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## False identification use among college students increases the risk for alcohol use disorder: Results of a longitudinal study

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### Abstract

**Background**—It is well known that using false identification (ID) is a common method by which underage youth in the US obtain alcohol. While false ID use is associated with high-risk drinking patterns, its association with alcohol use disorder (AUD), independent of other risk factors, has not been firmly established.

**Methods**—Participants were 1,015 college students recruited from one university and assessed annually during their first four years of college. Latent variable growth curve modeling was used to identify significant predictors of false ID use and test the hypothesis that false ID use increased the risk for AUD, by increasing the frequency and/or quantity of alcohol use. Several other hypothesized risk factors for AUD were accounted for, including demographics (sex, race, living situation, religiosity, socioeconomic status), individual characteristics (childhood conduct problems, sensation-seeking, age at first drink), high school behaviors (high school drinking frequency, drug use), family factors (parental monitoring, parental alcohol problems), perception of peer drinking norms, and other factors related to false ID use.

**Results**—False IDs were used by almost two-thirds (66.1%) of the sample. False ID use frequency was positively associated with baseline quantity and frequency of alcohol use, independent of all other factors tested. False ID use was not directly related to AUD risk, but indirectly predicted increases in AUD risk over time through its association with greater increases in alcohol use frequency over time. Several predictors of false ID use frequency were also identified.

**Conclusions**—False ID use may contribute to AUD risk by facilitating more frequent drinking. If replicated, these findings highlight the potential public health significance of policies that enforce sanctions against false ID use. Students who use false IDs represent an important target population for alcohol prevention activities.

### Keywords

alcohol use disorder; alcohol use patterns; college students; false ID use; longitudinal study

## INTRODUCTION

Underage drinking is an ongoing pervasive problem on US college campuses. Nationally, 60.1% of college students were drunk at least once during the past year and 36.1% drank five or more drinks in a row during the past two weeks (Johnston et al., 2012). Underage students drink less frequently than their 21- to 23-year-old peers but are more likely to engage in high-risk drinking (Wechsler et al., 2002). Serious consequences of excessive drinking among college students are well-documented and include motor vehicle crashes, poor academic performance, serious injuries, sexual violence, and alcohol-related health problems (Engs and Diebold, 1996; Hingson et al., 2002). Between 16.6% and 37.9% of college students are estimated to meet criteria for alcohol use disorder (AUD; Caldeira et al., 2009; Knight et al., 2002; Slutske, 2005; Wu et al., 2007) based on the *Diagnostic and Statistical Manual of Mental Disorders: Fourth Edition* (DSM-IV).

Easy accessibility to alcohol is strongly associated with both alcohol consumption and heavy drinking (Wechsler et al., 2000); therefore, reducing availability to minors is an important strategy for curtailing underage drinking. Extensive research suggests that raising the minimum legal drinking age (MLDA) reduces minors' access to alcohol, as evidenced by reductions in consumption, alcohol-related traffic fatalities, and other alcohol-related problems (Fell et al., 2008; Wagenaar et al., 2005). Yet minors circumvent MLDA requirements by obtaining alcohol from legal-aged persons, commercial outlets where minors are not asked to verify their age, parties, or by misrepresenting their age via false identification (ID; Fabian et al., 2008; Forster et al., 1995; Toomey et al., 2008; Wagenaar et al., 1996).

We found no studies documenting the availability of false IDs; however, a basic understanding of how they are obtained suggests that they are widely available. Students can simply borrow or purchase a false ID from a legal-age person (Myers et al., 2001). Technological advances in manufacturing false IDs and the proliferation of web-based sales have contributed to increased false ID use among underage drinkers (Murray, 2005). Few studies have examined the patterns and correlates of false ID use, and many questions remain unanswered regarding how false ID use might influence risk for heavy drinking and/or exacerbate existing alcohol problems. Martinez et al. (2007) demonstrated that false ID possession among college students increased over time and predicted heavy drinking. Conversely, heavy drinking predicted subsequent false ID acquisition, even controlling for sex and fraternity/sorority membership (Martinez et al., 2007). A later study by the same group linked frequent heavy drinking with using a false ID to enter a bar and using it to enter multiple venues (Martinez and Sher, 2010). In another study of 15- and 16-year olds, false ID ownership was associated with frequent drinking and "binge" drinking (Morleo et al., 2010). There is also some indication that false ID use might contribute to other alcohol-related consequences such as drunk driving, based on evidence that stricter enforcement of false ID laws is related to lower rates of alcohol-related fatal crashes involving drivers under age 21 (Fell et al., 2008).

