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THE ROLE OF IMMIGRATION AGE ON ALCOHOL AND DRUG USE AMONG BORDER AND NON-BORDER MEXICAN AMERICANS

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Abstract

Background—To determine the age of immigration at which the marked increase in risk for alcohol- and drug use problems in adulthood is observed among Mexican American adults residing in two distinct contexts: the U.S.-Mexico border, and cities not proximal to the border.

Methods—We used two samples of Mexican American adults; specifically, 1,307 who resided along the U.S.-Mexico border, and 1,288 non-border adults who were interviewed as a part of the 2006 Hispanic Americans Baseline Alcohol Survey study. Survey logistic and Zero-Inflated Poisson methods were used to examine how immigration age during adolescence is related to alcohol and drug use behavior in adulthood.

Results—We found that participants who immigrate to the U.S. prior to age 12 have qualitatively different alcohol- and drug-related outcomes compared to those who immigrate later in life. Adults who immigrated at younger ages have alcohol and drug use patterns similar to those who were U.S.-born. Similarly, adults who immigrated at younger ages and live along the U.S.-Mexico border are at greater risk for alcohol and drug use than those who live in non-border contexts.

Conclusions—Immigration from Mexico to the U.S. before age 12 results in alcohol and drug-related behavior that mirrors the behavior of U.S.-born residents.

Keywords

immigration; Hispanic; Mexican American; alcohol

The literature is clear that Hispanic immigrants have lower prevalence rates of substance use disorders and other alcohol- and drug-related problems than their U.S.-born counterparts (Grant, Stinson, Hasin, Dawson, Chou, & Anderson, 2004; Maldonado-Molina, Reingle, Jennings, & Prado, 2011). Because Hispanics are a highly heterogeneous group, there are likely to be substantial differences in the prevalence rates in risk behavior between different nationalities of Hispanic adults. For instance, the literature is clear that Mexican Americans and Puerto Ricans have the highest alcohol-related mortality rates among all Hispanic national groups (Caetano, Vaeth, Rodriguez, 2012; Chartier, Vaeth, & Caetano, 2014).

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Despite the indisputable evidence in support of the "Immigrant Paradox", in which immigrants have better health outcomes than U.S.-born Hispanics, there is evidence that the corresponding health outcomes of the Hispanic population may depend on the age at which individuals migrate to the U.S (Alegria, 2007; Vega et al., 2004).

Several studies have assessed the impact of age of immigration on health outcomes, including psychiatric disorders and illicit drug use. Alegria et al. (2007) found that adults who immigrated to the United States before age 6 had much higher rates of depressive and anxiety disorders. Rates of substance use disorders in general were also higher among those who immigrated earlier (age 6 or younger) compared to those who immigrated at age 7 or older. Using a sample of Mexican Americans, Vega and colleagues (2004) found qualitative differences in immigrants who migrated at age 13 or younger in mood, anxiety and substance use disorders. Other studies have substantiated this link between immigration age and mental health disorders and alcohol use disorders (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000). Further, increased duration of residence in the U.S. has been associated with cigarette, alcohol and illicit drug use among Cuban and Nicaraguan youth (Gfroerer & Tan, 2003). In fact, a study by Cheung et al. (2011) found evidence of a "sensitive period" of acculturation in which those who immigrate as a child become more acculturated than adult immigrants, even when living in the U.S. for the same period of time. Therefore, age of immigration seems to have an effect on risk behavior.

The proposed mechanism for the relationship between these poor alcohol- and drug-related outcomes among early immigrants is rapid acquisition of normative drinking and drug using behavior that is often modeled by peers native to the United States. This immigration-assimilation effect has been operationalized by generation and viewed as a linear process, where successive generations experience increasingly negative health outcomes (Maldonado-Molina, Reingle, Jennings, & Prado, 2011). However, in light of the developmental research on immigration, culture, and mental health and substance use outcomes, it is likely that Hispanics who immigrated at a very young age are more amenable to the new culture than those who immigrated during their teenage years or later. Immigration to the US at a young age will increase the time in which a person is exposed to the US culture, potentially in a manner similar to those who are born in the US (Alergria, 2007). The exposure to US culture, assimilation, and adoption of American cultural values, has been consistently identified as having poor effects on several dimensions of health (Maldonado-Molina et al., 2011; Alegria et al., 2007; Caetano et al., 2012). Specifically, Caetano and colleagues (2012) suggested that these alcohol-related problems observed among Mexican Americans may be the result of assimilation and acculturation stress, which in turn, leads to increased levels of alcohol consumption.

