Profiles of acculturation among Hispanics in the United States: links with discrimination and substance use

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Abstract

Purpose—Recent research suggests that acculturation is a multifaceted construct with implications for substance use among Hispanics. However, few, if any, studies examining profiles of acculturation have been conducted using national samples. Moreover, no cluster-based studies have examined how acculturation relates to discrimination and substance use disorders among Hispanics in the United States.

Methods—The present study, employing Wave 2 data on Hispanics ($n = 6,359$) from the National Epidemiologic Survey of Alcohol and Related Conditions, aims to address these gaps. We use latent profile analysis to identify profiles of acculturation among Hispanics in the United States and, in turn, examine the relationships between membership in these profiles and experiences of discrimination and the prevalence of substance use disorders.

Results—A five-class solution was the optimal modeling of the data. Classes were identified as Class 1: *Spanish-dominant/strongly separated* (17 %), Class 2: *Spanish-dominant/separated* (18 %), Class 3: *bilingual/bicultural* (33 %), Class 4: *English-dominant/bicultural* (16 %), and Class 5: *English-dominant/assimilated* (16 %). Bilingual/bicultural Hispanics (Class 3) reported the highest prevalence of discrimination (31 %). Spanish-language dominant Hispanics (Classes 1 and 2) reported the lowest prevalence of substance use disorders. Significant differences in the prevalence of substance use disorders were observed between the bilingual/bicultural (Class 3) and English-dominant/assimilated classes (Class 5), but no differences were noted between the two English-dominant classes (Classes 4 and 5).

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Conclusions—Study findings indicate that acculturation is heterogeneous in its expression among Hispanics and suggest that Hispanics who maintain their Spanish-language capacity are at a substantially lower risk for a variety of substance use disorders.

Keywords

Hispanic; Acculturation; Discrimination; Substance use; Race and ethnicity

Introduction

Links between acculturation and substance use outcomes have been well established among Hispanics in the United States. In general, evidence suggests that various acculturative factors, including greater linguistic acculturation, increased social integration, and decreased identification with Hispanic culture, are all associated with the increased likelihood of substance use [1, 4, 13, 16, 21, 24]. Fundamentally, research suggests that more acculturated Hispanics are at increased risk for the use of licit and illicit substances, as well as substance use disorders [19, 22]. Recent studies suggest that the link between acculturation and substance use can also be extended to include other major immigrant groups as well as other psychiatric disorders (e.g. depression, bipolar) [5].

Various mechanisms have been identified that might explain the manner in which greater acculturation is related to increased substance use [6, 7, 27]. Among these, discrimination has been identified as a construct that might function to explain part of the relationship between acculturation and substance use [12, 28]. Research suggests that, as individuals become more acculturated, contact with members of other racial/ethnic groups increases and individuals become more aware of ethnic discrimination in the social milieu and the disadvantages faced by minorities [14, 31]. Substance use, in turn, is conceptualized as a coping strategy used to manage the stresses and negative feelings associated with discrimination experiences [27]. That said, it should be noted that other studies have found that individuals who are less acculturated are more likely to experience discrimination and that assimilated Hispanics report lower levels of discrimination than their less-acculturated counterparts [20, 23]. In either case, acculturation is believed to be linked with discrimination which, in turn, is associated with the increased likelihood of substance use.

Acculturation has increasingly become understood to be a multifaceted and multidimensional construct. Indeed, while unidimensional and bidimensional models of acculturation have profoundly shaped the manner in which we understand acculturation [3, 8], recent research and theory suggest that acculturation may be far more complex than suggested by these original models. Recent cluster-based studies suggest that highly influential models such as Berry's model of acculturation [2, 3] may not completely capture the full breadth of acculturation profiles observed among Hispanics in the United States [23]. The strength of cluster-based approaches—such as latent class or profile analysis—is that the identification of particular subgroups is not conducted a priori, but rather classes are inferred based on data [29]. Using such an approach, Schwartz and Zamboanga [23] identified latent acculturation subgroups that were in keeping with previous research as well as others that represented a level of conceptual nuance not captured by prior models. For

instance, Berry's model conceptualizes of a singular biculturalism class; however, using latent profile analysis, Schwartz and colleagues identified three distinct biculturalism subgroups (i.e. partial bicultural, American-oriented bicultural, and full bicultural). Such cluster-based research has laid the groundwork for important theoretical pieces that have outlined the utility of multidimensional models of acculturation that take into account factors such as language, cultural values, and cultural identification [25]. These advances have helped revolutionize the ways in which we understand acculturation among an increasingly diverse and heterogeneous population of Hispanics in the United States.

