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Patterns of Drinking Initiation Among Latino Youths: Cognitive and Contextual Explanations of the Immigrant Paradox

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ABSTRACT

This study examined the immigrant paradox in drinking initiation among Latino youths and tested contextual (i.e., family, peer) and cognitive (i.e., alcohol expectancies, risk-taking) explanations of this pattern. A sample of 129 first- and second-generation (73%) youths completed the study. The estimated odds of starting to drink were 2.5 (95% confidence interval [CI]: 1.10–5.9) times higher for second-generation teens compared to first-generation youths. Negative expectancy valuations and perceptions of peer substance use simultaneously explained the generational increase in drinking initiation. Addressing these tractable mechanisms represents opportunities to delay initiation and help reduce emerging disparities among Latino youth.

KEYWORDS
alcohol expectancies; alcohol expectancy valuations; drinking initiation; *familismo*; immigrant paradox; Latino youth; parental monitoring; perceptions of peer substance use

Introduction

Alcohol continues to be the most used substance among adolescents in the United States (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014) and is associated with a host of negative consequences among this age group including impaired school and work performance, physical and psychological impairment, risky sexual behaviors, and drunk driving (Brown et al., 2008; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2006; Office of the Surgeon General, 2007; Windle & Windle, 2006). By eighth grade, Latino teens exhibit higher drinking prevalence in the past month as well as binge drinking episodes than other ethnic groups (Johnston, O'Malley, Bachman, & Schulenberg, 2013). This is critical given that having a first drink earlier in adolescence (DeWit, Adlaf, Offord, & Ogborne, 2000), specifically before age 15, is a key risk factor associated with alcohol dependence later in development (Grant & Dawson, 1997; Hingson, Heeren, & Winter, 2006; Windle et al., 2008). Consequently, Latino youths may be at high risk for alcohol use problems later in life as a function of an earlier initiation of use.

Alcohol use patterns among Latino adolescents are determined by multifaceted factors including cultural and psychosocial influences. Place of birth is one of the most consistent factors that significantly impacts the health status and risk behaviors of the Latino population living in the United States, including alcohol use (Alegria et al., 2008; Prado et al., 2009). That is, Latino immigrants to the United States are more likely to experience stressors than their U.S.-born counterparts as immigrants are often exposed to trauma during migration, settle in more impoverished neighborhoods upon arrival, and are limited by language barriers. Despite these disadvantages, first-generation Latino immigrants exhibit better physical and mental health outcomes, including lower adolescent alcohol use, than their U.S.-born counterparts (Alegria et al., 2008; Bacio, Mays, & Lau, 2013; Prado et al., 2009). This finding is known as the immigrant paradox (Vega & Sribney, 2011).

Various hypotheses have been proposed to explain the immigrant paradox in Latino adolescent alcohol use. However, its underlying mechanisms remain unclear. To date, most of these hypotheses have focused on factors that influence the developmental environment of Latino youths, namely the peer and family contexts. Perceptions of the prevalence of peer substance use and association with substance-using peers are some of the most robust predictors of teens' own use and have been proposed as explanations of the immigrant paradox (Lopez et al., 2009; Prado et al., 2009). That is, U.S-born Latino teens seem more likely to associate with substance-using peers and, in turn, are more likely to drink earlier in adolescence and at a higher frequency than first-generation teens (German, Gonzales, & Dumka, 2009; Lopez et al., 2009).

Despite the fact that teens display a preference for peers during adolescence, the family continues to be salient for Latino youths because parenting practices among Latino parents tend to traditionally be organized around its centrality (e.g., Castro, Stein, & Bentler, 2009). There is evidence that a decrease in parental monitoring is related to increased alcohol use among Latino youths (Mogro-Wilson, 2008). In contrast, endorsement of *familismo* appears to be protective against drinking during adolescence (Castro et al., 2009; Gil, Wagner, & Vega, 2000). *Familismo* is defined as a normative set of values espoused by Latinos in the United States that encompasses a sense of obligation to provide instrumental support to the family, an edict that family expectations should guide behavior, and an implicit sense that emotional support must be cultivated within the family (German et al., 2009; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). Erosion of these family-oriented values across generations is posited to increase the risk for alcohol use and to help explain the immigrant paradox (Barrera, Gonzales, Lopez, & Fernandez, 2004; Mogro-Wilson, 2008).

Differences in the peer and family contexts are partial explanations for the higher risk for alcohol use among U.S.-born compared to first-generation Latino youths. However, very little is known about whether cognitive aspects that have been identified as drinking risk factors among adolescents in general can also help explain this paradoxical pattern. Alcohol expectancies and propensity for risk-taking are two of these cognitive factors (e.g., Brown et al., 2008; Spear, 2000).

