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Original article

Heterogeneity of Latina/os' acculturative experiences in the National Latino and Asian American Study: a latent profile analysis

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ABSTRACT

Purpose: This study characterized unobserved subgroups of acculturative experiences among a nationally representative sample of U.S.-residing Latina/os (n = 2541) from the National Latino and Asian American Study.
Methods: Latent profile analysis was used to characterize the sample by acculturative experiences using nine-factor score indicators regarding discrimination, neighborhood context, family environment, acculturation (language use and preference), and enculturation (ethnic identity). Predictors of profile membership are also examined, including sociodemographics, Latina/o heritage (i.e., ethnic group), generational status, and two acculturative stress domains (legal and interpersonal).
Results: Four Latina/o subgroups were identified based on acculturative experiences. Profiles were differentiated by family context, neighborhood context, and discrimination: (1) positive experiences (n = 1,743, 69%), (2) cohesive conflict (n = 424, 17%), (3) marginalized conflict (n = 237, 9%), and (4) marginalized (n = 137, 5%). Generational status, heritage, and marital status were the salient predictors of profile membership. Among the foreign-born sample (n = 1617), legal acculturative stress also predicted profile membership.
Conclusions: Latina/os have heterogeneous experiences living in the United States. Discrimination, family context, and neighborhood environment are more related to varying experiences as opposed to traditional measures of acculturation and enculturation. Future research should characterize Latina/o heterogeneity using these experiences rather than strictly by observed demographics, such as heritage or generational status.

Introduction

In health research, Latina/os are often treated as a homogenous group although their experiences and characteristics vary considerably [1]. Latina/o ethnic heritage (e.g., Mexican or Cuban) and generational status are two ways in which Latinos can differ significantly [1,2]. However, there may be meaningful subpopulations of U.S.-residing Latina/os not easily classified based on observable characteristics such as demographics or nativity. Instead, there may be groups of Latina/os that are distinct in the ways through which they adapt to U.S. culture, retain the culture of their country of origin, and experience society, which in turn may influence health and contribute to health disparities [3]. Within-group disparities, such as higher rates of psychological distress or multiple chronic conditions among Puerto Ricans [4], are obscured when Latina/os are treated as a homogenous group [1].

Acculturation, or "the multidimensional process of the adoption of U.S. cultural norms, values, and lifestyles [5,6]," is often used in immigrant health research to investigate health disparities [3]. Greater levels of acculturation and increased time living in the United States have been consistently linked with worse mental health among Latina/os [7–11], yet the mechanisms through which these processes operate have yet to be understood. Berry's bidimensional model of acculturation separates immigrants into four broad acculturative categories: assimilated, integrated, marginalized and separated individuals [12]. These groups have distinct strategies by which they adapt to life in a new culture. Through a

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psychological acculturation framework [13], these strategies coupled with associated behavioral changes may result in sociocultural, intercultural, and psychological changes, which in turn affect health [14].

However, an ecological framework suggests that individuals do not exist in a vacuum [15]. Other experiences relevant to immigrants and minorities, such as discrimination, family conflict, and neighborhood context, are often associated with distress and disorder [8,16–22], yet the literature remains mixed. For example, social support, as experienced through family or friends, has been shown to buffer the effects of stress among minorities or immigrants [8,19,23,24]. However, although neighborhood social cohesion is associated with improved health outcomes [25–28], immigrant-dense areas often have increased levels of poverty [29]. This, in turn, can mean increased physical disorder and crime, which can have negative health effects [18,30–32]. Similarly, although families can provide support, they can also be places of conflict, also associated with disorder [8,19,33].

Minorities and immigrants may also encounter other experiences that negatively influence health. The experience of discrimination, which has been linked to poor health outcomes [16,17,34,35], is common among U.S.-residing Latina/os [36,37]. Other stressors are also common, such as fears regarding the legal system, deportation [34,38,39], or being separated from support systems in one's home country [39]. We hypothesize that acculturative characteristics and immigration-related experiences do not operate independently but cluster in a meaningful way. We further hypothesize that how these experiences cluster may be influenced by Latina/o heritage or generational status. Therefore, to elucidate pathways that lead to mental health disparities among U.S.-residing Latina/os, differences in acculturative characteristics and other experiences across Latina/o groups should be explored in a more holistic fashion that accounts for the potentially unobserved nature of the constructs of interest and how these constructs cluster.

In the presence of complex processes that may interact to influence health, latent variable methods may help identify both at-risk and resilient subpopulations. Person-centered methods such as latent profile analysis help capture underlying heterogeneity in a given population [40–43]. This approach allows for the exploration of meaningful, unobserved population groups based on a range of observed characteristics (e.g., language proficiency), which can shed light on unobserved interaction between exposures that naturally occur together.

This study aimed to (1) characterize unobserved population heterogeneity in a nationally representative sample of U.S.-residing Latina/os according to their acculturative characteristics and other relevant experiences (neighborhood context, family context, and discrimination), hereafter referred to as “acculturative experiences” and (2) quantify how generational status, ethnic heritage, and acculturative stress are related to group membership.