Despite the advances made in recent years, one of the major shortcomings of prior studies is the lack of scope and generalizability. In particular, few, if any, studies have examined acculturation profiles outside of major Hispanic population centers (e.g. Miami, Los Angeles) or have drawn from nationally representative samples of Hispanics in the United States. Moreover, while studies have examined the relationship between profiles of acculturation and experiences of discrimination, to our knowledge, no studies have systematically examined the links between profiles of acculturation and substance use disorders among Hispanics in the United States.

The present study

The present study employs data from a population-based longitudinal study (i.e. the National Epidemiologic Survey of Alcohol and Related Conditions [NESARC]) to address the aforementioned gaps. This data source is well suited to address the shortcomings of previous studies due to its far-reaching scope and extensive assessment of acculturation, discrimination, and substance use disorders. To this end, we use latent profile analysis to identify substantively meaningful profiles of acculturation among Hispanics in the United States. In turn, we examine the relationships between membership in these profiles and experiences of discrimination and the prevalence of substance use disorders. This approach allows us to examine the ways that acculturation is related to both discrimination and substance use disorders among a nationally representative sample of Hispanics in the United States. Although this study is exploratory in nature, we hypothesize that the prevalence of perceived discrimination and substance use disorders will be greater among Hispanics reporting higher levels of acculturation than among less acculturated Hispanics.

Methods

Sample and procedures

Study findings are based on data from Wave II (2004–2005) of the NESARC. The NESARC is a nationally representative sample of non-institutionalized U.S. residents aged 18 years and older. The survey gathered background data and extensive information about substance use disorders from individuals living in households and group settings (e.g. shelters, college dormitories, and group homes) in all 50 states and the District of Columbia. The NESARC utilized a multistage cluster sampling design, oversampling youth and racial/ethnic minorities to ensure appropriate representation of racial and ethnic subgroups and obtain reliable statistical estimation in these subpopulations.

The current study restricted analyses to Hispanic respondents 18 years or older (n = 6,359). Data were collected through face-to-face structured psychiatric interviews conducted by U.S. Census workers trained by the National Institute on Alcohol Abuse and Alcoholism and U.S. Census Bureau. Interviewers administered the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV version (AUDADIS-IV), which provides diagnoses for substance use disorders, including tobacco, alcohol, and illicit drug use disorders. The AUDADIS-IV has been shown to have good-to-excellent reliability in assessing substance use morbidity in the general population [10, 11]. A more detailed description of the NESARC procedures is available elsewhere [9].

Measures

Indicator variables—This study utilized latent profile analysis (LPA) to identify latent subgroups on the basis of 11 ordinal indicator variables related to English/Spanish language ability and preference, Hispanic/multi-ethnic social orientation, and Hispanic identity.

Language ability/preference—Four ordinal variables related to language ability and preferences were examined. Sample items include: "What languages do you usually speak at home?" and "In what languages do you speak with friends?" Responses were based on a 5-point Likert scale (1 = only English, 2 = more English than Spanish, 3 = both equally, 4 = more Spanish than English, 5 = only Spanish).

Social orientation—Four ordinal variables examining the degree of respondent Hispanic versus multiethnic social orientation were examined. Sample items include [1] "Most close friends are of Hispanic/Latino origin?" and "You prefer going to social gatherings and parties at which people are". Responses were based on either a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree) or a 5-point Likert scale (1 = All other ethnic groups, 2 = more other ethnic groups than Hispanic/Latino, 3 = about half-and-half, 4 = more Hispanic/Latino than other ethnic groups, 5 = all Hispanic/Latino).

Hispanic identity—Three ordinal variables measuring Hispanic identity were examined. Sample items include "Have a strong sense of yourself as a person of Hispanic/Latino origin" and "Identify with other Hispanics/Latinos." Responses for these questions were based on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree).

Outcome variables—This study utilized multinomial regression analysis to examine the association between membership in the latent acculturative subgroups and discrimination experiences and substance use disorder outcomes.

Discrimination experiences—Four dichotomous (0 = no, 1 = yes) variables were used to examine interpersonal, public, and institutional discrimination (see Table 3 for full description of items). Additionally, supplementary analyses made use of a dichotomous measure of "any discrimination" in which individuals reporting having experienced discrimination for any of the four variables were coded as 1 and those who reported never experiencing discrimination were coded as 0. Prompts related to discrimination are listed in Table 3.

Substance use disorders—Three substance use disorders were examined: nicotine dependence and lifetime alcohol or any illicit drug use disorder (abuse/dependence). Consistent with the original NESARC coding, each item was dichotomously scored (0 = no, 1 = yes).

Sociodemographic variables—The following sociodemographic variables were included as indicator covariates (in the latent profile analysis) and control variables (in multinomial regression analyses): age, gender, household income, education level, and immigration to the United States.

