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Parent–Child Acculturation Patterns and Substance Use among Hispanic Adolescents: A Longitudinal Analysis

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Abstract

Acculturation discrepancy theory predicts that conflicting cultural preferences between adolescents and their parents will increase the adolescents' risk for behavior problems such as substance use. This study evaluated this hypothesis in a sample of 1683 Hispanic students in Southern California who completed surveys in 9th and 10th grade. Measures included the students' own cultural orientations and their perceptions of their parents' preference for their cultural orientations ("Perceived Parental Cultural Expectations"—PPCE). Hispanic PPCE in 9th grade was a risk factor for lifetime, but not past-month, cigarette, alcohol, and marijuana use in 10th grade. The adolescents' own Hispanic orientation in 9th grade was protective against lifetime and past-month smoking and marijuana use and lifetime alcohol use in 10th grade. The effects of the acculturation variables did not vary according to generation in the U.S. Change in acculturation between 9th and 10th grade was statistically significant but small in magnitude. Increases in parent-child Hispanic acculturation discrepancy (i.e., the difference between the adolescents' own cultural orientations and their PPCE, with adolescents perceiving that their parents wanted them to be more Hispanic oriented than they actually were) from 9th to 10th grade were associated with an increased risk of substance use. Family-based interventions for acculturating Hispanic families may be useful in decreasing the likelihood of substance use among Hispanic adolescents.

Keywords

Acculturation; Hispanic; Adolescence; Cigarette smoking; Tobacco; Alcohol; Drugs

Hispanic adolescents represent a large and growing segment of the U.S. population with unique health, social, and educational needs (Lara et al. 2005). Hispanics are the most rapidly growing foreign-born group in the United States (Ramirez and de la Cruz 2002). For

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Hispanic immigrants, the challenges of acculturating to the United States culture are numerous, including learning a new language and new customs, coping with discrimination, and finding a balance between adopting the cultural norms and values of the United States and preserving those of the culture of origin (Gil et al. 1994; Szapocznik et al. 1989). The stress of the acculturation process can cause psychological and behavioral problems among adolescents. Acculturative stress is not restricted to immigrant adolescents; it also can occur among U.S.-born adolescents who experience conflict between the Hispanic norms of their parents and the U.S. norms of their acculturated peers (Gil et al. 1994).

Among Hispanic-American adolescents, acculturation to the United States culture has been associated with an increased risk of tobacco, alcohol, and other drug use (Brook et al. 1998; De La Rosa 2002; Epstein et al. 2001; Love et al. 2006; McQueen et al. 2003; Unger et al. 2000). The association between acculturation and substance use probably involves several mechanisms, including the more individualistic and rebellious social norms for adolescents in the United States, loss or rejection of traditional Hispanic cultural norms such as familism (Franzini et al. 2002; Marin and Marin 1991), and the stress of navigating two cultures simultaneously and feeling marginalized from one or both of those cultures (Balcazar et al. 1995). It is important to understand the role of acculturation in the development of risk behaviors such as substance use and to create culturally appropriate health education programs to make youth more resilient.

Although several studies have documented associations between acculturation and substance use among Hispanic adolescents, most previous studies have assessed only the adolescents' acculturation levels, without considering their family members' cultural orientations and preferences. Adolescents' acculturation patterns and cultural identity develop within a family context. When a family immigrates to a new country, the acculturation process typically is not uniform across generations of the family (Szapocznik et al. 1978; Portes and Rumbaut 2001). Mainly due to rapid English language acquisition, children typically learn the new culture more rapidly than their parents do, and if attributes of the culture of origin are not maintained and supported by family and other community members, they also might abandon or forget the culture of origin more rapidly than their parents do, leading to discrepancies in acculturation and cultural preferences between adolescents and their parents (Portes and Rumbaut 2001).

Parent–child discrepancy in acculturation patterns can affect parent–child relationships in several ways. When children learn the U.S. culture more rapidly than their parents do, parents can become dependent on their children to help navigate and interpret the new culture. This can undermine parental authority and lead to family conflict and inconsistent parental discipline and monitoring, increasing the risk of adolescents' involvement in problem behaviors such as substance use (Portes and Rumbaut 2001; Samaniego and Gonzales 1999; Szapocznik et al. 1986, 2007). Many immigrant parents work long hours at demanding jobs, which leaves them less time to provide emotional support and supervision for their children. This can lead to loneliness, isolation, and risk-taking behavior among the adolescents in the family (Bacallao and Smokowski 2007).

Family conflict and adolescent rebelliousness also can arise when parents attempt to transmit protective cultural values and traditions to their children, but the children are not interested in learning those values or participating in those traditions (Portes and Rumbaut 2001). Children and adolescents growing up in the United States might not perceive their families' cultures of origin as useful or relevant in their daily lives, and they might be embarrassed by their parents' traditional behaviors. Parents' unsuccessful attempts to transmit traditional cultural information to their children might result in strained communication and limited social support across the generations. That might limit the extent

to which the children become involved in traditional culturally oriented activities and social structures (e.g., religious institutions and cultural heritage groups), which typically encourage adolescents to engage in non-rebellious activities with adult supervision and guidance (Habenstein 1998). Therefore, when assessing the effects of acculturation on adolescents, it is important to consider the family context.