According to expectancy theory, alcohol expectancies (AEs) are cognitions related to the anticipated effects of drinking alcohol that can be identified early in childhood, even before drinking occurs (e.g., Christiansen et al., 1982; Dunn & Goldman, 1998). Valuations of alcohol expectancies refer to whether AEs are perceived to be desirable or undesirable (Fromme & D'Amico, 2000). Positive AEs have been associated with earlier initiation of alcohol use, higher frequency of drinking occasions, and greater quantities of drinks consumed (Windle et al., 2008). Though the literature is mixed, favorable valuations of negative AEs have been associated with current and future drinking behaviors (Zamboanga et al., 2012). There is some cross-cultural evidence of the relationship between AEs and alcohol use. For example, a study of Latino youths found that positive AEs mediated the relationship between peer alcohol use and teens' own alcohol use (Segura, Page, Neighbors, Nichols-Anderson, & Gillaspy, 2003). It remains unknown, however, if AEs and valuations among Latino teens differ by immigrant generation and whether these may help explain the immigrant paradox.

Propensity for risk-taking is an individual's tendency to take risks in response to potential rewards with a probability for negative results (Lejuez, Aklin, Bornovalova, & Moolchan, 2005; Lejuez et al., 2002). Increased risk-taking has been associated with risk behaviors in adolescence including smoking (Lejuez et al., 2005) and general substance use (Lejuez et al., 2007). Similarly, risk-taking propensity in early adolescence has been associated with probability of drinking later in adolescence (MacPherson, Magidson, Reynolds, Kahler, & Lejuez, 2010). The Balloon Analogue Risk Task (BART) is a behavioral task that was developed to assess propensity for risk-taking (Lejuez et al., 2002). There is some support that the BART captures risk-taking among adolescents of diverse ethnic backgrounds (Lejuez et al., 2002). Nevertheless, these findings have not been extended to Latino teens. If a generational difference in BART performance were to be detected wherein second-generation teens exhibited higher risk propensity than first-generation teens, it would indicate a new path through which the immigrant paradox can be explained. On the other hand, if no generational differences in risk-taking propensity were observed, it would signal that the immigrant paradox may be better explained by other cognitive or risk factors at the contextual level.

The current study

The aims of this study were to examine (a) whether the immigrant paradox typically studied in large, epidemiological samples is present in initiation of alcohol use among a smaller sample of Latino youths, and (b) whether contextual (i.e., peers and family) and cognitive (i.e., AEs and risk-taking) factors known to impact adolescent alcohol use would provide a mechanistic explanation of the immigrant paradox in this sample. It was hypothesized that second-generation adolescents (i.e., U.S.-born youths of immigrant parents) would be more likely to start drinking in adolescence than first-generation immigrant teens. Second-generation teens were expected to endorse substance use to be more prevalent, report having more substance-using friends, endorse lower family-oriented values, exhibit a higher risk-taking propensity, and report more positive AEs. In turn, these differences would explain the higher likelihood of starting to drink by generation.

Method

Participants

A total of 129 Latino adolescents in grades 9 to 11 were recruited from a public school in Los Angeles,

California. Approximately 27% of participants were first-generation immigrant, 40% identified as male, and were on average 15.4 years old. First-generation participants migrated to the United States when they were approximately 6.8 years old and have been residing in the country for an average of 8.6 years. Among first-generation teens, 85% reported Spanish as their first language compared to 67% of second-generation immigrant youths. Table 1 describes sociodemographic characteristics by generation.

Measures

All measures were available in English and Spanish, although the vast majority of participants (95%) chose to complete the study in English. Instruments for which versions in Spanish were not available were translated using recommended guidelines of translation and back-translation (Marín & Marín, 1991).

Table 1. Sociodemographic Characteristics by Generation.

	Overall	First Generation	Second Generation
Total	N = 129	27%	73%
Gender[a]			
Female	60%	66%	58%
Age in years	M = 15.4, SD = .9	M = 15.2, SD = .9	M = 15.5, SD = .9
Grade			
9th Grade	30%	46%	24%
10th Grade	46%	37%	49%
11th Grade	24%	17%	27%
First Language[b]			
Spanish	72%	85%	67%
National Ancestry			
Mexican	71%	69%	73%
Central American	20%	23%	19%
South American	2%	5%	1%
Caribbean	2%	3%	1%
Mixed	5%	—	6%
Assistance for School Lunch			
Free or Reduced lunch	93%	91%	94%
No assistance	7%	9%	6%
Mother Education			
Never went to school	8%	6%	10%
Did not graduate high school	63%	65%	63%
High school or equivalent	14%	20%	12%
Some college	3%	0%	4%
Graduated college	9%	6%	9%
College degree and beyond	2%	3%	1%
Unknown	1%	0%	1%
Father Education			
Never went to school	6%	15%	3%
Did not graduate high school	60%	56%	62%
High school or equivalent	17%	17%	16%
Some college	2%	0%	3%
Graduated college	6%	6%	6%
Some graduate school and beyond	1%	3%	0%
Unknown	8%	3%	10%