Statistical analyses

LPA and multinomial regression analyses were executed in successive steps to identify and, subsequently, validate latent subgroups. LPA is a statistical procedure designed to assign individual cases to their most likely latent subgroups on the basis of observed data [17]. Multinomial regression is a statistical procedure designed for nominal outcomes that contain categories that can be assumed to be unordered [15].

Beginning with the LPA, a sequence of latent profile models were identified between 1 and 6 classes using Latent GOLD® 4.5 [30] software. Five statistical criteria were used to identify the best fitting model: the Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), Consistent Akaike's Information Criterion (CAIC), Log Likelihood, and entropy. In interpreting these criteria, lower BIC, AIC, and CAIC values and higher log likelihood values reflect better model fit. Higher entropy values indicate greater accuracy. In addition to these quantitative criteria, the parsimony and substantive interpretability of the latent class solutions also function as key criteria for the selection of the final model.

After identifying latent subgroups and assigning subjects to classes on the basis of the probability of membership, multinomial regression was used to predict class membership. Results are presented in the study tables with the class reporting the lowest levels of discrimination experiences and substance use disorders as the reference category; however, to fully elucidate the differences between various classes, supplementary analyses were conducted in which all classes were sequentially examined as the reference category. Using multinomial regression, relative risk ratios and confidence intervals were estimated. Relative risk ratios refer to the likelihood of membership in one particular class versus a specified reference class and are interpretably akin to odds ratios [32]. Statistical procedures involving multinomial regression models were conducted using Stata 13.1SE survey data functions [26].

Results

Latent class analysis

Identification of latent subgroups—Latent classes were identified on the basis of 11 ordinal indicator variables related to English/Spanish language ability and preference, Hispanic/multi-ethnic social orientation, and Hispanic identity. As seen in Table 1, the statistical criteria suggest that a five-class solution was the optimal modeling of the data.

While the fit indices (i.e., Log Likelihood, BIC, AIC, and CAIC) suggest that the addition of a sixth class would slightly improve model fit, the relatively minor differences between the five- and six-class models suggest that the six-class solution would not be parsimonious. Decreases in entropy between the four-and five-class solutions are minimal, suggesting that the accuracy of classification remains stable for the five-class solution. Moreover, the conceptual fit of the latent profile models was examined by means of plotting the adjusted mean values of the 11 indicator variables across each of the latent classes. As illustrated in Fig. 1, the five-class solution provides a clearly distinguishable and conceptually coherent modeling of the heterogeneity of the data.

The five-class solution is comprised of Class 1: "Spanish-dominant/Strongly Separated" ($n = 1,091$; 17.16 %); Class 2: "Spanish-dominant/Separated" ($n = 1,165$; 18.32 %); Class 3: "Bilingual/Bicultural" ($n = 2,085$; 32.79 %); Class 4: "English-dominant/Bicultural" ($n = 1,005$; 15.80 %); and Class 5: "English-dominant/Assimilated" ($n = 1,013$; 15.93 %). Classes 1 and 2 are both Spanish-language dominant and are distinguished by incremental differences with respect to Hispanic social orientation and Hispanic identity. More precisely, members of Class 1 (Spanish-dominant/Strongly Separated) scored in the upper extreme for all variables examining social orientation and Hispanic identity, whereas members of Class 2 (Spanish-dominant/Separated) were characterized by a clear but more moderate Hispanic social orientation and identity. Roughly one-third of the sample was categorized into either Class 1 (17.16 %) or Class 2 (18.32 %). Members of Class 3 (Bilingual/Bicultural) were characterized by equal use of English and Spanish, only a slight social preference for Hispanics, and a clear sense of Hispanic identity. Class 3, which accounted for roughly one-third of the sample (32.79 %), was the largest of all latent classes identified in this study. Members of Class 4 (English-dominant/Bicultural) tended to be English speakers, but were very similar to members of Class 3 in terms of social orientation and identity. Finally, Class 5 (English-dominant/Assimilated) was distinguished by strong English-language orientation, a preference toward more ethnically diverse social activities, and a substantially more moderate sense of Hispanic identity. These two English-dominant classes were approximately the same size (Class 4 = 15.80 %, Class 5 = 15.93 %) and together accounted for roughly one-third of the total sample.