Material and methods

Participants and procedure

Data come from the National Latino and Asian American Study (NLAAS), a nationally representative, probability-based survey conducted between 2001 and 2003 as part of the National Institute of Mental Health–funded Collaborative Psychiatric Epidemiology Surveys [44,45]. The NLAAS target population was civilian, noninstitutionalized adults (18 years or older) of Latina/o or Asian origin in the contiguous United States. A stratified, multiframe probability sampling strategy was used to oversample these minority groups [44]. In-person, computer-assisted structured interviews were conducted at the respondent's home, administered by interviewers. The final response rate for the Latina/o sample was 75.5% [45]. These analyses included 2541 NLAAS participants of Latina/o ethnicity after excluding 13 individuals with unknown generational status. Basic demographics for the overall sample can be found in Table 3.

All NLAAS procedures were approved by the Institutional Review Board (IRB) Committees of Cambridge Health Alliance, the University of Washington, and the University of Michigan [44]. Additional details regarding the study sample and procedures are found elsewhere [44–46]. The present study was approved by the IRB Office at the Johns Hopkins Bloomberg School of Public Health (IRB#00008615).

Measures

All nondiagnostic measures are described elsewhere, including reliability results [47]. Questionnaires for the Latina/o sample were adapted, translated into Spanish, and back-translated to ensure cross-cultural equivalency [47]. Respondents could complete the interview in the language of their choice.

Indicators of acculturative experiences

Eleven-factor scores from six scales on acculturation and related experiences (language, ethnic identity, neighborhood context, family context, discrimination, and acculturative stress, details available in Appendix 1) were computed for each participant based on results from exploratory factor analyses (EFAs) and measurement invariance (MI) testing by generational status. Using a latent framework to measure these constructs lets individual items relate differently to the underlying construct, allowing variation by generational subgroups. Table 1 summarizes the MI models chosen for each scale, using taxonomy developed by Marsh et al [48]. For all scales, EFA was used to determine the factor structure, after which MI testing by four generational status groups was conducted within an Exploratory Structural Equation Modeling framework to determine the final measurement model. Estimated individual-level factor scores, which accounted for any lack of MI by generational group, for each scale were output using Mplus [49]. Further details on the models and how they were chosen are available elsewhere [50].

Acculturative stress factors were not included as latent profile indicators because of planned missingness on the acculturative distress scale for U.S.-born participants. Instead, the interpersonal and legal stress factor scores were used as covariates to predict profile membership. The remaining five scales, comprising nine factors, are described in the following. Additional EFA details can be found elsewhere [50].

Acculturation measures

Language

Two correlated latent factors were derived from the Language Proficiency and Language Preference scales [51] (6 items): Spanish and English. Higher factor scores indicate greater language use and preference.

Ethnic identity

Ethnic identity refers to the degree to which individuals feel linked to others with the same country of origin [52]. The ethnic identity scale [2] (four items) resulted in a single factor. Higher scores indicate increased identification with one's racial/ethnic group.

Table 1
Final models from measurement invariance testing by generational status for six scales in the National Latino and Asian American Study

Scale	Factor name(s)	Final MI model	Invariant parameters
Language	Spanish; English	Model 1	None (FMn = 0)
Ethnic identity	Identity	Model 8p	FL, FVCV, INT(p)
Neighborhood context	Social cohesion; danger	Model 10p	FL, INT(p), FMn
Family context	Cohesion; conflict	Model 1	None (FMn = 0)
Discrimination	Observed; perceived	Model 1	None (FMn = 0)
Acculturative stress	Interpersonal; legal	N/A	Configural invariance not obtained

p = partial; FL = factor loadings; FVCV = factor variance-covariances; INT = item intercepts; Uniq = item uniquenesses; FMn = factor means.

Other acculturative experience measures

Neighborhood context

Two correlated factors underlaid this 7-item scale: Neighborhood Cohesion and Neighborhood Danger, reflecting the two subscales: The Neighborhood Social Cohesion (4 items) and Neighborhood Safety (3 items) scales [53–55]. Higher Cohesion scores indicate better neighborhood cohesiveness. Higher Danger scores indicate the respondent perceived her/his neighborhood as being more dangerous.

Family context

This 15-item measure had two underlying factors: Family Cohesion and Family Conflict. Cohesion reflected the 7-item Family Pride and 3-item Family Cohesion subscales [56,57], with higher scores indicating greater feelings of familial respect/closeness and shared values/beliefs. The conflict factor reflected the 5-item Family Conflict subscale [58], which addresses cultural conflict between respondents and their families. Higher scores indicate increased familial cohesion and conflict, respectively.

Discrimination

Two latent discrimination factors were identified: observed and perceived. The former was characterized by the 9-item Everyday Discrimination scale and [59,60] the latter by three items adapted from the study by Vega et al [61]. Higher scores indicate greater discrimination, whether observed in day-to-day life (e.g., harassment) or perceived as attributable to race/ethnicity.

Predictors of profile membership

Sociodemographics

Characteristics included age at interview, gender, education (less than high school, high school, some college, and college degree), and marital status (married/cohabitating, divorced/separated/widowed, and never married).

