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Developmental Trajectories of Acculturation in Hispanic Adolescents: Associations With Family Functioning and Adolescent Risk Behavior

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Abstract

The present study examined longitudinal acculturation patterns, and their associations with family functioning and adolescent risk behaviors, in Hispanic immigrant families. A sample of 266 Hispanic adolescents (mean age 13.4) and their primary parents completed measures of acculturation, family functioning, and adolescent conduct problems, substance use, and sexual behavior at five timepoints. Mixture models yielded three trajectory classes apiece for adolescent and parent acculturation. Assimilated adolescents reported the poorest family functioning, but adolescent assimilation negatively predicted adolescent cigarette smoking, sexual activity, and unprotected sex indirectly through family functioning. Follow-up analyses indicated that discrepancies between adolescent and parent family functioning reports predicted these adolescent outcomes. Results are discussed regarding acculturation trajectories, adolescent risk behavior, and the mediating role of family functioning.

Keywords

Acculturation; Hispanic; mixture modeling; conduct problems; cigarette use; alcohol use; unprotected sex

Rates of international migration have reached unprecedented levels around the world. In many cases, individuals are migrating from developing, collectivist-based countries to post-industrial, individualistic Western countries (Steiner, 2009). This surge in migration has prompted increased attention to acculturation – the ways in which individuals culturally adapt following their move to a new country. Acculturation represents changes in one's cultural orientation that occur as a result of contact with culturally dissimilar people, places, and customs (Berry, 1980). Most studies of acculturation focus on immigrants and on children of immigrants, who have been directly exposed to both their heritage cultures and the culture of the receiving country or region (Portes & Rumbaut, 2001, 2006).

Acculturation has been commonly studied in terms of language use and other cultural practices, such as choice of friends, food and music preferences, and ways of celebrating holidays (Kang, 2006; Unger et al., 2002). Most recent views of acculturation have adopted a bidimensional approach – where heritage-culture and receiving-culture orientations are considered separately (e.g., Ryder, Alden, & Paulhus, 2000; Szapocznik, Kurtines, & Fernandez, 1980) and where individuals can endorse both the heritage and receiving cultures. For example, in the case of Hispanic immigrants in the United States – one can “act American” at work or school and “act Hispanic” at home, or can combine the Hispanic and U.S. cultures into a Hispanic-American way of living (e.g., Benet-Martínez & Haritatos, 2005).

Until the beginning of the 21st century, a major limitation of the acculturation literature was a reliance on cross-sectional studies (Fuligni, 2001) where acculturation was treated more as an individual-difference variable than as a trajectory of adaptation over time. In the decade since Fuligni's call for longitudinal work, a number of studies (e.g., Berkel et al., 2010; Knight et al., 2009a; Matsunaga, Hecht, Elek, & Ndiaye, 2010; Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2009) have examined acculturation longitudinally. Other studies have examined longitudinal trajectories of related cultural processes, such as ethnic identity (e.g., Nishina, Bellmore, Witkow, & Nylund-Gibson, 2010; Pahl & Way, 2005). These studies have advanced the acculturation literature considerably and have been consistent with Berry's (1980) definition of acculturation as a longitudinal trajectory of cultural adaptation. Moreover, a common theme among these studies has been the identification of multiple trajectories of cultural adaptation. For example, Knight et al. (2009a), in their 3-year study of Mexican Americans, found two trajectory groups (Mexican and Dual Cultural) for Hispanic and American cultural practices and three trajectory groups (Bilingual, Primarily English, and Monolingual English) for Spanish and English language use. Similarly, Matsunaga et al.'s (2010) study of Mexican Americans found movement in multiple directions during the course of adolescence – with some youth shifting toward a strong heritage-cultural orientation and others shifting away from heritage-cultural orientations. Acculturation is clearly not a singular process that proceeds in the same fashion across all individuals.

The majority of longitudinal acculturation studies thus far have been primarily descriptive, in that the objective was to map the course of acculturative change over time. This is not surprising, given that longitudinal acculturation research has emerged largely within the past decade. No published studies have yet linked different trajectories of acculturation to family relationships or to adolescent outcomes. This is an important next step for the field, given

evidence that acculturation may be related to family functioning (e.g., Ramirez Garcia, Manongdo, & Cruz-Santiago, 2010; Szapocznik & Kurtines, 1993; Unger et al., 2009) and to adolescent behavior problems and risk taking (e.g., Allen et al., 2008; Dinh, Roosa, Tein, & Lopez, 2002; Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009). The heterogeneity in acculturative trajectories found by Knight et al. (2009a), Matsunaga et al. (2010), and others opens up the possibility of identifying how different acculturative pathways might be differentially associated with family relationships and with adolescent developmental outcomes.

Acculturation and the Family

Although acculturation is often studied as an individual-level construct, in many cases it is also a family-level phenomenon (Crockett & Zamboanga, 2009; Santisteban & Mitrani, 2003), especially for children or adolescents who are raised in immigrant-headed homes. Parents' efforts to preserve the heritage culture are associated with children's continued endorsement and maintenance of aspects of that culture through adolescence (Umaña-Taylor, Bhanot, & Shin, 2006) and into early adulthood (Schwartz & Zamboanga, 2008). On the other hand, immigrant parents may experience trouble handling adolescents who have drifted away from the heritage culture (e.g., Smokowski & Bacallao, 2011). Indeed, parents may interpret individualistic, receiving-culture-oriented adolescent behavior (e.g., spending more time with friends) as disrespectful and as an affront to the collectivist-oriented family (Portes & Rumbaut, 2001).

Research suggests that many adults settling in ethnically concentrated areas may not acculturate much at all (Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). Children and adolescents, who attend school in the receiving society's language and are exposed to receiving-culture media, dress styles, and other influences, would be expected to orient themselves more toward the receiving society – and at the same time, remaining oriented toward the heritage culture is important in maintaining positive family bonds with traditionally oriented parents (e.g., Unger, Ritt-Olson, Soto, & Baezconde-Garbanati, 2009). Biculturalism, where the adolescent endorses the practices of both the heritage and receiving cultures, is often the most adaptive approach to acculturation (e.g., Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005).

Because acculturation is a family-level phenomenon, including family processes in studies of acculturation and risky behavior is important (Unger et al., 2009a, 2009b). Aside from the direct effects of acculturation on family functioning, several studies have also examined whether family processes mediate the effects of acculturation on adolescent outcomes. Theory (e.g., Szapocznik & Kurtines, 1993) and research (e.g., Gonzales et al., 2006; Unger et al., 2009a, 2009b) suggest that, within Hispanic families, adolescent acculturation toward American cultural practices is associated with compromised family relationships (e.g., communication, involvement, cohesion), which in turn are predictive of problematic adolescent behaviors such as conduct problems, drug and alcohol use, and unsafe sexual behavior. In some cases, adolescents' retention of Hispanic cultural practices has been associated with more favorable family processes (Smokowski, Rose, & Bacallao, 2008), which may in turn be protective against problematic adolescent behavior. Moreover, only a few studies have used independent parent and adolescent reports of acculturation and family functioning (e.g., Smokowski et al., 2008; Gonzales, Deardorff, Formoso, Barr, & Barrera, 2008) – and this is an important methodological advance in the literature.