The acculturation gap hypothesis (Szapocznik et al. 1978) has formed the basis of much of the current thought about the effects of acculturation on families and adolescents across ethnic groups (e.g., Gil et al. 1994; Rick and Forward 1992; Ying et al. 1999). However, only recently have researchers attempted to validate this hypothesis empirically. Several cross-sectional studies have examined parent–child acculturation discrepancy as a correlate of substance use among Hispanic adolescents. Supporting the acculturation discrepancy hypothesis, some of these studies (Felix-Ortiz et al. 1998; Martinez 2006) have found that parent–child acculturation discrepancy was associated with an increased risk of drug use. Some studies have identified mediators of the association between acculturation discrepancy and adolescent behavioral problems, including family stress (Martinez 2006), less effective parenting practices (Martinez 2006), family conflict (Smokowski and Bacallao 2006), and low family cohesion (Unger et al. in press). The results of other studies have been either inconsistent with the acculturation discrepancy hypothesis or difficult to interpret. Elder et al. (2005) found that Mexican-American adolescents who were more Anglo-oriented than their parents had an especially high risk of alcohol use. However, contrary to expectations, a measure of total acculturation discrepancy (discrepancy in Anglo orientation plus discrepancy in Hispanic orientation) was associated with a lower risk of alcohol use. Pasch et al. (2006) found no association between parent and child acculturation discrepancy and substance use; the highest levels of substance use and other problem behaviors were found in families in which both the adolescents and their parents were highly U.S.-oriented. Lau et al. (2005) also found no association between parent and child acculturation discrepancy and adolescents' conduct problems; contrary to expectations, their study found more conduct problems among adolescents who were more traditionally oriented than their parents.

Previous studies have measured parent–child acculturation discrepancies in different ways. Some studies have asked adolescents and their parents to self-report their own acculturation and have constructed difference scores to represent the discrepancy between the adolescents' self-reported acculturation and their parents' self-reported acculturation (e.g., Elder et al. 2005). This strategy assesses the actual difference in cultural orientation between parents and children, but it does not assess the effect of the acculturation discrepancy on the child. One might argue that an acculturation discrepancy will affect the child only if the child is aware of it, understands its implications, and experiences it as stressful, not if the child is oblivious to it or considers it unimportant. Other studies have asked the adolescents about their subjective perceptions of the effects of the acculturation discrepancy (e.g., how often they disagree with their parents about culture-related issues; Gil et al. 1994). This strategy captures the consequences of the acculturation discrepancy but does not quantify the extent of the discrepancy itself. In this study, we assessed the adolescents' self-reported acculturation and their perceptions of their parents' preferences for the adolescents' acculturation. We refer to the adolescents' perceptions of the way their parents want them to live as "Perceived Parental Cultural Expectations" (PPCE). This allows us to evaluate the effects of several related, but conceptually distinct, constructs: (a) the adolescents' own cultural orientations, (b) the adolescents' perceptions of how their parents want them to live, and (c) the adolescents' perceptions of discrepancy between the way they want to live and the way their parents want them to live.

The studies of acculturation and adolescent behavior described above have been limited by cross-sectional assessments, which can only suggest, but not demonstrate, that parent–child

acculturation patterns lead to adolescent substance use. Although it is likely that family acculturation patterns precede the development of substance use among the adolescents in the family, effects in the opposite direction are also plausible (e.g., affiliating with substance-using peers and experimenting with substance may encourage adolescents to adopt the more individualistic norms of the U.S. culture and/or reject the traditional norms of the culture of origin). Similarly, previous studies have assessed parent–child acculturation patterns at only one time point. Because adolescence is a time of ethnic identity exploration (Phinney 2003), adolescents' cultural orientations and their perceptions of their parents' cultural orientations may change during this period. One might hypothesize that a widening parent–child gap would be a risk factor for substance use. However, this hypothesis has not been tested. Longitudinal studies are needed to observe the development of cultural orientation and ethnic identity over time and determine the directionality of associations between acculturation and behavioral outcomes (Fuligni 2001).

It is not clear whether the associations between parent and child acculturation patterns and substance use are consistent across generations. parent–child acculturation discrepancies may be most salient when the parents are foreign-born and the children are U.S.-born, so the effects of these discrepancies might be strongest among these second-generation youth. Indeed, Portes and Rumbaut (2001) found the most social and behavioral problems among second-generation adolescents. However, parent–child acculturation discrepancies also exist among first-generation adolescents (adolescents who immigrate to the U.S. with their parents) because the adolescents adopt the U.S. culture more rapidly than their parents do, and acculturation discrepancies can persist through the third generation and beyond if the adolescents become more U.S.-oriented or less traditionally oriented than their parents. However, studies have not examined generation as a moderator of the associations between acculturation discrepancies and substance use.

Because the few empirical tests of the acculturation gap hypothesis have found inconsistent results, additional tests of the hypothesis are warranted. This 1-year longitudinal study examined parent–child acculturation patterns as correlates of the adolescents' substance use. We compared adolescents' self-reports of two constructs: their own cultural orientation and their perceptions of their parents' preferences for their cultural orientation (PPCE). Based on the acculturation discrepancy hypothesis (Szapocznik et al. 1978), we hypothesized that those adolescents who were strongly U.S.-oriented but perceived that their parents wanted them to be Hispanic-oriented would be at especially high risk for substance use. Based on predictions by Portes and Rumbaut (2001), we hypothesized that these associations would be strongest among second-generation adolescents. We examined the magnitude of change and stability in U.S. orientation, Hispanic orientation, and parent–child acculturation discrepancy. We also explored whether increases in parent–child acculturation discrepancies from 9th to 10th grade would be a risk factor for substance use in 10th grade.