Given the theoretical potential for early immigrants to have cultural exposure levels similar to those who were US born, the purpose of this paper is to systematically determine the age of immigration that puts adults who immigrated at a young age at risk for alcohol- and drug use problems in adulthood. To answer this research question, we used two samples of Mexican Americans residing in two distinct contexts: the U.S.-Mexico border, and cities not proximal to the border. In light of the previous research, we hypothesize that adults who immigrated to the United States prior to adolescence have a qualitatively distinct experience

in the U.S. compared to adults who immigrate during late adolescence or adulthood. Developmentally, youth are most vulnerable to social pressures during early adolescence, and the combined stresses of adolescence and acculturation may compound the risk of problematic alcohol and drug use. We expect to observe differences between early immigrants and late immigrants in binge drinking, lifetime alcohol status, number of standard drinks consumed each week, DSM-V Alcohol Use Disorder, and illicit drug use. We also hypothesize that those who immigrate before adolescence have alcohol and drug use behavior that mirrors Mexican American adults who were born in the U.S.-born. Finally, we expect to find differences in alcohol (current drinking status, binge drinking, and number of standard drinks per week) and drug use outcomes by age of immigration, across both the U.S.-Mexico border and non-border contexts. We expect that the age of immigration effect may be greater for alcohol and drug use on the border, as earlier immigration implies longer exposure to the border's known risk factors for alcohol use and risky behavior (Caetano et al., 2012, 2013; Mills et al., 2012; in press; Office of National Drug Control Policy, 1999).

This study is unique in that the population includes a sample of both Mexican Americans living proximal and distal to the U.S.-Mexico border. The U.S.-Mexico border is a unique location, characterized by a high concentration of Mexican Americans, poverty, low education, drug trafficking and related violence (Lusk, Staudt, & Moya, 2012). Alcohol is easily accessible across the border, as the legal drinking age in Mexico is 18; and unlike the U.S., the drinking age is not strictly enforced in Mexico (U.S. Department of State, 2013). Therefore, we are able to compare Mexican Americans living at the border with Mexican Americans living distal to the border, and whether the age of immigration remains a risk factor for alcohol and drug use in both locales.

Methods

Data Collection

These data include two samples of Mexican American adults, one group who resides along the U.S.-Mexico border, and a group of Mexican Americans who reside in large U.S. cities that are not proximal to the border. During March 2009 through July 2010, 1,307 Mexican Americans residing along the border in California (Imperial County, n=365), Arizona (Cochise, Santa Cruz, and Yuma Counties, n=173), New Mexico (Dona Ana County, n=65), and Texas (Cameron, El Paso, Hidalgo and Webb Counties, n=704) were interviewed. Mexican Americans in the non-border group (N=1,288) were interviewed as part of the 2006 Hispanic Americans Baseline Alcohol Survey (HABLAS), a study of more than 5,000 Puerto Rican, Mexican American, Cuban American, and South/Central Americans in five metropolitan areas of the U.S. Most of the 1,288 non-border respondents were interviewed in Los Angeles (n=609) and Houston (n=513); additional interviews were conducted in New York (n=86), Philadelphia (n=59), and Miami (n=21).

The sampling methodology and survey instrument used in both studies were virtually identical, allowing us to pool both samples. Both studies involved a multistage clustered random sample of self-reported Mexican Americans of age 18 or older from areas described above. Trained bilingual interviewers obtained formal informed consent and conducted in-person, at-home Computer Assisted Personal Interviews that lasted approximately one hour.

All respondents received a $25 incentive for participating. The only methodological difference between the two samples was that the border study was stratified by county to include primary sampling units from urban areas only. This ensured that the border and metropolitan non-border groups were comparable.