Note. M = mean; *SD* = standard deviation.
[a]All participants identified as male or female; [b]all participants endorsed speaking Spanish or English as their first language.

Drinking initiation

Lifetime alcohol use was derived from the Adolescent Alcohol Involvement Scale (Mayer & Filstead, 1979). A dichotomous lifetime alcohol use variable was created by identifying non-drinkers as those who reported "never" having had a drink of alcohol and categorizing drinkers as those who indicated the age at which they took their first drink.

Brief comprehensive effects of alcohol (BCEOA)

The BCEOA (Ham, 2005) assessed expectancies and valuations of the effects of drinking alcohol. Participants were presented with 15 statements on the positive or negative effects of alcohol and endorsed each statement on a 4-point scale ranging from "Disagree" to "Agree." An example of a positive expectancy was, "I would be brave and daring." A sample item of a negative expectancy was, "I would feel clumsy." Participants then evaluated each expectancy on a 5-point scale from "Bad" to "Good." The BCEOA was scored following the factor structure generated by Ham and colleagues (2012) based on a sample of ethnic minority students. This approach yielded a score on positive AEs ($\alpha = .75$), negative AEs ($\alpha = .85$), positive expectancy valuations ($\alpha = .87$), and negative expectancy valuations ($\alpha = .80$). The internal consistency of all subscales was acceptable.

Balloon analogue risk task (BART)

A modified version of the BART (Lejuez et al., 2002) was used to assess risk-taking. The BART is a computer-administered task where participants are presented with a picture of a balloon that is inflated by pumping a predetermined amount by pressing a key on a keyboard. A small amount of money ($0.005) is deposited into a bank with each pump. Participants decide the point at which they want to stop inflating a balloon and collect the amount earned on that trial. A balloon visibly pops on the screen if it is pumped past its explosion point, which results in the loss of the money accrued in the trial. Thus, each pump presents some risk. A total of 72 trials were presented with a risk of explosion normally distributed with a mean of 32 and a standard deviation of 20 (Courtney et al., 2012). Participants were paid the total earned, which ranged between $1 and $5. Two indicators were obtained from the BART: the adjusted mean pumps (AMP) and the post failure mean pumps (PFMP). The AMP is a general measure of propensity for risky decision making (Courtney et al., 2012). The AMP adjusts for the number of pumps that resulted in the explosion of balloons to avoid negatively biasing the mean. The PFMP is the mean number of pumps that follow a failed trial and was used given the importance of response to punishment for externalizing disorders (Courtney et al.,

2012). Consistent with other studies (Lejuez et al., 2007; Lejuez et al., 2005) the mean AMP decreased minimally between the first half ($M = 11.79$; $SD = .46$) and the second half ($M = 10.26$; $SD = .40$) and it was statistically significant ($t(127) = 5.11$, $p < .001$).

Perceived prevalence of peer substance use

Perceived peer prevalence of use was assessed with modified items from the Monitoring the Future survey (Johnston, O'Malley, Bachman, & Schulenberg, 2010). Participants were asked the proportion of their peers they think use alcohol, cigarettes, marijuana, and other drugs among their group of friends. Participants endorsed one of the following categories: "None," "Some," "Most," and "All." A mean score was obtained by averaging responses across the four substances assessed and exhibited good internal consistency ($\alpha = .76$).

Association with substance-using peers

Association with substance-using peers was assessed with items from the Monitoring the Future survey (Johnston et al., 2010). Participants were asked to report how many of their three closest friends (a) drink alcohol, (b) smoke cigarettes, (c) use marijuana, and (d) use any other illicit drug. A sum score was obtained by adding the number of friends across the four substances assessed and exhibited good internal consistency ($\alpha = .75$).

The Mexican American Cultural Values Scale (MACVS)

The MACVS (Knight et al., 2010) assessed orientation toward traditional family values. The questionnaire yields three *familismo* subscales: family support (6 items; $\alpha = .79$), family obligation (5 items; $\alpha = .66$), and family as a referent (5 items; $\alpha = .82$). Participants endorsed each item on a 5-point scale ranging from "Strongly Disagree" to "Strongly Agree." Validity for the MACVS has been established (Knight et al., 2010). The internal consistency of each subscale was acceptable.