It is also important to examine the ways in which acculturation *trajectories* – rather than just prior *levels* of acculturation – are predictive of family functioning. In particular, Cicchetti and Rogosch (2002) have discussed the concept of equifinality, where one can arrive at the

same endpoint via a number of different trajectories. For example, biculturalism may emerge when a recent immigrant becomes oriented toward American culture in addition to retaining her or his cultural heritage, or when a U.S.-born individual becomes reinvested in her or his cultural heritage in addition to being oriented toward the United States (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Although these trajectories appear to lead to the same place (i.e., biculturalism), different trajectories may be associated with quite different effects on the family system. For example, adolescents who reorient themselves toward Hispanic culture may engender increased closeness to family members (Szapocznik et al., 1989), whereas adolescents who gravitate toward American culture may create tension within the family (Santisteban & Mitrani, 2003). As a result, it is important to examine the over-time trajectories of acculturation in relation to family functioning in Hispanic adolescents and families.

Acculturation and Health Risk Behavior

A number of studies, most of which have been cross-sectional, have examined direct associations between acculturation and risk behaviors such as substance use and unsafe sexual behavior. In general, these studies have utilized unidimensional models of acculturation where Hispanic and American cultural practices are cast as opposite ends of a single continuum (e.g., Allen et al., 2008; Ramirez et al., 2004). Several studies have also suggested that increased “acculturation” predisposes Hispanic adolescents toward early sexual behavior (Afable-Munsuz & Brindis, 2006; Guilamo-Ramos, Jaccard, Peña, & Goldberg, 2005), lower likelihood of condom use (Kepka, Coronado, Rodriguez, & Thompson, 2010), and greater number of lifetime sexual partners (Lee & Hahm, 2010). However, given the reliance on unidimensional models of acculturation, extant literature leaves open the question of how longitudinal trajectories of more construct-valid indices of acculturation might be associated with sexual behavior and risk taking among Hispanic adolescents.

Although unidimensional models of acculturation do not reflect the lived experiences of most immigrants, longitudinal studies using language use as a proxy for acculturation may support the hypothesis that family processes would mediate the effects of acculturation on adolescent problem and risk outcomes. For example, McQueen, Getz, and Bray (2003) found that Mexican American adolescents’ feelings of separation from family members mediated the effects of English language use on deviant behavior and on cigarette and alcohol use. Mogro-Wilson (2008) found that, among Hispanic adolescents, use of English was associated with lower parental control, which in turn predicted adolescent alcohol use. Gil, Wagner, and Vega (2000), using a sample of Hispanic boys in Miami, found that English-language use was linked with lower levels of respect and regard for parents – which in turn was predictive of adolescent alcohol use.

The Present Study

The present study contributes to the growing literature on longitudinal patterns of acculturation by (a) examining trajectories of acculturation (both American-culture acquisition and Hispanic-culture retention) in adolescents and parents, and then (b) linking these trajectories to adolescent and parent reports of family functioning and to adolescent reports of risky behavior – conduct problems, substance use, and sexual activity (including unprotected sex). Conduct problems are risky because they may serve as precursors to, or occur along with, drug and alcohol use (Park & Romer, 2010). Sexual activity prior to age 16 is also risky because it is associated with unprotected sex, greater numbers of sexual partners, and sex under the influence of alcohol or drugs later on (Dillon et al., 2010).

Although data on all variables were collected at each of the five study timepoints, we utilized data on each variable only at certain timepoints so as to specify the temporal order of our study variables (i.e., acculturation trajectories → family functioning → behavior problems). This ordering was based on Szapocznik and Kurtines's (1993) theoretical perspective, which posits that acculturation can exert a causal effect on family processes, which then affect adolescent behavioral outcomes (see Figure 1). Given this theoretical grounding, and so that we could test for longitudinal mediation, we operationalized acculturation as a trajectory across four timepoints spanning two years (cf. Matsunaga et al., 2010), and we modeled family functioning reports (from both parents and adolescents) at the fourth study timepoint as a function of this acculturation trajectory. We controlled for family functioning at the third timepoint so that only the unique longitudinal effects of acculturative trajectories on family functioning would be modeled. Similarly, adolescent outcomes were modeled at the fifth (last) timepoint and were controlled for at the fourth timepoint.

Following Knight et al. (2009a), we used latent class growth analysis (Muthén & Muthén, 2000; Nagin, 2005) to extract classes of adolescents and of parents, where each group would be characterized by similar baseline levels and change trajectories in acculturation. Acculturation trajectories were allowed to predict adolescent conduct problems, substance use, and sexual risk taking both (a) directly and (b) indirectly through family functioning (cf. Gonzales et al., 2006). In line with bidimensional models of acculturation, we created trajectory classes for adolescents and for parents using both Americanism and Hispanicism (cf. Knight et al., 2009a), and we then examined how these acculturation trajectories were related to family functioning and to adolescent outcomes. The present study was conducted in Miami, which serves as a Hispanic ethnic enclave for adult immigrants and as a highly bicultural context for children, adolescents, and young adults (Stepick & Stepick, 2002).

Hypotheses

Consistent with Berry's (1980) model of acculturation, we anticipated that, for adolescents, trajectory classes would emerge representing assimilation (high Americanism combined with low Hispanicism), separation (low Americanism with high Hispanicism), and biculturalism (high Americanism with high Hispanicism). We did not expect a cluster representing marginalization (low Americanism with low Hispanicism), because it is unlikely that individuals living in a bicultural context would fail to endorse either American or Hispanic behaviors over time (Rudmin, 2003). For parents, given that most Hispanic parents who settle in ethnic enclaves retain their cultural heritage and do not endorse American behaviors strongly (Portes & Rumbaut, 2006; Schwartz, Pantin, et al., 2006) we anticipated that the classes extracted would be characterized by high Hispanicism and would differ only in the extent of Americanism endorsed.

Given the associations between low levels of adolescent Hispanicism and family disengagement or conflict (Gil et al., 2000; McQueen et al., 2003), we further hypothesized that adolescent acculturation trajectory classes characterized by high or increasing Hispanicism scores would predict more favorable indices of family functioning (e.g., high parent-adolescent involvement, positive parenting, and communication). On the other hand, an assimilated adolescent trajectory, characterized by low Hispanicism scores over time, would be expected to predict poor family functioning. An assimilated adolescent trajectory would also be expected to predict delinquent and risk-taking behaviors indirectly through family functioning (cf. McQueen et al., 2003). For parents, trajectories characterized by higher levels of Americanism were hypothesized to positively predict delinquent and risk-taking adolescent behaviors, likely because Americanized parents may be more permissive (Dumka, Gonzales, Bonds, & Millsap, 2009).

Method

Participants and Procedures

Data for the present study were taken from a randomized clinical trial of Familias Unidas (Grant MH63042; Pantin et al., 2003; Pantin et al., 2009; Prado et al., 2007), a family-based substance use and HIV prevention program for Hispanic adolescents and their parents. Although the dataset was taken from an intervention study, there is evidence that intervention datasets can be used for longitudinal analyses as long as (a) the study model is found to fit equivalently across conditions and (b) at least one of the conditions does not target any of the study variables (Choi, Harachi, Gilmore, & Catalano, 2005; Matsunaga et al., 2010). Acculturation was not directly targeted by any of the three conditions; family functioning, conduct problems, and substance use were directly targeted by the first condition; and sexual behavior was directly targeted by the first and second conditions. The third condition did not directly target any of the study variables.

One parent from each family participated in the study with the adolescent. Recruitment took place during April through June of the adolescents' 7th grade year. During recruitment, on several occasions, study staff visited all 7th grade homerooms in the three participating middle schools to distribute recruitment flyers to students. Adolescents were asked to return the letter signed by their parents indicating whether the parents were interested in learning about the study. Parents who indicated interest were contacted by project staff. Families were eligible to participate if (a) at least one parent was born in a Spanish-speaking country in the Americas, (b) the adolescent would advance to the 8th grade in the next school year, (c) neither the adolescent nor the primary parent had ever been hospitalized for psychiatric reasons, (d) the family was not planning to move out of the South Florida area during the 3 years of the study, (e) the adolescent was living with an adult primary caregiver who was willing to participate, and (f) a primary caregiver could attend weekly weekday evening meetings.

