Acculturation among Mexican-heritage preadolescents: A latent class analysis

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Abstract

This study applies advanced conceptualization and measurement to an analysis of acculturation among 1,632 Mexican-heritage preadolescents. We assessed whether – and how – multiple measures combine to form a latent acculturation construct that groups individuals into classes; and determine how many and what classes (or types) of acculturation are experienced by this sample of 5th graders. Measures included attitudinal, behavioral, and linguistic acculturation, generation status, time in the U.S., ethnic identification, and contact with the culture of origin. The analysis identified five classes of acculturation, differing in size and characterized by specific measures of acculturation: less acculturated, moderately bicultural, strongly bicultural, highly acculturated, and marginalized. Although most youths fell into the first four classes, consonant with their exposure to American society, a small minority of youths fell into the last class. Despite substantial exposure to U.S. culture and recent exposure to Mexican culture, these youth showed little affinity for either culture.

Keywords

acculturation; preadolescents; Mexican

1. Introduction

Acculturation is a multidirectional cultural change process (Berry, 2003) triggered by intercultural contact which produces changes in attitudes, norms, behaviors, knowledge, and identity (Berry, 2007). An extensive literature documents acculturation's relationship with numerous health and social outcomes, many of which are undesirable. Among studies conducted with youths, for example, greater acculturation to American culture has been linked to substance use (Marsiglia, Kulis, Wagstaff, Elek, & Dran, 2005; Marsiglia &

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Waller, 2002), obesity (Popkin & Udry, 1998), lower academic achievement (Portes & Rumbaut, 2001), and early sexual activity (Adam, McGuire, Walsh, Basta, & LeCroy, 2005). Because of its impact on health, education and wellbeing, acculturation remains an important focus of study. However, numerous concerns have been raised about the way acculturation has been measured in prior research, and calls have emerged for a more advanced conceptualization of acculturation (e.g., Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbonati, 2007; Page, 2005; Hunt, Schneider, & Comer, 2004; Rudmin, 2003; Zane & Mak, 2003; Cabassa, 2003; Weigers & Sherraden, 2001).

One concern is that existing measures and conceptualizations do not account adequately for its multi-directionality (e.g., the adoption of mainstream culture, enculturation into the origin culture, and acculturation to other ethnic minority cultures), variable rates of acculturative change in different social arenas (family, school, neighborhood, media consumption), its manifestations in changing cultural values, norms, behaviors, and identities, and the complexity of its relationships with health and social outcomes. Therefore, it is worthwhile to refocus research attention on acculturation itself and redress the methodological shortcomings of prior research. This study aims to contribute to that goal by examining acculturation in its very early stages, in a sample of Mexican-heritage preadolescents, using latent class analysis.

While much research on acculturation focuses on adolescents, relatively few studies focus on preadolescents (Coll & Marks, 2009). Adolescence is the developmental stage during which key identity tasks are performed (Erikson, 1968). Yet, "identity work" may begin prior to this stage (Thorne, 2005). For example, elementary school children often grapple with the racial and ethnic identities that teachers assign to them (Lewis, 2003). Certain life events, such as migration, may precipitate earlier consideration of identity than would be the case otherwise. Immigrant children, for example, are often faced with identity questions and challenges due to being the foreigner among native children. Parents and children may wrestle over cultural differences arising out of the migration process (Chun & Akutsu, 2003). These conflicts not only can lead to broader parent-adolescent conflict (Szapocznik & Kurtines, 1993) but also have implications for the child's emerging identity (Chun & Akutsu, 2003).

As a developmental stage in itself, preadolescence typically involves children's first sustained exposure to influences outside the family, including the broader culture. While the identities that emerge in this stage may not be stable, they may be consequential as starting points (Weigers & Sherraden, 2001). Studies of adolescent risk have demonstrated that risk trajectories begin prior to adolescence. For example, a surprisingly large number of children begin using alcohol as early as 5th grade (Donovan, 2007). Even when risk behaviors are not initiated until later, precursors of risk behavior, such as social norms (Elek, Miller-Day, & Hecht, 2006), may be established in preadolescence. Furthermore, research has explored the intersection of identity and educational achievement (Birr Moje & Martinez, 2007). Latino youths are known for their high dropout rates (López & Stanton-Salazar, 2001) and Mexican-heritage youths, in particular, have high rates of mobility during the school years (Ream, 2005). Thus, early acculturation likely has implications for later academic outcomes. For these reasons, it is worthwhile to explore acculturation among preadolescents.

We focus on the Mexican-heritage population because they comprise the largest group among immigrants (Ramirez & de la Cruz, 2003) and among Latinos, which is the largest ethnic minority group in the United States (U.S. Bureau of the Census, 2000). This population is diverse in terms of language fluency, legal status, time in the United States, generation status, and race/phenotype (García, 2002; López & Stanton-Salazar, 2001). In addition to being numerous and diverse, this population faces many challenges, such as low

educational attainment, disproportionate poverty, and discrimination (López & Stanton-Salazar, 2001). Thus, acculturation and its consequences are important issues for this group.

The next section reviews prior research on acculturation.

2. Background

2.1. Research on acculturation

The prevailing conceptual approach to acculturation in psychology is Berry's (1997) typology in which an individual is oriented along two linear dimensions – the origin culture and the new or host culture – and falls into one of four quadrants once the dimensions are cross tabulated: assimilated, integrated, separated, and marginalized. In the U.S. context, these types translate to being highly acculturated to mainstream American culture, bicultural, highly attached solely to their origin culture, or unattached to either culture, respectively.

Empirical research has generated support for Berry's bi-dimensional conceptualization of acculturation, showing that individuals can, though they may not, retain their culture while acquiring a new culture (Berry, 2003) and that the effect on a youth of retaining his or her origin culture may be different than the effect of acquiring a new culture (Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005; Birman, 1998). In methodological terms, the evidence suggests that acculturation is a categorical rather than a linear construct, though its dimensions may be linear.