The present study sought to fill critical gaps in our knowledge regarding the possible contributory role of false ID use to the development of AUD among college students, while accounting for possible confounding variables such as an individual's propensity for risk-taking and peer and family influences. Early onset of alcohol and drug problems during adolescence is a robust predictor of later risk for developing AUD (Rohde et al., 2001). Certain personality characteristics such as sensation-seeking have been linked to heavier drinking (Quinn and Fromme, 2011) and increased risk for alcohol-related injuries (Mundt et al., 2009) among college students, and strong evidence has linked conduct disorder during

adolescence to alcohol dependence in young adulthood (Button et al., 2007). College students' drinking behavior is influenced by perceptions of peer consumption (Quinn and Fromme, 2011; Sher and Rutledge, 2007). Members of fraternities and sororities are more likely than non-members to experience symptoms of alcohol dependence, even during the first year of college (Grekin and Sher, 2006), owing partially to having greater access to alcohol.

Finally, some aspects of the family environment, such as parental monitoring and supervision, can exert a protective influence against drinking during high school (Barnes et al., 2006; Nash et al., 2005), thereby reducing the risk for heavy drinking during college (Arria et al., 2008b). Conversely, having a family history of alcoholism increases the risk for AUD and other alcohol-related consequences among college students (Elliott et al., 2012; Jackson et al., 2001; Vungkhanching et al., 2004).

Latent variable growth curve modeling (LVGCM) was used to test the ability of false ID use frequency to explain changes in AUD risk—operationalized herein as a 6-level variable based on DSM-IV criteria for AUD (see *Alcohol Variables* below)—among a college student sample, through its relationships with changes in quantity and frequency of alcohol use throughout four years of college. The primary hypothesis was that more frequent false ID use would be associated with increasing AUD risk indirectly through its influence on increasing the opportunities to use alcohol (manifested as increasing frequency of consumption). Although we could not find any studies describing patterns and contexts of false ID use, our hypothesis is based on anecdotal evidence from our sample that false IDs are typically only needed once on a given drinking occasion—either to gain access to a bar or party or to purchase a quantity of alcohol in a retail setting—but are generally not presented every time an individual beverage is purchased. The possible contributory role of false ID use to AUD risk over and above the effects of several known risk factors for AUD (see above) was also evaluated.

There were three main components to the model. First, false ID use was hypothesized to predict increases in alcohol use frequency over time, which in turn was hypothesized to predict increases in AUD risk over time. Similarly, false ID use was hypothesized to predict increases in the quantity of alcohol consumed, which would predict AUD risk. Third, a direct relationship between false ID use and AUD risk was hypothesized. Moreover, the model allowed us to examine the importance of both quantity and frequency of alcohol consumption as separate, distinct predictors of AUD risk during college. Whereas prior studies of underage drinking have often focused on quantity (i.e., “binge” drinking), few studies have investigated how frequency of alcohol consumption might also be an important determinant of AUD risk during college, which is an important question in light of recent evidence among adolescents that the relationship with AUD is stronger for frequency than quantity (Chung et al., 2012). An advantage of our LVGCM approach is its ability to examine the potential importance of rates of change in both drinking quantity and drinking frequency over time, and the ability of these changes to predict changes in AUD risk. Such an approach constitutes an advancement over prior studies linking alcohol availability to binge drinking and other monolithic, cross-sectional measures of problem drinking.

## MATERIALS AND METHODS

### Design

Data were collected as part of the College Life Study (Arria et al., 2008a; Vincent et al., 2012). Participants were recruited from one large, public university in the mid-Atlantic US. Initially, all incoming first-time, first-year students ages 17 to 19 were invited to complete a short web-based assessment during Summer Orientation prior to college entry (response

rate=89%;  $n=3,401$ ). We next purposively oversampled individuals who ever used drugs (illicit or prescription used nonmedically) before college and randomly sampled all others at 40%. The resulting sample consisted of 1,253 individuals who completed the baseline assessment (Year 1; response rate=87%) sometime during their first year of college (2004 to 2005). Follow-up assessments were conducted annually thereafter (Years 2 through 4), regardless of continued college enrollment, and consisted of a two-hour personal interview and self-administered questionnaires. Follow-up rates exceeded 87% of the original 1,253 participants every year. Cash payments were provided. Additional information on sampling and recruitment is available elsewhere (Arria et al., 2008a; Vincent et al., 2012). Informed consent was obtained under IRB-approved protocols and a Federal Certificate of Confidentiality was acquired. Interviewers were trained extensively in human subject protection.

## Participants

To ensure that the sample for the present analyses shared a common campus environment throughout the study, the sample was restricted to the 1,068 individuals who were enrolled at the home university for at least one credit every year. Next, the sample was further restricted to the 1,015 individuals who had drunk alcohol at least once in their lives by Year 1. Sample characteristics are presented in Table 1. The 238 excluded individuals (170 not enrolled all four years plus 68 non-drinkers) were similar to the inclusion sample with respect to sex and parents' education, but whites were slightly underrepresented (62% vs. 76%,  $p<.001$ ) as were individuals with higher average neighborhood incomes during high school (\$68K vs. \$75K,  $p=.01$ ).