Heritage

Self-reported ancestry was collapsed into four Latina/o subgroups: Puerto Ricans ($n = 495$), Mexicans ($n = 868$), Cubans ($n = 577$), and all others ($n = 614$).

Generational status

Four categories of generational status were created. First generation (arriving in the United States at age of 13 years or older, $n = 1257$), 1.5 generation (arriving when aged less than 13 years, $n = 365$), second generation (U.S.-born with at least one parent foreign-born, $n = 522$), and third generation (U.S.-born, both parents U.S.-born, $n = 397$).

Acculturative stress

Acculturative stress was only assessed in the foreign-born population using a nine-item scale [62], resulting in two latent factors. Higher levels on the first ("Interpersonal") relates to greater feelings of stress both in leaving friends/family behind and difficulties interacting with others in the United States. Higher scores on the second ("Legal") indicate increased stress regarding immigration officials and deportation.

Statistical analysis

Latent profile analysis [43,63,64] with an expectation-maximum algorithm was used to classify individuals into similar subpopulations or "profiles" which help explain covariation between observed indicator variables [40,41]. Here, the indicator variables were the nine-factor scores detailed previously. Profile enumeration occurred in the overall sample, guided by fit indices and considerations of parsimony [40]. Participants were then categorized by their most probable profile membership. Profiles were described according to sociodemographics, heritage and generational group composition, and factor score distribution.

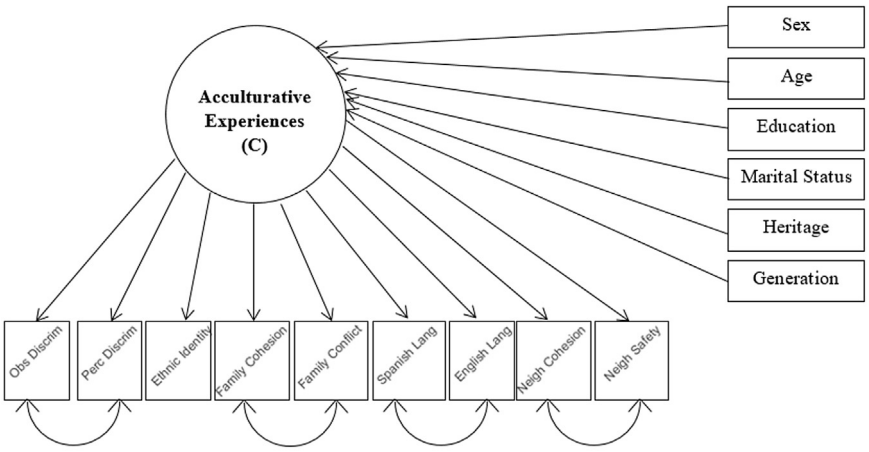
The relationship between covariates and profile membership was investigated by extending the unconditional latent profile model to include profile predictors (Fig. 1). These predictors (generational status, heritage, age, sex, education, marital status, and acculturative stress) were included using Vermunt's 3-step approach [65], which incorporates uncertainty regarding profile membership [66].

Analyses were conducted in Mplus, version 8 [49], with data management and graphics conducted using SAS software version 9.4 and RStudio [67] (with MplusAutomation) [68]. Statistical significance was assessed at the 0.05 level.

Results

Profile enumeration and characteristics

Profile enumeration results for the unconditional latent profile model are presented in Table 2. Models were compared using several recommended fit indices [40,69]: Log likelihood, Akaike's Information Criteria [70], Bayesian Information Criteria [71], and Lo-Mendell-Rubin likelihood ratio test [72]. Model entropy, a measure of classification quality, was also examined. Of equal importance is the substantive interpretation of the profiles, that is, evaluating the meaningfulness of each profile according to their indicator distributions. Therefore, although the Lo-Mendell-Rubin likelihood ratio test preferred a five-profile solution, visual examination of the five profiles revealed that the additional profile was not distinct enough to warrant inclusion in the model. It is also recommended that the smallest profile size does not drop below 5% [69], which occurred when adding a fifth profile. Based on these results, a four-profile solution was chosen. High entropy (0.966) confirmed that most probable profile assignment was good, as an entropy value of 1.0 indicates perfect classification of individuals into latent profiles [73].



Note. Model A. Obs=Observed; Perc=Perceived; Discrim=Discrimination; Lang=Language; Neigh=Neighborhood.
Data are from the National Latino and Asian American Study (n=2,541).

Fig. 1. Path diagram of final four-profile latent model with predictors of latent profile membership.

Figure 2 graphically displays estimated factor means by profile. The largest profile (n = 1743, 68.6%), those with generally positive experiences, had the lowest levels of discrimination and family conflict, the highest levels of ethnic identity and neighborhood cohesion, and felt their neighborhoods were the safest. The next largest profile (n = 424, 16.7%) had average levels of family cohesion but were characterized by medium levels of ethnic identity, higher neighborhood danger, and high perceived and observed discrimination. Despite having average family cohesion, they had high levels of family conflict. Thus, the profile name "cohesive conflict," as their family dynamics were distinct from the other conflict-laden profiles.