Parental monitoring

Two aspects of parental monitoring were assessed with a multidimensional parental monitoring scale (Kerr & Stattin, 2000) which evaluated parental knowledge of teens' activities (9 items; $\alpha = .82$) and parental control of teens' activities (5 items; $\alpha = .85$). Adolescents indicated the frequency of each item on a 5-point scale ranging from "No/Almost Never" to "Very Often." Average scores were calculated for each subscale. This instrument has been used with adolescent populations and has good psychometric properties (Kerr & Stattin, 2000). The internal consistency of both subscales was acceptable.

Procedure

The UCLA Institutional Review Board, the Los Angeles School District, and the local high school approved all procedures and materials. Active parental consent was required to participate in the study. In collaboration with the school, several recruitment strategies were employed: mailing of packets directly to parents, presentations at parent school events (e.g., parent nights), and presentations to classes that served English learners, among others.

The study was conducted on site, after school, in a private space by a bilingual team not affiliated with the high school. All interested participants were screened for parental consent and eligibility criteria. To be eligible, participants must have self-identified as Latino/Latina/Hispanic and attended grades 9 through 11. The target recruitment sample was originally set to 120 participants based on the power analysis described next; therefore, twelfth-graders were not included in the sample in an attempt to reduce additional potential confounds. For example, it is possible that eligible twelfth-grade students would not have been as representative of the drinking patterns among youths this age due to the unfortunate elevated school dropout rates among Latino youths. Participants were given the study procedures, given the opportunity to ask questions, and asked to provide written assent in their preferred language. Participants completed the study in 1 to 1.5 hours. Upon completion, participants were provided monetary compensation, BART earnings, and public transportation tokens if needed. Monetary compensation was initially a $15 gift card to an establishment of their choice (e.g., juice stand) and was changed to $30 in cash early in the study. The majority (84%) of participants completed the study once the compensation was increased.

Power analysis

A power analysis was conducted using G*power (Faul, Erdfelder, Buchner, & Lang, 2009) to inform the sample size. The effect sizes used were calculated from analyses conducted in a previous study (Bacio et al., 2013) where family closeness, parental monitoring, and association with substance-using peers were examined as simultaneous mediators of the relationship between generation and problematic alcohol use. The effect size of family closeness was small ($f^2 = .12$) and the effect size of association with substance-using peers was large ($f^2 = .9$). Taking a more conservative approach, the power analysis for a regression model using an effect size of .12 and six predictors indicated that the required sample size of 120 participants would afford >80% power to detect a significant effect at alpha = .05.

Data analysis

Statistical analyses were conducted in Stata IC 13 (Stata-Corp, 2013) and SPSS 22. The distribution of each outcome determined the appropriate regression model (e.g., ordinary least squares, logistic, etc.). Mediation models were conducted following Baron and Kenny (1986), where full mediation is established when (a path) the predictor is significantly related to the mediator, (b path) the mediator significantly predicts the outcome, and (c′ path) the effect of the predictor on the outcome is reduced or no longer significant when the mediator is included in the model. It should be noted that this traditional method is limited by having to establish these causal steps, as this approach may be underpowered to detect an effect. In addition, sample size may affect power when using a p-value for statistical significance (Kraemer, Kiernan, Essex, & Kupfer, 2008; Kraemer, Stice, Kazdin, Offord, & Kupfer, 2014). Multi-mediation models were conducted following recommendations by Preacher and Hayes (2008) to examine whether significant mediators explained the relationship between generation and drinking initiation over and above one another. Significance of indirect effects was tested using PROCESS (Hayes, 2013), a SPSS macro that uses bootstrapping to estimate indirect effects, standard errors, and confidence intervals. PROCESS allows for testing of indirect effects of continuous, categorical, and dichotomous variables for both mediation and multi-mediation models. Bootstrapping is a method that uses resampling with replacement; for these analyses it was set to 5,000 times. A sampling distribution is generated empirically through this non-parametric method, which allows for estimation of indirect effects and confidence intervals. If the confidence interval does not include zero, then the indirect effect is considered to be statistically significant, $p < .05$ (Hayes, 2013; Preacher & Hayes, 2008). Though bootstrapping provides many advantages, it is important to highlight that this approach assumes that the sample distribution is a reasonable estimate of the population distribution function. If it is not, it may lead to erroneous statistical estimations (Haukoos & Lewis, 2005).