Of the 649 potential families, 70 declined to participate, 44 adolescents were not promoted to the eighth grade, 26 families were not living within the catchment areas of one of the three participating schools, 163 families reported scheduling conflicts, and 80 families were planning to move out of the area. The remaining 266 families met inclusion criteria and were randomized to one of the three intervention conditions. Each condition consisted of two modules. The conditions were (a) Familias Unidas (family strengthening program) + Parent-Preadolescent Training for HIV Prevention (PATH), (b) English for Speakers of Other Languages (ESOL) + PATH, and (c) ESOL + HeartPower! for Hispanics (HEART-H), a cardiovascular health promotion program. All modules were delivered directly to parents in a participatory group format, and parents were encouraged to transmit the information to their adolescents in facilitator-supervised home visits. Intervention activities occurred between the baseline and 12-month assessment timepoints. More information on intervention outcomes is presented in Prado et al. (2007).

Participants were 128 boys and 138 girls (mean age = 13.4, $SD = .68$) and their primary caregivers (34 men, 232 women; mean age = 40.9, $SD = 6.2$). The vast majority (90%) of participating caregivers were the adolescents' biological mothers. Only 18.6% of the families reported household incomes greater than \$30,000 per year. Nearly all (99%) of parents, and 60% of adolescents, were foreign-born. The remaining adolescents were born in the United States but raised by foreign-born parents. Immigrant adolescents and parents were born in Cuba (40%), Nicaragua (25%), Honduras (9%), Colombia (4%), and other Hispanic countries (22%). Of foreign born adolescents ($n = 159$), 50% had been living in the United States for less than three years, whereas the other half had either been living in the United States between 3-10 years ($n = 54$; 34%) or more than 10 years ($n = 25$; 16%).

Participants were assessed at baseline and at 6, 12, 24, and 36 months post-baseline. Of the original cohort of 266 families, 250 provided data at two or more timepoints, and 178 provided data at all five timepoints. Six families did not provide data at Time 2 but returned to the study at later timepoints. Individuals providing data at all timepoints differed from other participants only in terms of age. “Completers” were, on average, 13.4 years of age at baseline, compared to 13.6 years for other participants.

Adolescent measures were completed on laptop computers using the audio-computer-assisted-interviewing (A-CASI; Turner, Rogers, Lindberg, Pleck, & Sonenstein, 1998) system. The questions and response choices were read to the adolescent through a set of headphones connected to a laptop computer. The adolescent indicated her or his response using the keyboard or mouse. The A-CASI system has been shown to increase the veracity of reports of sensitive or illegal behaviors, especially in adolescents and young adults (Cooley et al., 2001). Parent assessments were completed in interview form with a trained Hispanic interviewer because, during the pilot phase, many parents expressed discomfort about completing their assessments on computer. Parents and adolescents were assured that their answers would be kept confidential to the extent permitted by law (i.e., except in cases of abuse or of imminent harm to oneself or to someone else). Each participant completed the study measures in the language of her or his choice. Nearly all (99%) parents completed their assessments in Spanish at all timepoints. At baseline, 57% of adolescents ($n = 151$) elected to complete their assessments in Spanish, and 39% ($n = 104$) elected to complete their assessments in English. We do not have language-of-assessment data for 11 adolescents (4.1% of the sample). Families were paid \$25 at baseline, with payments increasing by \$5 at each successive timepoint.

Measures

For each of the adolescent-reported measures used in our study (aside from the cigarette use, alcohol use, and sexual behavior measures, which were single-item scales), we evaluated measurement invariance across language of administration (see Knight et al., 2009b, for a review of these procedures) using baseline data. Because almost all of the parents completed their assessments in Spanish, we were not able to ascertain measurement invariance in parent-reported measures. We sought to establish metric (equivalent factor loadings) and scalar (equivalent item intercepts) invariance for each measure across languages by comparing: first, a model with all factor loadings constrained equal across languages to a model with all factor loadings free to vary across languages, and second a model with all factor loadings constrained across languages to a model with all factor loadings and item intercepts constrained across languages. For measurement invariance to hold, the chi-square difference should be nonsignificant, and the differences in CFI and RMSEA values should be .01 or less (Dimitrov, 2010; Widaman & Reise, 1997). Because the chi-square difference is often overpowered in measurement models (Chen, 2007), the assumption of invariance may be retained if the chi-square difference is significant but the differences in the other fit indices are less than .01. Although invariance testing can be extended to include residual variances, this is an overly restrictive assumption (Dimitrov, 2010; Vandenberg & Lance, 2000).

Acculturation—Parents and adolescents completed the Bicultural Involvement Questionnaire (Szapocznik et al., 1980). This 24-item measure asks participants about the extent to which they are comfortable engaging in a number of cultural practices (e.g., language use at home and at school/work, reading magazines, watching television, celebrating birthdays and holidays) in “American ways” and in “Hispanic ways.” The response scale for each item ranges from 1 (*Not at all Comfortable*) to 5 (*Very Comfortable*). For the present analyses, we used acculturation data from Times 1-4.

Measurement invariance analyses on the BIQ Americanism and Hispanicism subscales indicated that neither the Americanism subscale, $\Delta\chi^2(18) = 38.40, p < .005, \Delta CFI = .015; \Delta RMSEA = .001$; nor the Hispanicism scale, $\Delta\chi^2(18) = 67.83, p < .001, \Delta CFI = .039; \Delta RMSEA = .013$, met criteria for linguistic measurement invariance. Examination of the factor loadings for the Hispanicism items indicated that the items referring to use of Spanish in various settings loaded well on the Hispanicism subscale factor for English-speaking adolescents, but loaded poorly for Spanish-speaking adolescents. No clear pattern emerged for the Americanism items.

Given that the language use items did not function equivalently across language of administration, we removed these items from the adolescent-reported Hispanicism and Americanism subscales in all further analyses. The adolescent-reported Hispanicism and Americanism subscales therefore consisted of seven items apiece. Cronbach's alpha coefficients for these shortened scales at baseline were .91 for Americanism and .88 for Hispanicism. The language items were retained for the parent-reported Americanism and Hispanicism subscales, because 99% of the parents completed their assessments in Spanish.

Family Functioning—Family functioning was assessed in terms of parental involvement, positive parenting, and parent-adolescent communication. Parents and adolescents each completed separate measures of each of these constructs. *Parental involvement and positive parenting* were assessed using parent and adolescent versions of the Parenting Practices Scale (Gorman-Smith, Tolan, Zelli, & Huesmann, 1996). The adolescent-report parental involvement subscale consists of 12 items ($\alpha = .87$); the adolescent-report positive parenting subscale consists of 6 items ($\alpha = .91$); the parent-report involvement subscale consists of 10 items ($\alpha = .71$); and the parent-report positive parenting subscale consists of 6 items ($\alpha = .79$). Sample adolescent-report items include “How often did your parent ask you about your plans for the coming day?” (involvement) and “When you do something that your parent likes, does s/he give you a wink or a smile” (positive parenting). Aside from the two additional adolescent-reported involvement items, the parent report items ask the same questions as the adolescent report items, from the parent's perspective – such as “How often have you asked your child about her/his plans for the coming day?” The response scale for each item ranges from 1 (*Almost Never*) to 3 (*Often*). *Parent-adolescent communication* was assessed using the Parent-Adolescent Communication Scale (Barnes & Olson, 1982). Both the parent and adolescent versions consist of 20 items (adolescent, $\alpha = .93$; parent, $\alpha = .81$). Sample items include “I can express my feelings to my parent/child without feeling restrained.” The response scale ranged from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). For the present analyses, family functioning data were used from Times 3 and 4.