The survey instrument used in both studies was piloted in English, translated into Spanish, and then translated back into English. Weighted response rates for the border and non-border samples were 67% and 76%, respectively. Both surveys were approved by the Committee for the Protection of Human Subjects of the University of Texas Health Science Center at Houston.

Measures

For this study, four alcohol- and drug-related outcomes of immigration age were assessed: 1) lifetime alcohol use status; 2) binge drinking; 3) standard quantity of alcohol consumed each week; and 4) illicit drug use.

Drinking status—Lifetime alcohol use status was categorized as “Abstainers” (never used alcohol during their lifetime), “former drinkers” (drank at some point during their lifetime but not in the past year), and “current drinkers”, who reported alcohol use in the past 12 months.

Binge drinking—Binge drinking was defined as drinking 4 (for women) or 5 (for men) standard drinks within a 2-hour period (NIAAA, 2004) at any point within the past 12 months. This variable was dichotomized into “binge drank” or “did not binge drink” in the previous year.

Quantity of alcohol consumed each week—Respondents were provided with explicit examples of what was meant by a standard drink of beer, wine and liquor (such as, “a 12-ounce can of beer”, “a 4-ounce glass of wine”, or “a mixed drink containing 1 shot of hard liquor”). The average weekly consumption was estimated based upon the graduated frequencies approach to measurement (Greenfield and Kerr, 2008).

Drug use—Due to the low prevalence of specific drug use, participants who reported use of stimulants, crack cocaine, depressants, heroin, methadone or painkillers, hallucinogens, or any other illicit drug were categorized as “users”. Those who did not report use of any substances were categorized as “non-users”.

Age of immigration to the United States—All respondents were adults (18+) at the time of the interview and retrospectively self-reported the number of years they have been living in the U.S. Immigration age was calculated as the age at the time of the interview minus the number of years living in the U.S. These ages were then categorized as “U.S.-born/Non-immigrant”, or immigrated “less than age 12”, “12–14”, “15–17”, “18–20”, or “21+”. The initial “<12 years” cut point was determined analytically due to the low prevalence (small n) of alcohol- and drug-related behavior when immigration occurred before age 12. Therefore, a 6-category variable was created for all ‘age of immigration’ analyses: 1) US-Born (non-immigrant); 2) immigrated at less than 12 years of age; 3)

immigrated at 12–14 years of age; 4) immigrated at 15–17 years of age; 5) immigrated at 18–20 years of age; and 6) immigrated at or after age 21.

Demographic variables—Gender, income (in thousands) and current age were self-reported covariates included in all models. Border or non-border was defined as the location of residence at the time of data collection.

Analytical Plan

To determine the age that qualitatively differentiates "early" versus "late" immigration, we first stratified age of immigration into two-year groups (U.S.-born, <12, 12–14, 15–17, 18–20, and 21+). We used these groupings to examine bivariate differences in each of the four drinking and drug use outcomes by age of immigration. Based upon these analyses, a 12-year cut off point was determined optimal and analyses proceeded using this cutoff age. Bivariate associations between U.S.-born and immigrant status in general and each outcome variable were conducted to determine whether a relationship between immigration and each outcome existed (Model 1 in Tables 2–5). Because all bivariate models resulted in significant age of immigration differences, multivariate analyses were conducted, controlling for age and gender, and stratified by border/non-border location (Model 2 in each outcome table). Depending upon the distribution of the dependent variable, the type of regression differed for each outcome. The relationship between age of immigration and drinking status, binge drinking, and drug use were tested using logistic regression, as these outcomes were binary in nature. The model testing the relationship between age of immigration and the average number of standard drinks per week was evaluated using a zero-inflated Poisson (ZIP) model, as the number of standard drinks per week was highly skewed towards "0". All models were weighted to correct for the unequal probability of selection into the sample. All analyses were conducting using STATA 12 (College Station, TX).