While there is significant support for the bidimensionality of acculturation, there is mixed support for Berry's four acculturation types, depending on the sample which varies by developmental period: adolescence, emerging adulthood, and adulthood. While some research has identified these four types (Berry, Kim, Power, Young, & Bujaki, 1989), other research has not. Coatsworth and colleagues (2005), for example, found in their sample of immigrant Latino youths that there were five rather than four acculturation identities. A better fit to the data existed when the integrated group was separated into strong biculturals – those highly attached to both mainstream and origin culture – and moderate biculturals – those with positive but less intense attachments to their dual cultures. Stevens and colleagues (2004) identified three acculturation types in a sample of Moroccan adult and adolescent immigrants in Europe, including a high bicultural type and a moderate bicultural type. Schwartz and Zamboanga (2008) found six acculturation types in their study of Latino college students, including two types of biculturalism and one type not clearly associated with any of Berry's types. These studies illustrate that a rigid categorical approach to measuring acculturation – one that assumes four and only four types are possible – may not be appropriate. Instead, a more flexible approach – one that does not limit the number of possible acculturation types and that captures the diversity emerging from the combinations of acculturation's two linear dimensions – is warranted.

It is noteworthy that the evidence of other than four types is related to the existence of the integrated or bicultural category. In the acculturation literature there is a prevailing belief that biculturalism is desirable (Trimble, 2003) because it either is associated with positive youth development (LaFromboise, Coleman, & Gerton, 1993) or moderates the risk of negative outcomes (Takebayashi, 2005). The evidence supporting this belief is inconclusive. First, studies that explicitly measure biculturalism, whether as a linear or categorical construct, have generated inconsistent results. Some research has demonstrated that youths with bicultural identities report fewer undesirable outcomes (Love & Buriel, 2007), while other research has not (Marsiglia & Waller, 2002). In addition, some research shows that while biculturalism may be associated with less risk than is associated with assimilation, it is

still associated with more risk than separation (Adam, McGuire, Walsh, Basta, & LeCroy, 2005); thus, it is not a panacea.

Second, many studies measure acculturation in a way that prevents an accurate assessment of the effect of biculturalism. Some use a single continuous measure with biculturalism as the midpoint, American culture at the high end, and the origin culture at the low end (e.g., Behavioral Acculturation Scale by Szapocznik, Scopetta, and Kurtines, 1978; Short Acculturation Scale for Hispanics by Marín, Sabogal, VanOss Marín, Otero-Sabogal, & Pérez-Stable, 1987; Suinn-Lew Asian Self Identity Acculturation Scale by Suinn, Rickard-Figueroa, Lew, & Vigil, 1987; Acculturation Scale for Southeast Asians by Anderson *et al.*, 1993). This operationalization does not reflect Berry's bidimensional conceptualization and fails to separate the effects of American culture, origin culture, and biculturalism.

Third, some research has suggested that the type of acculturation alone is insufficient to understand acculturation's effects. Coatsworth and colleagues (2005), for example, found that relative to other acculturation types, assimilated Latino youths reported more substance use. But they also found that a stronger affiliation to a culture, whether it was American culture or the origin culture, was more protective than a weaker one. That is, youths whose biculturalism was characterized by strong, rather than moderate, affinities toward either or both cultures reported better psychosocial functioning. The implication of this finding is that the effects may be explained not by the content of one culture or another but rather by the strength of the affinity toward that culture or set of cultures. Thus, to assess acculturation's effects, measures of acculturation must capture the gradations of a person's affinity toward each culture.

The implications of this prior research for the study of acculturation among Mexican-heritage preadolescents are fourfold. In keeping with Berry, we should examine acculturation in terms of both Mexican culture and U.S. culture. Furthermore, we should look for types of acculturation rather than simply characterize the youths as more or less acculturated. Berry's typology as applied to Mexican-heritage preadolescents might look as follows. An assimilated youth is born in the United States, fluent in English, and most familiar with American traditions and pastimes. An integrated youth either has been born in the United States or spent most of his/her life in the United States, is fluent in both English and Spanish, and is comfortable navigating back and forth between Mexican and American cultures. A separated youth is born in Mexico, fluent in Spanish and learning English, and most familiar with Mexican traditions and pastimes. A marginalized youth is born in Mexico, feels uncomfortable pressure to remain fluent in Spanish and master English quickly, and is familiar with some Mexican and American traditions and pastimes but has no great affinity for them. Yet, we should not predetermine the number of acculturation types; thus, we should not necessarily expect to find Berry's four acculturation types among the preadolescents, or at least not necessarily in the way they were described above. Alternate compositions may be found. Finally, we should assess not only whether or not the youths have an affinity towards a culture but also how strong that affinity is.

While the psychological literature has focused on acculturation types, the sociological literature has focused on contextual constraints on acculturation. Segmented assimilation theory (Portes & Zhou, 1993) has emerged as a leadi ng framework for understanding differences between groups in their ability to integrate successfully into American society. The theory explains how, in contexts where socioeconomic opportunities are limited and/or there are high rates of discrimination and social marginalization, some groups may not follow the typical progression toward full incorporation over time – i.e., move up the socioeconomic ladder and acquire an American identity (Alba, Massey, & Rumbaut, 1998). Instead, they "downwardly assimilate," joining the native underclass and acquiring

subcultural identities that respond to their oppression (e.g., reactive ethnicity – see Portes & Rumbaut, 2001) but may also hinder achievement (e.g., oppositional culture – see Ogbu, 1995).