Results

Table 2 illustrates descriptive statistics and correlations among all constructs. Approximately 45% of all participants reported having started to drink. The model examining the relationship between generation and drinking initiation was significant, $\chi^2(1) = 5.12$, $p < .05$. As expected, generation predicted drinking initiation, $z = 2.19$, $p < .05$, odds ratio (OR): 2.5, 95% confidence interval (CI): 1.10 to 5.9, suggesting that second-generation youths were twice as likely to drink in adolescence compared to first-generation teens. Gender, age, preferred language, financial assistance with lunch, mother education, and father education were not related to odds of drinking initiation as tested in separate models. Consequently, these characteristics were not included in subsequent mediation models to maintain parsimony.

Individual mediation analyses

All model estimates for individual mediation analyses are presented in Table 3.

Table 2. Correlations Among All Variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Drinking Initiation	—													
Balloon Analogue Risk Task														
2. Adjusted Mean Pumps	.06	—												
3. Post-Failure Mean Pumps	.14	.91***	—											
Alcohol Outcome Expectancies														
4. Positive Outcome Expectancies	.05	.04	.04	—										
5. Negative Outcome Expectancies	−.38***	−.04	−.08	.31***	—									
6. Valuations of Positive Expectancies	.46***	.04	.09	.38***	−.27**	—								
7. Valuations of Negative Expectancies	.40***	.12	.14	.12	−.40***	.59***	—							
8. Perception of Peer Use Norms	.32***	.03	.01	.14	−.19*	.26**	.15	—						
9. Association With Substance-Using Peers	.43***	−.03	−.07	.06	−.20*	.22*	.12	.68*	—					
Dimensions of *Familismo*														
10. Family Support	−.03	.01	.02	.04	.10	−.13	.17*	−.09	−.01	—				
11. Obligation to Family	−.002	−.05	−.04	−.05	.0002	−.13	−.02	−.03	.01	.70***	—			
12. Family as a Referent	−.16	−.18*	−.17	−.07	.10	−.15	−.13	−.07	−.01	.70***	.69***	—		
Parental Monitoring														
13. Parental Control	.03	−.09	−.07	−.10	.07	−.04	−.06	−.22*	−.05	.17	.09	.16	—	
14. Parental Monitoring	−.23*	−.04	−.05	−.01	.07	−.11	−.11	−.30***	−.34***	.34***	.20*	.41***	.28***	—
Mean	.44	10.99	8.34	2.36	2.67	2.69	2.02	.90	2.75	4.25	4.02	3.95	4.25	3.49
SD	.50	4.56	3.54	.68	.86	1.01	.86	.63	2.83	.62	.63	.72	.83	.70

Note. SD = standard deviation.
*$p < .05$. **$p < .01$. ***$p < .001$.

Alcohol expectancies

There were no differences in positive AEs, negative AEs, and positive expectancy valuations by generation. Though not statistically significant, there was a statistical trend toward second-generation youths endorsing less detrimental negative AEs ($p = .08$) and more favorable positive AEs ($p = .06$). Nevertheless, positive AEs, negative AEs, and positive expectancy valuations were not mediators.

Second-generation teens endorsed negative expectancy valuations to be more favorable ($b = .35$, $t = 2.09$, $p < .05$) than first-generation youths. In turn, negative expectancy valuations were associated with initiation of drinking ($b = 1.11$, $z = 4.15$, $p < .001$). The relationship between generation and drinking initiation was no longer significant after accounting for negative expectancy valuations in the model while negative expectancy valuations remained significant ($b = 1.05$, $z = 43.94$, $p < .001$). The indirect effect of generation on drinking initiation through negative expectancy valuations was significant (estimate $= .37$, 95% CI [.05, .81]) and, as such, negative expectancy valuations were a mediator of the relationship between generation and drinking initiation.

Risky decision making

There were no differences in AMP and PFMP scores by generation, though the latter approximated statistical significance ($p = .09$). Consequently, these indices did not explain the relationship between generation and drinking outcomes.

Table 3. Separate Cognitive and Contextual Mediation Models Examining Drinking Initiation Between First- and Second-Generation Immigrant Latino Youths.