Method

School Recruitment

Project Reteniendo y Entendiendo Diversidad para Salud (RED) is a longitudinal study of acculturation patterns and substance use among Hispanic/Latino adolescents in Southern California. The respondents in this study were students attending seven high schools in the Los Angeles area who completed surveys in 9th and 10th grade. Because this is a study of Hispanic adolescents, schools were approached and invited to participate if they contained at least 70% Hispanic students, as indicated by data from the California Board of Education, and were not participating in other studies or interventions designed to address variables of interest in this study. Efforts were also made to obtain a sample of schools with a wide range of socioeconomic characteristics. The median annual household incomes in the ZIP codes

served by the schools ranged from $29,000 to $73,000, according to 2000 U.S. Census data. Approval was obtained from the school principals and/or district superintendents, according to their established procedures.

Student Recruitment

The 9th grade survey was conducted in the Fall of 2005, and the 10th grade survey was conducted in the Fall of 2006. In 2005, all 9th-grade students in the school were invited to participate in the survey. Trained research assistants visited the students' classrooms, explained the study, and distributed consent forms for the students to take home for their parents to sign. If students did not return the consent forms, the research assistants telephoned their parents to ask for verbal parental consent. Students with written or verbal parental consent were allowed to participate. Although the students were minors and could not give legal consent, we also gave them the opportunity to assent or decline to participate as a way of involving them in the decision-making process. This procedure was approved by the university's Institutional Review Board.

Across the seven schools, 3,218 students were invited to participate. Of those, 2,420 (75%) provided parental consent and student assent. Of those, 2,222 (92%) completed the survey in 9th grade. Of the 2,222 students who completed the 9th grade survey, 1,947 (88%) also completed a survey in 10th grade. Of the 1,947 students who completed surveys in both years, 1,683 (86%) self-identified as Hispanic or Latino or reported a Latin American country of origin. These 1,683 Hispanic/Latino students are included in this analysis.

Survey Procedure

On the day of the survey, the data collectors distributed surveys to all students who had provided parental consent and student assent. Using a standardized script, they reminded the students that their responses were confidential and that they could skip any questions they did not want to answer. The classroom teachers were present during survey administration, but the data collectors instructed them not to participate in the survey process to ensure that they would not inadvertently see the students' responses. To help students with low literacy skills, the data collectors also read the entire survey aloud during the class period so the students could follow along.

The data collectors returned to the schools 1 year later, when the students were in 10th grade. Students who could be located in the same schools (and students who had transferred to another school participating in the study) completed follow-up surveys in their classrooms, using the same procedure used in 9th grade. Extensive tracking procedures were used to locate the students who had transferred schools. For the 9th grade survey, students filled out a Student Information Sheet with contact information such as their home addresses, home phone numbers, cell phone numbers, parents' cell phone numbers, email addresses, and addresses and phone numbers of a relative or close family friend who would know their whereabouts if they moved. School personnel also provided forwarding information if available. Data collectors telephoned the missing students in the evenings and surveyed them by telephone; 9.6% of the 10th grade surveys were conducted by telephone.

Measures

Surveys were available in English and Spanish. To create the Spanish translations, we first looked for the translated items that were published or recommended by the scales' authors. If none were available, one translator translated the items from English to Spanish, and then the translation was checked by a translation team including bilingual researchers of Mexican, Salvadoran, and Argentinean descent. This procedure was used to ensure that the Spanish translation reflected the idioms that are used among Mexican-Americans and other

Hispanic/Latinos living in Southern California. Although English and Spanish versions were available, only 17 students (0.8%) chose to complete the survey in Spanish. The survey assessed substance use, acculturation, family and peer characteristics, psychological variables, and demographic characteristics.

Adolescents' Acculturation—Adolescents responded to 12 items from the Revised Acculturation Rating Scale for Mexican Americans (ARSMA-II; Cuéllar et al. 1995): seven from the Anglo orientation subscale and five from the Hispanic orientation subscale. These 12 items were selected based on a pilot study in a similar school (Unger, 2005, unpublished manuscript), in which these items had the highest factor loadings on their respective scales. Recently, a shorter version of the ARSMA-II was validated among adolescents (Bauman 2005). Unfortunately, this scale had not yet been published at the time when this survey was conducted. Of the 12 items that we selected for our scale, 10 were also included in Bauman's scale; Bauman included two items that we did not include (enjoying reading in Spanish and enjoying English movies), and we included two items that Bauman did not include (enjoying English music and enjoying reading in English). The remaining 10 items were identical across the two scales (enjoying Spanish language TV, enjoying speaking Spanish, enjoying Spanish movies, speaking Spanish, thinking in Spanish, speaking English, writing letters in English, associating with Anglos, thinking in English, and having Anglo friends). The scores on each subscale (U.S. Orientation and Hispanic Orientation) were rescaled so that they ranged from 0 = lowest to 1 = highest. The wording of the response options was not changed. The Cronbach's alphas were .77 for U.S. Orientation and .88 for Hispanic Orientation.