Results

Sample description

Of the total sample of 2,511 adults, 51% constituted the border sample and 49% constituted the non-border sample. Women comprised 51% of the sample, and the average age of respondents was 39.5 (sd=15.4). Less than 50% of both samples reported having attained a high school diploma (48% in the non-border sample; 49% in the border sample). The mean annual income among non-border adults was $26,000(sd=21.8) and $28,500 (sd=29.6) among adults residing proximal to the border. Despite the relatively low income in both samples, 61% of the non-border sample and 45% of the border sample was employed full-time. The proportion of respondents who were married or cohabitating did not vary substantial on and off the border (60% and 58%, respectively). A total of 37% of the sample was foreign-born, with 55% of border residents and 71% of non-border residents identifying as being born outside of the U.S. (x^2=14.6; p<0.001). The average age of arrival among immigrants was 23.2 (sd=11.0), with the average age of arrival on the border at 23.7 years (sd=12.1). Overall, 40% of the respondents were lifelong abstainers, 7% were former drinkers, and 53% were current drinkers. Twenty-one percent of the sample reported binge

drinking, and the median number of drinks per week among drinkers was 2.7. Nearly twenty percent (19.1%) reported use of one or more illicit drugs in the past year.

Table 1 depicts the weighted proportions of each alcohol- and drug-related outcome by age of immigration and border/non-border residence. Regardless of location, U.S.-born adults were more likely than those who immigrated at or after age 21 to be current alcohol users, binge drinkers, users of any illicit drugs, and they consumed a greater number of standard drinks per week. On the border only, early immigrants were more likely than late immigrants to be current alcohol users, to be binge drinkers, and to consume a greater number of drinks per week.

Table 2 details the relationship between immigration age and drinking status between U.S.-born participants compared with all immigrants (Model 1), and U.S.-born compared with immigrants broken down by age of immigration (Model 2). Model 1 shows that U.S.-born participants were significantly more likely than immigrants to currently use alcohol among both border and non-border residents. In Model 2, adults who immigrated between the ages of 12 and 14 were nearly three and a half times as likely as late immigrants to be current drinkers among the non-border sample only. As detailed in Table 3, U.S. born adults were more likely to report binge drinking compared to immigrants in the border sample only (Model 1). There were no differences in binge drinking by age of immigration (Model 2).

Being born in the U.S. (compared to being an immigrant) predicted increased weekly drinking volume (Table 4, Model 1) in both samples. However, age of immigration was associated not with higher weekly drinking volume (Table 4, Model 2). Finally, Table 5 shows the relationship between drug use and immigration (Model 1) and drug use and immigration age (Model 2). Model 1 shows that U.S.-born adults are approximately three times more likely to use illicit drugs than those who immigrated at age 21 or older in both samples. Model 2 shows that adults who immigrated at an early age (less than 12) are at least twice as likely as those who immigrated later in life (21+) to use drugs in both samples.

Discussion

The purpose of this study was to examine the age of immigration that most optimally differentiates immigrants and non-immigrants' experience as related to alcohol- and drug use outcomes. We found that adults who immigrated before age 12 have alcohol and drug use patterns similar to U.S.-born adults for many alcohol- and drug-related outcomes (specifically, illicit drug use, and alcohol use status, but not binge drinking or drinking volume per week), while those who immigrate after age 12 have lower rates of alcohol and drug use in adulthood. There were differences in the effects of immigration age across the border and non-border populations. Specifically, early non-border (age 12–14) immigrants were more likely to be current drinkers compared to non-border late immigrants. There were no differences in weekly drinking volume by immigration age. As expected, U.S.-born participants were at risk for nearly all alcohol- and drug-related outcomes, regardless of border/non-border context.

The findings from the current study are in line with the previous research on immigration age and alcohol use (Alderete et al., 2000; Alegia et al., 2008; Grant et al., 2004); however, we were able to expand knowledge on the effect of immigration age beyond alcohol and drug dependence. We assessed specific behavioral outcomes; particularly, binge drinking, lifetime alcohol use status, number of standard drinks consumed per week, and drug use in the past year. In addition, we were able to identify distinct behavioral differences in alcohol- and drug-related risk behavior that qualitatively changes at age 12. This finding is in line with cross-cultural developmental processes, as cultural values from a host country are more strongly solidified when immigration occurs at a young age (Berry, Phinney, Sam, & Vedder, 2006; Cheung et al., 2011). This early immigration may result in higher levels of acculturation stress (Alva & de Los Reyes, 1999) due to school enrollment and peer processes that differentially influence younger immigrants.