## Demographic Variables

Sex was coded by interviewers at baseline. Race was self-reported and later dichotomized as White and non-White, due to the preponderance of Whites (75.6%) and the small number of individuals in any given racial minority group (see Table 1). Religiosity was assessed in Year 2 as, "How important is religion in your life?" with responses ranging from "not important" (1) to "extremely important" (4). Socioeconomic status was approximated by highest education attained by mother and father (separately, as reported by the participant) and neighborhood income (i.e., mean adjusted gross income for the parents' ZIP code during the participant's last year in high school; MelissaDATA, 2003).

## Family Factors

Family history of alcohol problems was captured in Year 2 via a family tree questionnaire (Mann et al., 1985). Responses for biological mother and father were coded as no problems (0), possible problems (1), and definite problems (2). To avoid excluding individuals with "don't know" responses (3% for mothers, 4% for fathers), we recoded them conservatively as "no problems." Parental monitoring during the last year of high school was assessed in the pre-college assessment using an adapted version of Capaldi and Patterson's (1989) nine-item parental monitoring scale (Arria et al., 2008b).

## Pre-College Factors

Impulsive sensation-seeking was assessed in Year 1 using the Zuckerman-Kuhlman Personality Questionnaire (Zuckerman, 2002). Also in Year 1, childhood conduct problems were measured using an adapted version of the conduct disorder screener (Falls et al., 2011; Johnson et al., 1995), which asks about 18 different behaviors corresponding to the DSM-IV criteria for conduct disorder. Items were weighted according to severity (Johnson et al., 1995) and summed to derive an overall score (range 0 to 26).

In Year 1, participants were asked how old they were the first time they had a drink of alcohol, even just a sip. Responses were later categorized as before age 15 (0) and 15 or older (1). High school drinking frequency was captured pre-college as the number of weekdays and weekend days they would drink in a typical week during their last year of high school. Responses were later summed to compute a weekly total (0 to 7 days). Illicit drug use was computed as an index (0 to 10) of the number of drugs the participant had ever used at least once in their life, based on responses to lifetime frequency questions at Year 1 for seven types of illicit drugs (marijuana, inhalants, hallucinogens, cocaine, amphetamines/methamphetamine, heroin, ecstasy) and three types of prescription drugs used nonmedically (stimulants, analgesics, tranquilizers).

### College Factors

Fraternity/sorority involvement was assessed in Year 2 and later dichotomized as regular/irregular involvement and none. Living situation in Year 2 was consolidated into four categories: fraternity/sorority house, off-campus, family/other (parent/guardian's home, other relative's home, other), and campus housing. In Year 3, peer drinking norms were assessed as the number of drinks participants thought the average third-year student (same sex as the participant) at the home university would drink on a typical Saturday.

### Alcohol Variables

**Alcohol Use Disorder (AUD)**—Participants were asked annually a series of questions corresponding to the DSM-IV criteria for alcohol abuse and dependence, adapted from the National Survey of Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2003). Participants who drank less than five days during the past year were not asked the DSM-IV series of questions. Responses were later consolidated into a six-level ordinal variable indicating AUD risk [0=Did not drink in the past year, 1=Drank less than five times in the past year, 2=Drank five or more times in the past year but endorsed no DSM-IV criteria, 3=Diagnostic orphans (endorsed one or two criteria but not meeting the definition of abuse or dependence), 4=Abuse, 5=Dependence; (Arria et al., 2013)].

**Quantity and Frequency of Alcohol Use during College**—Annually, participants were asked the number of days during the past year they had used alcohol and the number of drinks they would have on a typical drinking day. Show cards were provided to illustrate standard drink sizes.

### False ID Variables

In Year 3, participants answered three self-administered questions about their use of a false ID to obtain alcohol during their first three years of college. Items were worded to capture an estimated percent: “Before you turned 21, what percent of the times you drank did you use a fake ID during your first [second, third] year of college?” For the small number of participants who were already 21 during Years 2 and/or 3 (see Table 1), these items were not applicable and therefore skipped. Thus, each participant provided between one and three percentages describing their false ID use frequency during Years 1 through 3, respectively. Each individual's mean frequency of false ID use was later computed from all available responses, depending on when they turned 21. For example, for individuals who remained underage at the Year 3 assessment, average false ID use was computed from their responses for all three years; for those who turned 21 between the Year 2 and Year 3 assessments, the average was computed for Years 1 and 2 only. The mean was set to zero for participants who did not drink during those years or never used a false ID.

Questions about false ID use among one's peers were also self-administered in Year 3. Perception of peers' false ID use was captured as a percent: “What percent of underage

students at this university use a fake ID regularly to get alcohol?” Four yes/no questions asked if the participant had ever heard of a legal consequence happening to someone at the university because they used a false ID: getting their ID taken away, getting a ticket/citation, having to pay a fine, and getting arrested. Affirmative responses were summed to compute an overall index of exposure to legal consequences (range 0 to 4).

### Analytic Strategy

A structural equation model that incorporated latent variable growth curve modeling (LVGCM) served as the inferential approach to test the possible direct relationships between false ID use and change in AUD risk over time, in the context of a model that included changes in alcohol frequency and quantity as possible mediating variables between false ID use and changes in AUD risk, as well as pre-college and college factors as possible predictors of false ID use.