Adolescents' Perceived Parental Cultural Expectations (PPCE)—Because a validated measure of adolescents' perceptions of their parents' cultural expectations was not available, a measure was created by adapting questions from existing self-report acculturation scales. We refer to the resulting scale as Perceived Parental Cultural Expectations (PPCE). There were two PPCE scales: one for U.S./White cultural orientation and one for Hispanic cultural orientation. The following items assessed U.S./White PPCE: "My parents want me to speak English at home," "My parents want me to speak English outside the home," "My parents want me to live by or follow the U.S./White way of life," "My parents want me to be a success in the U.S./White way or life." The following items assessed Hispanic PPCE: "My parents want me to speak Spanish at home," "My parents want me to speak Spanish outside the home," "My parents want me to live by or follow the Hispanic or Latino way of life," and "My parents want me to be a success in the Hispanic or Latino way or life." The response options were "strongly agree," "agree," "disagree," and "strongly disagree." The Cronbach's alphas were .69 for the U.S./White subscale and .86 for the Hispanic scale. The subscale scores were rescaled so that they ranged from 0 = lowest to 1 = highest, so that their metric would be similar to that of the adolescents' acculturation scales, despite slight differences in response options.

Substance Use—Cigarette, alcohol, and marijuana use were the outcome measures. Two dichotomous measures were used for each substance: lifetime use (0 = never, 1 = ever) and past-month (0 = no use in past month, 1 = any use in past month). The following questions assessed cigarette smoking: "Have you ever tried cigarette smoking, even one or two puffs?" (yes/no); and "During the past 30 days, on how many days did you smoke cigarettes?" The following questions assessed alcohol use: "During your life, on how many days have you had at least one drink of alcohol? (please do not count drinking alcohol for religious purposes like communion wine)"; and "During the past 30 days, on how many days did you have at least one drink of alcohol?" The following questions assessed marijuana use: "During your lifetime, how many times have you used marijuana (grass, pot, weed)?" and

"In the last 30 days, how many times have you used marijuana (grass, pot, weed)?" The questions about the number of days in the past month were rated on a 7-point scale from "0 days" to "all 30 days" and were recoded to 0 days versus all other responses because the distributions were skewed. The questions about the number of times the respondent used marijuana were rated on a 6-point scale from "0 times" to "40 or more times" and were recoded to 0 times versus all other responses because the distributions were skewed.

Demographic Characteristics—These included age, gender, socioeconomic status (SES), and generation in the U.S. Age and gender were self-reported. Socioeconomic status is a complex, multidimensional construct consisting of financial capital, social prestige, available resources, and access to opportunities (Bradley and Corwyn 2002). Measurement of SES is especially difficult among adolescents because many adolescents cannot provide reliable reports of the indicators most commonly used to quantify SES such as household income and specific employment categories. Therefore, in this study we used several different proxy measures of SES that adolescents could self-report and that were likely to be associated with the families' overall SES. These included parents' education (rated on a 6-point scale ranging from "8th grade or less" to "advanced degree"; each respondent's score indicates the maximum of mother's and father's education if both were reported), number of rooms per person in home, eligibility for free/reduced price lunch at school (1 = no, 0 = yes), homeownership (1 = family owns its home, 0 = family rents home from a landlord), presence of a computer in the home (1 = yes, 0 = no), and availability of the Internet at home (1 = yes, 0 = no). We also included the median household income in the respondent's Zip code (from 2000 U.S. Census data). These items were standardized to a mean of 0 and a standard deviation of 1 and averaged together to create an SES score (Cronbach's alpha = .56). Although this Cronbach's alpha is slightly low, an analysis of subsets of the items indicated that the alpha would not be improved if one or more items were removed from the scale. In addition, an exploratory factor analysis provided additional support for a one-factor solution. Therefore, the decision was made to keep all seven items, with the rationale that each captures a unique aspect of the complex construct of SES.

Generation in the U.S. was assessed with three items: "In what country were you born?" "Where was your mother born?" and "Where was your father born?" Response options were "United States" or "Other." The "Other" option included a line for the respondent to write the name of the country. Respondents were classified as 1st generation if the student and parents were born outside the U.S., as 2nd generation if the student was born in U.S. but both parents were born outside the U.S., and as 3rd generation if the student and at least one parent were born in the U.S.

Data Analysis

Frequencies and means were calculated to characterize the sample. Multilevel logistic regression models were used to evaluate the association between 9th grade acculturation variables (adolescent's U.S. orientation, adolescent's Hispanic orientation, U.S. PPCE, and Hispanic PPCE) and 10th grade substance use, controlling for 9th grade substance use and the covariates. Separate models were run for lifetime smoking, past-month smoking, lifetime alcohol use, past-month alcohol use, lifetime marijuana use, and past-month marijuana use.

To determine whether the associations between the acculturation variables and substance use were consistent across generations, interaction terms were added into the models after the main effects (i.e., Adolescent's U.S. orientation × generation, Adolescent's Hispanic orientation × generation, U.S. PPCE × generation, Hispanic PPCE × generation). The criterion for statistical significance was set at .0125 (.05/4) to control for multiple tests.

To assess stability and change in acculturation scores, the 9th and 10th grade acculturation scores were compared with paired t-tests and correlation coefficients.

