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Alcohol Use among Recent Immigrant Latino/a Youth: Acculturation, Gender, and the Theory of Reasoned Action

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Abstract

Objective—Latino/a youth are at risk for alcohol use. This risk seems to rise with increasing U.S. cultural orientation and decreasing Latino cultural orientation, especially among girls. To ascertain how acculturation may influence Latino/a youth alcohol use, in this study we integrated an expanded multi-domain model of acculturation with the Theory of Reasoned Action.

Design—Participants were 302 recent Latino/a immigrant youth (141 girls, 160 boys; 152 from Miami, 150 from Los Angeles) who completed surveys at 4 time points. Youth completed measures of acculturation (measured in terms of Latino/a practices, Latino/a identity, collectivistic values; U.S. cultural practices, U.S. identity, and individualistic values), attitudes toward drinking, perceived subjective norms regarding alcohol use, intention to drink, and alcohol use.

Results—Structural equation modeling indicated that collectivistic values predicted more perceived disapproval of drinking, which negatively predicted intention to drink. Intention to drink predicted elevated alcohol use.

Conclusion—Although the association between collectivistic values and social disapproval of drinking was relatively small ($\beta=.19, p < .05$), findings suggest that collectivistic values may help protect Latino/a immigrant youth from alcohol use by influencing their perceived social disapproval of drinking, leading to lower intention to drink. Educational preventive interventions aimed at reducing or preventing alcohol use in recent Latino/a immigrant youth could promote collectivistic values and disseminate messages about the negative consequences of drinking.

Keywords

Acculturation; Alcohol Use; Theory of Reasoned Action; Latino/a youth; Gender

1. Introduction

National surveys indicate high prevalence of alcohol use among Latino/a 8th to 12th graders (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014). Latino/a youth belong to the second largest ethnic/racial group in the U.S., beyond Hispanic Whites (Ennis, Rios-Vargas, & Albert, 2011). Because the majority of U.S. Latino/as are immigrants or children of immigrants (Fry & Passel, 2009), it is important to understand how immigration-related experiences, such as acculturation, might affect their risk for alcohol use. Acculturation encompasses the cultural, behavioral, and psychological changes that occur in immigrant groups and individuals when they come into continuous contact with new receiving cultural contexts (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). The present study examines potential pathways through which acculturation may influence youth alcohol use.

Latino/as in the U.S. can experience changes in their alcohol-related attitudes and norms as they interact with peers, teachers, and other individuals or social institutions (Marsiglia, Kulis, Hussaini, Nieri, & Becerra, 2010). As a result of adopting U.S. cultural elements

(and/or disengaging from their Latino/a culture), Latino/a youth may also adopt more permissive attitudes and norms regarding alcohol use, which in turn may increase their intentions to drink alcohol, and ultimately, their risk for alcohol use (Marsiglia et al., 2010).

1.1. The Theory of Reasoned Action (TRA)

TRA provides a framework for understanding the antecedents of substance use (Madden, Allen, & Ajzen, 1992; Marcoux & Shope, 1997). It posits that intention to engage in a behavior can directly influence an individual's decision to engage in that behavior. Intentions are determined by attitudes (evaluations of the consequences of a behavior) and perceived subjective norms (perceptions of others' approval or disapproval of the behavior). Applied to youth alcohol use, TRA postulates that youth use alcohol because favorable drinking attitudes and perceived subjective norms increase their alcohol use intention (Marcoux & Shope, 1997). Although TRA is a useful model for understanding how youth's attitudes and perceived subjective norms toward alcohol influence their intention and decision to use alcohol, TRA does not consider the influence of cultural factors. We propose that TRA can be extended to Latino/a youth alcohol use by including acculturation, which has been linked with drinking among Latino/a youth (Guilamo-Ramos, Jaccard, Johansson, & Turrissi, 2004).

1.2. Acculturation: Cultural Dimensions and Domains

Dimensions—Acculturation involves two independent dimensions: receiving culture acquisition and heritage culture retention (Berry, 1997). Individuals often continue to learn about and adhere to elements of their heritage culture while also learning about and adopting elements of their receiving culture (Padilla & Perez, 2003). However, most public health research operationalizes acculturation as a unidimensional process where heritage culture retention and receiving culture acquisition are cast as opposing ends of a single continuum (Thomson & Hoffman-Goetz, 2009). These unidimensional acculturation models may not fully reflect the lived experiences of immigrant youth because they do not allow for the possibility of biculturalism (Phinney, 2003; Schwartz et al., 2010) – endorsement of both the receiving culture and the heritage culture. The use of unidimensional conceptions of acculturation in the alcohol literature has limited researchers' understanding of the complex associations between acculturation dimensions and Latino/a youth alcohol use (Schwartz et al., 2010; Zamboanga, Tomaso, Kondo, & Schwartz, 2014).

Domains—Schwartz and colleagues (2010) presented a model of acculturation in which receiving-culture acquisition and heritage-culture retention each operate within three separate yet related cultural domains. Among Latino/a immigrants to the United States, receiving-culture acquisition entails orientations towards U.S. *practices*, U.S. *cultural values*, and U.S. *ethnic identification*. U.S. practices refer to behaviors and participation in cultural practices such as English language acquisition and consuming U.S. American media and foods. U.S. cultural values refer to individualistic value orientations such as prioritizing one's uniqueness and independence from others. American ethnic identification refers to the degree to which Latino/a immigrants identify as American.

Heritage-culture retention, on the other hand, includes orientations towards *Latino/a practices*, *Latino/a cultural values*, and *Latino/a ethnic identification*. Latino/a practices refer

to participation in Latino/a cultural practices such as learning, speaking, and retaining the Spanish language. Latino/a cultural values refer to collectivistic value orientations such as viewing oneself as part of one's community and being interdependent on others. Latino/a ethnic identification refers to the degree to which Latino/a immigrants identify as Latino/a or with a Latino/a national identity.