Path	Variable	Coefficient	SE
	c Path: Direct Effect		
Outcome	Drinking Initiation[a]		
Predictor	Generation[b]	0.94[*]	0.43
	a Path: Relationship between generation and each mediator		
Predictor	Generation		
Mediators	Risky Decision Making (BART)		
	Adjusted Mean Pumps	0.81	0.90
	Post-Failure Mean Pumps	1.19	0.68
	Alcohol Outcome Expectancies		
	Positive Outcome Expectancies	0.18	0.13
	Negative Outcome Expectancies	−0.30	0.17
	Valuation of Positive Expectancies	0.37	0.20
	Valuation of Negative Expectancies	0.35[*]	0.17
	Association with Substance-Using Peers	0.75	0.56
	Perception of Peer Use Prevalence	0.28[*]	0.12
	Parental Monitoring		
	Parental Control	0.04	0.16
	Parental Monitoring	−0.15	0.14
	Dimensions of *Familismo*		
	Family Support	−0.11	0.12
	Obligation to Family	−0.05	0.13
	Family as a Referent	−0.25	0.14
	b Path: Relationship between each mediator and drinking initiation		
Mediator	Evaluation of Negative Expectancies	1.05[***]	0.27
Mediator	Peer Perception of Use	1.17[**]	0.34
	c′ Path: Indirect effect predicting drinking initiation - Valuation of negative expectancies		
Predictor	Generation	0.68	0.47
Mediator	Evaluation of Negative Expectancies	1.05[***]	0.27
	c′ Path: Indirect effect predicting drinking initiation - Peer perception of use prevalence		
Predictor	Generation	0.72	0.45
Mediator	Perception of Peer Use Norms	1.08[**]	0.34

Note.. SE = standard error.
[a]Dichotomous variable where those who reported having had a drink in their lifetime were coded as 1 and those who have not were coded as 0;
[b]Second generation = 1 compared to first generation = 0.
[*]$p < .05$.[**]$p < .01$.[***]$p < .001$.

Association with substance-using peers

Contrary to study hypotheses, generation was not significantly related to the number of friends whom participants reported engaging in substance use. Consequently, association with substance-using peers was not a mediator.

Perception of peer substance use prevalence

There were significant differences in the proportion of peers who participants perceived to use substances ($b = .28$, $t = 2.32$, $p < .05$). Second-generation youths reported substance use to be more prevalent among their peers than first-generation teens. Perceptions of prevalence were associated with initiation of drinking ($b = 1.17$, $z = 3.43$, $p < .01$). Generation did not significantly predict drinking initiation after accounting for peer perception of use norms in the model, whereas perception of peer use prevalence remained a significant predictor ($b = 1.08$, $z = 3.16$, $p < .01$). The indirect effect of generation on drinking initiation through peer perception of use norms was statistically significant (estimate = .31, 95% CI [.06, .76]). Consistent with study hypotheses, perception of peer use prevalence mediated the association between generation and drinking initiation.

Parental monitoring

There were no differences in parental control or parental monitoring between first- and second-generation youths. Consequently and contrary to study hypotheses, parental control and monitoring were not mediators.

Dimensions of familismo

There were no differences in family support, family obligation, and family as a referent by generation. Contrary to expectations, dimensions of *familismo* were not mediators of the association between generation and drinking outcomes.

Multi-mediation analyses

Significant mediators (i.e., negative expectancy valuations and perceptions of peer prevalence) were tested concomitantly in a multi-mediation model to examine whether each mediator helped explain the relationship between generation and drinking initiation over and above the other. Figure 1 illustrates the model estimates for these analyses. Perception of peer use prevalence was associated with drinking initiation ($b = 1.06$, $z = 3.08$, $p < .01$) over and above negative expectancy valuations. Negative expectancy valuations were also related to initiation of drinking ($b = 1.07$, $z = 3.88$, $p < .001$) over and above perception of peer use prevalence. After accounting for both mediators, generation no longer predicted drinking initiation, while perception of peer prevalence norms ($b = 1.01$, $z = 2.91$, $p < .01$) and negative expectancy valuations ($b = 1.02$, $z = 3.75$, $p < .001$) remained significant predictors of drinking initiation. The indirect effects of generation on drinking initiation through perceptions of peer use norms (estimate = .29, 95% CI [.05, .74]) and through negative expectancy valuations (estimate = .37, 95% CI [.04, .82]) were significant. Perceptions of peer use and negative alcohol expectancy valuations were simultaneous mediators of the relationship between generation and drinking initiation.