Research informed by segmented assimilation theory has documented how some later generation youths resemble immigrant youths in key respects, despite the former's longer tenure in the United States. For example, both may endorse national identities (Mexican) rather than hyphenated identities (e.g., Mexican-American) suggestive of greater affinity toward U.S. culture (Ono, 2002; Portes & Rumbaut, 2001). And while a preference for English is the norm in later generations (Alba, Massey, & Rumbaut, 1998), both immigrant youths and later generation youths (especially second generation youths) may have the ability to speak the language of origin. Another example is found in research on subcultural groups which shows that enculturation (i.e., new learning about and endorsement of one's ethnic culture) may occur among native populations, such as when American-born, Mexican-heritage gang members embrace Mexican culture to establish an identity in an environment of constrained options (Lopez & O'Donnell Brummett, 2003). In terms of acculturation, then, this research suggests that different measures of acculturation may tell different stories and no one measure may be sufficient to tell the whole story. For example, a measure of time in the U.S. would categorize the later generation youths as more acculturated than the immigrant youths; howe ver, a measure of national identity would categorize both immigrant and native youths as less acculturated to U.S. culture. Thus, multiple measures of acculturation should be examined. While a number of researchers have made this point (Castro, 2007; Zane & Mak, 2003; Heindselman, 2001; Cheung, 1993), few have heeded it.

Segmented assimilation theory also highlights the distinction between ability and preference. As the above-cited research illustrates, an ability to operate in and a preference for a particular culture do not necessarily go hand in hand. Immigrants are influenced by their environments but also have agency to respond to those environments when choosing aspects of culture. Therefore, acculturation measures should not lump together people based solely on either a shared ability or a shared preference. Rather, they should take into account both ability and preference, yielding more complex categories that capture sets of characteristics instead of single attributes. While many researchers acknowledge the need to assess multiple measures of acculturation, the importance of capturing both abilities and preferences is not widely recognized.

2.2. This study

This study examines acculturation among Mexican-heritage preadolescents using latent class analysis. This method permits a theoretically and empirically sound treatment of the acculturation construct as implied by previous research. Using this method, we are able to examine separately affinity to U.S. culture and Mexican culture, treat acculturation as a categorical rather than a linear construct, generate the number of acculturation types that best fits the data, allow variation in the strength of affinity to each culture, employ multiple measures of acculturation, including measures of acculturation in multiple domains (family, friends, media), and sort youths by sets of characteristics rather than single attributes. We address the following research questions: whether and how multiple measures of acculturation combine to form a latent construct of acculturation that sorts youths into specific acculturation classes (or types) and how many and what classes of acculturation are present among Mexican-heritage preadolescents. We expect that the sample's Mexican-heritage preadolescents may not sort cleanly into Berry's typology and that instead, they may sort into more, fewer, or different acculturation types. By answering the questions raised here, we lay the groundwork for an improved exploration of both acculturation trajectories and their effects on health and social outcomes.

3. Methods

3.1. Data and sample

Data came from the first wave (Fall 2004) of a longitudinal drug prevention study of 2,034 students in 30 public elementary schools in Phoenix, Arizona, where the resident population is over 30% Latino (see Hecht *et al.*, 2008, for the detailed study design). The participating schools all had student populations that were at least 50% Latino. The study was approved by the university institutional review board. Every student enrolled in 5th grade in these schools at the baseline of the study was eligible to participate. University-trained proctors administered the one-hour, written survey, available in English and Spanish, in the school classroom. Active parental consent and student assent were obtained in accordance with university and school district policies and human subject protection requirements. Parents of 82 percent of enrolled children consented for their children to participate in the study. Absent consented students could complete the survey in class within two weeks of the initial survey date. Ninety-six percent of consented students (79 percent of enrolled) completed the baseline survey.

The sample for the present study consisted of 1,632 5th graders who completed the baseline survey and self-identified on any one of several ethnicity measures as having a Mexican heritage. This group comprised 80 percent of all the baseline survey respondents. Students from other ethnic backgrounds were not represented in sufficient numbers to permit separate analyses of their acculturation-related characteristics. The Mexican heritage students were mostly from immigrant families, with one or both parents born abroad (81%). Nearly a third (30%) of the students were themselves born abroad. The sample was nearly gender balanced (51% female). The vast majority (93%) came from low-income families as evidenced by their participation in the schools' free and reduced lunch program. Students were age typical for 5th graders. The mean age was 10.4 years, and 96% were either age 10 or 11 at the time of the survey.

3.2. Measures

Multiple measures of acculturation were used in the analysis: linguistic acculturation, attitudinal acculturation, behavioral acculturation, generation status, time in the U.S., exposure to the origin culture, and ethnic identification. When used in conjunction, this set of measures overcomes many of the limitations of measures used in prior acculturation studies. Specifically, it captures multiple angles of people's actual thoughts and behaviors related to culture, in addition to gathering, via generation status and time in the U.S., important supplemental information about diversity within categories of acculturation experience. It also captures attitudinal domains and multiple behavioral domains and goes beyond measuring just language use. All measures were treated as categorical. While it is always preferable to preserve variation in a measure, some variables' categories were collapsed in order to have a manageable number of cells and avoid unacceptably sparse distributions within cells in the latent class analysis data matrix. Final categories were based on both empirical and substantive considerations. Note that while the measures capture affiliation with "American culture" and "Mexican culture," we acknowledge that these cultures do not exist in any rigorous sense. Each culture is, in fact, a set of many cultures whose borders are not necessarily aligned with the political borders of each nation. We use the terms "American culture" and "Mexican culture" heuristically to begin the analysis of patterns of cultural affiliation, setting aside the question of which American culture and Mexican culture appeared in our sample.

Linguistic acculturation in three separate domains – family, friends, and media – was measured by three items. Youths were asked what language they usually speak when talking

(1) with family members, (2) with friends, and (3) in what language they usually listen when watching TV, listening to the radio, or listening to music (Sabogal, Marín, Otero-Sabogal, Marín, & Pérez-Stable, 1987). The original response options were Spanish only, mostly Spanish, both Spanish and English, mostly English, and English only. In the latent class analysis these categories were reorganized as follows. The first two responses were collapsed to become Spanish dominant (1). The middle bilingual response, which was the most common response chosen for all three questions, remained an intact category (2). The last two responses were collapsed to become English dominant (3).