One advantage of this bidimensional/multi-domain model (compared to unidimensional or single-domain models) is the simultaneous consideration of various domains (practices, values, identifications) of receiving culture acquisition and heritage culture retention. The inclusion of these different domains makes it possible to pinpoint which specific acculturation domains predict alcohol use (Schwartz et al., 2010), and therefore, which domains should be addressed in interventions. The present study examines the roles of Latino/a and U.S. cultural values, practices, and identifications on youth's attitudes and norms toward alcohol use.

1.3. Latino/a Acculturation and Alcohol Use

Acculturation scholars have proposed that acquisition and engagement with the U.S. culture increases risk for alcohol use, whereas retention of Latino/a cultural elements decreases it (De La Rosa, 2002). However, findings on the associations of acculturation with drinking are mixed. Some studies report higher prevalence of alcohol use among “more acculturated” youth (conceptualized as youth who were born in the U.S. or who prefer to speak English) than “less acculturated” (conceptualized as youth who were born outside the U.S. or who prefer to speak Spanish) Latino/a youth (Marsiglia et al, 2010), whereas others report the opposite association (Guilamo-Ramos et al., 2004) or no association (Tonin, Burrow-Sanchez, Harrison, & Kircher, 2008). These inconsistent findings limit our understanding of how acculturation is related with drinking among Latino/a youth. One possible reason for these mixed results is the reliance on simplistic conceptualizations of acculturation, or comparing studies that operationalized acculturation differently (Thomson & Hoffman-Goetz, 2009).

Acculturation has been linked with social-cognitive processes such as attitudes and norms regarding substance use among Latino/as (Des Rosiers, Schwartz, Zamboanga, Ham, & Huang, 2013), perhaps explaining the relationships of acculturation with more frequent alcohol use. In a cross-sectional study of Mexican American 7th graders, Marsiglia et al. (2010) employed a unidimensional acculturation model and found that U.S. cultural practices such as speaking English were associated with pro-drug norms, and pro-drug norms were associated with alcohol intentions and use. Few studies have used bidimensional models of acculturation, which can test the influence of U.S. and Latino/a cultural elements independently, to investigate the relationships of acculturation with Latino/a youth alcohol use attitudes and norms.

1.4. Latino/a Acculturation, Gender, and Alcohol Use

Within many traditional Latino households, there may be stronger sanctions against drinking among girls compared to boys (Zamboanga et al., 2014). Thus, when acculturating, Latina girls may experience greater shifts in alcohol use attitudes and norms than boys because, in

traditional Latino/a culture, the norms for boys to drink resemble the more permissive norms to drink often ascribed to U.S. culture (Wahl & Eitle, 2010). These gendered socialization experiences could partly explain why studies based on unidimensional acculturation models indicate that girls' drinking is more affected by acculturation than boys' drinking (Marsiglia et al., 2010). In a cross-sectional study employing a unidimensional model of acculturation, Marsiglia et al. (2010) reported that, among Mexican American youth, pro-drug norms mediated the effect of U.S. cultural practices (speaking English) on alcohol use; and that the mediating influence of pro-drug norms was stronger for girls than boys. This study highlights the relevance of gender in research on acculturation and alcohol use.

1.5. The Current Study

Past research on Latino/a youth acculturation and TRA has relied on cross-sectional data and employed unidimensional models of acculturation, suggesting that results from extant studies may not fully reflect the lived experiences of Latino/a youth (Schwartz et al., 2010). This longitudinal study examined the different components of acculturation and their associations with attitudes and subjective norms toward drinking in a sample of recent immigrant youth. We also tested how attitudes and norms, in turn, are associated with intention to drink and how intention to drink relate to alcohol use. In developing the theoretical model (Figure 1), we integrated what is known about the TRA, Latino/a youth acculturation, and youth alcohol use. Consistent with work (Marsiglia et al., 2010) indicating that adopting receiving cultural elements or becoming Americanized can lead to more permissive attitudes and norms, we expected U.S. practices, U.S. identity, and individualistic values at Time 1 to be associated with lower perceived drinking risk and less social disapproval of drinking at Time 2. Conversely, we hypothesized that engagement with Latino/a heritage cultural elements at Time 1 (conceptualized as Latino/a practices, Latino/a ethnic identity, and collectivistic values) would be associated with higher perceived drinking risk and more social disapproval of drinking at Time 2. As suggested by TRA, we further expected lower perceived drinking risk and lower social disapproval of drinking at Time 2 to predict greater intention to drink at Time 3, and intention to drink at Time 3 to predict higher levels of alcohol use at Time 4. Figure 1 summarizes the hypotheses, showing which relationships are expected (as indicated by an arrow between constructs) and the anticipated direction of each relationship (positive or negative). We also expected to find gender differences. Based on the notion that, in traditional Latino/a cultures it is more acceptable for boys to drink, we expected the links of acculturative processes with perceived drinking risk and less social disapproval of drinking to be stronger for girls than boys.

2. Method

2.1. Sample

Data came from a six-wave longitudinal study of acculturation and substance use among Latino/a families (Schwartz et al., 2014). We used the first four time points for the current analyses. The sample consisted of 302 adolescents from Miami ($N=152$) and Los Angeles ($N=150$) who were finishing or entering the ninth grade at baseline (47% female, mean age at baseline=14.51 years ($SD=0.87$, range 14-17)). The majority of the adolescents (92%) were born outside the United States. A small number of adolescents were U.S. born but were

raised in Latin American countries before returning to the U.S. All participants had resided in the U.S. for five years or less at baseline. Among the Los Angeles sample, 62% of students were born in Mexico. Among the Miami sample, 61% of adolescents were born in Cuba. Almost all of the adolescents (98%) reported Spanish as their “first or usual language”; 82% reported “speaking mostly Spanish at home” and 17% reported speaking “English and Spanish about the same at home.”