LVGCM can be understood as an extension to repeated measures analysis of variance in that it analyzes differences in mean structure over time. It can also be seen as an extension to confirmatory factor analysis, in that latent or unmeasured variables (in this case, some form of growth) are of primary interest. These latent variables represent growth trajectories—or rates of change over time—in the variable of interest. Goals of LVGCM include estimation of the growth trajectory of a latent variable and determination of the relationships between rates of change over time in two or more of these latent variables (Duncan et al., 1999; Muthén, 2008).

Our LVGCM model can be considered a hybrid LVGCM that had grafted onto it a structural model involving both exogenous variables—the individual, family, and peer risk factors—and endogenous variables that resulted from false ID use—changes in alcohol frequency and quantity, and change in AUD risk. Figure 1 depicts the putative model under examination. Missing data were imputed via EM imputation in SAS version 9.2. The LVGCM was fit in *Mplus*<sup>®</sup>.

The Satorra-Bentler scaled  $\chi^2$  goodness-of-fit tests (Satorra and Bentler, 1988) were used to conduct the omnibus test of model fit and compare competing models. Similarly, standard errors associated with the free parameters were estimated with robust methods (Chou et al., 1991). Hu and Bentler (1999) have pointed out the necessity of using joint criteria to determine adequacy of fit of a model, in which cutoff values are established for two measures of fit. Therefore, in addition to a non-significant omnibus Satorra-Bentler scaled test statistic, a model needed to exhibit a comparative fit index (CFI) .95 (Bentler, 1990) and standardized root mean square residual (SRMR) .09 before it was considered acceptable. Finally, any path remaining in the model needed to be statistically significant at  $\alpha=.05$ .

Our approach to model testing was to test our hypothesized model, which included only intercepts and linear terms for the three variables that were measured repeatedly—AUD risk, and quantity and frequency of alcohol use—and modify the model as needed based on examination of the parameter estimates and overall model fit. Thus, our approach was to specify a putative model *a priori*, and modify it on the basis of examination of the results of fitting the model, rather than building a model in stages.

## RESULTS

### Missing Data

Most of the analysis sample completed all four annual assessments (86.3%,  $n=876$ ), and 72.2% ( $n=733$ ) had complete data on every variable in the model. The number of individuals

with missing data was less than 10% for any given variable, with the exception that 111 individuals (10.9%) were missing data on AUD risk in Year 2. The predominant reason for missing data was non-response by a small subset of the total sample at an annual assessment (6.3% in Year 2, 8.6% in Year 3, 9.1% in Year 4).

### Participants in the Present Analyses

Two-thirds (66.1%) of the sample used a false ID at least once during college (Table 1), as reported in Year 3. On average, students used false IDs during about one-fourth (mean=24.1%) of their drinking occasions before they turned 21 (range 0 to 100%). Table 2 presents descriptive results for the main outcome variable—AUD risk—and quantity and frequency of alcohol consumption over time. While alcohol frequency increased over time, alcohol quantity was somewhat stable on average.

### Latent Variable Growth Curve Modeling (LVGCM) Results

In the following sections, we describe the results of the structural equation model (see Table 3 and Figure 2 in supplemental online material). After all non-significant effects were pruned from the model, the model provided good fit to the data based on CFI (.953),  $\chi^2$  ( $\chi^2=677.519$ ,  $df=255$ ,  $p<.0001$ ), and SRMR (.035), with significant variance for the all intercepts and slopes (all  $ps<.012$ ). Nonsignificant paths have their structure coefficients omitted from Table 3 and their paths omitted from Figure 2.

**Predictors of False ID Use Frequency**—As shown in the first column of Table 3, compared with their male and non-white counterparts, females and whites had a higher frequency of false ID use after adjustment for all other variables. False ID use was associated with alcohol-related risk factors such as initiating alcohol use early, drinking and illicit drug use in high school, and higher levels of sensation-seeking (Year 1). False ID use was more frequent among students who were involved in fraternities or sororities or who lived off-campus or in Greek housing as compared to living on campus (Year 2). Students who perceived that many of their peers regularly used a false ID tended to use false IDs more frequently themselves. However, a counterintuitive relationship was observed between exposure to legal consequences and false ID use, in that students who were more aware of others experiencing legal consequences tended to use false IDs more (rather than less) frequently. False ID use frequency was not related to religiosity, family history of alcohol problems, parental monitoring during high school, childhood conduct problems, or peer drinking norms.

**Relationship between False ID Use and Alcohol Consumption**—As hypothesized, false ID use was positively associated with both the baseline levels (i.e., intercepts) and rates of change (i.e., slopes) of alcohol quantity and frequency.