Attitudinal acculturation to Mexican culture and attitudinal acculturation to the American culture were each measured by a single item. Youths reported on a scale of 1 to 4 the extent to which they agreed or disagreed with the following statements: "I like the way things are done in the culture my family comes from" and "I like the way things are done in the United States." Youths who agreed or strongly agreed were coded as having a high affinity (1) to the named culture whereas youths who disagreed or strongly disagreed were coded as having a low affinity (2) to the named culture. Behavioral acculturation was measured by a single item (Unger *et al.,* 2002). Youths indicated whether the way they do things is mostly like the way they do things in: 1 = the United States, 2 = the country their family originally came from (i.e., Mexico), 3 = both places, or 4 = neither place. These categories correspond to Berry's (1997) four acculturation types: assimilated, separated, integrated, and marginalized.

Generation status was measured by a single variable based on the answers to three questions about where the student, the mother, and the father were born. The categories included 1 = immigrant youth (foreign born with foreign-born parents), 2 = child of immigrant parent(s) (American born with one or both foreign-born parents) and 3 = native youth (American born with American-born parents). Time in the U.S. was measured by a single item: "How long have you lived in the United States?" Responses included 1 = Less than a year, 2 = Between 1 and 5 years, 3 = Between 6 and 10 years, and 4 = More than 10 years.

To account for countervailing influences that facilitate maintenance of origin culture, exposure to Mexican culture was measured with a question about the recency of visits to the origin country: "Have you visited family/friends who live outside the United States?" Responses were 1 = No, never visited, 2 = Yes, more than 3 years ago, or 3 = Yes, in the last 3 years.

Ethnic identification, in its original form, was a six-item, modified version of Phinney's multi-group ethnic identity measure (1992). Responses to each item ranged from 1 to 4 with higher values indicating greater ethnic identification. Students indicated the extent to which they agreed or disagreed with the following six statements about the ethnic group they said described them best: "I have tried to learn more about my own ethnic group, such as its history and customs," "I have often talked to other people, like my parents, to learn more about my ethnic group," "I am happy to be part of my ethnic group," "I feel like I really belong to my own ethnic group," "I'm very proud of my ethnic group and its accomplishments," and "I am involved in the customs, such as food, music, or celebration, of my ethic group and its accomplishments." The scale, which had high reliability ($\alpha = .803$), was recoded into three categories. Scales values ranging from 1.0 to 2.49 were categorized as low ethnic identification (1). Scale values ranging from 2.5 to 3.49 were coded as moderate ethnic identification (2). Scale values greater than or equal to 3.5 were classified as high ethnic identification (3).

3.3. Analyses

We conducted a latent class analysis, a method that has been employed successfully in prior work to address similar questions (Schwartz & Zamboanga, 2008). Latent class analysis was used to identify the number of classes in a latent construct of acculturation, to estimate the distribution of cases in each acculturation class, to determine the characteristics of each acculturation class, and to classify each study participant into an acculturation class. Towards these ends, we estimated the latent class probability (a.k.a. unconditional probability) and the conditional probability. The latent class probability is the likelihood that a youth belongs to a specific class. It is used to determine the number of classes and relative size of each class. The sum of latent class probabilities is 1.0. The conditional probability is the probability of a set of characteristics for youths in a particular class. It is comparable to a factor loading in factor analysis in that values closer to 1.0 indicate that that characteristic better defines the class (Mc Cutcheon 1987). In latent class analysis the class indicators – in this case, the acculturation measures – are conditionally independent.

To identify the number of acculturation classes in the data, we used the software Mplus 4.1 (Muthén & Muthén, 2006). Latent class analysis has been used successfully in prior research on acculturation (Stevens, Pels, Vollebergh, & Crijnen, 2004). Following that general approach, we first estimated a one-class, or independence, model to which all subsequent models were compared. We increased the number of classes successively until the optimum number of classes was identified. We relied on several indices of model fit to make this determination: Akaike information criterion (AIC), Bayesian informa tion criterion (BIC), Entropy, Lo-Mendell-Rubin likelihood ratio test (LRT), and Log Likelihood ratio (LL) values. Better fitting models are indicated by smaller AIC and BIC values, and Entropy values closer to 1.0. A significant *p*-value in the LRT indicates whether an additional class improves model fit. Although subject to bias when many cells in the classification are empty, the LL, represented by chi-square values, indicates model improvement when there is a statistically significant difference in the fit of two nested models. In addition to these indices, we considered theory and interpretability when deciding on the final number of latent classes. The model was freely estimated without constraints on specific indicators.

Prior to conducting the latent class analysis, we applied multiple imputation procedures, using PROC MI in SAS 9.1, to address missing data. Across the latent class indicators, the proportion of cases missing data varied from 3.1% (for time in the U.S.) to 5.3% (for attitudinal acculturation to the U.S.). Although relatively few cases were missing on the indicators, ignoring missing data can introduce bias. Relative to other missing data techniques, multiple imputation provides more efficient estimation (Allison, 2002). An important assumption of this method is that the data are missing at random, conditional on the variables that have been observed. Although not testable, the assumption can be strengthened by including all relevant predictors that may be related to a case being missing. In the imputation model, we included all variables used in the analysis as well as variables likely to be correlated with the process leading to missing data, such as educational aspirations. We created 10 imputed datasets using SAS Proc MI. Once the data were imputed, the datasets were analyzed using complete-data methods – in this case, latent class analysis in Mplus – and results from the analysis of each dataset were combined and adjusted to arrive at the correct parameter estimates (Muthén & Muthén, 2006).

4. Results

Table 1 contains descriptive statistics for the sample. With the exception of the attitudinal acculturation measures, the various acculturation measures reveal diversity in the sample. In terms of linguistic acculturation with family, the largest group of youths (half of the sample) reported being bilingual. In the case of linguistic acculturation with friends and with media,

the largest groups of youths reported being English dominant (52 percent and 49 percent, respectively). Although a third of the sample reported being Spanish dominant with family, less than 10 percent were Spanish dominant in the domains of friends and media.