Proportion of respondents in the latent classes across sociodemographic differences

Table 2 displays the proportion of respondents in each of the five latent classes across sociodemographic factors. In terms of age, Class 1 (Spanish-dominant/Strongly Separated) had the highest proportion of respondents ages 50 and older (35.44 %) in contrast with Class 5 (English-dominant/Bicultural) which had smallest proportion of respondents over the age of 50 (19.46 %). With respect to gender, the largest differences were observed for the two Spanish-dominant classes as Class 1 (Spanish-dominant/Strongly Separated) had the lowest proportion of male respondents (47.55 %) and Class 2 (Spanish-dominant/Separated) had the highest proportion of male respondents (55.96 %). As for household income, by far the lowest proportion of individuals residing in households with incomes greater than $70,000 per year was identified in the two Spanish-dominant classes as Class 1 (Spanish-dominant/ Strongly Separated) and Class 2 (Spanish-dominant/separated) had only 5.58 % and 5.72 % of respondents in this category, respectively. This stands in contrast with Class 5 (English-

dominant/Assimilated) in which the proportion of respondents in households earning $70,000 or more was roughly six times that of the Spanish-dominant classes (32.74 %). Similar differences were observed in terms of educational attainment as Class 1 (Spanish-dominant/Strongly Separated) had the highest proportion of respondents with less than a high school education (65.79 %) compared with Classes 4 and 5 in which only 12.75 % and 7.53 % of respondents did not hold a high school diploma, respectively. Finally, Class 4 (English-dominant/Bicultural) had the smallest proportion of respondents who had immigrated to the United States (4.60 %) versus Class 1 (Spanish-dominant/Strongly Separated) which had the largest proportion (93.39 %).

Supplementary analyses of variance (ANOVA) also revealed, among individuals reporting having immigrated to the United States, significant differences between classes with respect to time since immigration ($F = 46.67$, $p < 0.001$). The two Spanish-dominant classes reported the lowest mean values for years since immigration to the United States (Class 1: $M = 21.16$, SD = 12.73; Class 2: $M = 20.72$, SD = 13.10). Compared to Classes 1 and 2, the mean value for years since immigration to the United States was significantly greater among bilingual/bicultural Hispanics (Class 3: $M = 25.77$, SD = 13.37). Significant differences were also observed between Class 3 and Classes 4 and 5. Specifically, although Classes 4 and 5 contained only a small proportion of immigrants, immigrants who were classified into the two English-dominant classes reported the highest mean values for years since immigration (Class 4: $M = 31.82$, SD = 13.50; Class 5: $M = 32.52$, SD = 16.68).

Links between profiles of acculturation and discrimination

Figure 2 displays the percentage of respondents in each of the latent classes that experienced one or more discrimination experiences in the previous year. Class 3 (Bilingual/Bicultural) reported the highest prevalence of perceived discrimination (31.36 %) followed by Class 4 (English-dominant/Bicultural) in which roughly one in four (26.44 %) of respondents reported having experienced some form of discrimination. Class 1 (Spanish-dominant/Strongly Separated) reported the lowest prevalence of perceived discrimination (14.32 %) followed by Class 2 (Spanish-dominant/Separated; 17.84 %) and Class 5 (English-dominant/Assimilated; 19.04 %). Supplemental multinomial regression analyses revealed that, controlling for sociodemographic factors, members of Class 3 (Bilingual/Bicultural) were significantly more likely than members of Class 4 (English-dominant/Bicultural) to report experiencing discrimination (RR = 1.57, 95 % CI 1.42–1.73). Moreover, members of Class 3 (Bilingual/Bicultural) and Class 4 (English-dominant/Bicultural) were significantly more likely than members of all other classes to report experiencing discrimination. No significant differences were observed between Classes 1–2 and Class 5 (English-dominant/Assimilated). Supplementary analyses also revealed that individuals who reported experiencing any form of discrimination were significantly more likely to meet criteria for alcohol (OR = 1.42, 95 % CI 1.35–1.51) or illicit drug use (OR = 1.31, 95 % CI 1.18–1.46) disorders, but not nicotine dependence.

Links between acculturation, discrimination, and substance use disorders

Table 3 displays the associations between discrimination, substance use disorders and membership in the five latent classes. With respect to substance use disorders, a fairly

consistent pattern of associations was identified. Compared to the reference class (Spanish-dominant/Strongly Separated), Class 5 (English-dominant/Assimilated) reported the highest risk ratios for all substance use disorders examined, followed by Class 4 (English-dominant/Bicultural), and Class 3 (Bicultural/Bilingual). With the exception of alcohol use disorder (RR = 1.57, 95 % CI 1.42–1.73), no significant differences were observed between Class 1 and Class 2. Supplementary multinomial regression analyses sequentially examined differences with each of the latent classes as the reference class in order to fully elucidate differences between classes. Supplementary results revealed that, with equally large effects, members of the two Spanish-dominant classes (Class 1 and Class 2) were both significantly less likely to meet criteria for all substance use disorders examined in this study compared to Classes 3, 4 and 5. Supplementary analyses also revealed large effects between Class 3 (Bilingual/Bicultural) and Class 5 (English-dominant/Assimilated) for nicotine (RR = 0.62, 95 % CI 0.51–0.76), alcohol (RR = 0.54, 95 % CI 0.48–0.60), and illicit drug use (RR = 0.48, 95 % CI 0.44–0.53); notably, however, no significant differences were observed between the two English-dominant classes (Class 4 and Class 5).