**Interrelationships between Alcohol Consumption Variables**—Higher baseline levels of alcohol quantity predicted greater increases in alcohol frequency. Conversely, baseline alcohol frequency was negatively associated with changes in both the frequency and quantity of drinking. The latter findings suggest a possible ceiling effect—that is, individuals who were already drinking frequently at baseline were already at or near their peak in both quantity and frequency of drinking, and had little room for any change at all (except downward). Notably, the slopes of alcohol quantity and frequency were not interrelated.

**Relationship between Alcohol Consumption and AUD Risk**—The intercepts of alcohol frequency and quantity were both positively associated with AUD risk at baseline. The alcohol quantity intercept was negatively associated with AUD risk slope, suggesting a

possible ceiling effect (see above). Increases in alcohol frequency predicted increases in AUD risk, but there was no relationship between the slope of alcohol quantity and the slope of AUD risk.

**Relationship between False ID Use and AUD Risk**—False ID use did not have a direct statistical effect on AUD risk. However, the indirect pathway from false ID use to alcohol frequency slope to AUD risk slope was statistically significant ( $b=.002$ ,  $SE<.001$ ,  $p<.001$ ), even with inclusion of variables that were significantly associated with false ID use. The other hypothesized pathway from false ID use to alcohol quantity slope to AUD risk slope was not significant. These results are consistent with the notion that more frequent false ID use tends to increase the risk for AUD by facilitating more frequent drinking, but not necessarily heavier drinking.

**Other Predictors of Alcohol Consumption and AUD Risk**—Baseline levels of alcohol quantity and frequency both were positively predicted by exposure to consequences of using a false ID (Year 3), fraternity/sorority involvement (Year 2), and peer drinking norms (Year 3). Several background variables also predicted greater alcohol quantity and frequency at baseline including being male and white, using more illicit drugs in high school, drinking more frequently in high school, and having higher levels of sensation-seeking. Childhood conduct problems positively predicted baseline alcohol quantity but not frequency, and younger age at first drink predicted greater alcohol frequency but not quantity.

Increases in alcohol quantity were greater among students who were male, had no parental history of alcohol problems, used fewer illicit drugs during high school, and had heard of more peers experiencing legal consequences of using a false ID. Increases in alcohol frequency were greater among students who were white, drank less frequently during high school, and had higher peer drinking norms.

Aside from false ID use and the alcohol consumption variables, four other variables significantly predicted lower levels of AUD risk at baseline: being male, being white, having higher levels of parental monitoring during high school, and having higher peer drinking norms (Year 3). Although the latter result was unexpected, examination of the indirect effects indicated that the total effect of peer drinking norms on AUD risk intercept in this model was in the expected direction:  $b=.049$ ,  $SE=.010$ ,  $p<.001$ . Sex was the only exogenous variable that was associated with AUD risk slope, such that males exhibited greater increases in AUD risk over time than females. None of the other exogenous variables were directly associated with AUD risk intercept or slope after accounting for their associations with alcohol quantity and frequency.

## DISCUSSION

A substantial proportion (66.1%) of this college student sample used a false ID at least once to obtain alcohol during college. The central hypothesis of the study was supported: even after holding constant several alcohol-related risk factors, the more frequently students used a false ID, the more they increased their drinking frequency over time, and thereby increased their AUD risk.

Results also showed that students who used a false ID more often tended to increase both the quantity and frequency of their drinking over time, even controlling for many other alcohol-related risk factors. This comports with prior evidence from adolescent and college student samples linking false ID use with higher-risk drinking patterns (Martinez et al., 2007; Martinez and Sher, 2010; Morleo et al., 2010). Because our model accounted for drinking



patterns both before and during college, our results extend prior research by demonstrating that high-risk drinking might be simultaneously both a precursor and consequence of false ID use. A key contribution of this study is the finding that false ID use predicted college alcohol variables, even accounting for any selection effects related to the variables that predicted both false ID use and high-risk drinking (i.e., sensation-seeking, high school substance use, Greek involvement, sex, and race).

Certain findings regarding other hypothesized risk factors for AUD in our model also warrant mention. First, the observed associations between high school and college drinking patterns replicate and extend prior evidence that college drinking patterns tend to be established well before college entry (Arria et al., 2008b; Sher and Rutledge, 2007).

Second, results shed light on the relative importance of the relationships between quantity and frequency of alcohol consumption and AUD risk during college. Much attention has been focused on “binge” drinking among college students, but in this study alcohol frequency was at least as important as quantity in determining AUD risk. Cross-sectionally, initial levels of both quantity and frequency of drinking were positively associated with the initial level of AUD risk. However, increases in AUD risk over time were explained by increases in alcohol frequency but not by increases in alcohol quantity.

Third, surprisingly parental history of alcohol problems did not predict increased risk for AUD. One possible explanation is that there was considerable overlap in the variance accounted for by parental history and the other alcohol-related risk factors. Some evidence indicates that the association between family history and alcohol-related problems during college is mediated by other risk factors such as early age of onset of drinking, behavioral undercontrol, and cigarette use (Capone and Wood, 2008). Future study with this cohort will examine the relative importance of family history *vis à vis* other risk factors in predicting AUD risk among college students.