The "marginalized conflict" profile (n = 237, 9.3%) and "marginalized" profile (n = 137, 5.4%) were both defined by low family and neighborhood cohesion, low Spanish, and lower ethnic identity than the other profiles. They also felt their neighborhoods were the least safe. However, they were differentiated by level of discrimination and family conflict, both higher in the marginalized conflict profile. The marginalized conflict profile experienced equivalent levels of conflict to the cohesive conflict profile, hence the distinction between "marginalized" and "marginalized conflict."

Table 3 presents sample demographics and factor score distributions, overall and by most probable profile membership. Of the 2541 Latina/o participants, most were female (55.8%), married, or cohabitating (62.6%), and a large proportion did not complete high school (38.7%). The largest heritage subgroup was Mexican (33.9%), followed by other Latina/os (24.1%), Cubans (22.7%), and Puerto Ricans (19.3%). About half the sample were first-generation immigrants who arrived at age of 13 years or later. The average age at interview was 40.6 years. Profiles were similar in gender distribution. Broadly, the profile of positive experiences was slightly older, contained the most adolescent and adult immigrants (52.2%) and Cubans (24.4%), and was more likely to be married or cohabitating (66.0%). Both marginalized profiles had the highest percentages of Puerto Ricans (approximately 29%) and fewest Cubans. They were also the youngest (approximately 36 years of age) and more likely to be single (30.0–33.6%). The marginalized profile had the lowest level of education (46.0% without a high school degree) and the marginalized conflict profile the highest (67.1% with a high school degree or higher), although the nonmarginalized profiles had the most members with at least a college degree (approximately 14.5%). Second-generation Latina/os were more likely to be in the marginalized conflict profile and the 1.5 generation in the cohesive conflict profile.

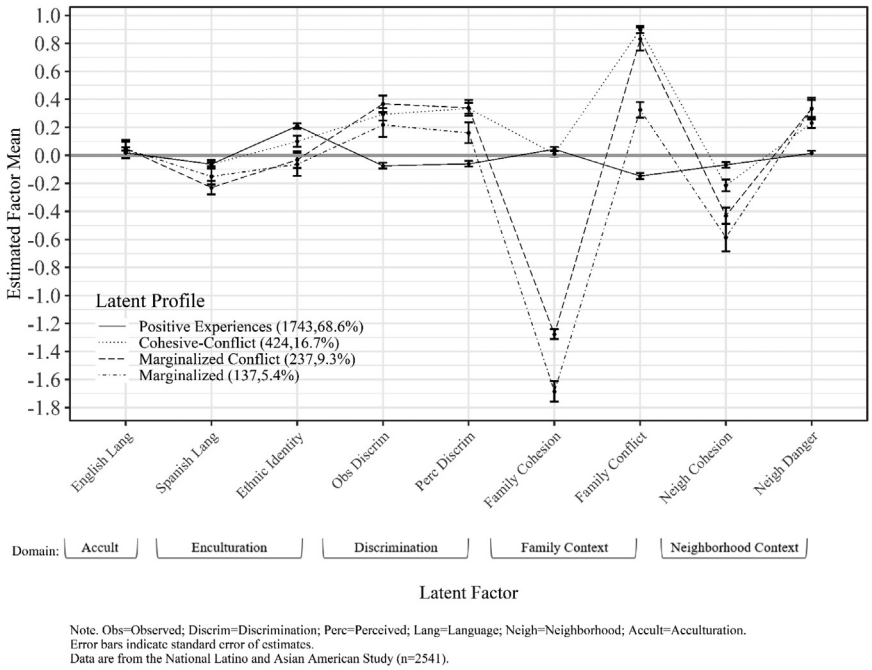
Predictors of profile membership

Table 4 displays results from two models including covariates as profile predictors. Model A included sociodemographics (age, gender, education, marital status), heritage, and generational status. Model B added acculturative stress factor scores (interpersonal and legal), limiting the sample to foreign-born participants (n = 1617). The reference profile for all models was the profile of positive

Table 2
Fit indices for latent one- to six-profile models with correlated factors within scales

Number of		Log likelihood	Information criteria			LMR likelihood ratio test		Entropy	Smallest profile size		Error message
Profiles	Free parameters		AIC	BIC	aBIC	Statistic	*P*-value		n	%	
1	22	−23992.78	48,029.55	48,158.04	48,088.14	NA	NA	NA	2541	100.0	No
2	32	−23120.57	46,305.14	46,492.03	46,390.36	1722.444	.000	0.957	414	16.3	No
3	42	−22815.68	45,715.35	45,960.65	45,827.20	602.106	.010	0.880	366	14.4	No
4	***52***	***−22318.60***	***44,741.19***	***45,044.89***	***44,879.67***	***954.583***	***.038***	***0.966***	***137***	***5.4***	***No***
5	62	−21996.88	44,117.75	44,479.85	44,282.86	635.336	.117	0.954	102	4.0	No
6	72	−21754.60	43,653.20	44,073.71	43,844.94	478.445	.003	0.963	26	1.0	Yes

Chosen model shown in bold italics.
AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size adjusted Bayesian Information Criteria; LMR = Lo-Mendel-Rubin; NA = Not applicable.