Measurement invariance analyses on the family functioning measures indicated that parent involvement, positive parenting, and parent-adolescent communication met criteria for partial linguistic measurement invariance. Specifically, although we found full metric invariance, some of the item intercepts were not equivalent across languages for the parent involvement, positive parenting, and parent-adolescent communication measures. However, following Knight et al. (2009b), we proceeded with these subscales given the assumption that the combination of full metric invariance and partial scalar invariance is sufficient to support pooling data across language of administration. Statistical details regarding these analyses are available from the first author on request.

Adolescent Behavioral Outcomes—Conduct problems, past-90-day cigarette and alcohol use, past-90-day sexual activity, and past-90-day unprotected sex at the Time 5 assessment were used as the outcome variables in the present study. Time 4 scores on these same constructs were used to control for consistency in risky behaviors over time. Adolescent conduct problems were measured using shortened versions of the adolescent-

reported aggressive behavior (12 items, $\alpha = .72$) and attention problems (9 items, $\alpha = .74$) subscales from the Youth Self-Report (Achenbach & Rescorla, 2002). Sample items from these scales include “I am mean to others” (aggressive behavior) and “I have trouble paying attention” (attention problems). The response scale for each item ranges from 0 (*Not True*) to 2 (*Very Often or Often True*).

Measurement invariance analyses on the conduct problem measures indicated that, although some measurement nonequivalence was present, $\Delta\chi^2(6) = 13.50, p = .036, \Delta CFI = .029; \Delta RMSEA = .020$, the fully constrained model provided acceptable model fit ($CFI = .97, RMSEA = .095$). Freeing one item intercept, as per modification indices, produced a nonsignificant chi-square difference between the constrained and unconstrained models, $\Delta\chi^2(5) = 4.55, p = .49$; and this revised constrained model fit the data extremely well ($CFI = 1.00, RMSEA < .001$). The behavior problem subscales therefore largely met criteria for linguistic measurement invariance.

Substance use—Substance use was assessed using items similar to those used in the Monitoring the Future Study (Johnston, O’Malley, Bachman, & Schulenberg, 2010). Adolescents were asked whether they had smoked in their lifetime and in the 90 days prior to the Time 4 and 5 assessments. Adolescents were also asked about how many occasions they had consumed alcohol in the 90 days prior to assessment. Response choices included 1 (0 occasions), 2 (1-2 occasions), 3 (3-5 occasions), 4 (6-9 occasions), 5 (10-19 occasions), 6 (20-29 occasions), and 7 (40+ occasions). Given low levels of response to categories 3-7, we recoded the alcohol use response scale to 1 (0 occasions), 2 (1-2 occasions), or 3 (3+ occasions). We also asked about marijuana and hard drug use; however, because only 9 adolescents reported any marijuana use, and only 6 adolescents reported any hard drug use in the 90 days prior to assessment, these substances were not included in the present analyses. Cigarette use was therefore measured as a dichotomous variable, and alcohol use was measured as an ordinal variable.

Sexual Risk Behaviors—Sexual risk behaviors were measured using items from Jemmott, Jemmott, and Fong’s (1998) Sexual Behavior instrument. Adolescents were asked to indicate whether they had ever had sex (vaginal, anal, or oral), and for those who had ever had sex, whether they had had sex in the past 90 days preceding the Time 4 and Time 5 assessments. Adolescents who reported having had sex in the past 90 days were asked whether they had engaged in unprotected sex during that time period. Sexual outcomes were therefore measured as dichotomous variables.

Results

We present the study results in three general steps. First, we describe patterns and predictors of missingness in the study variables. Second, we create acculturation trajectory classes for adolescents and for parents. Finally, we estimate our proposed structural model (see Figure 1).

Step 1: Missing Data

We first examined patterns of missing data using Little’s (1988) Missing Completely at Random (MCAR) test. In cases where the MCAR assumption is violated, Enders (2010) recommends creating a missingness indicator for each variable (or set of variables) and comparing all other study variables between cases with and without missing data on the variable(s) in question. It should be noted that maximum likelihood estimation still outperforms more traditional ways of handling missing data (e.g., listwise deletion, mean replacement) even when data are not MCAR (Schlomer, Bauman, & Card, 2010). We

conducted the MCAR test separately for the acculturation variables, family functioning variables, and outcome variables, because these variables were included in the study model at different timepoints. We included adolescent and parent reported variables together within each MCAR test. A normed chi-square (χ^2/df) of 1.5 or below indicates missingness completely at random (Enders, 2010).

For the acculturation variables at Times 1-4, the assumption of missingness completely at random was retained, $\chi^2(241) = 283.99, p < .05, \chi^2/df = 1.18$. For the family functioning variables at Times 3 and 4, the assumption of missingness completely at random was statistically rejected, $\chi^2(182) = 613.57, p < .001, \chi^2/df = 3.37$. For the adolescent outcome variables at Time 5, the assumption of missingness completely at random was also statistically rejected, $\chi^2(4) = 16.04, p < .005, \chi^2/df = 4.01$.

Because the family functioning and adolescent outcome variables did not satisfy the MCAR assumption, we examined differences in demographic variables and baseline scores on the study constructs between cases with and without valid family functioning data at Times 3 and 4. Of the 266 study families, 226 (85%) provided valid family functioning data at Time 3, and 213 (80%) provided valid family functioning data at Time 4. Multivariate analyses of variance (MANOVAs; one for Time 3 family functioning and one for Time 4 family functioning) indicated that none of the study variables at baseline were significantly related to missingness on family functioning at Times 3 or 4. Chi-square tests indicated that missingness on family functioning at Times 3 and 4 was not related to intervention condition or to adolescent gender or nativity (U.S.-born versus foreign born). We therefore proceeded with structural equation modeling. We used the mean and variance adjusted weighted least squares (WLSMV) estimator, which deletes missing data only for observed independent variables (Bengt Muthén, Mplus discussion, October 3, 2005). Except for one adolescent who provided no acculturation data at any of the study timepoints, all adolescents and parents were assigned to an acculturation trajectory class (which was modeled as an observed predictor); and parent and adolescent reports of family functioning were modeled as latent variables, for which missing data are not deleted.

For the Time 5 adolescent outcome variables, 207 adolescents (78%) provided complete data. A MANOVA indicated no associations of the study variables at baseline with missingness at Time 5, Wilks' $\lambda = .95, F(10, 239) = 1.35, p = .20, \text{partial } \eta^2 = .05$. Chi-square analyses indicated no significant associations of intervention condition, adolescent gender, or adolescent nativity with missingness on adolescent outcomes at Time 5.

Step 2: Acculturation Trajectory Classes

Our next step of analysis was to examine longitudinal trajectories of acculturation in terms of distinct classes of individuals grouped according to their baseline levels (at the end of 7th grade) and change trajectories (from 7th to 9th grades). We used a multi-stage decision process (Nylund et al., 2007) to decide on the number of classes to retain by considering five criteria. First, the Vuong-Lo-Mendell-Rubin likelihood ratio test indicates the extent to which the $-2 \log$ likelihood value for a model with k classes is significantly smaller than the corresponding value for a model with $k-1$ classes. Second, the Akaike Information Criterion (AIC) and Bayesian Information (BIC) provide an additional basis for comparing models, where lower values indicate better fit. Third, to ensure stability of the class solution, each class had to represent more than 5% of the sample. Fourth, classes had to be substantively different from one another (i.e., one class could not simply be a variant on another class). Fifth, posterior probabilities of correct classification and entropy values should be .75 or higher.