With respect to the predictors of false ID use, the finding that pre-college drinking and drug use predicted more frequent false ID use during college extends the finding of Martinez et al. (2007) that heavier drinkers were more likely to obtain a false ID. The finding that women used false IDs more frequently than men, on average—even though men drank more often and more heavily than women—provides new insight into the complex gender differences among college students’ drinking behavior. The observed association between fraternity/sorority involvement or housing and more frequent false ID use points to fraternity and sorority members as a possible target for enforcing false ID sanctions. Future study is needed to understand the cultural norms around the sharing and selling of false IDs amongst fraternity/sorority members, and to evaluate the effectiveness of strategies aimed at altering those norms.

The counterintuitive finding that exposure to legal consequences was positively related to false ID use might be explained by a tendency for false ID users to affiliate with similar peers who also use false IDs, some of whom have experienced legal consequences. Regardless, this type of second-hand exposure to legal consequences did not appear to deter false ID use in this sample.

Several limitations of the study must be acknowledged. Participants were recruited from a single university, so generalizability to other populations is unknown. We acknowledge possible problems with recall bias with our retrospective measure of false ID use frequency up to three years in the past. We mitigated this concern somewhat by averaging each participant’s responses. Although we have no information about the contexts in which participants used their false IDs, we speculate that false ID use enabled underage drinkers

both to go out drinking at bars and clubs and to purchase alcohol for use at home or private parties; further study is needed to test that hypothesis. Additionally, some of our hypothesized risk factors were measured after certain dependent variables (e.g., fraternity/sorority involvement as measured in Year 2 predicted baseline alcohol variables measured in Year 1). Finally, we were unable to examine racial/ethnic variation in the strength of the observed relationships due to insufficient numbers of individuals in minority groups.

Findings have important implications for the design and implementation of strategies to reduce excessive drinking among college students. Because false ID use increases access to alcohol for underage drinkers and facilitates more drinking opportunities, heightened enforcement of sanctions against manufacturers or suppliers, confiscation of false IDs, and enforcing sanctions against underage individuals who use them might be warranted.

Policies related to false ID use were identified by Wagenaar et al. (2005) as an area with no research, compared with research on MLDA, taxes, servers, dram shop liability, and other policies. In an ecological study of 16 underage drinking laws, Fell and colleagues (2008) found that states with strong false ID laws had significantly fewer fatal crashes, controlling for a variety of other state-level variables. However, prosecution related to the manufacture and use of false IDs is uncommon due to the difficulty in enforcing these laws (Myers et al., 2001). Additionally, while strategies have been identified to reduce the use of the false IDs that have been manufactured or altered, strategies to reduce the sharing of false IDs have not been identified. The results of this study highlight the need for policymakers to proactively include false ID enforcement as part of a comprehensive strategy to reduce excessive drinking among college students.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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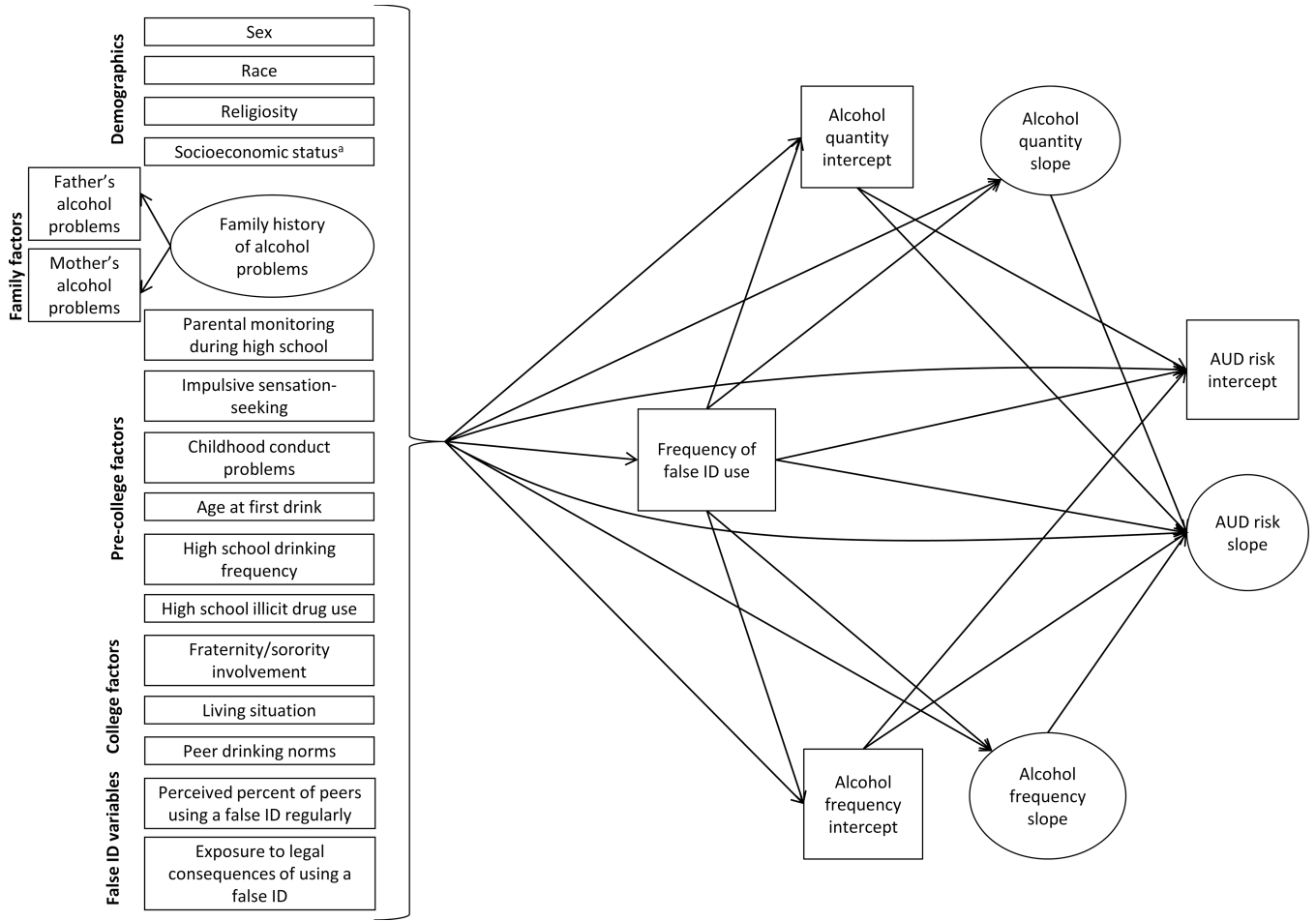
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**Fig. 1.** Schematic depiction of hypothesized latent variable growth curve model predicting alcohol use disorder (AUD) risk.  
<sup>a</sup>Three variables were used to approximate socioeconomic status, which was held constant in the model: highest education attained by mother and father (separately, as reported by the participant) and neighborhood income (i.e., mean adjusted gross income for the parents' ZIP code during the participant's last year in high school).