2.2. Procedures

Participant Recruitment—Participants were recruited from randomly selected schools in Miami-Dade and Los Angeles Counties. Participating schools were at least 75% Latino/a because many Hispanic recent immigrants live in Hispanic enclaves (Kasinitz et al., 2008). Ten Miami schools and 13 Los Angeles schools participated. The study was approved by the Institutional Review Boards at the University of Miami and the University of Southern California, and by each participating school district. Students were recruited from English for Speakers of Other Languages (ESOL) classes and from the overall student body. Interested students provided their parent/guardian's phone numbers. We obtained contact information for 632 students and their parents. Of these 632 families, 435 were reachable by phone (the remaining 197 were unreachable due to incorrect or non-working telephone numbers), and of these 435 families, 302 participated at baseline. The retention rate was 85% through all waves (92% in Miami and 77% in Los Angeles). A more detailed description of school selection and participant recruitment has been described elsewhere (Schwartz et al., 2014).

Assessment Procedures: Baseline data were gathered during the summer of 2010, and subsequent time points occurred during Spring 2011, Fall 2011, and Spring 2012. Participants completed the assessment in English or Spanish, according to their preference; 84% adolescents completed their assessments in Spanish at baseline, 77% at Time 2, 72% at Time 3, and 68% at Time 4. Assessments were completed using an audio computer-assisted interviewing (A-CASI) system (Turner et al., 1998). As incentives, adolescents received a voucher for a movie ticket at each time point. Parents provided informed consent, and adolescents provided informed assent.

2.3. Measures-Predictors at Baseline (Time 1)

Acculturation—Consistent with our bidimensional/multi-domain theory of acculturation, acculturative processes tapping into U.S. receiving culture acquisition included U.S. practices, U.S. identity, and individualist values. Acculturative processes tapping into Latino/a heritage culture retention included *Latino/a practices*, *Latino/a identity*, and *collectivist values*. *Latino/a* and U.S. *cultural practices* were measured using the Bicultural Involvement Questionnaire (BIQ-S; Guo, Suárez-Morales, Schwartz, & Szapocznik, 2009) which assesses the degree to which individuals participate in U.S. and Latino/a cultural practices such as speaking English and Spanish, reading books in English and Spanish, and enjoying Latino/a and U.S. TV and radio programs. Twelve items assessed U.S. practices and 12 assessed Latino/a practices. Sample items included “You enjoy American-oriented places” and “You feel comfortable speaking Spanish at home,” measured on a 5-point Likert

scale, ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Cronbach's alphas were .91 for U.S. practices and .88 for Latino/a practices.

U.S. and Latino/a cultural values were assessed in terms of individualistic and collectivistic value orientations, respectively. Compared to the general U.S. population, Latino/as have been described as having a stronger orientation towards collectivism and a weaker orientation towards individualism (Hofstede, 2001). Collectivist cultural values such as familismo, respeto, personalismo, simpatia, marianismo and machismo are emphasized more strongly in Latino/a cultures than in the U.S. (Perez & Cruess, 2014). Accordingly, we assessed individualism and collectivism with 16 items (8 individualism items and 8 collectivism items) from the Individualism-Collectivism Scale (Triandis & Gelfand, 1998). A sample individualism item is “I’d rather depend on myself than on others,” and a sample collectivism item for collectivism is “If a classmate or friend gets a prize, I would be proud.” Adolescents rated the 16 items on a Likert Scale ranging from 1=*Strongly Disagree* to 5=*Strongly Agree*. Cronbach's alphas were .73 for individualism and .79 for collectivism.

U.S. and Latino/a Identity were assessed using parallel versions of the Multi-Group Ethnic Identity Measure (MEIM; Roberts et al., 1999). In the U.S.-identity version, “the United States” was inserted in place of “my ethnic group” (Schwartz et al., 2012). A sample items included “I am happy that I am a member of the group I belong to/an American.” Cronbach's alphas were .88 for U.S. and .91 for Latino/a identity.

2.4. Measures – Outcomes and Predictors at Time 2

Attitudes Toward Drinking—We assessed students’ attitudes toward drinking with two questions about their perceived risk of drinking alcohol: “How much do you think people risk harming themselves (physically or in other ways), if they drink alcohol once or twice?” and “How much do you think people harm themselves (physically or in other ways), if they drink alcohol occasionally?”. Response choices ranged from 0=*Great risk* to 3=*No risk*. Higher scores represent less perceived drinking risk (Cronbach's $\alpha=.79$).

Negative Subjective Norms towards Drinking—Negative subjective drinking norms were conceptualized as youth’s perceived social disapproval of drinking. Four questions measured students’ perceptions of how much their parents, friends, teachers, and others would disapprove if they drank alcohol: “If your parents found out you drank alcohol sometimes, how do you think they'd feel?”; “If your friends found out that you drank alcohol, how do you think they'd feel?”; “How much would your teachers disapprove if they found out that you drank alcohol?”; and “How much would others disapprove if they found out that you drank alcohol?”. Response options for question 1 included 0=*They would not be upset at all*, 1=*They would be a little upset*, 2=*They would be pretty upset*, 3=*They would be very upset*, with higher scores representing more disapproval. Response options for question 2 included 0=*They would approve*, 1=*They would disapprove but still be my friends*, 2=*They would disapprove and stop being my friends*, or 3=*They wouldn't care*. We recoded this question to the following sequence of response options: 0=*Approve*, 1=*Don't care*, 2=*Disapprove but still be friends*, and 3=*Disapprove and stop being friends*. Thus, higher scores represent more disapproval of drinking. Response options for questions 3 and

4 ranged from 0=*Very much* to 3=*Not at all*. We reverse coded these two items, so that higher scores would represent more disapproval of drinking (Cronbach's $\alpha=.60$).

2.5. Measures–Outcomes and Predictors at Time 3

Intention to Drink Alcohol—We assessed *intention to drink within the next three months* with one question: “Do you think you will drink alcohol in the next three months?”

Response options were 1=*Definitely no*, 2=*Probably no*, 3=*Probably yes*, and 4=*Definitely yes*. Higher scores represent greater intention to drink.