Discussion

It has been well established that greater acculturation is related to the increased likelihood of substance use and substance use disorders among Hispanics in the United States. Few studies, however, have examined the relationship between distinct profiles of Hispanic acculturation and the prevalence of substance use using cluster-based techniques. Moreover, few, if any, studies have done so with nationally representative samples of Hispanics in the United States. Our objective in this study was twofold: first, we aimed to identify substantively meaningful acculturative profiles by drawing from a variety of factors related to English/Spanish language ability and preference, Hispanic/multi-ethnic social orientation, and Hispanic identity. Second, we aimed to examine the prevalence of discrimination experiences and substance use disorders among members of the identified classes. Overall, the study findings shed light on the acculturative heterogeneity of Hispanics in the United States and highlight the links between acculturation, discrimination, and nicotine, alcohol, and illicit drug use disorders.

Study findings suggest that acculturation is heterogeneous in its expression among Hispanics in the United States as five distinct acculturative subgroups were identified. The largest group identified was the Bilingual/Bicultural (33 %) class, characterized by linguistic and social flexibility in combination with a clear sense of Hispanic identity. Two English-language dominant classes, both of which were comprised of primarily U.S.-born individuals as well as a minority of immigrants who had spent roughly 30 or more years living in the United States, were identified that differed markedly in terms of social orientation and Hispanic identity. The English-dominant/Assimilated (16 %) class was characterized by a preference for ethnically diverse social engagement and moderate orientation toward Hispanic identity. In contrast, members of the English-dominant/Bicultural (16 %) class, despite being comprised primarily of monolingual English speakers, were functionally identical to members of the Bilingual/Bicultural class in terms of social orientation and Hispanic identity. Additionally, two Spanish-language dominant classes were identified that were distinguished by incremental differences in terms of social

preference and Hispanic identity. More than 90 % of the members of these two Spanish-language classes reported having immigrated to the United States and, relative to immigrant-members of the other classes, reported having spent fewer years living in United States. Several of the identified classes—namely the Bilingual/Bicultural, English-dominant/Assimilated, and the two Spanish-dominant classes—share substantial overlap with categories identified in recent cluster-based studies [23] as well as with Berry's seminal typology [2].

The present study results suggest a link between acculturation and the likelihood of experiencing discrimination. The highest levels of discrimination were identified among members of the Bilingual/Bicultural class as nearly one in three (31 %) Hispanics in this class reported experiencing one or more experiences of discrimination in the previous year. Notably, Bilingual/Bicultural Hispanics reported not only the highest levels of discrimination in general, but also reported the highest prevalence for all four manifestations of discrimination examined in this study. The second highest levels of discrimination were identified for the English-dominant/Bicultural class in which more than one in four (26 %) reported having experienced discrimination during the previous year. Members of both bicultural classes were significantly more likely to report experiencing discrimination compared to members of the Spanish-dominant/Strongly Separated (14 %), Spanish-dominant/Separated (18 %), and the English dominant/Assimilated (19 %) classes. No significant differences were observed in terms of the likelihood of experiencing discrimination among members of the two Spanish dominant classes and, at the other end of the acculturative spectrum, the English-dominated/Assimilated class. These findings are consistent with the perspective of theorists who suggest that the relationship between acculturation and perceived discrimination may take on a quadratic distribution with individuals at the extremes of acculturation reporting the lowest levels of discriminatory experiences [27]. It may be that Hispanics at very low levels of acculturation have limited contact with culturally distinct individuals or may not be aware of discriminatory experiences due to language limitations, whereas highly acculturated Hispanics may no longer be as likely to be identified as targets of discrimination. This variability is noteworthy given recent research highlighting the links between discrimination and the wellbeing of Hispanics in the United States [18].

With respect to the relationship between acculturation profiles and substance use disorders, a markedly distinct pattern was identified. The two Spanish-dominant classes were found to have a lower prevalence for all substance use disorders examined in this study. This is consistent with previous research that has identified associations between nativity, low linguistic acculturation (i.e., not preferring English to Spanish), and substance use [1, 13, 16]. Greater nuance was observed in examining differences between the three Bilingual/Bicultural and English-dominant classes. Indeed, despite experiencing the highest levels of discrimination, members of the Bilingual/Bicultural class were between roughly 1.5 and 2 times less likely to meet criteria for nicotine, alcohol, and illicit drug use disorders compared to members of the English-dominant classes. This is noteworthy given that the Bilingual/Bicultural and English-dominant/Bicultural classes are functionally identical but for marked differences in language ability and preference. No significant differences were observed between members of the English-dominant/Bicultural and English-dominant/Assimilated

classes. These findings suggest that the lack of Spanish-language ability (being bilingual) may be linked with increased risk for substance use disorders among Hispanics.