**Table 1**Sample Characteristics (*N*=1,015)

	%	Mean (SD)
<b>Demographics</b>		
Sex (% Male)	47.9	
Race (% White) <sup>d</sup>	75.6	
Age (% <21, Year 1)	100.0	
Age (% <21, Year 2)	99.8	
Age (% <21, Year 3)	76.3	
Religiosity		
Not important	27.4	
Slightly important	24.5	
Moderately important	32.1	
Extremely important	16.0	
Mother's education		
Graduate degree	39.2	
Bachelor's degree	35.2	
Less than bachelor's degree	25.6	
Father's education		
Graduate degree	46.0	
Bachelor's degree	31.5	
Less than bachelor's degree	22.5	
Neighborhood income <sup>b</sup>		74.6 (34.5)
<b>Family factors</b>		
Father's history of alcohol problems		
No problems	81.7	
Possible problems	12.1	
Definite problems	6.2	
Mother's history of alcohol problems		
No problems	93.5	
Possible problems	4.9	
Definite problems	1.6	
Parental monitoring during high school <sup>c</sup>		29.1 (6.1)
<b>Pre-college factors</b>		
Sensation-seeking <sup>d</sup>		3.6 (2.2)
Childhood conduct problems <sup>e</sup>		6.7 (4.7)
Age at first drink of alcohol		
<15	40.1	
15 to 19	59.9	
High school drinking frequency		1.3 (1.2)
High school illicit drug use (n)		1.5 (1.5)

	%	Mean (SD)
<b>College factors</b>		
Fraternity/sorority involvement	30.0	
Living situation		
Parents/other	7.3	
Campus housing	60.9	
Fraternity/sorority house	14.2	
Off-campus	17.6	
Peer drinking norms		6.7 (3.0)
<b>False identification (ID) variables</b>		
Ever used false ID during college	66.1	
Frequency of false ID use <sup>f</sup>		24.1 (28.7)
Perceived percent of peers using a false ID regularly	37.8 (21.6)	
Exposure to legal consequences of using a false ID		2.3 (1.2)

Note: Measures were administered at different times. Parental monitoring during high school and high school drinking frequency were measured the summer before college entry. Religiosity, parents' history of alcohol problems, fraternity/sorority involvement, and living situation were measured in Year 2 of college. Peer drinking norms and all false ID variables were measured in Year 3. All remaining variables shown were measured in Year 1.

<sup>a</sup> Individuals coded as non-white self-reported their race as Asian ( $n=84$ ), Black/African-American ( $n=81$ ), Pacific Islander ( $n=2$ ), other race ( $n=54$ ), or multiple races ( $n=27$ ).

<sup>b</sup> The mean adjusted gross income reported by the Internal Revenue Service for each participant's home ZIP code during their last year in high school, measured in ten thousands.

<sup>c</sup> Scores ranged from 9 to 45; higher scores indicate greater levels of parental monitoring.