Growth curves for both Americanism and Hispanicism were included in the mixture model so that the solution extracted would be based on a bidimensional understanding of acculturation (cf. Nagin, 2005; Schwartz & Zamboanga, 2008). Separately for Americanism and for Hispanicism, the Time 1, 2, 3, and 4 scores were attached to latent intercept and slope terms, with all intercept loadings fixed to 1 and each slope loading fixed to the number of months elapsed since the baseline assessment (i.e., 0, 6, 12, and 24). We therefore extracted classes based on both Americanism and Hispanicism trajectories.

For adolescents, we extracted a three-class solution. The Vuong-Lo-Mendell-Rubin likelihood ratio test indicated a statistically significant improvement in fit when a third class was added, $LRT = 198.80$, $p < .02$; but not when a fourth class was added, $LRT = 67.50$, $p = .12$. The entropy value for the 3-class solution was $E = .83$, and posterior classification accuracies for the three classes ranged from .89 to .95.

Based on the intercepts and slopes for adolescent Hispanicism and Americanism (see Figure 2), the three classes were named Moderate Bicultural ($n = 30$), High Bicultural ($n = 171$), and Assimilated ($n = 64$). Following Coatsworth et al. (2005), the scale midpoint, rather than the sample mean or median, was used to name the classes – as a way of limiting the sample-specificity of the class labels. The Moderate Bicultural class was characterized by baseline Americanism and Hispanicism scores that were both close to the scale midpoint and did not change significantly over time. The Assimilated class was characterized by Americanism scores near the top of the range of possible values, and by Hispanicism scores that begin near the scale midpoint. Neither Americanism nor Hispanicism scores changed significantly over time within the Assimilated class. The High Bicultural class was characterized by high and modestly increasing Americanism scores, and by Hispanicism scores that begin in the moderate-to-high range and increase markedly over time. Assimilated adolescents were most likely (53.1%) to be U.S.-born, whereas Moderate Bicultural adolescents were least likely (13.3%) to be U.S.-born, $\chi^2(2) = 13.49$, $p < .001$, Cramér's $V = .23$. Moreover, among foreign-born adolescents, those in the Moderate Bicultural class were most likely (73.1%) to have lived in the United States for three years or less, with participants in the Assimilated (46.7%) and High Bicultural (45.6%) classes marginally significantly less likely to be recent immigrants, $\chi^2(4) = 8.19$, $p = .085$, Cramér's $V = .16$.

We also extracted latent trajectory classes for parent Americanism and Hispanicism. The decision process pointed to a 3-class solution, $LRT = 150.83$, $p < .001$; $E = .80$; posterior accuracy values ranged from .88 to .93. Class 1 (named Highly Hispanic; $n = 153$) was characterized by extremely high Hispanicism scores and extremely low Americanism scores; Class 2 (named Moderate Bicultural; $n = 62$) was characterized by moderate-to-high Hispanicism scores and moderate Americanism scores; and Class 3 (named Moderately Hispanic; $n = 51$) was characterized by moderate Hispanicism scores and extremely low Americanism scores (see Figure 3). None of the slopes were significantly different from zero, indicating that parent acculturation scores changed little over time. The classes did not differ significantly in terms of number of years spent in the United States. Not surprisingly, however, parents in the Moderate Bicultural class were most likely (51.6%) to have U.S.-born adolescents, $\chi^2(2) = 6.81$, $p < .04$, Cramér's $V = .16$. Parents in the Highly Hispanic class were least likely (27.5%) to have U.S.-born adolescents.

Step 3: Acculturation as a Predictor of Adolescent Problem Outcomes

To test the primary study hypothesis – that trajectories of acculturation would predict adolescent outcomes both directly and indirectly through their effects on family functioning – we estimated a structural mediational model using the Mplus software package (release 6.12; Muthén & Muthén, 2010). To ensure that the mediational model was fully longitudinal, and to rigorously test the theoretical perspective advanced by Szapocznik and

Kurtines (1993), acculturation trajectories were modeled in terms of the classes created from Time 1-4 scores; family functioning was modeled at Time 4; and adolescent behavioral outcomes were modeled at Time 5. To most rigorously evaluate mediation, we controlled for Time 3 family functioning so that the acculturation classes would be able to predict only the variability in Time 4 family functioning that was not associated with the stability of family functioning over time. Moreover, because adolescent and parent reports of family functioning are generally only modestly intercorrelated (Schwartz, Pantin, Prado, Sullivan, & Szapocznik, 2005), we created separate latent variables for parent and adolescent reports of family functioning at Times 3 and 4. Similarly, in predicting Time 5 adolescent outcomes, we controlled for the corresponding Time 4 adolescent outcome variables. Given that the acculturation trajectories were parameterized as ending at Time 4, and given that stability of family functioning from Times 3-4 was statistically controlled, the model provides a fairly rigorous longitudinal test of mediation (cf. Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001).

Frequencies and Distributions of Substance Use and Sexual Behavior Data—

At the final study timepoint, 18 adolescents (9% of all adolescents providing data) indicated having smoked cigarettes during the 90 days prior to assessment, and 56 adolescents (27%) indicated having consumed alcohol at least once in the 3 months prior to assessment. Of the 207 adolescents providing sexual behavior data at the final study timepoint, 45 (21.7%) indicated having had anal or vaginal sex during the 90 days prior to assessment, and 30 (14.5%) indicated having had unprotected anal or vaginal sex during the 90 days prior to assessment.

Structural Models—Four steps were followed in testing the structural model. First, we created latent variables for adolescent and parent family functioning. Second, we evaluated whether the structural model could be collapsed across intervention condition. Third, we examined the structural model. Finally, we tested the extent to which parent and adolescent reports of family functioning mediated the effects of parent and adolescent acculturation trajectory classes on adolescent outcomes.

In the structural model that we estimated (see Figure 1), adolescent reports of family functioning were parameterized as a latent variable with parent-adolescent communication, parental involvement, and positive parenting as indicators. Parent-reported family functioning used the same set of indicators. Fornell and Larcker (1981) proposed a method of calculating reliability for latent variables, where reliability is computed as the ratio of the variability explained by the latent variable to the total variability among the indicators. Reliability estimates were .83 and .82 for adolescent-reported family functioning at Times 3 and 4, respectively; and .59 and .73 for parent-reported family functioning at Times 3 and 4, respectively.

In estimating the structural model, we again used the WLSMV estimator, rather than the maximum likelihood estimator, because the WLSMV estimator does not require mathematical integration and provides standard fit indices for models with categorical outcomes. However, whereas maximum likelihood estimation provides logistic regression coefficients that can be converted to odds ratios, the WLSMV estimator provides probit regression coefficients (Azen & Walker, 2011). Probit regression assumes that the probability of the dependent-variable event occurring is normally distributed, and as such, a standardized probit regression coefficient is similar to a standardized linear regression coefficient (except that the outcome is the probability of event occurrence). As fit indices, we used the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Kline (2006) suggests that good model fit is represented by CFI .95 and RMSEA .05, and that adequate fit is represented by CFI .90 and RMSEA .08. The

RMSEA also provides a 90% confidence interval and a “close fit probability” that the RMSEA value is below .05 (Hancock & Freeman, 2001).

Model Invariance across Conditions—To ensure that the sample could be collapsed across intervention conditions, we estimated the model within each condition and conducted equivalence analyses to ensure that the model fit similarly across conditions. The two control conditions were combined in the equivalence analysis to avoid extremely small cell sizes for some of the risk behavior outcomes. For example, the low frequency of cigarette smoking and risky sex at Time 5 created extremely small cell sizes when the sample was split by condition, and indeed the unconstrained model produced inadmissible parameter estimates (including correlations above 1.0). As a result, we conducted the invariance test without cigarette smoking and risky sex. Because the WLSMV estimator was used, the DIFFTEST option in Mplus was used to compare the constrained and unconstrained models to obtain a correct chi-square difference value.