2.6. Measures – Outcomes at Time 4

Alcohol Use—We assessed alcohol use with one question: In the past 3 months, have you had any beer, wine, wine coolers, or liquor to drink- more than just a few sips? Response options were 1=*Yes* and 0=*No*. This question is commonly used in national surveys of school-attending youth in the U.S. (Johnston et al., 2014).

Demographic Characteristics—Age, gender, and years spent in the U.S. were self-reported.

2.7. Analysis

We computed descriptive statistics and bivariate correlations for all study variables with SPSS version 21.0 (SPSS IBM, 2012). We tested for gender and site (Miami versus Los Angeles) differences in all study variables. T-tests were used for continuous variables and χ^2 tests for categorical variables. We used Mplus Version 7.1 (Muthén & Muthén, 1998-2012) to estimate structural equation models. Missing data were handled in Mplus 7.1 using weighted least squares estimation. Weighted least squares estimation (WLSMV) includes all available data and can be used for models with categorical dependent variables (as is the case in the current study). Similar to full-information maximum likelihood estimation (FIML) with continuous dependent variables, weighted least squares estimation has been demonstrated to be superior to other missing data techniques (e.g., listwise and pairwise deletion) in terms of aspects of model estimation, bias, and efficiency, and it is relatively equivalent to multiple imputation techniques (Asparouhov & Muthén, 2010). The WLSMV estimator treats dependent variables as categorical with the Mplus command (categorical=X), and it provides standardized probit regression coefficients, which can be interpreted similarly to standardized beta coefficients.

In estimating our structural equation model, we first constructed parcels as indicators of latent constructs to improve the parsimony of our measurement and structural models (Little, Rhemtulla, Gibson, & Schoemann, 2013). Parceling reduces a large number of indicator items into a smaller number of parceled indicators, increasing the likelihood that the latent construct will explain the majority of the shared variability among the indicators (Little et al., 2013). We constructed three parcels for each of the six acculturation scales because these scales consisted of many items. After constructing the indicators, we estimated a structural equation model to test our theoretical model (Figure 1). We then trimmed non-significant paths from the model while still leaving the basic structure of the integrated model intact (Figure 2) (Kline, 2011). We controlled for age, gender, and years in the U.S. in all the

structural paths. We also controlled for previous levels of our mediating variables (perceived drinking risk, social disapproval of drinking and intention to drink) in the association of acculturation components at Time 1 with our mediation variables at Time 2, and we controlled for previous levels of our outcome variables (past-90-day drinking) in the association of intention to drink at Time 3 with past-90-day drinking at Time 4. We evaluated overall fit using the comparative fit index (*CFI*), the χ^2 test of model fit, and the root mean square error of approximation (*RMSEA*) (Hu & Bentler, 1998).

3. Results

3.1. Descriptive Statistics

For Tables 1 and 2, we created scales by summing up respective scale items for the following variables: U.S. and Latina/o practices, values, and identifications; perceived drinking risk and social disapproval of drinking. Table 1 displays descriptive statistics for all study variables, separately for girls ($n=141$) and boys ($n=160$), and separately for Miami ($n=152$) and Los Angeles ($n=150$). Approximately 8.9% of the overall sample reported past-90-day alcohol use, and there were no significant differences in past-90-day alcohol use between boys (8.9%) and girls (8.5%), or between youth from Miami (9.2%) and Los Angeles (8.7%). Girls ($M=1.11$, $SD=1.40$) reported lower perceived drinking risk compared to boys ($M=1.49$, $SD=1.63$; $p<.05$). Girls also reported more social disapproval of drinking; ($M=9.11$, $SD=2.77$) and collectivistic values ($M=25.62$, $SD=3.69$) compared to boys ($M=8.01$, $SD=3.06$; $p<.05$ and $M=23.79$, $SD=4.29$, $p<.05$).

Bivariate correlations among all study variables are shown in Table 2. Social disapproval of drinking was correlated with lower past-90-day drinking ($r=-.14$, $p<.01$) and intention to drink was correlated with more past-90-day drinking ($r=.47$, $p<.001$). U.S. identity ($r=-.14$, $p<.05$) and social disapproval of drinking ($r=-.17$, $p<.001$) were the only correlates of intention to drink at the bivariate level.

3.2. Structural Equation Modeling with the Overall Sample

We undertook a two-stage approach to modeling (Anderson & Gerbing, 1988). In the first stage, we estimated the measurement model for the latent variables to ensure that the psychometric properties of the measures were adequate and that the items loaded on their hypothesized factors. In the second stage, we estimated the structural model (Figure 1) and trimmed non-significant paths (Figure 2). The measurement model with all eight latent variables produced excellent model fit indices ($\chi^2=275.836$, $df=224$, $p<.05$; $CFI=.985$; $RMSEA=.028$, 90% $CI=.014-.038$). The structural model also provided a good fit to the data ($\chi^2=534.684$, $df=405$, $p<.001$; $CFI=.917$; $RMSEA=.033$, 90% $CI=.025-.040$). As shown in Figure 2, standardized path coefficients suggested that collectivistic values at baseline predicted higher levels of social disapproval (time 2) ($\beta=.19$); perceived disapproval of drinking at time 2 in turn predicted lower intention to drink ($\beta=-.29$) at time 3; and intention to drink at time 3 positively predicted alcohol use at time 4 ($\beta=.35$). All of these effects were estimated controlling for gender, age, years in the U.S., and mediating or outcome variables from the prior time point.