Note. Obs=Observed; Discrim=Discrimination; Perc=Perceived; Lang=Language; Neigh=Neighborhood; Accult=Acculturation.
Error bars indicate standard error of estimates.
Data are from the National Latino and Asian American Study (n=2541).

Fig. 2. Estimated profile-specific factor means for four-profile solution.

experiences, meaning all relative odds estimates are compared against this group. This profile was chosen as the reference group because of its size and having the most optimal experiences. In the sociodemographic model (model A), only being in the 1.5 or second generation was significantly related to belonging to the cohesive conflict profile. Child immigrants had increased odds of having a cohesive conflict family dynamic, whereas U.S.-born Latina/os with at least one foreign-born parent were less likely to belong to that group. Having a higher education level was inversely related to belonging to the marginalized profile. Not being a first-generation Latina/o increased the odds of belonging to the marginalized conflict profile, but generational status was unrelated to belonging to the low-conflict marginalization profile. Compared to Puerto Ricans, Cubans and Mexicans were much less likely to belong to the marginalized profile, whereas other Latina/os had reduced odds of being in the high-conflict marginalized profile. When incorporating acculturative stress (model B), levels of interpersonal stress did not predict profile membership. However, after adjusting for all other variables, legal stress significantly increased the odds of belonging in the cohesive conflict and marginalized profiles by over 50 percent. Legal stress was unrelated to being in the high-conflict marginalization profile as compared with the profile of positive experiences.

Discussion

We aimed to identify distinct acculturative subgroups of Latina/os in the NLAAS using a latent variable framework. Although there has been some prior research examining latent acculturative classes/profiles among minorities [74–76], this is the first study to expand the focus of acculturative groups to other important contextual factors that U.S.-residing minorities and immigrants face. It also takes into account heterogeneity by important Latina/o subgroups: Latina/o heritage and generational status. Four subgroups of Latina/os based on acculturative experiences were identified. Traditionally, ethnic identity and English language use have been used as proxy measures of enculturation and acculturation, respectively [2]. Spanish language use is also sometimes used to measure enculturation, or "the process of preserving the norms of the native group, whereby individuals retain identification with their ethnic cultures of origin [2]". However, given that the four latent profiles identified in our sample had nearly identical levels of English as measured by a more nuanced latent construct, acculturation, at least as measured by language use and proficiency, may not be the most relevant construct to identify meaningful Latina/o subgroups. Levels of ethnic identity were more discriminating, as Latina/os identifying more strongly with their country of origin or ancestry tended to have higher cohesion and lower conflict and discrimination.

The most salient characteristics to characterize Latina/o subpopulations in our sample were external: interpersonal and environmental (i.e., discrimination, family, and neighborhood environment). Interestingly, a profile emerged that reported good family cohesion but also very high conflict. The construct of family cohesion was most strongly defined by items involving family pride, expressing feelings and feeling close to one another, and enjoying spending free time together (see Appendix 1 for all items). Conflict within the family involved intergenerational dissonance, especially regarding the alignment of one's personal goals with the family unit. This tension between receiving emotional closeness and social support from one's family while also feeling at odds with them because of acculturative differences may represent a meaningful distinction from those families which let intercultural dissonance drive them apart. Belonging to this profile of Latina/os with a seemingly paradoxical family context was only significantly predicted by generational status and legal stress. It may be that undocumented immigrants are more likely to belong to this profile, given that fear of immigration officials and deportation is highly correlated with documentation status [38,39,77]. This stress, unique from discrimination and separation from one's home country, may be what drives the family conflict while leaving social and emotional bonds intact.

The two marginalized profiles may align with Berry's "marginalized" acculturative strategy group [12], which he proposed

Table 3
Characteristics of sample, overall and by latent profile membership in the National Latino and Asian American Study ($n = 2541$)

