifiable socio-cultural risk factors (WHO, 2014). In this way, remote acculturation may be a new cultural determinant of health for some adolescents and families. Remote acculturation to European American culture and U.S. cable TV consumption may be key candidates to facilitate more targeted research and prevention/intervention efforts.

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