3.3. Multi-group Structural Equation Modeling: Gender as a Moderator

Next, we conducted multi-group structural equation modeling with gender as a grouping variable to determine whether the structural path coefficients differed between boys and girls. First, we examined whether the same measurement model fit the data for boys and girls. We tested for configural invariance to see whether the form of the measurement model was invariant across gender (Dimitrov, 2010). We tested a baseline measurement model separately for boys and girls which produced good model fit indices for boys ($CFI=.987$; $RMSEA=.026$, 90% $CI=.000-.043$; $\chi^2=249.020$, $df=225$, $p=.13$) and girls ($CFI=.970$; $RMSEA=.038$, 90% $CI=.017-.054$; $\chi^2=271.551$, $df=224$, $p<.05$), suggesting that the measurement model was applicable to both boys and girls. Next, we tested for measurement invariance by comparing constrained and unconstrained models (Dimitrov, 2010). In the constrained model, we set all factor loadings equal between boys and girls. In the second model, we released all equality constraints across gender. Next, we compared the fit of the constrained ($CFI=.975$; $RMSEA=.034$, 90% $CI=.020-.045$); $\chi^2=566.238$, $df=482$, $p<.05$) and unconstrained ($CFI=.976$; $RMSEA=.034$, 90% $CI=.020-.05$); $\chi^2=548.338$, $df=467$, $p<.01$) models to the data and conducted a chi-square difference test to examine whether the fit of the constrained model significantly differed from that of the unconstrained model ($\Delta\chi^2=17.9$, $\Delta df=15$, $p=.272$). The same measurement model therefore fit the data equivalently across gender.

Second, we examined whether the structural form of our model (Figure 1) varied by gender. We re-estimated the model fit by constraining both the measurement and structural paths in the structural model to equality between boys and girls. This fully constrained model provided a good fit to the data: $CFI=.963$; $RMSEA=.021$, 90% $CI=.000-.034$); $\chi^2=679.788$, $df=638$, $p=.122$. Next, we released all equality constraints on the structural model ($CFI=.947$; $RMSEA=.025$, 90% $CI=.002-.037$); $\chi^2=679.596$, $df=620$, $p<.05$), which did not result in a significant χ^2 change ($\Delta\chi^2=13.85$, $\Delta df=18$, $p=0.738$). This indicates that our empirical model fit equally well for boys and girls, and that there was no moderation by gender.

3.5. Mediation Analyses

We next conducted mediation analyses to determine whether collectivistic values predicted intention to drink by way of social disapproval of drinking, and whether social disapproval of drinking predicted alcohol use by way of intention to drink. We calculated confidence intervals using the Rmediation software (Tofighi & MacKinnon, 2011), where mediation is assumed if the confidence interval does not include zero. Social disapproval of drinking mediated the link between collectivistic values and intention to drink ($\beta=-.06$, $p<.05$, 95% $CI=-.133$, $-.002$) and intention to drink mediated the link between social disapproval of drinking and alcohol use ($\beta=-.102$, $p<.05$, 95% $CI=-.181$, $-.034$). Although bivariate correlations between collectivism and past-90-day drinking were not statistically significant, collectivism was correlated with social disapproval of drinking; social disapproval of drinking was correlated with intention to drink; and intention to drink was correlated with past-90-day drinking. According to MacKinnon (2008), a direct relationship between an independent and dependent variable is not necessary for mediation to occur as long as the mediator(s) are significantly associated with both the independent and dependent variables.

3.6. Additional Analyses

Finally, we conducted multi-group structural equation modeling with site as a grouping variable because there were mean differences in descriptive variables (U.S. and Latina/o practices, values, and identifications) between youth from Los Angeles and Miami in the current study, and because Los Angeles and Miami provide very different contexts of reception for Latino/a immigrant youth (Schwartz et al., 2014). In light of these differences, we tested whether site moderated the depicted relationships in Figure 1. We first tested for configural invariance and found excellent model fit for youth from Los Angeles ($CFI=.971$; $RMSEA=.039$, 90% $CI=.020-.054$); $\chi^2=276.922$, $df=225$, $p<.05$) and Miami ($CFI=.976$; $RMSEA=.034$, 90% $CI=.011-.050$); $\chi^2=265.607$, $df=225$, $p<.05$). Next, we tested for measurement invariance (Dimitrov, 2010). The constrained ($CFI=.970$; $RMSEA=.038$, 90% $CI=.026-.048$); $\chi^2=586.580$, $df=482$, $p<.01$) and unconstrained ($CFI=.968$; $RMSEA=.040$, 90% $CI=.028-.050$); $\chi^2=577.651$, $df=467$, $p<.01$) measurement models did not differ from each other ($\Delta\chi^2=11.413$, $\Delta df=15$, $p=.723$). We also did not find site differences in the structural model. The fully constrained model ($CFI=.955$; $RMSEA=.023$, 90% $CI=.000-.035$); $\chi^2=688.466$, $df=638$, $p=.08$) and the unconstrained models ($CFI=.937$; $RMSEA=.027$, 90% $CI=.010-.039$); $\chi^2=689.803$, $df=620$, $p<.05$) provided excellent model fit, and they did not differ significantly from each other ($\Delta\chi^2=13.397$, $\Delta df=18$, $p=.768$). Thus, our hypothesized model fit the data equivalently across the Los Angeles and Miami sub-samples.

4. Discussion

The present study integrates a multi-domain acculturation theory and TRA to examine how different components of acculturation are associated with youth drinking attitudes, norms, intention, and alcohol use. Because Latino/a youth acculturation and substance use are gendered, context-dependent experiences (Marsiglia et al., 2010), we examined the potential moderating role of gender and city. The TRA appears to be a useful theoretical model for understanding alcohol use among recent immigrant Latina/o youth. Social disapproval of drinking predicted youth intention to drink which, in turn, predicted youth alcohol use. Although only one of six acculturation components predicted social disapproval of drinking, results indicate that including cultural predictors of youth alcohol attitudes and norms can extend the TRA.

Collectivistic values were linked with more social disapproval of drinking, which in turn were linked with lower intention to drink, and greater intention to drink was associated with higher likelihood of alcohol use. Our study is an important next step in research on Latino/a youth alcohol use. Because attitudes and norms toward drinking often develop before youth try alcohol, modifications in attitudes and norms are often a focus of youth substance use prevention interventions (Foxcroft & Tsertsvadze, 2012; Stigler, Neusel, & Perry, 2011). Further, acculturation can influence drinking attitudes and norms among Latino/a youth (Marsiglia et al. 2010). It is therefore important to understand the longitudinal links among acculturation, alcohol use attitudes and norms, intention to drink, and subsequent alcohol use. This knowledge can help inform the development of targeted prevention programs

aimed at reducing alcohol use among recent immigrant Latino/a boys and girls (Smokowski & Bacallao, 2009).