Characteristic	Overall sample		Profile membership							
			Positive experiences		Cohesive conflict		Marginalized conflict		Marginalized	
	2541 (100%)		1743 (68.6%)		424 (16.7%)		237 (9.3%)		137 (5.4%)	
	N	%	N	%	N	%	N	%	N	%
Gender										
Male	1123	44.2	787	45.2	180	42.5	98	41.4	58	42.3
Female	1418	55.8	956	54.8	244	57.5	139	58.6	79	57.7
Education										
Less than high school	984	38.7	688	39.5	155	36.6	78	32.9	63	46.0
High school	632	24.9	416	23.9	114	26.9	63	26.6	39	28.5
Any postsecondary	565	22.2	382	21.9	95	22.4	67	28.3	21	15.3
College degree or more	360	14.2	257	14.7	60	14.2	29	12.2	14	10.2
Marital status										
Married/cohabitating	1591	62.6	1151	66.0	265	62.5	105	44.3	70	51.1
Divorced/widowed	477	18.8	314	18.0	81	19.1	61	25.7	21	15.3
Never married	473	18.6	278	15.9	78	18.4	71	30.0	46	33.6
Heritage										
Puerto Rican	490	19.3	310	17.8	71	16.7	70	29.5	39	28.5
Cuban	576	22.7	426	24.4	93	21.9	42	17.7	15	10.9
Mexican	862	33.9	591	33.9	149	35.1	77	32.5	45	32.8
Other Latino	613	24.1	416	23.9	111	26.2	48	20.3	38	27.7
Generational status										
1st Generation	1257	49.5	910	52.2	208	49.1	77	32.5	62	45.3
1.5 Generation	365	14.4	228	13.1	78	18.4	37	15.6	22	16.1
2nd Generation	522	20.5	361	20.7	64	15.1	72	30.4	25	18.2
3rd Generation	397	15.6	244	14.0	74	17.5	51	21.5	28	20.4
Age at interview, in y	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	40.61	15.63	41.52	15.77	39.82	14.86	37.64	15.44	36.57	15.2
Factor scores										
Spanish language	−0.08	0.63	−0.06	0.62	−0.06	0.62	−0.22	0.66	−0.15	0.65
English language	0.02	0.69	0.02	0.68	0.02	0.70	0.06	0.71	0.03	0.70
Ethnic identity	0.15	0.79	0.21	0.78	0.10	0.78	−0.03	0.81	−0.06	0.84
Observed discrim	0.05	0.86	−0.08	0.83	0.30	0.89	0.37	0.85	0.22	0.82
Perceived discrim	0.06	0.79	−0.06	0.76	0.34	0.76	0.34	0.77	0.17	0.84
Family cohesion	−0.18	0.63	0.04	0.34	0.01	0.36	−1.28	0.39	−1.69	0.47
Family conflict	0.15	0.69	−0.15	0.51	0.91	0.49	0.83	0.63	0.33	0.58
Neighborhood cohesion	−0.16	0.83	−0.07	0.80	−0.22	0.85	−0.44	0.85	−0.58	0.94
Neighborhood danger	0.10	0.72	0.01	0.69	0.24	0.74	0.34	0.76	0.33	0.72
Interpersonal stress*	0.07	0.71	0.00	0.70	0.22	0.72	0.17	0.62	0.26	0.77
Legal stress*	0.13	0.65	0.07	0.62	0.30	0.71	0.17	0.63	0.34	0.72

Discrim = Discrimination.
* Acculturative stress only assessed on foreign-born participants ($n = 1617$).

identifies with neither one's home nor host country's culture. Yet, within this group, there still appear to be meaningful differences. The marginalized conflict group tends to have higher interpersonal conflict (as seen through high discrimination and family conflict) but slightly more cohesion (family and social) than the low-conflict marginalized group. Although discrimination, family context, and neighborhood cohesion and danger do not directly measure enculturation and acculturation, they most likely correlate with them, as evidenced by the separation from the profile of positive experiences.

Our findings support the growing body of research showing that both nativity and age at time of immigration are salient predictors of important health-related exposures in Latina/os [78–83]. These exposures, such as discrimination, family conflict, and neighborhood characteristics, varied significantly by profile and were consistently less favorable in our cohesive conflict, marginalized, and marginalized conflict profiles. We found that generational status significantly predicted profile membership, with immigrants arriving as children and U.S.-born Latina/os being much less likely to belong to the group who has more positive experiences. The distinction between the first and 1.5 generations is important from a developmental perspective, as it allows for differences based on age of migration to the United States, which has been linked to increased prevalence of psychiatric disorder [84,85]. The relationship between profile membership and generational status persisted, although the underlying constructs account for MI by generation, and the associations were adjusted for sociodemographic characteristics and ancestry. The exception was membership in the marginalized profile, which was predicted instead by education, marital status, and heritage. Puerto Ricans were much more likely to belong to this profile, characterized by extremely low family and neighborhood cohesion but also moderate levels of discrimination and family conflict.

Finally, our findings underscore the importance of Latina/o heterogeneity. While prior literature has called for attention to differences by heritage and nativity [1,33,46,86], our results argue that other experiences may be more meaningful when addressing heterogeneity at the population level. These subgroups indicate that experiences such as discrimination and family conflict do not occur independently but rather cluster together. Although this directly applies to researchers, health care providers, community workers, and policy makers should also consider how the individuals they serve may not be best characterized by a “one-size-fits-all” approach. Instead, practice and policy should be aware of

Table 4
Log odds coefficients and odds ratios for predictors of profile membership, using profile of positive experiences as the comparison group