To determine the effect of change in parent–child acculturation patterns on substance use, additional logistic regression models were run, including the acculturation discrepancy variables at both time points. In these models, if we had included all of the separate acculturation variables (adolescent-U.S., adolescent-Hispanic, U.S. PPCE, Hispanic PPCE) at both time points, there would have been eight separate acculturation-related predictor variables, all of which were moderately intercorrelated, which could result in multicollinearity and uninterpretable results. To reduce the number of variables, we constructed difference variables to represent each type of perceived parent–child acculturation discrepancy (e.g., perceived parent–child discrepancy in U.S. orientation was the child's U.S. orientation minus the U.S. PPCE). Therefore, there were four discrepancy scores: (a) perceived parent–child discrepancy in U.S. orientation in 9th grade, (b) perceived parent–child discrepancy in U.S. orientation in 10th grade, (c) perceived parent–child discrepancy in Hispanic orientation in 9th grade, and (c) perceived parent–child discrepancy in Hispanic orientation in 10th grade. These perceived discrepancy scores were used as predictor variables in the logistic regression models.

All models were controlled for age, gender, SES, and the random effect of school. To control for the multilevel data structure (students nested within schools), the GLIMMIX procedure in SAS was used, with school as a random effect.

Results

Attrition Analysis

Compared with the students who were successfully followed from 9th to 10th grade, those lost to attrition were significantly older (14.1 years vs. 14.0 years, $t = 2.25$, $p < .05$), more likely to have tried smoking by 9th grade (37% vs. 27%, chi-square = 10.80, $p < .005$), more likely to have tried marijuana (31% vs. 20%, chi-square = 14.52, $p < .0005$), more likely to have smoked marijuana in the past month (19% vs. 12%, chi-square = 10.45, $p < .005$), and had higher Hispanic Orientation scores ($t = 2.44$, $p < .05$). The students lost to attrition did not differ significantly from those who were followed on gender, generation in the U.S., language spoken at home, student's U.S. orientation, U.S. PPCE, Hispanic PPCE, parents' education, homeownership, past-month smoking, lifetime alcohol use, or past-month alcohol use.

Demographic Characteristics of Respondents

As shown in Table 1, the students' mean age was 14.0 years and the sample was approximately half male and half female. Because students self-reported their race/ethnicity with a "check all that apply" question, some selected multiple categories. Some of the Hispanic/Latino youth also self-reported as White (5%), African-American (2%), American Indian (1%), Asian (1%), or Pacific Islander (1%). Their countries of origin included Mexico (84%), the United States (29%), El Salvador (9%), Guatemala (6%), and Honduras (1%) (respondents could select more than one country of origin). Over half of the students (62%) were second-generation (student born in the U.S. but neither parent born in the U.S.) In 9th grade, nearly half (47%) of the students had tried alcohol; 26% had tried cigarettes and 19% had tried marijuana. By 10th grade, 63% had tried alcohol, 33% had tried cigarettes, and 27% had tried marijuana.

Associations Between Acculturation Variables and Substance Use

Table 2 shows the results of the logistic regression analyses with the substance use outcome variables. In these models, the predictor variables were measured in 9th grade and the substance use outcome variables were measured in 10th grade, controlling for 9th grade use. The adolescent's own Hispanic orientation was protective against smoking and marijuana use (lifetime and past-month) and against lifetime alcohol use (but not past-month alcohol use). The adolescent's own U.S. orientation was not associated with substance use. Hispanic PPCE was a risk factor for the adolescent's lifetime smoking, alcohol use, and marijuana use, but not past-month substance use. U.S. PPCE was inversely associated with past-month alcohol use. Male gender was also a risk factor for lifetime smoking and lifetime and past-month marijuana use. Age and SES were not significantly associated with substance use.

Generational Variation in the Associations Between Acculturation Variables and Substance Use

To determine whether the associations between the acculturation variables and substance use were consistent across generations, acculturation × generation interaction terms were added into the models after the main effects. None of the interaction terms met the criterion for statistical significance, indicating that the associations between the acculturation variables and substance use did not vary across generations.

Change in Perceived Parent–Child Acculturation Discrepancy from 9th to 10th Grade

Table 3 shows the change and stability in the students' reports of their own cultural orientation and PPCE from 9th to 10th grade. The correlations between each measure in 9th grade and the same measure in 10th grade ranged from .36 to .71, indicating that the 9th grade acculturation scores explained 13–50% of the variance in 10th grade acculturation scores. The students' U.S. orientation decreased significantly ($t = 17.86$, $p < .05$), and their Hispanic orientation remained constant ($t = 0.70$, ns). Their U.S. and Hispanic PPCE both decreased slightly ($t = 3.63$ for U.S. and 3.95 for Hispanic, both $p < .05$). Perceived parent–child discrepancy in U.S. orientation decreased ($t = 8.97$, $p < .05$), and perceived parent–child discrepancy in Hispanic orientation increased ($t = 3.62$, $p < .05$). Although these changes were statistically significant, they were modest in magnitude (changes of 1–7% points).

Association Between Change in Perceived Parent–Child Acculturation Discrepancy and Substance Use

Table 4 shows the results of the longitudinal analysis of change in perceived parent–child acculturation discrepancy predicting 10th grade substance use. After controlling for 9th grade perceived parent–child Hispanic acculturation discrepancy and 9th grade substance use, 10th grade perceived parent–child Hispanic acculturation discrepancy was significantly associated with all of the substance use outcome variables except past-month alcohol use. (Because the Hispanic acculturation discrepancy variable is reverse-coded, i.e., adolescents were less Hispanic-oriented than parents, the odds ratios less than one indicate an increased risk of substance use.) Figure 1 illustrates this pattern. Substance use in 10th grade was most prevalent among the adolescents who were less Hispanic-oriented than their parents' expectations in 9th grade and experienced a widening of the perceived parent–child acculturation gap from 9th to 10th grade. This pattern was evident for all three substances.