Discussion

The aims of the present study were to test whether the immigrant paradox in drinking initiation was observed
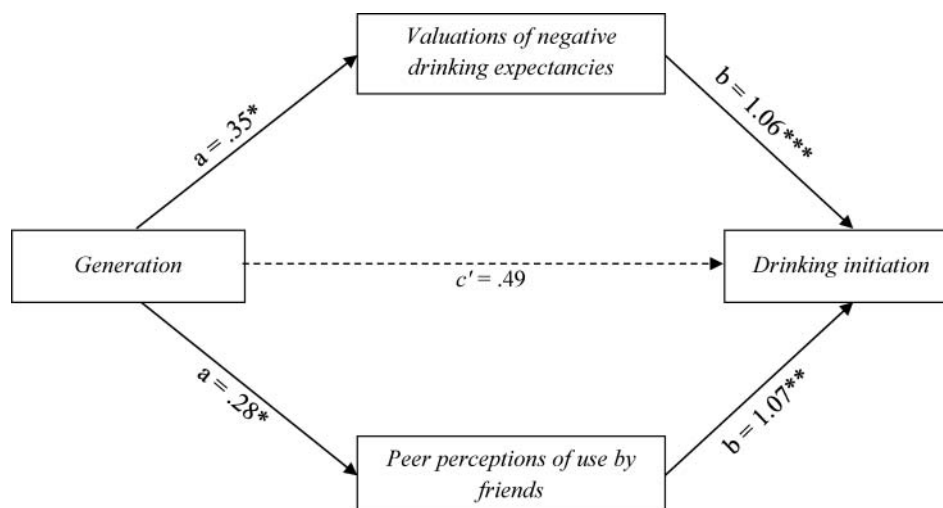

Figure 1. Multi-mediation model: Indirect effects of generation on drinking initiation through valuations of negative alcohol outcome expectancies and perceptions of peer substance use prevalence. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

in a sample of first- and second-generation Latino youths and examine potential cognitive (i.e., AEs, expectancy valuations, risk-taking propensity) and contextual (i.e., peer, family factors) explanations of this difference. As expected, second-generation youths (i.e., U.S.-born youths of immigrant parents) were more likely to start drinking in adolescence compared to first-generation teens. Mediation analyses indicated that differences in alcohol expectancy valuations and perceptions of peer substance use prevalence simultaneously mediated the association between generation and drinking initiation.

Consistent with large epidemiological studies, second-generation teens were twice as likely to start drinking alcohol in adolescence than first-generation youths (Bacio et al., 2013; Prado et al., 2009); underlining the importance of generation as a key correlate of drinking patterns among Latino youths. Most importantly, this highlights that second-generation teens may be at greater risk than their first-generation peers for alcohol problems later in life as a function of earlier drinking initiation (DeWit et al., 2000; Grant & Dawson, 1997; Hingson et al., 2006; Windle et al., 2008).

AEs, expectancy valuations, and propensity for risk-taking were examined as potential explanations of the immigrant paradox in drinking initiation. Valuations of negative AEs emerged as a cognitive mediator of the association between generation and drinking initiation. That is, second-generation teens valuated negative AEs (e.g., "I would feel clumsy") to be more favorable than first-generation youths, which in turn was associated with a higher likelihood of drinking initiation. However, youths of both generations endorsed comparable positive AEs (e.g., "I would act sociable"), negative AEs, and positive expectancy valuations. These similarities may suggest that youths of both generations find alike messages regarding the effects of alcohol and their desirability. Nevertheless, the difference in negative AE valuations suggests that second-generation youths at some point in development begin to discount the negative effects of drinking as less "bad" or, conversely, value them as more "good," thereby placing them at greater risk for initiation. The importance of negative expectancy valuations for drinking initiation is consistent with studies that found valuations to be particularly salient for adolescents with limited drinking experience (Zamboanga et al., 2012; Zamboanga, Schwartz, Ham, Jarvis, & Olthuis, 2009) and negative valuations, more so than positive, to be linked to adolescent drinking (Fromme & D'Amico, 2000; Zamboanga et al., 2012). Further examination of AEs and valuations is necessary to understand the cultural development of these constructs and the role these play in drinking behaviors among Latino youths.

Risk-taking propensity as assessed by the BART (Lejuez et al., 2002) did not explain the immigrant paradox in drinking initiation, as first- and second-generation youths performed similarly on this task. Perhaps this suggests that risk-taking propensity develops at a similar pace among Latino youths across generations and may not be unique to the immigrant paradox. Nonetheless, this is one of the first studies to implement the BART among a primarily Latino sample. The BART has been used with ethnic minority youths, mostly African-American teens (Lejuez et al., 2005; Lejuez et al., 2007), where the performance was linked to smoking (Lejuez et al., 2005) and composite scores across various risk behaviors including substance use (Lejuez et al., 2007). More studies in this area are needed to better understand the role of risk-taking propensity in explaining drinking patterns among Latino youths.