One unexpected finding that resulted from this study is that adults who immigrated at young ages who live in non-border regions are more likely to use illicit drugs compared to adults who immigrated later in adolescence or during adulthood. Due to the availability of drugs on the U.S.-Mexico border (Office of National Drug Control Policy, 1999), we expected to find that adults who immigrated at young ages were at risk for drug use if they lived proximal to the border. However, a study by Wallisch & Spence (2006) also found that illicit drug use was lower among U.S.-Mexico border residents compared to the rest of the state of Texas and nationwide. We speculate that, due to the overt drug enforcement that takes place at and near the border, a drug pipeline to other major U.S. cities (El Paso, San Antonio, etc.) has emerged that allows those transporting drugs to disseminate drugs in a less risky setting (Wallisch & Spence, 2006). This effect could be responsible for the availability and use of drugs in the non-border population.

The current study has several strengths that advance the literature on immigration among Hispanics. First, we were able to examine the effects of immigration age retrospectively among adults across two contexts (the U.S.-Mexico border, and other U.S. cities with a large number of Mexican Americans), one of which is characterized by a great deal of access to alcohol and drug use (Office of Drug Control Policy, 1999). Second, a sample of only Mexican Americans was used, limiting the potential for national origin differences in the effects of immigration age. There are also several limitations that should be noted. First, although we did not detect a significant interaction between border residence and immigration status on any of our outcomes (likely due to insufficient power for several of these outcomes, including illicit drug use), we did plan *a priori* to stratify our analyses by border/non-border regardless of whether border interactions were significant. This was motivated by previous research using these data (which show that border residents are at high risk for alcohol-related problems and other negative health outcomes). Although immigration status as a dummy variable did not vary by border/non-border context in predicting our outcomes, we did observe border differences in the results. Second, there is a potential for recall bias in the immigration age measurement, as well as alcohol and drug use. Also, although the analysis of data from Mexican Americans only is a considerable strength, the national homogeneity of the sample limits the generalizability of the findings to other national groups. Finally, due to the low prevalence of illicit drug use in this

population, all types of illicit drugs were grouped together. Although we acknowledge that there may be differential outcomes for different drugs (particularly, marijuana), it remains interesting that we were able to detect an increase in the odds of *any* illicit drug use as a result of immigration patterns.

In conclusion, this study provides evidence that immigration from Mexico to the U.S. before age 12 results in alcohol and drug-related behavior that mirrors the behavior of U.S.-born residents for many alcohol- and drug-related outcomes. Future research on the impact of early immigration on risk behavior should attempt to delineate the social and cognitive processes that produce the increase in alcohol and drug-related risk both on and off the U.S.-Mexico border.

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Table 1

Proportions and means of alcohol and drug-related risk behavior by age of immigration.

	U.S.-Born Residents		Immigrants (Age of Immigration)									
			11 or younger		12–14		15–17		18–20		21+	
	Border	Non-Border	Border	Non-Border	Border	Non-Border	Border	Non-Border	Border	Non-Border	Border	Non-Border
n	614	351	105	84	41	44	72	112	81	164	380	525
Current drinker	.61	.64	.62	.59	.51	.74	.34	.61	.45	.51	.41	.43
Binge Drinker	.29	.24	.29	.26	.18	.28	.12	.28	.13	.21	.14	.15
Any drug use	.29	.30	.24	.21	.10	.12	.07	.16	.17	.12	.15	.08
Standard Drinks/Week Mean	7.7	6.3	6.1	4.4	2.7	7.3	2.2	5.5	3.2	5.1	2.7	2.7

Note. Binge drinking was defined as consuming 5 (males) or 4 (females) drinks within a two-hour window sometime in the last 12 months. ‘Age of immigration’ was calculated retrospectively.

Table 2

Multivariate border/non-border differences in current alcohol use by immigration age.