Discussion

These findings demonstrate that Hispanic adolescents' own cultural orientations and their perceptions of their parents' cultural expectations for them are associated with their

substance use behavior. In this sample of 1,683 predominantly second-generation Hispanic adolescents in Southern California, adolescents' perceptions of their parents' expectations for them to live a Hispanic lifestyle were associated longitudinally with a higher risk of cigarette, alcohol, and marijuana use, whereas the adolescents' own Hispanic orientation was protective against substance use. In addition, an increase in perceived Hispanic acculturation discrepancy from 9th to 10th grade was also associated with substance use in 10th grade. In other words, when adolescents perceived that their parents wanted them to be more Hispanic-oriented than they actually were, and this discrepancy widened over time, the adolescents were at increased risk of substance use.

These findings support the acculturation gap theories of Szapocznik et al. (1978), whereas the findings of some previous studies have not. An important difference between this study and the others is that this study assessed adolescents' perceptions of their parents' cultural expectations for them, rather than the parents' own self-reports. It is possible that acculturation gaps adversely affect adolescents' behavior only when they are acutely perceived by the adolescent. In other words, if an acculturation gap exists but the adolescent is not aware of it, it would not be expected to affect the adolescent's behavior.

Another unique aspect of the PPCE measure used in this study is that it focused on the children's perceptions of their parents' preferences for their acculturation (e.g., the children's preferences of their parents' desire for them to speak English and to be a success in the U.S. way of life). Therefore, this study focuses on the gap between how the adolescents preferred to live and how they perceived that their parents wanted them to live. Other studies (e.g., Elder et al. 2005), have measured the parents' own acculturation (i.e., their own preferred way of living rather than their expectations for their children's ways of living). Some researchers have directly asked adolescents whether they experienced conflict with their parents because of acculturation discrepancies (e.g., "How often have you had problems with your family because you prefer American customs?" "How often do you get upset at your parents because they don't know American ways?" Gil et al. 1994) as an indicator of acculturative stress. It would be useful for a future study to include all of these measures of family acculturation discrepancies in a single survey and conduct psychometric analyses to determine whether they represent a single construct or multiple constructs.

Unlike previous studies of acculturation discrepancies, this study assessed acculturation at two time points, allowing us to examine changes in the adolescents' acculturation, their perceptions of their parents' preferences, and the discrepancy between the two. The adolescents' U.S. orientation decreased slightly from 9th to 10th grade. Although one might expect U.S. orientation to increase over time, our results are consistent with Phinney's (2003) notion that children and adolescents growing up in the U.S. initially identify with the majority culture (U.S.) as a default, and then begin to challenge and question that identification during adolescence. Thus, U.S. orientation would be expected to decrease somewhat during this process. The adolescents' U.S. and Hispanic PPCE also decreased slightly, but these changes were small in magnitude; 9th grade acculturation scores explained 13–50% of the variance in 10th grade acculturation scores. This is consistent with Phinney's (2006) assertion that cultural identity and cultural values change relatively slowly, whereas other aspects of acculturation such as language acquisition are more rapid. Because this study assessed changes in acculturation only during the transition from 9th to 10th grade, it is not clear whether similar changes would be observed during other stages of adolescent development. In future studies, it would be informative to follow cohorts of adolescents for longer periods of time and describe the growth trajectories of acculturation across multiple assessment intervals.

Practice Implications

Family based interventions may be useful for Hispanic families with high levels of parent–child acculturation discrepancy. According to Szapocznik et al. (1978), these families may be characterized by poor communication, high levels of conflict, and breakdowns in parental authority, which may lead to substance use among the adolescents in the family. In a recent focus group study of 34 adolescents and parents recruited from similar schools (Wagner et al. 2008), we found that Hispanic adolescents and their parents perceived a loss of family cohesion as a result of parent–child acculturation discrepancies. Adolescents and parents may experience these discrepancies in different ways; for example, the parents in the focus group study reported a need to monitor their children's activities and whereabouts closely because they were concerned about their children being influenced by U.S. cultural norms that they could not understand or control, whereas the children reported frustration that their parents mistrusted them and did not understand their need to fit in with their peers. It is possible that acculturation discrepancies, and the resulting breakdowns in family functioning, may lead to psychological stress among the adolescents, rebelliousness, and increased opportunities to affiliate with deviant peers, which may in turn lead to substance use. Interventions to increase parent–child communication and understanding may be useful to prevent this negative sequence of events.

Although improvements in parent–child communication are probably desirable in most families, immigrant families in particular may benefit from interventions to teach bicultural competence skills to parents and children. Bicultural competence skills may help all family members cope more effectively with acculturative stress (LaFromboise et al. 1993) and may help members of the family understand other family members' perspectives (Bacallao and Smokowski 2005; Litrownik et al. 2000; Santisteban et al. 2006). Of course, family interventions should be presented in ways that are consistent with cultural norms for parenting, because the effectiveness of various parenting styles can vary across cultural contexts (Yasui and Dishion 2007).

Limitations and Directions for Further Research

These results are based on adolescents' perceptions of their parents' acculturation, rather than the parents' own reports. Although adolescents may be somewhat inaccurate in their reports of their parents' cultural preferences, one might argue that it is the adolescents' perceptions of their parents' cultural attitudes that actually influences the adolescents' decisions about their own behaviors. Additional research is needed to validate adolescents' reports of their parents' acculturation. It is possible that adolescents' misperceptions of their parents' actual attitudes may be another indicator of poor family communication, which also may be a risk factor for the adolescents' problem behaviors.