Association with substance-using peers, perception of peer substance use prevalence, dimensions of *familismo*, and parental monitoring were tested as potential contextual explanations of the immigrant paradox in drinking initiation. Consistent with the literature (Epstein et al., 2008; Yan et al., 2008), perception of substance use prevalence was a contextual mediator of the relationship between generation and drinking initiation. That is, second-generation youths reported peer substance use to be more prevalent than first-generation teens, which in turn, predicted drinking initiation. In contrast, association with substance-using friends was not a mediator of the immigrant paradox. In this study, perceptions of the peer use prevalence were more relevant in explaining the immigrant paradox than having substance-using friends. It is possible that beliefs of more global indices of peer substance use are more pertinent to predicting initiation, whereas for drinkers, associating with substance-using friends may have a stronger impact in determining how often Latino teens drink or how much they drink when they do.

Contextual family factors were not mediators of the immigrant paradox in this study as there were no generational differences across indices of parental monitoring, parental control, and dimensions of *familismo*. It is possible that these factors are not as influential for drinking initiation but rather play a more important role once adolescents drink regularly. Similarities in these contextual factors may also be due in part to the fact that both first- and second-generation youths have immigrant parents. Consequently parents are likely to follow comparable parenting practices and promote similar family values among their offspring regardless of whether their children are first- (i.e., also immigrants) or second-generation (i.e., born in the United States) citizens. Nonetheless, it is possible that if this study had captured first-

generation youths who were more recently immigrated, differences in these family factors would have been more pronounced and would have emerged as explanations of the immigrant paradox.

Importantly, multi-mediation analyses indicated that indeed, perception of peer substance use prevalence and negative expectancy valuations uniquely contributed to explaining the higher likelihood of drinking initiation between second- and first-generation youths. These findings highlight that, in addition to contextual factors, salient cognitive determinants of adolescent drinking in general also play a role in explaining the immigrant paradox in drinking among Latino youths. Additional studies are necessary to understand how the relationships among contextual and cognitive factors can improve our understanding of the emergence of disparities in alcohol use and consequences among generations of Latino adolescents.

These findings have implications for prevention efforts for first- and second-generation Latino youths across a variety of settings. Addressing negative expectancy valuations and perceptions of peer substance use among these communities represents two opportunities for delaying drinking initiation. For example, these can be incorporated onto the National Institute on Alcohol Abuse and Alcoholism (2011) screening and brief intervention guidelines to bolster providers' efficacy with Latino youths. Findings also support school-based preventions targeting the general student body that provide corrective peer substance use feedback (e.g., Schulte, Monreal, Kia-Keating, & Brown, 2010) and those that are culturally grounded for Latino youths (e.g., Marsiglia, Kulis, Yabiku, Nieri, & Coleman, 2011).

Study findings should be interpreted within the study's limitations. This study tested only one, albeit important, drinking outcome. Consequently, the role of the tested mediators may change when examining other patterns such as binge drinking. As a cross-sectional study, results capture the relationships among constructs at one point in time; it is possible that these associations change across development. In addition, the relationships between the tested constructs are not causal. For example, it is possible that negative AE valuations are related to higher likelihood of drinking or that those who have initiated drinking hold more favorable negative AEs. Furthermore, this study did not test all potential contextual or cognitive explanations of the immigrant paradox. In particular, adolescents' acculturation level (e.g., Castro et al., 2009; Gil et al., 2000) and the parent-child acculturation gap (e.g., Martinez, 2006; Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Gabarnati, 2009), which have been linked to adolescent substance use, are two important dimensions that should be taken into consideration in future studies. The sample recruited for study participation reflects the cultural context of the Latino community in Los Angeles and may not represent the Latino culture of other places in the United States. For example, the drinking behaviors of Latino youths may differ for those who live in less populous areas or who are more or less exposed to specific environmental stressors of cities such as potential interpersonal violence. Furthermore, participants were recruited from a high school that serves Latino youths in its catchment area and youths who commute from greater Los Angeles. Consequently, these students may be more motivated to attend school and engage in less risky behaviors than Latino youths in greater metropolitan areas.

On balance, this study extends the literature by examining the immigrant paradox in drinking initiation and testing contextual and cognitive explanatory factors relevant to the development of two generations of Latino youths. Negative alcohol expectancy valuations and perception of peer substance use prevalence explained the generation differences in drinking initiation. These findings offer an initial evaluation of tractable mechanisms underlying the immigrant paradox which in turn may help refine prevention efforts for Latino youths. More studies are sorely needed to improve our understanding of how cognitive development and the contextual environment explain the immigrant paradox in drinking outcomes among Latino youths that include assessments from adolescents and their caregivers.

Funding

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