Study assets and limitations

The present study has three primary assets: first, to our knowledge, this is the first study of the profiles of acculturation that draws from a large, nationally representative sample of Hispanics in the United States. The scope and representativeness of the study sample provide a greater degree of generalizability than has previously been afforded by smaller, geographically circumscribed samples. Second, we show that bicultural Hispanics are more likely to experience discrimination than Hispanics situated at either extreme of the acculturative spectrum. Finally, our findings add an important degree of nuance to our understanding of the relationship between acculturation and substance use disorders, highlighting what may be a link between Spanish-language ability/preference and substance use.

Despite these assets, our study findings should be interpreted in light of several limitations. First, the NES-ARC is not a true longitudinal investigation; as such, the temporal ordering of acculturation, discrimination, and substance use disorders is not ideal. Second, while the NESARC includes a variety of variables related to multiple domains of acculturation, the list of acculturation-related variables at our disposal was not as exhaustive as in previous cluster-based studies (e.g., [23]). Third, study analyses focused exclusively on lifetime substance use disorders; however, distinct patterns might be observed in examining the relationships between acculturation and subclinical substance use. Substance use disorders in the previous 12 months were not examined due to low base rates for illicit drug use disorders. Finally, it should be noted that the data file does not provide situational or contextual information (e.g., interpersonal relationships, neighborhood characteristics) that may help to more fully explain the relationships between key study variables. Future research on acculturation, discrimination, and substance use disorders would benefit from incorporating such factors.

Conclusions

In sum, present study findings indicate that acculturation is heterogeneous in its expression among Hispanics in the United States. Hispanic Americans who are bicultural—be they bilingual English/Spanish speakers or monolingual English speakers—are at greatest risk for experiencing various manifestations of interpersonal, public, and institutional discrimination. However, a strong contrast can be drawn between these two bicultural groups in terms of substance use disorders as study findings suggest that Hispanics who maintain their Spanish-language capacity are at a substantially lower risk for a variety of substance use disorders. Clinical and public health implications of the observed relationships are that more acculturated—and particularly English-dominant—Hispanics should be targeted in prevention efforts and monitored more closely for the development of substance use disorders.

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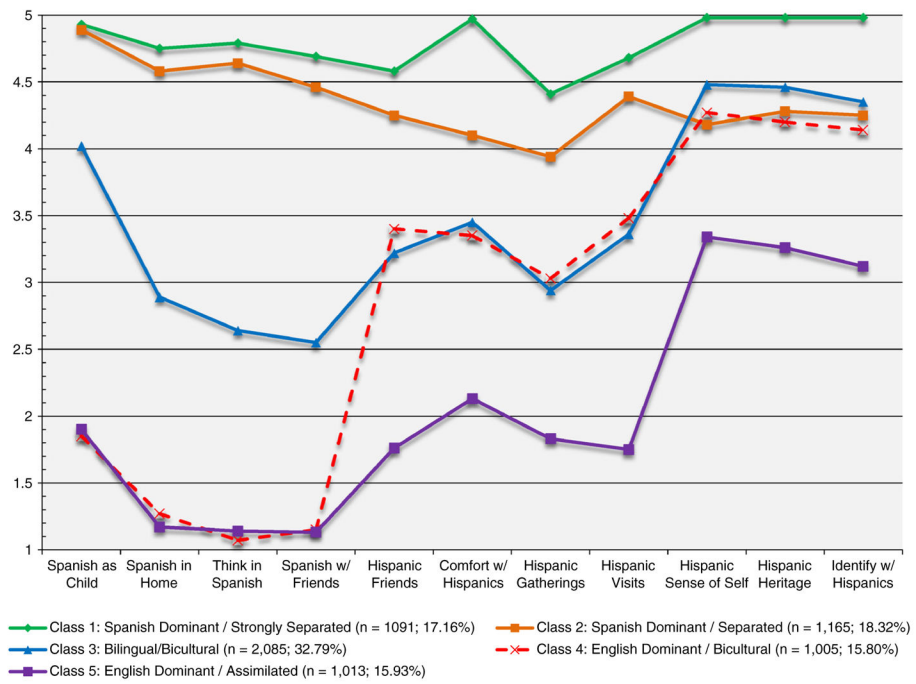
Fig. 1.
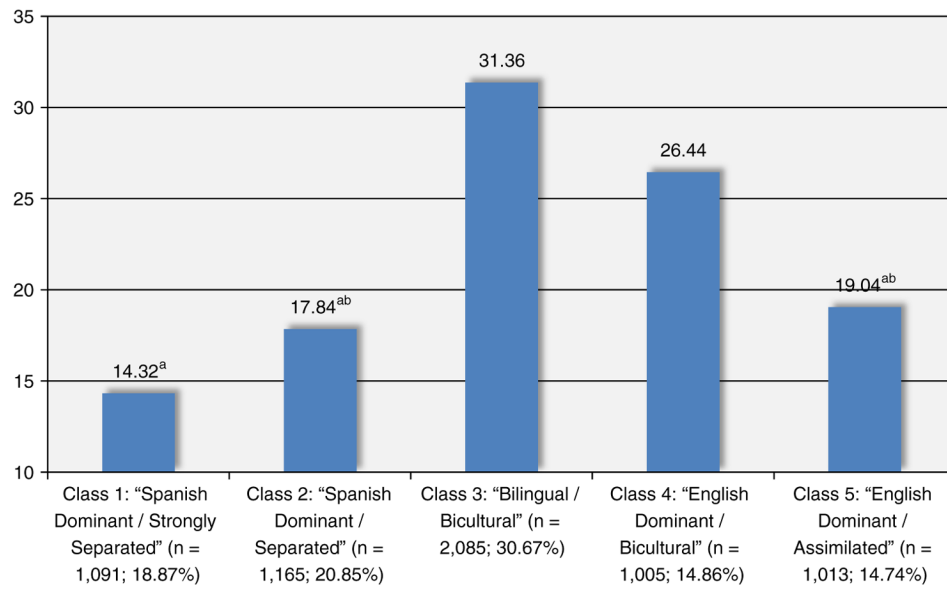Characteristics of latent classes