In terms of attitudinal acculturation, the vast majority of the sample reported high affinity toward both Mexican and U.S. cultures, although the proportion was somewhat higher in the case of origin culture (94 percent relative to 82 percent). In the behavioral domain, the largest group of youths (40 percent) reported doing things the way things are done in the United States. This group was followed by youths who were bicultural (34 percent), doing things the way they are done in both the U.S. and Mexico. The third largest group, youths who do things the way they are done in Mexico, comprised a substantial minority, 20 percent of the sample. The smallest proportion (4 percent) was comprised of marginalized youths who do things differently than the way they are done in either the U.S. or Mexico.

A third of the sample was first generation, or foreign born, and just over half was second generation, with foreign-born parent(s). The remaining one-fifth of the sample was third or higher generation. A majority of the sample (64 percent) had lived in the U.S. more than 10 years, which for these 5th graders equates to nearly all of their lives, given the sample's average age of 10.3 years. In terms of exposure to Mexican culture through visits to family and friends, the sample broke out into almost even thirds: 37 percent had no exposure, 29 percent had exposure more than three years ago, and 34 percent had recen t exposure. Over half of the sample reported moderate identification with their ethnic group. Over a third reported high ethnic identification. Less than 10 percent reported low ethnic identification.

Table 2 shows the fit statistics for the models with different numbers of acculturation classes. According to the BIC and Entropy, the best fitting model had five classes. Although the AIC gave support for a sixth class, the LRT and LL indicated that the addition of a fifth class (the Less Acculturated), but not a sixth class, would improve the model. Of these indices we gave greater weight to the LRT as recommended by Nylund and colleagues (2007) and since it was not sensitive to sample size in the way that the LL is (Dayton, 1998). In addition, as recommended by Muthén (2007), we considered which solution best reflected the substantive theory found the five-class solution to be substantively meaningful. Taken together, then, these results led to the choice of the five-class solution.

From here, the youths were assigned to an acculturation class based on the five-class model. Because the statistical software could not directly assign class memberships with imputed data, we relied instead on the mode of the class assignment across the 10 imputed datasets to indicate the correct class assignment. A diagnostic test was performed to assess the reliability of class membership assignment with this method; 90 percent of the youths were assigned to the same class in all 10 datasets.

Table 3 displays the latent class probabilities, the size of each class, and the characteristics of each class as manifest through the conditional probabilities. We identified the first class as *Less Acculturated Immigrant Children*. This class contained 6 percent of the sample. Its members tended to be Spanish dominant in all domains – family, friends, and media. All except 5% reported a strong affinity to Mexican culture but a much smaller plurality reported strong affinity to U.S. culture. Th eir behavior tended most often to align toward Mexican culture. They were overwhelmingly first generation, recent arrivals, having lived in the U.S. five years or less. They were diverse in terms of their amount of exposure to Mexican culture through visits to the country. A substantial number (43 percent) had no exposure, but a comparable number (43 percent) had recent exposure. These youths mostly reported moderate to high ethnic identification, with slightly more reporting high ethnic identification.

The second class contained *Bicultural Immigrant Children*. This class comprised 21 percent of the sample. Its members were mostly Spanish dominant or bilingual with family but bilingual with friends and media. Nearly all reported a strong affinity to Mexican culture, and a smaller majority had a strong affinity to U.S. culture, although their affinity for U.S. culture outpaced that of the first class of less acculturated children. Their behavior reflected the culture of both the U.S. and Mexico. Children in this class were nearly all first generation like those in the first class, but they had lived longer in U.S. Few members of this class had been in the U.S. less than a year. As in the case of their less acculturated immigrant peers, about 43 percent had no exposure to Mexican culture through visits. Yet, fewer of them had recent exposure than did those in the first class. Their level of ethnic identification was nearly always moderate or high, with appreciably more youths reporting moderate than high ethnic identification, the opposite of the first class.

The third class contained the largest portion of the sample: 46 percent. These *Bicultural Children of Immigrants* tended most often to be bilingual in all three language domains. Similar to the second class, almost all reported strong affinity to Mexican culture with smaller majorities reporting strong affinity to U.S. culture. They also tended to describe their behavior like that in both the U.S. and Mexico. Class members were overwhelmingly second generation and normally had lived in U.S. more than 10 years. Relative to their bicultural peers in the second class, this group was less likely to have had no exposure to Mexican culture through visits. In contrast, 41 percent had recent exposure and 38 percent had exposure more than 3 years ago. Moderate ethnic identification was reported by a clear plurality of the students in this class.

The fourth class was comprised of *Highly Acculturated non-Immigrant Children.* Large majorities of its members were English dominant in all domains. They reported comparable high affinity to both U.S. and Mexican cultures, but a large majority described their behavior as being like that in the U.S. These youths were mostly third generation or higher and nearly all had lived in the U.S. more than 10 years. Most had no exposure to Mexican culture through visits and had moderate ethnic identification. They comprised 22 percent of the sample.

The fifth and last class, *Marginalized Children*, contained the smallest portion of the sample: 5 percent. We chose the label "marginalized" because youths in this class had low affinities to both origin and host cultures, consistent with Berry's fourth acculturation type. Compared to all other classes, this class was distributed more evenly across the ranges of values for the acculturation indicators. Class members tended to be bilingual with family but English dominant with friends and media. A defining characteristic of this class was the more substantial majority reporting low affinity toward both the U.S. and Mexican cultures, a proportion larger than any other class. Behaviorally, they more often reported their behavior to reflect U.S. culture. Over half of the group was second generation, and nearly a third was first generation. Although the class was thus mostly comprised of children from immigrant families, a majority had lived in the U.S. for more than 10 years and nearly a third had lived in the U.S. between 6 and 10 years. Like members of the first class, these youths were diverse in their exposure to Mexican culture through visits. While 37 percent had no exposure, 38 percent had recent exposure. Relative to the first class, a larger portion of this class had exposure more than three years ago (25 percent relative to 14 percent). Another defining characteristic of this class was the high proportion reporting a low level of ethnic identification, which members reported despite their immigrant family backgrounds. Table 4 provides a summary of the five acculturation classes with a listing of their characteristics.