<sup>d</sup> Scores ranged from 0 to 7; higher scores indicate greater levels of sensation-seeking.

<sup>e</sup> Scores ranged from 0 to 26; higher scores indicated more childhood conduct problems.

<sup>f</sup> Frequency of false ID use is the percent (0 to 100) of drinking occasions on which a false ID was used (before age 21).



**Table 2**Alcohol-related Variables, by Year of College ( $N=1,015$ )

	<b>Year 1 Mean (SD)</b>	<b>Year 2 Mean (SD)</b>	<b>Year 3 Mean (SD)</b>	<b>Year 4 Mean (SD)</b>
AUD risk <sup>a</sup>	3.0 (1.2)	3.1 (1.3)	3.1 (1.2)	3.3 (1.1)
Alcohol frequency <sup>b</sup>	51.5 (49.6)	77.7 (63.2)	91.1 (65.9)	103.0 (69.3)
Alcohol quantity <sup>c</sup>	4.8 (3.2)	4.7 (3.2)	4.8 (3.2)	4.6 (3.0)

<sup>a</sup> AUD risk is scored from 0 (did not drink in the past year) to 5 (meeting DSM-IV criteria for alcohol dependence).

<sup>b</sup> Alcohol frequency is the number of drinking days during the past year (0 to 365).

<sup>c</sup> Alcohol quantity is the typical number of drinks consumed per drinking day.

**Table 3**

Latent Growth Curve Analysis Predicting False ID Use, Alcohol Quantity and Frequency, and Alcohol Use Disorder (AUD) Risk

Direct Effects	Outcomes						
	Frequency of false ID use b (SE)	Alcohol quantity		Alcohol frequency		AUD risk	
		Intercept b (SE)	Slope b (SE)	Intercept b (SE)	Slope b (SE)	Intercept b (SE)	Slope b (SE)
<b>Demographics</b>							
Sex=Male	-3.310 (1.462)	1.107 (.142)	.109 (.054)	.068 (.025)		-.487 (.068)	.172 (.028)
Race=White	3.782 (1.741)	1.433 (.138)		.127 (.028)	.043 (.015)	-.251 (.057)	
<b>Family factors</b>							
Family history of alcohol problems				-.092 (.035)			
Parental monitoring during high school							-.016 (.003)
<b>Pre-college factors</b>							
Sensation-seeking	.715 (.345)	.138 (.027)		.017 (.005)			
Childhood conduct problems		.040 (.012)					
First drink after age 15	-5.183 (1.538)			-.077 (.023)			
High school drinking frequency	2.332 (.641)	.346 (.051)		.113 (.011)	-.012 (.006)		
High school illicit drug use (n)	1.156 (.525)	.265 (.043)	-.047 (.019)	.056 (.008)			
<b>College factors</b>							
Fraternity/sorority involvement	10.747 (1.865)	.412 (.133)		.143 (.027)			
Living situation=Fraternity/sorority house <sup>a</sup>	15.037 (2.469)						
Living situation=Off campus <sup>a</sup>	8.236 (1.981)						
Peer drinking norms		.242 (.021)		.011 (.004)	.007 (.002)	-.042 (.010)	
<b>Alcohol variables</b>							
Alcohol quantity intercept						.351 (.027)	-.075 (.007)
Alcohol quantity slope							
Alcohol frequency intercept						.548 (.113)	
Alcohol frequency slope							1.207 (.105)
<b>False identification (ID) variables</b>							
Frequency of false ID use		.011 (.002)	.006 (.001)	.003 (<.001)	.001 (<.001)		
Perceived percent of peers using a false ID regularly	.303 (.035)						

Direct Effects	Outcomes						
	Frequency of false ID use b (SE)	Alcohol quantity		Alcohol frequency		AUD risk	
		Intercept b (SE)	Slope b (SE)	Intercept b (SE)	Slope b (SE)	Intercept b (SE)	Slope b (SE)
Exposure to legal consequences of using a false ID	4.585 (.624)	.242 (.054)	.046 (.022)	.051 (.010)			

*Note.* Results presented for hypothesized model presented in Figure 1, holding constant neighborhood income and mother's and father's education. All parameters shown were statistically significant ( $p < .05$ ). Structure coefficients that were non-significant are not shown in the table. Religiosity did not achieve statistical significance and is therefore not shown in the table. Predictor variables were administered at four different times: in the summer before college entry (parental monitoring during high school, high school drinking frequency), Year 1 of college (sex, race, parental monitoring, sensation-seeking, conduct problems, age at first drink, high school drug use, parents' education), Year 2 of college (religiosity, parents' history of alcohol problems, fraternity/sorority involvement, and living situation), and Year 3 of college (peer drinking norms and all false ID variables). Alcohol and AUD variables were measured annually, Years 1 through 4.

<sup>a</sup>Reference group for living situation variables is campus housing. Family/Other was also held constant but is not shown in the table because it did not achieve statistical significance in the model.