	Border N=1227		Non-Border N=1284	
	OR	**95% CI**	**OR**	**95% CI**
	Model 1: US Born vs. Immigrant			
U.S.-born	1.77**	1.15–2.74	1.79*	1.04–3.06
Immigrant	Ref	--	Ref	--
Covariates				
Gender (Male)	2.71***	1.80–4.08	2.56***	1.66–3.96
Age	0.98*	0.97–0.99	0.99	0.97–1.00
Income	1.01*	1.00–1.02	1.01	0.99–1.02
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.73	0.42–1.28	0.40**	0.21–0.70
Retired/disabled/not looking for employment	0.54**	0.34–0.85	0.38***	0.23–0.63
	Model 2: Age of Immigration			
U.S.-born	1.76*	1.10–2.80	2.25**	1.25–4.05
Immigrant (age <12)	1.38	0.69–2.74	1.68	0.73–3.90
Immigrant (age 12–14)	0.99	0.44–2.22	4.36*	1.32–14.40
Immigrant (age 15–17)	0.41	0.14–1.19	1.80	0.88–3.66
Immigrant (age 18–20)	1.68	0.71–3.98	1.20	0.65–2.22
Immigrant (ages 21+)	Ref	--	Ref	--
Covariates				
Gender (Male)	2.80***	1.93–4.05	2.59***	1.67–4.00
Age	0.98*	0.97–0.99	0.99	0.98–1.01
Income	1.01	0.99–1.01	1.01	.99–1.02
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.68	0.39–1.20	0.39**	0.19–0.78
Retired/disabled/not looking for employment	0.49**	0.31–0.79	0.36***	0.22–0.61

Note. Model 1 uses a binary ‘immigrant’/’U.S.-born’ variable. Model 2 includes a deconstructed immigration variable broken down by age of immigration, including US Born as a ‘non-immigrant’ group within the immigration age variable. The reference group for both models is the theoretically least acculturated group (“immigrants” in Model 1’ “Immigrant 21+” in Model 2.”).

* p<0.05

** p<0.01

*** p<0.001

Table 3

Multivariate logistic regression analysis of border/non-border differences in binge drinking by immigration age.

	Border N=1269		Non-Border N=1270	
	OR	**95% CI**	**OR**	**95% CI**
	Model 1: US Born vs. Immigrant			
U.S.-born	1.72*	1.08–2.73	1.20	0.70–2.05
Immigrant	Ref	--	Ref	--
Covariates				
Gender (Male)	2.84***	1.68–4.81	3.01***	1.71–5.31
Age	0.97***	0.95–0.98	0.97*	0.95–0.99
Income	1.00	0.99–1.01	1.00	0.99–1.01
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.78	0.45–1.33	0.71	0.37–1.38
Retired/disabled/not looking for employment	0.57*	0.33–0.96	0.30**	0.13–0.67
	Model 2: Age of Immigration			
U.S.-born	1.55	0.94–2.54	1.45	0.77–2.75
Immigrant (age <12)	1.33	0.60–2.90	1.48	0.65–3.37
Immigrant (age 12–14)	0.75	0.25–2.29	1.65	0.33–8.21
Immigrant (age 15–17)	0.46	0.12–1.79	1.61	0.68–3.82
Immigrant (age 18–20)	0.70	0.23–2.14	1.18	0.56–2.47
Immigrant (ages 21+)	Ref	--	Ref	--
Covariates				
Gender (Male)	2.87***	1.73–4.77	3.02***	1.70–5.39
Age	0.97***	0.95–0.98	0.98	0.96–1.00
Income	1.00	0.99–1.01	1.00	0.99–1.01
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.73	0.41–1.31	0.72	0.36–1.41
Retired/disabled/not looking for employment	0.55*	0.31–0.96	0.29**	0.13–0.66

Note. Model 1 uses a binary 'immigrant'/'U.S.-born' variable. Model 2 includes a deconstructed immigration variable broken down by age of immigration, including US Born as a 'non-immigrant' group within the immigration age variable. The reference group for both models is the theoretically least acculturated group ("immigrants" in Model 1' "Immigrant 21+" in Model 2.").

* p<0.05

** p<0.01

*** p<0.001

Table 4

Zero-inflated Poisson analysis of border/non-border differences in standard drinking volume by immigration age.