4.1. Key Findings and Their Implications

Several significant gender differences emerged. Consistent with the notion that Latino/a cultures condone drinking among boys to a much greater extent than among girls (Marsiglia et al., 2010), girls reported higher levels of perceived social disapproval of drinking than did boys. Girls also perceived more drinking risk compared to boys. These findings may indicate that girls and boys learn through social influences (parents, friends and teachers) that it may be more socially acceptable for boys to drink than it is for girls, possibly placing boys at greater risk for these risk behaviors. Girls also endorsed higher levels of Latino/a cultural practices and collectivistic values at baseline. If retention of Latino/a cultural elements is indeed protective against substance use (De La Rosa, 2002), our findings suggest a gender-differentiated protective mechanism that may help explain why the links of acculturation (generally measured as U.S. culture acquisition) with drinking tend to be stronger for Latina girls than for Latino boys (assuming Latino/a cultural practices and collectivist values get lost with life in the U.S.). To investigate this possibility, we developed a model of pathways through which acculturative processes (acquisition and retention of U.S. and Latino/a cultural practices, values, and identifications) influence alcohol use by way of attitudes, norms, and intention.

As hypothesized, collectivistic values predicted more perceived social disapproval of drinking, and perceived social disapproval, in turn, predicted more intention to use alcohol. Intention to use alcohol positively predicted alcohol use. Collectivistic values may instill in Latino/a youth the perception that their social environment disapproves of drinking. This perception may protect them from intending to use alcohol, possibly to avoid social sanctions for drinking.

Our findings that collectivistic values may protect youth from drinking (as collectivistic values were linked with more disapproval) parallel Schwartz et al. (2011), who found that collectivistic values protected first and second generation immigrant Latino/a college students against illicit drug use and sexual risk behavior. This study extends these findings to immigrant adolescents and further suggest that it may not be the acquisition of U.S. cultural elements per se that increases youth's risk for alcohol (which is often assumed), but rather the loss of Latino/a cultural elements (and collectivistic values in particular) by way of intention to drink. Indeed, none of the U.S. cultural elements (practices, values, and identifications) were associated with perceived drinking risk or social disapproval of drinking.

Interestingly, gender did not moderate the relationships from acculturative processes to drinking norms and attitudes. This is an important finding because Latina/o girls and boys are often described as being differentially affected by acculturation experiences (Valenzuela, 1993). Empirical data, however, do not always support this gendered perspective (Lorenzo-Blanco & Cortina, 2013), stressing the importance of empirically testing gender differences *and* similarities in Latino/a youth development.

4.2. Limitations

The present results should be interpreted in light of several limitations. First, drinking behaviors were assessed via self-report. Although self-report and objective indicators of substance use converge well in Latino/a adolescents (Dillon, Turner, Robbins, & Szapocznik, 2005), future studies should collect data from additional informants (parents, schools, other relatives and friends). Second, we did not account for the influence of peer, adult, and community factors on youth attitudes and norms, which can have important influences on youths' attitudes and norms (Duan, Chou, Andreeva, & Pentz, 2009; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001). Future studies should develop more comprehensive models that account for additional contextual influences on Latino/a youth alcohol use.

A third limitation involves the measurement of social disapproval of drinking, which had an adequate but relatively low Cronbach's alpha (.60). Although we used items from previously established scales, we did not include the full scale in our study, possibly contributing to the low Cronbach's alpha value (Field, 2012, p. 709). Therefore, future studies should replicate the current study by using a complete measure of negative subjective alcohol norms. Similarly, we assessed perceived drinking risk with two items, and future studies should replicate the current study by using a more extensive scale for perceived drinking risk.

Although attrition was relatively low in the current study, Los Angeles youth were more likely to drop out of the study at Times 2, 3, and 4 compared to youth from Miami. Thus, results of the current study may not generalize to Los Angeles youth who did not complete surveys at Times 2-4. Graham (2012) recommends adding survey measures to assess causes of missingness. This helps researchers understand how missing data influence their results. Thus, future studies should replicate the current study and add measures of causes for missing data when conducting research on acculturation and alcohol use among recent immigrant Latino/a youth.

Lastly, it is important to note that, although collectivistic values predicted social disapproval of drinking, the effect size was relatively small ($\beta=.19, p < .05$). Similarly, the mediated effect of social disapproval of drinking in the association of collectivistic values and intention to drink was significant but small ($\beta = -.06, p < .05, 95\% CI = -.133, -.002$). As such we recommend that future studies try to replicate these results with other recent immigrant Latina/o youth to see whether similar findings will emerge with similar populations.

Despite these limitations, the present results provide a more nuanced understanding of which acculturation domains (U.S. and Latino/a practices, values, and identifications) are linked with intention to drink and alcohol use. This information can inform prevention and intervention strategies to prevent or reduce alcohol use.

4.3. Implications for Prevention and Intervention

Collectivistic values were linked with more social disapproval, which in turn was linked with lower intention to use alcohol, and intention to use alcohol were linked with more alcohol use. Thus, programs aimed at reducing alcohol use among Latino/a youth may target

alcohol use intention by fostering collectivistic values and promoting messages that emphasize the harmful effects that drinking can have on interpersonal relationships with family, friends, teachers, and peer networks. This could be done in the form of school- or family-based educational programs. Such programs would be consistent with evidence-based drug use prevention programs that could be tailored to Latino/a youth to prevent drinking among these groups (Foxcroft & Tsertsvadeze, 2012).