Fig. 2.
Prevalence of one or more discrimination experiences across latent classes. Percentages that do not share a superscript are statistically different ($p < 0.05$) when controlling for age, gender, family income, education, and immigrant to the United States

Table 1

Fit indices for latent classes

Class solution	Log Likelihood	BIC	AIC	CAIC	Entropy
1 Class	−96,667.39	193,753.62	193,430.79	193,801.62	n/a
2 Classes	−82,755.90	166,070.25	165,639.81	166,134.25	0.93
3 Classes	−78,719.24	158,136.54	157,598.49	158,216.54	0.91
4 Classes	−77,227.12	155,291.91	154,646.24	155,387.91	0.89
5 Classes	−76,098.73	153,174.73	152,421.45	153,286.73	0.88
6 Classes	−75,221.32	151,559.52	150,698.64	151,687.52	0.87

AIC Akaike's Information Criterion, *BIC* Bayesian Information Criterion, *CAIC* Consistent Akaike's Information Criterion

Table 2

Sociodemographic characteristics of the latent classes

	Class 1: "Spanish-dominant/Strongly Separated" (n = 1,091; 18.87 %)		Class 2: "Spanish-dominant/Separated" (n = 1,165; 20.85 %)		Class 3: "Bilingual/Bicultural" (n = 2,085; 30.67 %)		Class 4: "English-dominant/Bicultural" (n = 1,005; 14.86 %)		Class 5: "English-dominant/Assimilated" (n = 1,013; 14.74 %)	
	N (%)	95 % CI	N (%)	95 % CI	N (%)	95 % CI	N (%)	95 % CI	N (%)	95 % CI
Sociodemographic characteristics										
Age										
18–34 years	257 (29.11)	(28.0–30.3)	317 (36.15)	(34.5–37.9)	689 (42.50)	(41.4–43.6)	407 (44.58)	(43.0–46.1)	355 (42.21)	(40.3–44.1)
35–49 years	376 (35.46)	(34.4–36.5)	436 (37.02)	(36.1–38.0)	737 (32.98)	(31.9–34.0)	380 (35.95)	(34.2–37.8)	397 (35.62)	(33.7–37.5)
50–64 years	248 (21.18)	(20.1–22.3)	218 (17.12)	(16.4–17.9)	389 (15.36)	(15.0–15.7)	147 (12.92)	(11.0–15.1)	169 (14.86)	(13.7–16.1)
65+ years	210 (14.26)	(13.6–14.9)	194 (9.71)	(9.3–10.1)	270 (9.16)	(8.7–9.7)	71 (6.54)	(5.5–7.7)	92 (7.31)	(6.3–8.5)
Gender										
Female	672 (52.45)	(50.9–54.0)	633 (44.04)	(43.2–44.9)	1,201 (48.81)	(47.7–49.9)	582 (51.78)	(49.9–23.6)	552 (50.14)	(48.4–51.9)
Male	419 (47.55)	(46.0–49.1)	532 (55.96)	(55.1–56.8)	884 (51.19)	(50.0–52.3)	423 (48.22)	(46.4–50.1)	461 (49.86)	(48.1–51.6)
Household income										
< $20,000	463 (36.03)	(34.6–37.5)	449 (35.26)	(34.1–36.4)	448 (20.13)	(19.3–20.9)	182 (18.48)	(16.7–20.4)	167 (14.37)	(12.6–16.3)
$20,000–$34,999	315 (31.65)	(30.0–33.4)	349 (30.09)	(29.1–31.1)	475 (23.22)	(22.2–24.2)	198 (20.56)	(19.3–1.8)	160 (15.77)	(13.9–17.8)
$35,000–69,999	266 (26.74)	(25.9–27.6)	295 (28.93)	(28.2–29.8)	738 (35.90)	(35.1–36.7)	343 (32.80)	(31.5–34.1)	350 (37.12)	(35.6–38.7)
> $70,000	47 (5.58)	(5.0–6.2)	72 (5.72)	(5.3–6.2)	424 (20.76)	(20.3–21.2)	282 (28.15)	(26.4–29.9)	336 (32.74)	(30.9–34.7)