5. Discussion

This study examined acculturation in a sample of Mexican-heritage 5th graders. Using latent class analysis to analyze multiple theoretically and empirically important acculturation measures, we identified five acculturation classes. The majority of the youths fell into an acculturation class consistent with their exposure to American society – that is, recent arrivals were typically less acculturated to U.S. culture, and later generation youth were typically more acculturated to U.S. culture. This pattern is consistent with the classic model of immigrant incorporation in which over time and across generations, individuals become more acculturated to U.S. culture. However, there was a minority of youths whose acculturation deviated from this pattern and was consistent with segmented assimilation theory. Despite (or perhaps because of) their longer exposure to American society, these youths felt little connection to U.S. culture. Furthermore, these youths felt little connection to Mexican culture, even despite, in some cases, recent infusions of origin culture by way of visits to Mexico.

The main purpose of the paper was to identify the acculturation starting points for these preadolescents and to do so in a manner that avoided pitfalls of prior research. The five identified classes were partially concordant with the prevailing typology of acculturation. The Less Acculturated, Highly Acculturated, and Marginalized classes correspond conceptually to Berry's Separated, Assimilated, and Marginalized classes, respectively. The Less Acculturated and Highly Acculturated classes conform to the cla ssic dichotomy between immigrants and natives. The former are newcomers who still maintain strong connections with their origin culture whereas the latter are long-time residents, immersed in dominant culture. It is notable that the Less Acculturated class exhibited some internal diversity, both in terms of exposure to their origin culture and ethnic identification. The former may reflect differences in the ability to maintain the origin culture (e.g., low socioeconomic status or undocumented status may preclude visits to the home country). The latter may reflect differences in youths' feelings about migrating to the U.S. The decision to migrate is likely to have been made by the parents and may not have been agreeable to all children. Also notable is that the Highly Acculturated class reported moderate ethnic identification, despite their heavy immersion in American culture. The maintenance of ties to ethnic culture even at the highest levels of acculturation in this sample of youths is evidence supporting the notion that acculturation is not a zero-sum process. Claims about the relative risk or protection of highly acculturated youths, then, must acknowledge the presence of these ethnic ties and consider their contribution to the risk profile and its associated health and social outcomes. The Marginalized class is discussed in detail later.

Despite some concordance with the prevailing acculturation typology, the identification of five rather than four classes reflects a departure from Berry's model. We identified two bicultural groups rather than one. Arguably, the two classes are similar and could be combined. Even in the four-class solution, the two bicultural classes emerged distinctly (It was the Less Acculturated class that was absent). Furthermore, part of what distinguishes the two classes is the degree of biculturalism, and prior research shows this distinction to be important (Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005). Therefore, we believe there is utility in accounting for strength of affinity. This study showed that doing so captures the diversity within the large bicultural group and en sures the possibility for assessing differences in outcomes by degree of biculturalism. Limiting the analysis to a predetermined number of classes – a practice employed in prior research that has met with criticism (Rudmin, 2003) – would have veiled that diversity. By employing latent class analysis, we were able to assess the number of classes that best fit the data on both substantive and empirical grounds.

Another distinction between the two bicultural groups was made by the two often-used proxies for acculturation: generation status and time in the U.S. One could argue that without these two measures in the model, the two groups may not have appeared. Coatsworth and colleagues (2005) and Stevens and colleagues (2004) did not incorporate these measures in their models and still identified the two groups. In this study, although they were less pronounced than the differences between the bicultural classes and the remaining classes, differences between the two bicultural classes on variables other than the proxies were present, suggesting that the acculturation experience differs for youths of different generation statuses and different lengths of time in the U.S. These results illustrate the importance of analyzing sets of acculturation characteristics, given that youths may share a single attribute but be quite diverse on other attributes. It may be that the two groups have different points of reference. Bicultural immigrants may feel a pull toward American culture from their base in Mexican culture whereas bicultural children of immigrants may feel a pull toward Mexican culture from their base and lifelong immersion in American culture. If so, these different points of reference may equate to different challenges and different levels of risk and protection.

The Marginalized class was small in this sample (5%) but recognizable due to several key features. First, whereas other class members might resemble one other class – typically the one adjacent to it – members of this class shared a number of characteristics of members from several other classes. In the case of lingui stic acculturation with family, for instance, they were similar to the Bicultural Immigrant and Bicultural Children of Immigrant classes. In the case of linguistic acculturation with friends and media, they were similar to the Highly Acculturated class. In the case of exposure to Mexican culture, they were similar to the Less Acculturated class.

A second key distinction is that the attitudinal acculturation variables were remarkably salient for the Marginalized class relative to other classes. Although differences between the classes were evident – affinity toward U.S. culture increases as you go from Less Acculturated to Highly Acculturated – the difference between the conditional probabilities for the Marginalized class and those for the other classes was marked. Whereas very large majorities in all the other classes reported high affinities to both Mexican and U.S. cultures, the proportions reporting these affinities in the Marginalized class were much smaller than in the other classes. This low level of affinity to U.S. culture, taken together with these youths' low level of ethnic identification, yields a group without strong cultural connections.

A third distinction is that the Marginalized class did not fit neatly into a continuum ranging from less to more acculturated to American culture in the way that the other four classes did. Table 3 shows an obvious pattern for most of the acculturation measures as you move from the leftmost column – the Less Acculturated – to the fourth column – the Highly Acculturated. Linguistic acculturation declines. The gap between the two attitudinal acculturation measures declines. Generation status and time in the U.S. increase. Ethnic identification declines.

The presence of this marginalized identity in this sample is notable because these preadolescents have only just begun their interaction with the broader society. It may be that the contexts in which they reside foster the development of subcultural identities which, in the adolescent literature, are associated with a high-risk trajectory (Portes & Zhou, 1993). If so, then we would expect this acculturati on type to be associated across time with numerous undesirable outcomes, such as school dropout, substance use, and criminal activity (Portes & Rumbaut, 2001; Ogbu, 1995). Alternatively, it may be that because the youths in the Marginalized class are experiencing their first exposure to the broader society, their affinity toward different cultures is in flux. Here too, it may be expected that the absence of

affinities may be associated with undesirable outcomes. As mentioned in the introduction, some acculturation research has suggested that it's the affinity itself (having an affinity versus not having one, or having a strong affinity versus a weak one) more than the group itself that is important for predicting healthy outcomes (Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005). Another possibility is that the absence of affinities in this group is temporary and will be resolved over time with further interaction with the broader society. If so, then this acculturation type may not be associated with later problems.