These educational programs could address the dynamic between individualistic and collectivistic values to target increases in or maintenance of collectivistic values. Latino/a youth in the U.S. may feel pressured to adopt more individualistic values in schools as a way to fit in with their non-Latino/a white (or later-generation Latino/a) peers and become Americanized. They may think that adopting more individualistic values is desirable and necessary in the U.S., where Latino/a youth often experience discrimination and are regarded as outgroup members (Lorenzo-Blanco et al., 2011). Having open discussions about these cultural differences may allow youth to appreciate *both* the beneficial role of collectivistic values in Latino/a culture *and* the role of individualistic values in U.S. culture. Such open discussions, in turn, may help Latino/a youth to avoid losing connection with collectivistic values as they adopt individualist values, and to achieve balance between these value systems. Such efforts would be consistent with interventions aimed at increasing adaptability and biculturalism among Latino/a youth and families (Smokowski & Bacallao, 2009) and could be extended to target youth's alcohol attitudes and norms as a way to prevent or reduce alcohol use.

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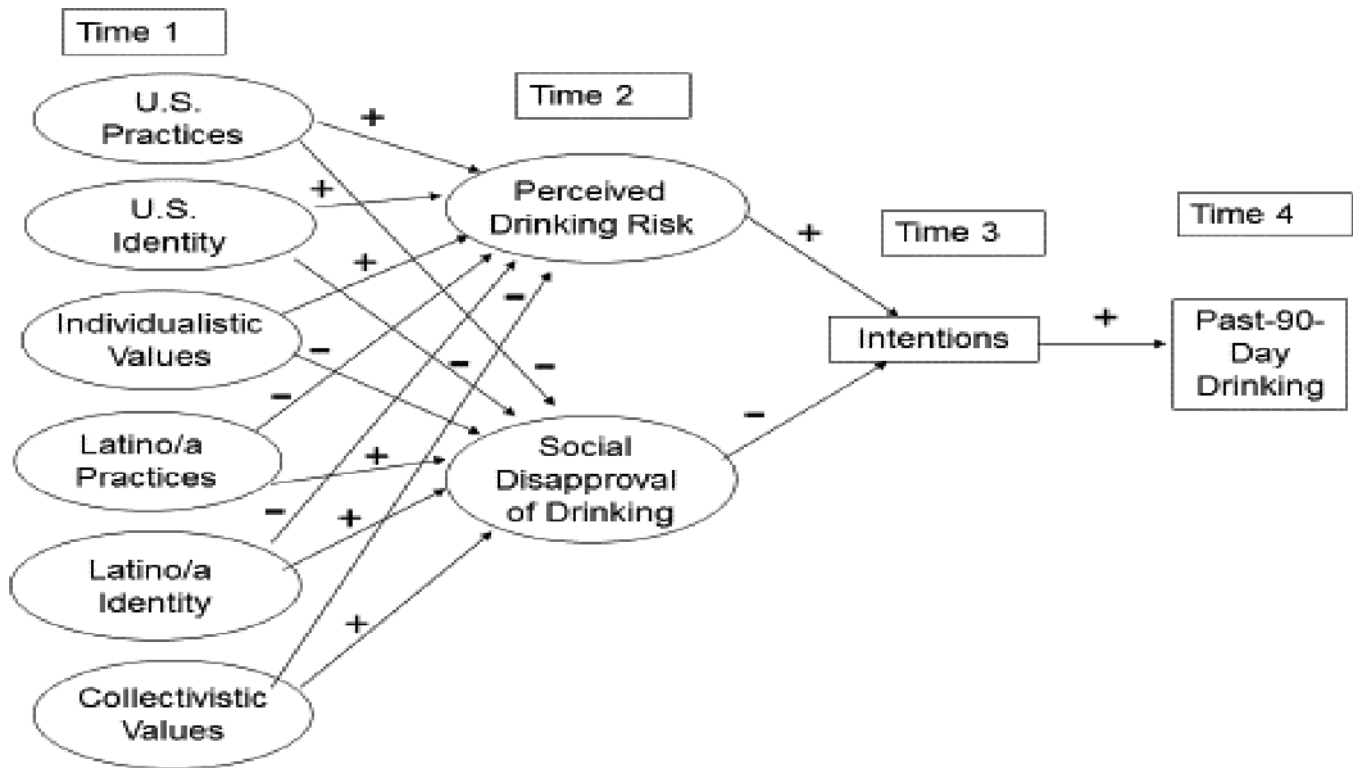


Figure 1. Theoretical model based on the theory of reasoned action and multi-domain acculturation theory, showing all expected relationship and their predicted valence.

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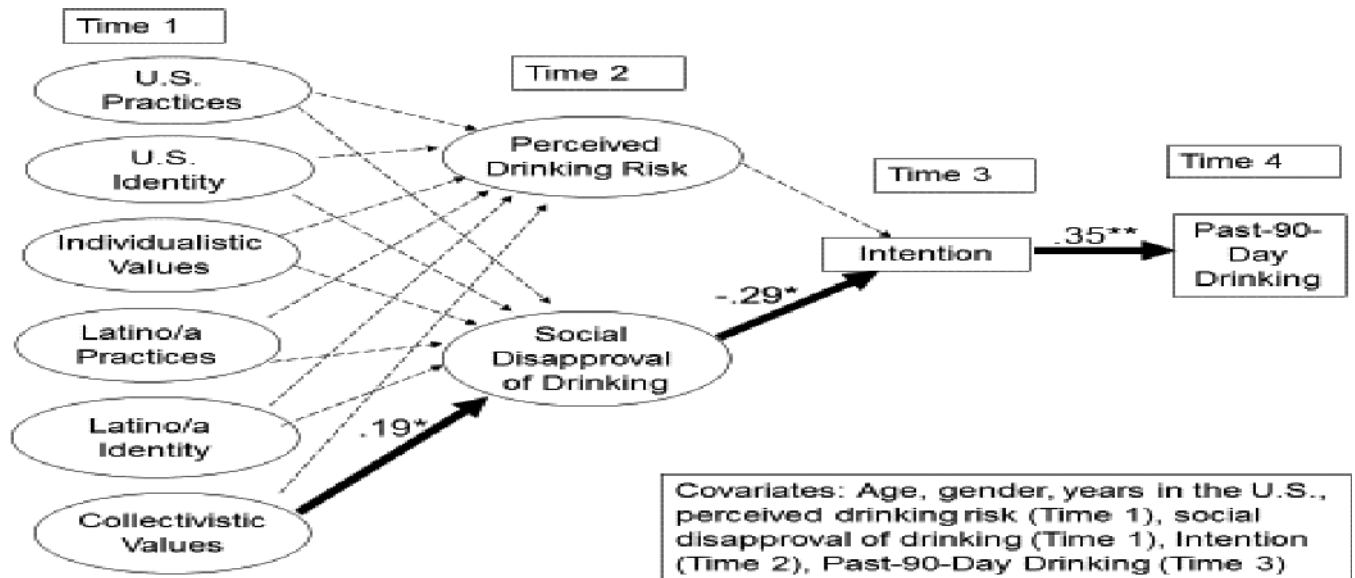


Figure 2.