Education										
Less than H.S.	690 (65.79)	(64.7–66.8)	634 (57.70)	(56.5–58.9)	444 (23.81)	(11.5–14.1)	130 (12.75)	(6.4–8.8)	85 (7.53)	(34.1–35.4)
H.S. graduate	208 (18.98)	(18.1–19.8)	265 (21.35)	(20.3–22.5)	549 (27.49)	(29.7–33.3)	299 (31.49)	(20.6–23.9)	256 (22.24)	(23.9–24.9)
Some college or more	193 (15.23)	(14.7–15.7)	266 (20.95)	(20.3–1.6)	1,092 (48.70)	(54.3–57.2)	576 (55.77)	(68.2–72.2)	672 (70.24)	(40.3–41.3)
Immigrant to USA										
No	85 (6.61)	(5.9–7.4)	129 (8.96)	(8.1–9.8)	1,087 (47.65)	(46.1–49.1)	964 (95.39)	(94.7–96.0)	866 (86.74)	(86.0—87.5)
Yes	1,006 (93.39)	(90.1–91.8)	1,036 (91.04)	(90.1–91.8)	998 (52.35)	(50.9–53.8)	41 (4.60)	(4.0–5.3)	147 (13.26)	(12.5–14.0)

Table 3

Risk ratios for discrimination experiences across the latent classes

	Class 2: "Spanish- dominant/ Separated" (*n* = 1,165; 20.85 %)		Class 3: "Bilingual/ Bicultural" (*n* = 2,085; 30.67 %)		Class 4: "English- dominant/ Bicultural" (*n* = 1,005; 14.86 %)		Class 5: "English- dominant/ Assimilated" (*n* = 1,013; 14.74 %)	
	RR	95 % CI	RR	95 % CI	RR	95 % CI	RR	95 % CI
Discrimination experiences								
Racist names	**0.86**	**(0.79–0.93)**	**1.82**	**(1.63–2.02)**	**1.38**	**(1.22–1.56)**	1.00	(0.83–1.19)
Called a racist name because you are Hispanic?								
Public discrimination	**1.10**	**(1.02–1.18)**	**2.15**	**(1.97–2.35)**	**1.57**	**(1.43–1.73)**	0.97	(0.84–1.12)
Experienced discrimination in public (e.g. on the street, in stores or restaurants) because you are Hispanic?								
Institutional discrimination	**1.23**	**(1.14–1.32)**	**1.70**	**(1.53–1.89)**	**1.31**	**(1.16–1.48)**	**0.87**	**(0.76–0.99)**
Experienced discrimination because you are Hispanic in any other situation (e.g. obtaining a job, on-the-job, getting admitted to school, in the courts or by police, or obtaining housing)?								
Discriminatory bullying	0.95	(0.77–1.18)	**2.54**	**(2.10–3.06)**	**1.49**	**(1.19–1.86)**	1.02	(0.81–1.29)
Made fun of, picked on, pushed, shoved, hit, or threatened with harm because you are Hispanic?								
Substance use disorders								
Nicotine	1.06	(0.93–1.21)	**2.19**	**(1.84–2.60)**	**3.14**	**(2.46–4.00)**	**3.50**	**(2.83–4.32)**
Alcohol	**1.57**	**(1.42–1.73)**	**2.49**	**(2.27–2.73)**	**4.55**	**(3.99–5.19)**	**4.62**	**(4.06–5.25)**
Illicit drugs	0.70	(0.46–1.08)	**2.81**	**(1.94–4.07)**	**5.88**	**(3.77–9.18)**	**5.85**	**(3.96–8.64)**

Reference = Class 1: "Spanish-dominant/Strongly Separated" (*n* = 1,091; 18.87 %)

Risk ratios adjusted for age, gender, household income, education level, and immigrant to USA

Risk ratios in bold are significant at *p* < 0.05 or lower