Another interpretation of the Marginalized class is that the youths are affiliated with a third, unmeasured emergent culture. For example, research on biracial/biethnic people suggests that the preference for a "mixed" or "biracial" identity label is distinct from a preference for a label acknowledging the two specific source identities (e.g., African American and Japanese American) (Renn, 2003), much the way that "Latino" and "Asian" have come to be important labels linking under a single label diverse individuals with a set of shared characteristics (Jones-Correa & Leal, 1996; Le Espiritu, 1993). In other words, these youths may define their culture in terms other than American, Mexican, or both. Because they are affiliated with a culture, their distance from American and Mexican cultures may not be associated with feelings of marginalization or undesirable outcomes. This interpretation acknowledges that acculturation may involve cultural creation, no t simply change from one existing culture to another, a possibility that is rarely studied in acculturation research and warrants further attention.

The possibility that the youths may change acculturation classes over time applies not only to the marginalized group but also to the other four groups. For example, following segmented assimilation theory, youths in the four classes other than the marginalized class may reside in contexts that over time undermine their cultural affinities, causing them to change acculturation classes, possibly becoming marginalized. Thus, in addition to assessing the consequences of these early acculturation types, it would be important to examine the extent to which the types change over time and to evaluate the consequences associated with specific change sequences. The focus on change over time is especially important given the these preadolescents will face significant changes in school context as they progress from elementary school to junior high and high school. Elementary schools tend to be located in a child's local neighborhood and are homogeneous in most school districts while junior high and high schools tend to be more ethnically and economically diverse. Given these changes, it would be interesting to assess whether 5th graders' acculturation predicts later outcomes.

The take-home lesson from the finding of five rather than four acculturation types is not that the proper model of acculturation is one with five types. Rather, it is that the application of Berry's model requires methodological flexibility to capture the diversity in acculturation types that are present in a given sample. By not predetermining the number of acculturation classes present in a sample, we allow a more detailed assessment of acculturation, capturing the richness of multiple attitudinal and behavioral domains and the clustering of people with shared sets of characteristics, which has the potential to better inform studies of acculturation's consequences.

Before concluding, several limitations are worth mentioning. While a strength of this study is its use of a diverse and comprehensive set of acculturation measures, some of our measures could be improved. For example, attitudinal acculturation and behavioral acculturation were measured with two items and one item, respectively. As such, they serve as global measures.A fuller set of items for each construct is preferable, however, and might provide insight into specific attitudinal or behavioral domains that are influential. Our measure of exposure to the culture of origin could also be expanded to include forms of cultural exposure beyond visits to the country of origin. For example, it could include

participation in social networks that include members of the culture of origin and participation in cultural traditions and events of the culture of origin. These areas have been incorporated into several existing measures of acculturation (e.g., ARSMA II by Cuellar, Arnold, and Maldonado, 1995; AHIMSA by Unger *et al.*, 2002; SASH-Y by Barona and Miller, 1994).

Another limitation of this study is that some of our measures used bipolar response options that reflect the four-classes-only conceptualization. For example, the values on our linguistic acculturation measures ranged from Spanish dominant to English dominant. An advanced alternative would be to measure Spanish use and English use separately and to have response options ranging from low use to high use. In future studies, where relevant, the use of additional languages could also be measured.

Because the data were drawn from a purposive sample of schools from one southwestern city, the findings may not generalize to Mexican-heritage students in other types of schools and geographic settings. Two of the more salient features of the participating schools are that they served mostly low income families, and most had majority Latino enrollments. In addition, the city is located close to the Mexican border and has experienced large influxes of immigrants from two Mexican states, Sonora and Sinaloa. The acculturation experiences of the young children in the sample might reflect their particular socioeconomic background, school ethnic composition, and family immigration pathways. Overall, this appears to be a sample of youth mostly from poorer, recent immigrant families living in neighborhoods with high concentrations of immigrants. Their exposure to mainstream cultural influences and acculturation stresses may differ substantially from more socioeconomically advantaged youth from more ethnically heterogeneous neighborhoods and schools. Thus, the findings from the study should be examined in other samples of Mexican-heritage youth.

Finally, while this study effectively responds to several key criticisms of prior acculturation studies, it does not resolve all outstanding issues, not the least of which is how best to define culture (Hunt, Schneider, & Comer, 2004). More work is needed to tease out the effects of factors that, at present, are defined as indicators of culture and understand how and why they relate to health, education, and wellbeing among youths. The patterns relating acculturation to various outcomes (e.g., Marsiglia, Kulis, Wagstaff, Elek, & Dran, 2005; Marsiglia & Waller, 2002; Popkin & Udry, 1998; Portes & Rumbaut, 2001; Adam, McGuire, Walsh, Basta, & LeCroy, 2005) are compelling enough to warrant continued research despite the persistence of some ambiguities.

In conclusion, this study made significant contributions to the acculturation literature. By examining preadolescents, we confirmed that even at early ages, acculturation is a salient phenomenon. We identified the early patterns of acculturation in this sample of Mexican-heritage 5th graders, thus laying the groundwork for exploration of both acculturation trajectories and their effects on health and social outcomes. Furthermore, by employing measures and methods that address critiques of prior research, we demonstrat ed the possibility for a more rigorous study of acculturation.