To conduct the invariance test, we compared (a) a fully unconstrained model with all factor loadings, structural paths, and intercepts free to vary across conditions to (b) a fully constrained model with all factor loadings, structural paths, and intercepts set equal across conditions. When testing invariance of structural paths and intercepts, Little (1997) recommends using only the chi-square difference index. The invariance test indicated that the model demonstrated metric (factor loadings and structural paths) and scalar (structural intercepts) invariance across conditions, $\Delta\chi^2(50) = 47.24, p = .58$. The constrained model provided an acceptable fit to the data, $\chi^2(432) = 490.83$; CFI = .90; RMSEA = .036 (90% CI = .014 to .051).

Evaluating and Interpreting the Structural Model—In the full model, because there were three adolescent acculturation trajectory classes and three parent acculturation trajectory classes, we used dummy coding to enter these classes as predictor variables. For adolescents, the High Bicultural class was used as the reference group, and for parents, the High Hispanic class was used as the reference group – because these were the classes with the highest Hispanicism scores for each reporter. Dummy variables were created for each of the other two classes for each reporter, and were allowed to predict adolescent and parent reports of family functioning, as well as adolescent reports of behavior problems, cigarette and alcohol use, and sexual behavior and risk taking. Where the effect of the acculturation classes on adolescent or parent reports of family functioning was statistically significant, we evaluated the possibility that family functioning might mediate the effects of acculturation trajectory on adolescent outcomes.

The structural model provided an acceptable fit to the data, $\chi^2(257) = 366.52, p < .001$; CFI = .90; RMSEA = .045 (90% CI = .034 to .055), close fit probability = .79. Path coefficients for the dummy-coded acculturation class variables are reported as unstandardized coefficients, because dummy variables are on a nominal scale. A significant effect of acculturation trajectory class on family functioning emerged: the Assimilated adolescent classes was associated with less favorable adolescent-reported family functioning compared to the High Bicultural class, $B = -4.44, p < .02$. A marginally significant direct effect of trajectory class on adolescent outcomes emerged. Compared to those in the High Bicultural class, adolescents in the Assimilated class reported marginally higher levels of aggressive behavior, $B = 1.11, p = .068$.

A number of associations emerged between family functioning at Time 4 and adolescent outcomes at Time 5. Parent-reported family functioning was significantly negatively predictive of adolescent cigarette smoking, $\beta = -.32, p < .02$; and marginally significantly predictive of sexual activity, $\beta = -.21, p = .062$. Adolescent-reported family functioning was

negatively predictive of extent of alcohol use, $\beta = -.20$, $p < .04$; but was positively predictive of cigarette smoking, $\beta = .36$, $p < .02$; sexual activity, $\beta = .31$, $p < .01$; and unprotected sex, $\beta = .32$, $p < .01$.

Tests of Mediation—Because adolescent and parent reports of family functioning were associated both with acculturation classes and with adolescent outcomes, we tested the extent to which family functioning would mediate the effects of acculturation trajectory classes on adolescent outcomes. Such mediated associations would suggest that adolescents' or parents' classes (or patterns) of Americanism and Hispanicism over time would affect adolescent behavioral outcomes through adolescent or parent perceptions of family functioning. We tested for mediation using MacKinnon's (2008) Asymmetric Distribution of Products Test and using the Model Indirect command in Mplus (Muthén & Muthén, 2011). This test computes a 95% confidence interval around the product of the two unstandardized path coefficients that comprise the mediating pathway. If this confidence interval does not include zero, then partial mediation is assumed. A standardized indirect path coefficient can be computed by multiplying the two standardized path coefficients that comprise the mediating pathway.

Three significant mediated pathways emerged: (a) a negative effect of the Assimilated adolescent class on cigarette smoking through adolescent-reported family functioning, unstandardized $B = -.193$, 95% CI = $-.382$ to $-.003$, $p < .05$, standardized $\beta = -.075$; (b) a negative effect of the Assimilated adolescent class on sexual activity through adolescent-reported family functioning, unstandardized $B = -.168$, 95% CI = $-.324$ to $-.012$, $p < .04$, standardized $\beta = -.065$; and (c) a negative effect of the Assimilated adolescent class on risky sexual activity through adolescent-reported family functioning, unstandardized $B = -.164$, 95% CI = $-.328$ to $-.001$, $p = .05$, standardized $\beta = -.067$.

Follow-Up Analysis: Examining the Counterintuitive Effects of Adolescent-Reported Family Functioning—The finding that adolescent-reported family functioning positively predicted adolescent cigarette smoking, sexual activity, and unprotected sex appears counterintuitive and warrants further examination. Because both parent and adolescent reports of family functioning were included as predictors of adolescent outcomes, the effects of adolescent family functioning reports are calculated controlling for the effects of parent family functioning reports (and vice versa; Keith, 2006). As a result, the counterintuitive effects of adolescent-reported family functioning on adolescent outcomes may have been a result of discrepancies between parent and adolescent reports of family functioning.

To explore this possibility, we created a latent parent-adolescent difference score (adolescent report minus parent report; King et al., 2006) at Times 3 and 4, and we used this difference score in place of adolescent and parent reports of family functioning. The model including the difference score fit the data adequately, $\chi^2(255) = 353.36$, $p < .001$; CFI = .91; RMSEA = .043 (90% CI = .031 to .053), close fit probability = .87. Neither parent nor adolescent acculturation trajectories significantly predicted the latent family functioning difference score at Time 4 (controlling for the latent difference score at Time 3). However, the latent difference score at Time 4 significantly predicted adolescent outcomes at Time 5: cigarette smoking, $\beta = .34$, $p < .01$; alcohol use, $\beta = -.19$, $p < .04$; sexual activity, $\beta = .27$, $p < .005$; and unprotected sex, $\beta = .27$, $p < .01$.

Discussion

The present study examined the developmental trajectories of acculturation in Hispanic adolescents and parents, as well as the effects of these trajectories on family functioning and

on adolescent behavioral outcomes. Several major findings emerged. First, of the three adolescent trajectory classes that we extracted, only the High Bicultural class was characterized by changes (increases) in Americanism and Hispanicism over time. However, 64% of adolescents were placed into the High Bicultural class, suggesting that the majority of adolescents in the sample were high and increasing in both American and Hispanicism. This pattern suggests that the bicultural environment of Miami is likely to enrich both American and Hispanic cultural streams within Hispanic adolescents who are already bicultural – but not necessarily in those who adopt other approaches to acculturation. Such a finding is consistent with the supposition that a bicultural environment can encourage and increase biculturalism in young people (cf. Flannery, Reise, & Yu, 2001; Schwartz & Zamboanga, 2008). Miami appears to represent an example of a bicultural environment that facilitates the continuing development of cultural behaviors for the majority of Hispanic adolescents – and some other U.S. cities with large Hispanic populations (such as Los Angeles, New York, Chicago, and Houston) may provide similarly bicultural environments.