Results with the overall sample ($N=302$).

Note. Dashed lines indicate non-significant paths and bold lines indicate significant paths. Time 1 acculturation components were treated as latent variables, each consisting of three parcels. Time 2 perceived drinking risk and social disapproval of drinking were treated as latent variables, each consisting of two and four items, respectively. Time 4 Past-90-Day Drinking was treated as an observed categorical outcome variable. We controlled for age, gender, and years in the U.S. in all the structural paths. We controlled for Time 1 perceived drinking risk and Time 1 social disapproval of drinking in the associations of Time 1 acculturation components with Time 2 perceived drinking risk and social disapproval of drinking. We controlled for past-90-day drinking at Time 3 in the association of intention with past-90-day drinking at Time 4.

Table 1
Descriptive Characteristics for Overall Sample, Girls, Boys, Miami and Los Angeles Youth

Variables	Overall Sample N=302		Girls n=141		Boys n=160		Miami n=152		Los Angeles n=150	
	N(%)	or M (SD)	N(%)	or M (SD)	N(%)	or M (SD)	N(%)	or M (SD)	N(%)	or M (SD)
Age										
13 years	26	8.6	15	10.6	11	6.9	15	9.8	11	7.3
14 years	141	46.5	60	42.6	81	50.6	64	41.8	77	51.3
15 years	93	30.7	46	32.6	45	28.1	48	31.4	45	30.0
16 years	33	10.9	15	10.6	18	11.3	19	12.4	14	9.3
17 years	6	2.0	3	2.1	3	1.9	5	3.3	1	0.7
Missing	3	1.3	2	1.4	2	1.3	1	1.3	2	1.3
U.S.Practices	27.82	10.08	27.72	10.15	28.04	9.98	26.63	9.91	29.03	10.15 *
U.S. Identity	27.05	8.35	26.33	8.08	27.78	8.55	28.61	8.01	25.45	8.41 *
Individualistic Values	19.71	4.90	19.52	5.30	19.84	4.55	20.79	4.76	18.6	4.81 **
Latino/a Practices	33.17	8.50	34.32	8.03	32.27	8.66	34.58	7.65	31.73	9.09 *
Latino/a Identity	32.01	7.90	32.70	7.31	31.44	8.41	33.22	7.82	30.79	7.82 *
Collectivistic Values	24.47	4.07	25.62	3.69	23.79	4.29	25.69	3.83	23.23	3.93 **
Perceived Drinking Risk	1.30	1.53	1.11	1.40	1.49	1.63	1.28	1.57	1.32	1.48
Disapproval of Drinking	8.53	2.96	9.11	2.77	8.01	3.06	6.14	2.74	6.42	2.43
Intention to Drink										
Definitely Not	192	63.4	96	68.1	95	59.4	112	73.7	80	53.3
Probably Not	27	8.9	9	6.4	18	11.3	11	7.2	16	10.7
Probably Will	27	8.9	11	7.8	16	10.0	14	9.2	13	8.7
Definitely Will	10	3.3	7	5.0	2	1.3	4	2.6	6	4.0
Missing	46	15.2	18	12.8	28	17.6	11	7.2	35	23.3
Past-90-Day Alcohol Use										
Yes	27	8.9	12	8.5	14	8.8	14	9.2	13	8.7
No	225	74.3	110	78.0	114	71.3	123	80.9	102	68.0
Missing	50	16.6	19	13.5	31	19.5	15	9.9	35	23.3

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Note: Significance levels refer to differences between boys and girls, and between Miami and Los Angeles youth. We lost 1 case due to missing cases for the gender variable. The variable Social Disapproval of Drinking had 24 cases missing and the variable Perceived Drinking Risk had 31 cases missing.

* $p < .05$.
** $p < .01$.

Table 2

Intercorrelations between all Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Site	-												
2. Age	-.08	-											
3. Gender	-.08	.00	-										
4. Years in the U.S.	.36**	-.05	-.02	-									
5. U.S. Practices	.12*	-.05	-.02	-.34**	-								
6. U.S. Identity	-.19*	-.10	-.09	.02	.37**	-							
7. Individual Values	-.22**	.09	-.03	.18**	.06	.27**	-						
8. Latino/a Practices	-.17*	.00	.12*	.03	-.14**	-.03	.05	-					
9. Latino/a Identity	-.15*	.12*	.08	-.09	.06	.24**	.25**	.29**	-				
10. Collectivistic Values	-.30**	.11	.18**	-.06	.13*	.24**	.26**	.32**	.47**	-			
11. Perceived Drinking Risk	.01	.04	-.12*	.16**	.12*	-.02	-.01	-.06	-.11	-.05	-		
12. Disapproval of Drinking	.04	-.01	.19**	-.05	-.02	-.00	-.06	.07	.10	.14*	-.30**	-	
13. Intention to Drink	.10	.05	-.00	.04	.00	-.14*	-.03	.02	-.08	-.11	.07	-.17**	-
14. Past-90-Day Alcohol Use	.02	.11	-.02	.06	-.01	-.07	.01	-.03	.02	-.09	.04	-.14**	.47**

Note:

Categorical measures: Site, Gender, Past-90-Day Alcohol Use.

* $p < .05$.** $p < .01$.