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Table 1

Descriptive Statistics for Sample (N=1,632)

Indicators	Category	%
Linguistic acculturation – family		
	Spanish dominant	29.61
	Bilingual	50.47
	English dominant	19.92
Linguistic acculturation – friends		
	Spanish dominant	9.62
	Bilingual	38.06
	English dominant	52.32
Linguistic acculturation – media		
	Spanish dominant	7.94
	Bilingual	43.55
	English dominant	48.51
Attitudinal acculturation – Mexican culture		
	High affinity	93.62
	Low affinity	6.38
Attitudinal acculturation – U.S. culture		
	High affinity	82.17
	Low affinity	17.83
Behavioral acculturation		
	United States	41.64
	Family's country of origin	20.05
	Both places	34.23
	Neither place	4.09
Generation status		
	First	29.48
	Second	50.78
	Third or higher	19.74
Time in U. S.		
	Less than 1 year	4.52
	1-5 years	15.00
	6-10 years	16.75
	More than 10 years	63.74
Exposure to Mexican culture		
	None	37.47
	More than 3 years ago	28.86
	In the last 3 years	33.67
Ethnic identification		
	Low	7.97
	Moderate	57.44

Indicators	Category	%
	High	34.59

Table 2

Model Fit Statistics for the Optimal Number of Acculturation Classes

	AIC	(S.D)	BIC	(S.D)	Entropy	LRT	LL	(S.D)	df
Independence	28674.494	(40.009)	28782.446	(40.009)	-	-	14317.247	(20.005)	20
Two classes	27163.797	(52.425)	27385.097	(52.425)	0.760	<.0001	13540.899	(26.212)	41
Three classes	26382.109	(56.413)	26716.758	(56.413)	0.816	<.001	13129.055	(28.206)	62
Four classes	26177.404	(55.826)	26625.401	(55.826)	0.830	<.01	13005.702	(27.913)	83
Five classes	26058.734	(55.785)	26620.081	(55.785)	0.831	<.05	12925.367	(27.893)	104
Six classes	26008.828	(53.265)	26683.523	(53.265)	0.806	N.S.	12879.477	(26.632)	125

Note: Mplus generated 10 AIC, BIC, and LL values, one for each of the 10 imputed datasets, as well as the summary statistic shown here. The standard deviations in the table capture the extent of the variation in each statistic across the 10 datasets. In the case of the LRT, nine out of the 10 p-values were constant. Shown here are the largest and, therefore, most conservative p-values of each set of 10. Mplus generates only a single Entropy value for each model.

Table 3

Five-Class Solution: Latent Class Probabilities, Class Size, and Conditional Probabilities

Indicators		Less Acculturated 6% (n=96)	Bicultural Immigrants 21% (n=340)	Bicultural Children of Immigrants 46% (n=752)	Highly Acculturated 22% (n=362)	Marginalized 5% (n=82)
Linguistic Acculturation – Family	Spanish dominant	83.13	46.94	30.20	0.91	16.46
	Bilingual	11.56	48.44	68.14	23.90	59.63
	English dominant	5.31	4.62	1.66	75.19	23.60
Linguistic Acculturation – Friends	Spanish dominant	87.50	7.32	5.41	0.58	6.46
	Bilingual	8.23	57.82	48.66	6.16	34.76
	English dominant	4.27	34.85	45.93	93.26	58.78
Linguistic Acculturation - Media	Spanish dominant	61.35	7.71	4.19	0.97	11.59
	Bilingual	23.96	64.74	52.22	15.55	22.68
	English dominant	14.69	27.56	43.59	83.48	65.73
Attitudinal Acculturation – Mexican						
Culture	High affinity	95.21	99.50	98.60	94.39	18.29
	Low affinity	4.79	0.50	1.40	5.61	81.71
Attitudinal Acculturation – U.S.						
Culture	High affinity	72.92	82.03	83.66	91.80	37.44
	Low affinity	27.08	17.97	16.34	8.20	62.56
Behavioral Acculturation	United States	25.31	22.65	36.46	73.48	46.34
	Origin country	53.65	28.00	19.19	5.77	18.66
	Both places	17.29	45.62	41.28	14.94	27.32
	Neither place	3.75	3.74	3.07	5.80	7.68
Generation Status	First	86.98	98.29	3.71	1.91	34.88
	Second	10.94	1.32	90.82	24.42	51.71
	Third or higher	2.08	0.38	5.47	73.67	13.41
Time in U. S.	Less than 1 year	42.29	6.41	0.96	0.28	3.78
	1-5 years	47.60	44.82	4.14	1.16	13.90
	6-10 years	4.06	41.06	12.25	3.70	29.63
	More than 10 years	6.04	7.71	82.66	94.86	52.68

Indicators		Less Acculturated 6% (n=96)	Bicultural Immigrants 21% (n=340)	Bicultural Children of Immigrants 46% (n=752)	Highly Acculturated 22% (n=362)	Marginalized 5% (n=82)
Exposure to Mexican Culture	None	43.13	43.32	21.20	64.31	37.32
	More than 3 years ago	13.65	29.24	37.69	15.14	24.76
	In the last 3 years	43.23	27.44	41.12	20.55	37.93
Ethnic Identification	Low	10.52	1.26	4.40	7.93	65.61
	Moderate	43.54	55.65	60.44	62.02	33.54
	High	45.94	43.09	35.16	30.06	0.85

Table 4

Summary of Five Latent Acculturation Classes

	Less Acculturated	Bicultural Immigrants	Bicultural Children of Immigrants	Highly Acculturated	Marginalized
Linguistic acculturation					
- family	Spanish dominant	Spanish dominant	Bilingual	English dominant	Bilingual
- friends	Spanish dominant	Bilingual	Bilingual	English dominant	English dominant
- media	Spanish dominant	Bilingual	Bilingual	English dominant	English dominant
Attitudinal acculturation					
- Mexican affinity	High	High	High	High	Low
- U.S. affinity	High	High	High	High	Low
Behavioral acculturation	Like origin country	Like both places	Like both places	Like U.S.	Like U.S.
Generation status	First	First	Second	Third or higher	Second
Time in U.S.	1-5 years	1-5 years	More than 10 years	More than 10 years	More than 10 years
Visits to origin country	Bimodal: In the last 3 years or None	None	In the last 3 years	None	Bimodal: In the last 3 years or None
Ethnic identification	Bimodal: Moderate or High	Moderate	Moderate	Moderate	Low