	Border N=1287		Non-Border N=1277	
	IRR	**95% CI**	**IRR**	**95% CI**
	Model 1: US Born vs. Immigrants			
U.S.-born	1.98***	1.48–2.63	1.64*	1.05–2.55
Immigrant	Ref	--	Ref	--
Covariates				
Gender (Male)	3.10***	2.24–4.28	6.21***	2.55–15.11
Age	1.00	0.98–1.01	1.00	0.98–1.01
Income	1.00	0.99–1.00	1.00	0.99–1.01
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.98	0.71–1.36	1.40	0.77–2.56
Retired/disabled/not looking for employment	0.53**	0.35–0.81	0.87	0.37–2.04
	Model 2: Age of Immigration			
U.S.-born	2.10***	2.52–2.91	2.06**	1.31–3.26
Immigrant (age <12)	1.54	0.92–2.61	1.54	0.59–4.00
Immigrant (age 12–14)	0.63	0.26–1.51	1.56	0.68–3.60
Immigrant (age 15–17)	0.91	0.46–1.80	1.28	0.68–2.42
Immigrant (age 18–20)	1.01	0.38–2.64	1.57	0.91–2.73
Immigrant (ages 21+)	Ref	--	Ref	--
Covariates				
Gender (Male)	3.12***	2.25–4.32	6.22***	2.56–15.12
Age	0.99	0.99–1.01	1.00	0.98–1.02
Income	1.00	0.99–1.00	1.00	0.99–1.01
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	0.98	0.71–1.35	1.43	0.78–2.61
Retired/disabled/not looking for employment	0.51**	0.33–0.77	0.73	0.37–3.98

Note. Model 1 uses a binary ‘immigrant’/’U.S.-born’ variable. Model 2 includes a deconstructed immigration variable broken down by age of immigration, including US Born as a ‘non-immigrant’ group within the immigration age variable. The reference group for both models is the theoretically least acculturated group (“immigrants” in Model 1’ “Immigrant 21+” in Model 2.”).

* p<0.05

** p<0.01

*** p<0.001

Table 5

Multivariate logistic regression of border/non-border differences in drug use by immigration age.

	Border Drug Use N=1284		Non-Border Drug Use N=1277	
	OR	**95% CI**	**OR**	**95% CI**
	Model 1: US Born vs. Immigrant			
U.S.-born	2.91***	1.94–4.36	3.20***	1.88–5.45
Immigrant	Ref	--	Ref	--
Covariates				
Gender (Male)	1.56*	1.02–2.37	1.41	0.86–2.31
Age	1.00	0.99–1.02	1.00	0.98–1.02
Income	1.00	0.99–1.00	1.00	0.99–1.02
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	1.07	0.58–1.97	1.04	0.51–2.13
Retired/disabled/not looking for employment	1.31	0.81–2.11	1.38	0.70–2.71
	Model 2: Age of Immigration			
U.S.-born	3.27***	1.96–5.43	4.67***	2.43–8.97
Immigrant (age <12)	2.32*	1.08–4.97	3.13*	1.06–9.25
Immigrant (age 12–14)	0.95	0.33–2.72	1.52	0.44–5.29
Immigrant (age 15–17)	0.62	0.16–2.40	2.16	0.90–5.17
Immigrant (age 18–20)	1.25	0.61–2.53	1.52	0.56–4.13
Immigrant (ages 21+)	Ref	--	Ref	--
Covariates				
Gender (Male)	1.58*	1.04–2.39	1.42	0.86–2.34
Age	1.01	0.99–1.02	1.00	0.98–1.02
Income	1.00	0.99–1.00	1.00	0.99–1.02
Employment status				
Full/part time employed	Ref	--	Ref	--
Temporary illness/unemployed	1.03	0.59–1.91	1.08	0.53–2.22
Retired/disabled/not looking for employment	1.27	0.78–2.07	1.39	0.69–2.78

Note. Model 1 uses a binary ‘immigrant’/’U.S.-born’ variable. Model 2 includes a deconstructed immigration variable broken down by age of immigration, including US Born as a ‘non-immigrant’ group within the immigration age variable. The reference group for both models is the theoretically least acculturated group (“immigrants” in Model 1’ “Immigrant 21+” in Model 2.”).

* p<0.05

** p<0.01

*** p<0.001