These results are based on adolescents' self-reports of their substance use. Respondents may have underreported their substance use. However, the respondents were assured that their surveys were completely confidential, and previous studies have found adolescents' self-reports of substance use to be quite accurate under confidential survey conditions (Harrison and Hughes 1997).

As in many longitudinal studies, higher-risk students (e.g., those who had already experimented with substance use by 9th grade) were more likely to be lost to attrition. These results might not generalize to the students who were not followed up successfully. Intensive attempts were made to locate all participants and survey them at school or by telephone, resulting in an 88% follow-up rate, but some attrition is inevitable in longitudinal research. Additional research is needed to understand the acculturation and family related stresses and

substance use behavior of students who drop out of school or change schools and/or residences frequently.

This survey did not ask about each parent separately, but it is possible that acculturation discrepancies also may exist between the parents or among other extended family members. For example, it is possible that the father has more outside contact than the mother does, and he therefore might adopt the U.S. culture more rapidly than the mother does. This could create acculturation discrepancies between the parents, which could further alter the family dynamics and increase the potential for family conflict. It is also possible that multiple generations of extended family members may be living in the same household or nearby, and acculturation discrepancies between the grandparents and the parents could affect the entire family climate and thereby affect the youngest generation of the family. More U.S.-oriented cousins, siblings, or other relatives also may influence adolescents to engage in risk behaviors. Future research should assess the cultural orientations of all family members to gain a more complete understanding of all the possible acculturation discrepancies within the immediate family, and, if possible, the extended family as well.

The acculturation gap hypothesis specifies that the effects of acculturation gaps are negative, i.e., that they lead to family conflict and problem behaviors among the adolescent generation. However, parent–child acculturation gaps also may have the effect of encouraging the adolescents to become more responsible and more accountable, because they are the conduits of information for the rest of the family (Weisskirch and Alva 2002). Being information-brokers for other family members can potentially put inordinate amounts of stress on children and adolescents in difficult situations such as interpreting medical information for sick relatives (Buriel et al. 2006). However, if the amount of added responsibility is not too excessive, it is possible that the responsibility of being an information-broker could encourage adolescents to make more responsible decisions about their personal behaviors. More research is needed to understand whether acculturation gaps can sometimes have beneficial effects.

Studies have only recently begun to assess parent–child acculturation discrepancies empirically, and the field has not yet achieved consensus about the best way to define this construct. Statisticians have long debated about whether difference scores are unreliable because they can magnify measurement error (Rogosa and Willett 1983). As an alternative to defining acculturation discrepancies as a difference score, Birman (2006) has suggested other techniques such as calculating the interaction term between adolescents' acculturation and parents' acculturation or simply classifying parents and adolescents as "matched" or "mismatched" on acculturation. Additional research is needed to determine which method of measuring and defining parent–child acculturation discrepancy is most valid and accurate.

Conclusions

Previous studies (Brook et al. 1998; De La Rosa 2002; Epstein et al. 2001; Love et al. 2006; McQueen et al. 2003; Unger et al. 2000) have found associations between adolescents' acculturation patterns and their substance use. In addition to replicating this finding, this longitudinal study adds to this body of literature by demonstrating that adolescents' perceptions of their parents' expectations for their acculturation are also associated with their substance use. Adolescents who perceived that their parents wanted them to be more Hispanic-oriented than they actually were had an increased risk of initiation of cigarette, alcohol, and marijuana use over a 1-year period. Further research is warranted to determine the psychosocial mechanisms by which adolescents' perceptions of their parents' cultural expectations influence their decisions about engaging in risky behaviors such as substance

use. Research is also needed to develop effective interventions to prevent substance use among adolescents in acculturating families.

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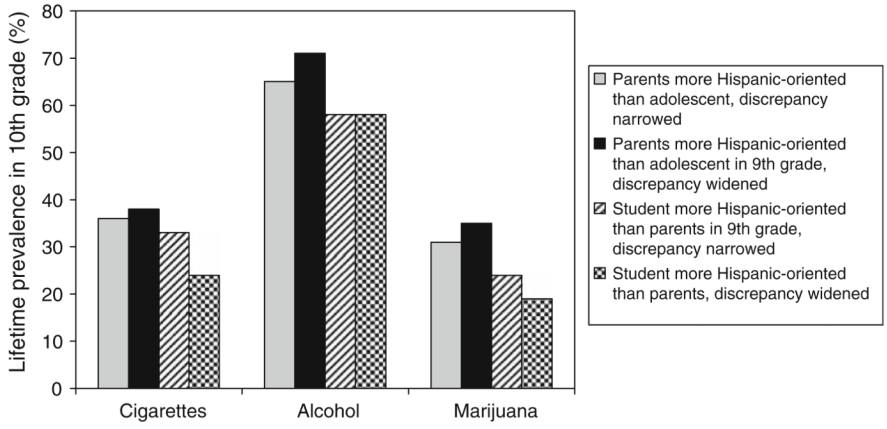

Fig. 1.