Second, as an index of validation for the trajectory classes, these classes mapped as expected onto adolescents' nativity and time in the United States. The Moderate Bicultural class, which appeared to represent a combination of Berry's (1980, 1997) separated and bicultural approaches, consisted primarily of recently immigrated adolescents – whereas U.S.-born adolescents were overrepresented within the Assimilated class. Although parents' length of time (less than 3 years, 3-10 years, or more than 10 years) in the United States was not related to their acculturation trajectory classification, those parents whose adolescents were born in the United States were disproportionately likely to be classified into the Moderate Bicultural trajectory class, which was characterized by higher levels of Americanism compared to the other two classes. Hispanicism was moderate to high in all three parent trajectory classes, suggesting that the Hispanic enclave context of Miami was successful in maintaining Hispanic cultural practices among adults. Moreover, the high Hispanicism in all three parent trajectory classes may explain why these classes were not differentially related to parent reports of family functioning. Because many Hispanic cultures are characterized by a strong orientation toward family (Sabogal, Marin, Otero-Sabogal, Marin, & Perez-Stable, 1987), maintaining Hispanic cultural orientations may help to preserve parent-adolescent relationships – at least from the parent's perspective.

Third, the High Bicultural adolescent acculturation trajectory – high and increasing in both Hispanicism and Americanism over time – was associated with the most favorable adolescent-reported family functioning. Because the highest degrees of biculturalism involve a deepening of one's solidarity both with the culture of settlement and with one's cultural heritage (Benet-Martínez & Haritatos, 2005), High Bicultural adolescents may be in an advantaged position in terms of relating to traditionally oriented parents. Bicultural adolescents may also serve as a conduit between family members and some services within the culture of settlement (e.g., medical providers, bill collectors; Morales & Hanson, 2005) – although this “language brokering” role may have negative as well as positive consequences for adolescents (Trickett & Jones, 2007).

With that said, however, an assimilated – rather than highly bicultural – adolescent acculturation trajectory was indirectly protective against adolescent cigarette smoking and sexual activity, with adolescent-reported family functioning serving as a mediator. One would expect a bicultural approach to be predictive of the lowest levels of risk taking – and these counterintuitive mediated effects appeared to be driven by the positive link between adolescents' perceptions of family functioning and their likelihood of smoking cigarettes and engaging in sexual activity and in unprotected sex. Further exploring this anomalous finding indicated that the significant positive effects of adolescent-reported family functioning on risky outcomes may have been due to the divergence between adolescent and

parent reports of family functioning. Specifically, in families where adolescents perceived family functioning to be more positive than parents did, adolescents appeared to be at greatest risk for cigarette smoking, sexual activity, and unprotected sex. However, the acculturation trajectory classes did not predict this discrepancy in reports of family functioning. Further research is needed to examine the effects of adolescent acculturation on family functioning over time, as well as the extent to which the *interaction* between parent and adolescent acculturation trajectories may affect family and adolescent outcomes.

Nonetheless, the negative effect of the assimilated adolescent acculturation trajectory on adolescent reports of family functioning is consistent with prior research suggesting links between loss of one's cultural heritage and family conflict and disengagement (Gil et al., 2000; Gonzales et al., 2006; McQueen et al., 2003). Indeed, a primary characteristic of assimilation is rejecting one's cultural heritage (Berry, 1980, 1997). Contrary to unidimensional approaches to acculturation, adopting American practices and customs is not problematic as long as Hispanic practices and customs are retained. Indeed, the more positive adolescent-reported family relationships associated with the two bicultural classes suggest that biculturalism represents an especially favorable approach to acculturation.

Fourth, parent-reported family functioning appeared to be protective against adolescent cigarette smoking and sexual activity. These effects may be a function of parental involvement and communication. Research indicates that Hispanic parents who are able to communicate with their adolescents in general may be more likely to discuss sexuality, smoking, and other risk behaviors with them (Harakeh, Scholte, Vermulst, de Vries, & Engels, 2010; McKee & Karasz, 2006). In turn, parent-adolescent communication about cigarette smoking is predictive of lower likelihood of adolescent smoking (de Leeuw, Scholte, Vermulst, & Engels, 2010); and parent-adolescent communication about sexuality is predictive of delayed sexual onset, and decreased likelihood of unprotected sex, among adolescents (Aspy et al., 2007).

Finally, all of the adolescent substance use and sexual outcomes were associated (directly, indirectly, or both) with parent or adolescent reports of family functioning. This suggests that the present findings were likely not due to shared-method biases involved in analyzing variables all reported by the same person (e.g., Podskoff, MacKenzie, Lee, & Podsakoff, 2003). Favorable adolescent perceptions of family functioning were protective against alcohol use; and favorable parent reports of family functioning were protective against cigarette smoking and recent sexual activity. The finding that parent, but not adolescent, perceptions of family functioning were protective against cigarette smoking and sexual activity is noteworthy. A likely explanation, as noted above, is that warm and close parent-adolescent relationships facilitate adolescent disclosure, parental guidance, and parental attempts to transmit their values regarding risky behaviors (Kerr & Stattin, 2000). Moreover, the extent to which parents and adolescents agree on the affective valence of their relationships with one another may also help to protect adolescents against cigarette smoking and precocious sexual activity.

Strengths and Limitations of the Present Study

Despite their contributions to the literature, the present results should be interpreted in light of several important limitations. Perhaps the most important limitation is that the present data were drawn from an intervention dataset. Although there is some precedent for conducting longitudinal analyses on intervention datasets (e.g., Choi et al., 2005; Dishion et al., 2005; Matsunaga et al., 2010), and although the model paths were not moderated by condition, sample composition is likely somewhat different between studies designed to test interventions and those designed purely to follow cohorts over time. Specifically, individuals and families who are most interested in receiving help (Perrino, Coatsworth,

Briones, Pantin, & Szapocznik, 2001) are most likely to be engaged into an intervention study. However, it is noteworthy that 94% of families provided data at two or more timepoints, and 78% of families provided data at Time 5. This high retention rate suggests that we were able to track developmental change for the overwhelming majority of adolescents in our sample.

Second, although theory (Szapocznik & Kurtines, 1993) suggests that acculturation affects family functioning and adolescent outcomes (both directly and indirectly through family functioning), it is possible that family functioning and adolescent outcomes may also influence the trajectory of acculturation. Acknowledging this possibility is especially important given that family functioning (using either adolescent or parent reports) did not significantly predict conduct problems once earlier levels of conduct problems were controlled. It is important for future research to empirically test the directionality of the links between acculturative and family processes.

A third limitation concerns the use of a Miami Hispanic sample. Miami is a unique cultural context in at least two respects. First, it is the only major U.S. city where Hispanics hold the majority of political and economic power; and second, it is the only U.S. city where neither of the two largest Hispanic nationalities in the U.S. (Mexican Americans and Puerto Ricans) are well represented within the local Hispanic population. As a result, it is important to replicate the present findings across multiple geographic contexts to ascertain generalizability. We (Schwartz et al., in press) are beginning to conduct research in this direction.

Fourth, because the language use items did not function equivalently across language of administration, we deleted those items and estimated the latent class growth analyses and structural models using only the items assessing other cultural practices (e.g., media use, choice of friends). There is evidence that language use is empirically distinguishable from other types of cultural practices (Kang, 2006). This suggests that the omission of language use items may have produced different results than might have emerged had language use items been included in analysis. However, our results also underscore the importance of examining linguistic measurement equivalence when measuring acculturation – and our findings suggest that language use items may operate differently in Spanish-dominant Hispanics than in Hispanics who are comfortable in English. Future research should further examine the different meanings of language use – and the role of language use as a dimension of acculturation – in bilingual versus monolingual Hispanic individuals.

Fifth, the use of self-reports of substance use and sexual behavior represents a potential limitation. Adolescents may overreport or underreport these behaviors for any number of reasons (cf. Shillington & Clapp, 2000). However, it should be noted that high levels convergence have been found between self-reports and biological measures of substance use among Hispanic adolescents (Dillon, Turner, Robbins, & Szapocznik, 2005), and that the method for data collection, the A-CASI, has been found to increase adolescents' veracity of responding (Cooley et al., 2003).