Model A ($n = 2541$)	Cohesive conflict			Marginalized conflict			Marginalized		
	$n = 424$ (16.7%)			$n = 237$ (9.3%)			$n = 137$ (5.4%)		
	Coef	SE	OR (95% CI)	Coef	SE	OR (95% CI)	Coef	SE	OR (95% CI)
Sex									
Male	REF	—	—	REF			REF	—	—
Female	0.099	0.115	1.10 (0.88–1.38)	0.083	0.155	1.09 (0.80–1.47)	0.115	0.194	1.12 (0.77–1.64)
Age	−0.006	0.004	0.99 (0.99–1.00)	**−0.012**	**0.006**	**0.99 (0.98–1.00)**	−0.014	0.009	0.99 (0.97–1.00)
Education									
Less than high school	REF	—	—	REF	—	—	REF	—	—
High school	0.171	0.151	1.19 (0.88–1.60)	0.107	0.201	1.11 (0.75–1.65)	−0.096	0.232	0.91 (0.58–1.43)
Any postsecondary	0.076	0.161	1.08 (0.79–1.48)	0.232	0.201	1.26 (0.85–1.87)	**−0.706**	**0.294**	**0.49 (0.28–0.88)**
College degree or more	0.044	0.185	1.04 (0.73–1.50)	−0.052	0.265	0.95 (0.56–1.60)	−0.460	0.331	0.63 (0.33–1.21)
Marital status									
Married	REF	—	—	REF	—	—	REF	—	—
Divorced	0.209	0.156	1.23 (0.91–1.67)	**0.929**	**0.196**	**2.53 (1.72–3.72)**	0.175	0.293	1.19 (0.67–2.12)
Never married	0.164	0.165	1.18 (0.85–1.63)	**0.775**	**0.198**	**2.17 (1.47–3.20)**	**0.849**	**0.238**	**2.34 (1.47–3.73)**
Heritage									
Puerto Rican	REF	—	—	REF	—	—	REF	—	—
Cuban	−0.021	0.189	0.98 (0.68–1.42)	−0.45	0.251	0.64 (0.39–1.04)	**−1.159**	**0.368**	**0.31 (0.15–0.65)**
Mexican	0.097	0.174	1.10 (0.78–1.55)	−0.379	0.197	0.68 (0.47–1.01)	**−0.609**	**0.259**	**0.54 (0.33–0.90)**
Other Latino	0.109	0.181	1.12 (0.78–1.59)	**−0.575**	**0.225**	**0.56 (0.36–0.87)**	−0.376	0.268	0.69 (0.41–1.16)
Generation									
1st Generation	REF	—	—	REF	—	—	REF	—	—
1.5 Generation	**0.341**	**0.165**	**1.41 (1.02–1.94)**	0.441	0.238	1.55 (0.97–2.48)	0.110	0.297	1.12 (0.62–2.00)
2nd Generation	**−0.368**	**0.182**	**0.69 (0.48–0.99)**	**0.510**	**0.208**	**1.67 (1.11–2.50)**	−0.410	0.288	0.66 (0.38–1.17)
3rd Generation	0.187	0.175	1.21 (0.86–1.70)	**0.646**	**0.226**	**1.91 (1.23–2.97)**	0.126	0.270	1.13 (0.67–1.93)
Model B (n=1617)	Cohesive conflict			Marginalized conflict			Marginalized		
	$n = 286$ (17.7%)			$n = 114$ (7.1%)			$n = 84$ (5.2%)		
	Coef	SE	OR (95% CI)	Coef	SE	OR (95% CI)	Coef	SE	OR (95% CI)
Acculturative stress									
Interpersonal stress	0.204	0.129	1.23 (0.95–1.58)	0.306	0.206	1.36 (0.91–2.03)	0.175	0.226	1.19 (0.76–1.86)
Legal stress	**0.419**	**0.144**	**1.52 (1.15–2.02)**	0.100	0.251	1.11 (0.68–1.81)	**0.467**	**0.236**	**1.60 (1.00–2.53)**

Estimates in bold indicate $P < .05$.
Model B includes all covariates in model A and acculturative stress factor scores.
Coef = coefficient; SE = standard error; OR = odds ratio; CI = confidence interval.

the importance of tailoring services to address the contexts through which people experience their world.

This study is not without limitations. The NLAAS data are self-report and therefore subject to bias. Although the NLAAS has a large Latina/o sample size, some subgroups were relatively small, potentially reducing power and contributing to some model non-convergence. Sample size and choice of outcomes also influence type and number of profiles [87,88], although at this time, there are no clear recommendations. Due to software limitations, estimated factor scores were treated as observed indicators. This implies that factor scores are known rather than latent and ignores their inherent uncertainty. Although we took into account variation of the latent factors by generational status, we did not explore MI by generational or heritage groups. Finally, the NLAAS data are approximately 15 years old, which may not be generalizable to Latina/os' experiences in the present day, particularly in the context of illegal immigration issues.

Conclusion

The NLAAS is one of the largest, nationally representative sample of U.S. Latina/os with rich data on acculturation, ethnic identity, and other contextual factors relevant to this population, allowing the exploration of unobserved population heterogeneity on these important constructs. The large sample size enables the investigation of the relationship between these latent subpopulations and often-ignored factors such as generational status and heritage. Latent profile indicators reflected underlying constructs of interest and improved on simply using observed item responses by accounting for MI by generational status. As a result, meaningful subpopulations of Latina/os were identified based on their distinct acculturative experiences rather than traditional acculturation measures. This includes the emergence of two marginalized subgroups, proposed by Berry but often not found in other studies [75,76].