Substance use according to changes in perceived parent–child Hispanic acculturation discrepancy

Table 1

Self-reported baseline demographic characteristics and substance use of Hispanic/Latino students

	n	%
Age (years)		
12–13	133	8
14	1410	84
15–16	126	7
Missing	9	1
Gender		
Female	871	52
Male	773	46
Missing	39	2
Other race/ethnicity (in addition to Hispanic/Latino)		
White	88	5
African-American	27	2
Asian	12	1
Pacific Islander	11	1
American Indian	20	1
Generation in the United States		
1 (student and parents born outside U.S.)	235	14
2 (student born in U.S., both parents born outside U.S.)	1040	62
3 (student and at least one parent born in U.S.)	396	23
Other/missing	12	1
9th grade substance use		
Lifetime cigarette smoking	442	26
Past-month cigarette smoking	117	7
Lifetime alcohol use	794	47
Past-month alcohol use	420	25
Lifetime marijuana use	328	19
Past-month marijuana use	194	12
10th grade substance use		
Lifetime cigarette smoking	549	33
Past-month cigarette smoking	132	8
Lifetime alcohol use	1060	63
Past-month alcohol use	587	35
Lifetime marijuana use	456	27
Past-month marijuana use	226	13

Note: $N = 1683$ for students with data at both timepoints

Table 2

9th-grade predictors of 10th grade substance use

	Lifetime cigarette			Past-month cigarette			Lifetime alcohol			Past-month alcohol			Lifetime marijuana			Past-month marijuana		
	OR	**95% CI**		**OR**	**95% CI**		**OR**	**95% CI**		**OR**	**95% CI**		**OR**	**95% CI**		**OR**	**95% CI**	
Age	1.19	0.91	1.54	1.10	0.70	1.71	0.78	0.61	1.01	0.85	0.66	1.10	1.11	0.84	1.46	1.10	0.77	1.57
Female (vs. male)	*0.64*	*0.51*	*0.80*	0.68	0.46	1.01	1.06	0.86	1.32	0.98	0.79	1.22	*0.67*	*0.53*	*0.84*	*0.51*	*0.37*	*0.69*
SES	0.83	0.67	1.01	0.77	0.54	1.09	1.00	0.82	1.22	1.07	0.87	1.30	0.89	0.72	1.11	1.04	0.79	1.38
Adolescent's U.S. orientation	0.76	0.35	1.68	0.65	0.17	2.49	1.47	0.68	3.17	0.76	0.35	1.65	1.00	0.43	2.33	1.50	0.50	4.47
Adolescent's Hispanic orientation	*0.29*	*0.16*	*0.52*	*0.24*	*0.09*	*0.66*	*0.43*	*0.24*	*0.76*	0.58	0.33	1.03	*0.21*	*0.11*	*0.38*	*0.29*	*0.13*	*0.65*
PPEC-U.S.	0.86	0.40	1.82	1.18	0.33	4.26	0.50	0.24	1.05	*0.38*	*0.18*	*0.81*	0.62	0.28	1.37	0.60	0.22	1.64
PPEC-Hispanic	*2.64*	*1.27*	*5.49*	1.17	0.34	4.07	*4.96*	*2.43*	*10.11*	1.88	0.92	3.82	*2.36*	*1.09*	*5.10*	1.01	0.38	2.67

Note: Odds ratios with 95% confidence intervals that do not include 1.00 (indicated in italics) are significant at $p < .05$

Table 3

Change and stability in acculturation variables from 9th to 10th grade

Variable	9th grade mean (SD)	10th grade mean (SD)	*t*-test for 9–10th grade change	Test–retest correlation (9–10th grade)
Adolescent's U.S. orientation	.65 (.14)	.58 (.12)	17.86*	.36*
Adolescent's Hispanic orientation	.43 (.20)	.44 (.20)	0.70	.71*
PPEC-U.S.	.35 (.15)	.34 (.16)	3.63*	.44*
PPEC-Hispanic	.42 (.16)	.41 (.17)	3.95*	.47*
Perceived parent–child discrepancy in U.S. orientation	.29 (.19)	.25 (.18)	8.97*	.36*
Perceived parent–child discrepancy in Hispanic orientation	.02 (.21)	.03 (.22)	3.62*	.52*

Note:

* $p < .05$

Table 4

Change in perceived acculturation discrepancy and 10th grade substance use

	Lifetime cigarette			Past-month Cigarette			Lifetime alcohol			Past-month alcohol			Lifetime marijuana			Past-month Marijuana		
	OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI		OR	95% CI	
Perceived parent–child discrepancy in U.S. orientation. 9th grade	0.91	0.45	1.86	0.76	0.23	2.56	1.11	0.55	2.23	1.28	0.64	2.54	1.03	0.48	2.19	1.69	0.66	4.34
Perceived parent–child discrepancy in Hispanic orientation. 9th grade	0.58	0.30	1.13	0.88	0.28	2.76	*0.51*	*0.27*	*0.96*	0.80	0.42	1.52	*0.45*	*0.22*	*0.91*	0.89	0.36	2.17
Perceived parent–child discrepancy in U.S. orientation. 10th grade	1.58	0.74	3.38	1.30	0.36	4.75	*2.71*	*1.29*	*5.71*	1.74	0.83	3.66	1.53	0.68	3.44	1.45	0.52	4.01
Perceived parent–child discrepancy in Hispanic orientation. 10th grade	*0.33*	*0.17*	*0.64*	*0.17*	*0.05*	*0.54*	*0.36*	*0.19*	*0.69*	0.55	0.29	1.05	*0.26*	*0.12*	*0.53*	*0.20*	*0.08*	*0.49*

Note: Odds ratios are controlled for age, gender, and SES. Odds ratios with 95% confidence intervals that do not include 1.00 (indicated in italics) are significant at $p < .05$