Finally, the dichotomous (yes or no) response scale used to assess cigarette use, sexual behavior, and sexual risk taking did not permit us to examine the extent or frequency of engagement in these activities. It is important for future research to obtain precise estimates of how often, and to what extent, adolescents engaged in specific risky behaviors.

In conclusion, and despite these limitations, the present study has extended the literature on acculturation trajectories in Hispanic families, and on the associations of these trajectories with family functioning and risk behaviors. The finding that both parent and adolescent acculturation trajectories – and both adolescent and parent reports of family functioning –

influenced adolescent risk behavior is consistent with a family-systemic perspective on adolescent outcomes. It is hoped that the present results inspire additional longitudinal research examining trajectories of acculturation and of their effects on family functioning and risk outcomes in Hispanic adolescents.

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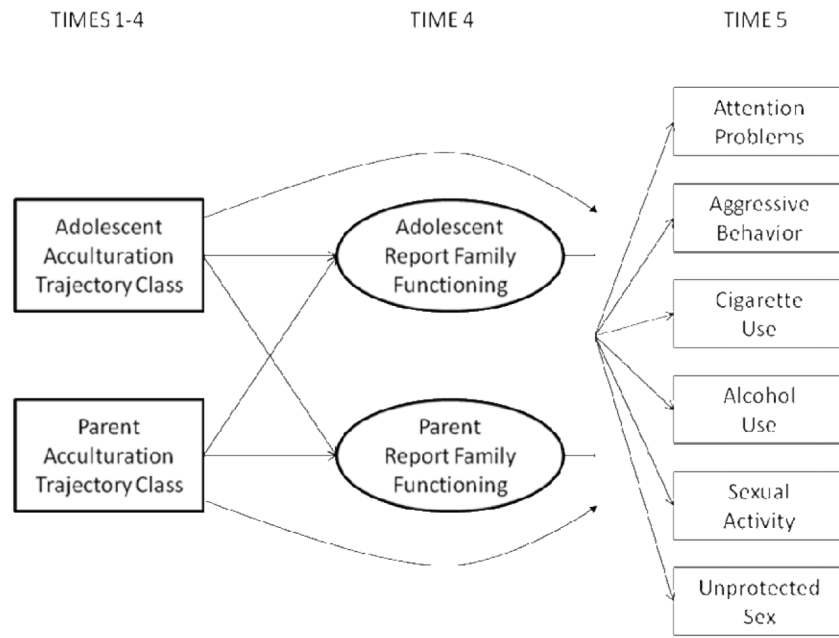


Figure 1. Structural Model

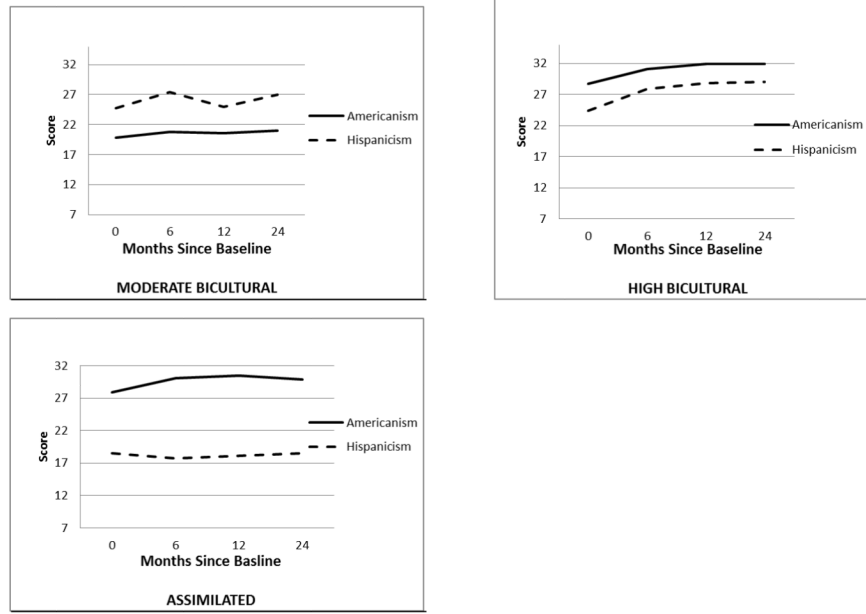


Figure 2. Adolescent Acculturation Class Solution

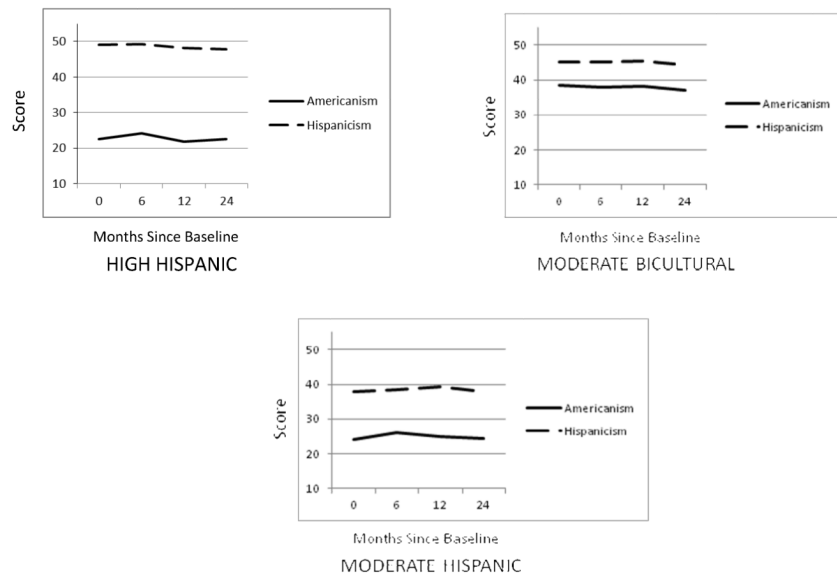


Figure 3. Parent Acculturation Class Solution

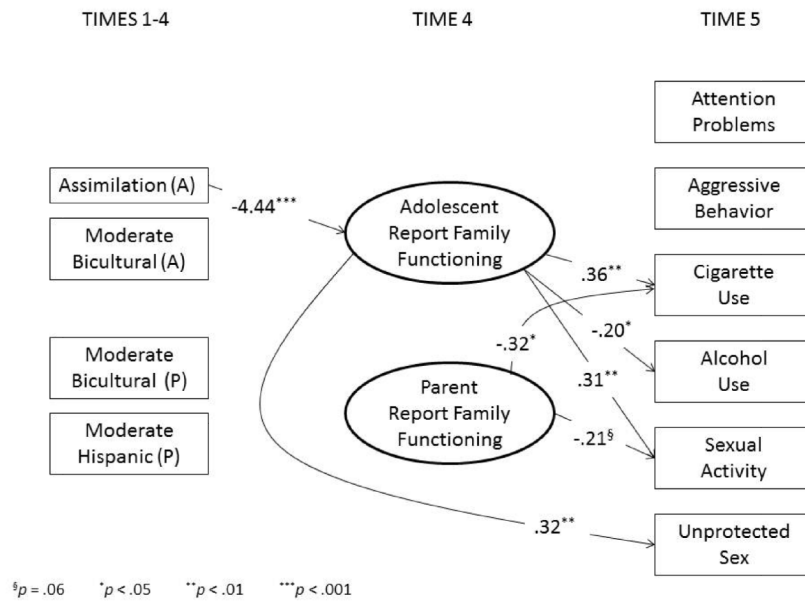


Figure 4. Final Structural Model

Note: Only significant results are displayed. (A) = Adolescent; (P) = Parent.