Prior health-related research has demonstrated a relationship between acculturation and health among Latina/o populations [3,89]. Many studies have used an overly simplistic notion of acculturation [3]. A more nuanced operationalization of the acculturation construct, in addition to incorporating other contextual experiences relevant to minority and immigrant populations, may lead to more robust associations with health-related outcomes and identify important areas for prevention and intervention [3,89]. This study proposes one way to capture the complexities of acculturation. Therefore, future research should account for Latina/o heterogeneity by acculturative subgroups in addition to heritage and nativity when exploring health-related outcomes.

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Appendix

Table S1
Items for National Latino and Asian American Study instruments

Question	Response options
Language	
Subscale: Language proficiency	
1. How well do you speak Spanish?	Poor
2. How well do you read Spanish?	Fair
3. How well do you write in Spanish?	Good
4. How well do you speak English?	Excellent
5. How well do you read English?	
6. How well do you write in English?	
Subscale: Language preference	
The next few questions ask about your language preference.	
7. What language do you speak with most of your friends?	Spanish all the time
8. What language do you speak with most of your family?	Spanish most of the time
9. In what language do you think?	Spanish and English equally
	English most of the time
	English all the time
Ethnic identity	
1. How closely do you identify with other people who are of the same racial and ethnic descent as yourself—very closely, somewhat, not very, or not at all?	Very close(ly)/a lot Somewhat close(ly)/some
2. How close do you feel, in your ideas and feelings about things, to other people of the same racial and ethnic descent—very close, somewhat, not very, or not at all?	Not very close(ly)/a little Not at all/none
3. If you could choose, how much time would you like to spend with other people who are of your same racial and ethnic group—a lot of the time, some, a little, or none of the time?	
4. How important do you think it is for people who are from your same racial/ethnic group to marry other people who are also from this group?	
Neighborhood context	
Subscale: Neighborhood context	
How true is each of the following statements about your neighborhood?	
1. People in this neighborhood can be trusted.	Very true
2. People in this neighborhood generally get along with each other.	Somewhat true
3. I have neighbors who would help me if I had an emergency.	Not very true
4. People in my neighborhood look out for each other.	Not at all true
Subscale: Neighborhood safety	
How true is each of the following statements about your neighborhood?	
5. I feel safe being out alone in my neighborhood during the night.	Very true
6. People often get mugged, robbed, or attacked in my neighborhood.	Somewhat true
7. People sell or use drugs in my neighborhood.	Not very true
	Not at all true
Family context	
Subscale: Family pride	
Now I would like to know how strongly you agree or disagree with the following statements about your family.	
1. Family members respect one another.	Strongly agree
2. We share similar values and beliefs as a family.	Somewhat agree
3. Things work well for us as a family.	Somewhat disagree
4. We really do trust and confide in each other.	Strongly disagree
5. Family members feel loyal to the family.	
6. We are proud of our family.	
7. We can express our feelings with our family.	
Subscale: Family cohesion	
Now I would like to know how strongly you agree or disagree with the following statements about your family.	
8. Family members like to spend free time with each other.	Strongly agree
9. Family members feel very close to each other.	Somewhat agree
10. Family togetherness is very important.	Somewhat disagree
	Strongly disagree
Subscale: Family cultural conflict	
Please tell me how frequently the following situations have occurred to you	
11. You have felt that being too close to your family interfered with your own goals.	Hardly ever or never
12. Because you have different customs, you have had arguments with other members of your family.	Sometimes
13. Because of the lack of family unity, you have felt lonely and isolated.	Often
14. You have felt that family relations are becoming less important for people that you are close to.	
15. Your personal goals have been in conflict with your family.	
Discrimination	
Subscale: Everyday discrimination	
In your day-to-day life, how often have any of the following things happened to you?	
1. You are treated with less courtesy than other people.	Almost every day
2. You are treated with less respect than other people.	At least once a week
3. You receive poorer service than other people at restaurants or stores.	A few times a month
4. People act as if they think you are not smart.	A few times a year
5. People act as if they are afraid of you.	Less than once a year
6. People act as if they think you are dishonest.	Never

(*continued on next page*)

Table S1 (*continued*)

Question	Response options
7. People act as if you are not as good as they are.	
8. You are called names or insulted.	
9. You are threatened or harassed.	
Subscale: Perceived discrimination	
10. How often do people dislike you because you are [ethnic/racial group of R]?	Often
11. How often do people treat you unfairly because you are ethnic/racial group of R?	Sometimes
12. How often have you seen friends treated unfairly because they are ethnic/racial group of R?	Rarely
	Never
Acculturative stress	
Please tell me if you have felt this way, in the following situations	
1. Do you feel guilty for leaving family or friends in your country of origin?	Yes
2. Do you feel that in the United States you have the respect you had in your country of origin?	No
3. Do you feel that living out of your country of origin has limited your contact with family or friends?	
4. Do you find it hard interacting with others because of difficulties you have with the English language?	
5. Do people treat you badly because they think you do not speak English well or speak with an accent?	
6. Do you find it difficult to find the work you want because you are of Latino descent?	
7. Have you been questioned about your legal status?	
8. Do you think you will be deported if you go to a social or government agency?	
9. Do you avoid seeking health services due to fear of immigration officials?	