



## Full length article

# Cross-cultural examination of college drinking culture in Spain, Argentina, and USA: Measurement invariance testing of the College Life Alcohol Salience Scale



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## ABSTRACT

**Objective:** Perceptions about what is “normal” drinking in college, measured by the College Life Alcohol Salience Scale (CLASS; 15 items), have been robustly associated with elevated levels of problematic alcohol use, yet the role of these beliefs has not been studied outside the U.S. The present work examined measurement invariance of the CLASS across sex, drinker status, and in individuals from three different countries (i.e., U.S., Argentina, Spain). Additional goals were to evaluate differences on the CLASS (i.e., latent mean differences) as a function of sex, drinker status and country and to compare construct validity (i.e., correlations with alcohol variables) across sex and different countries.

**Method:** A large sample of 1841 college students enrolled in universities from the U.S., Spain and Argentina completed, via an online survey, a battery of instruments that assess college alcohol beliefs, drinking motives, alcohol consumption and alcohol-related negative consequences.

**Results:** We found that a shortened 12-item version of the CLASS to be invariant across sex and drinker status, but only metric invariance was found across countries. As expected, men and drinkers showed significantly higher scores on the CLASS than women and non-drinkers, respectively. Bivariate correlations between CLASS scores and drinking outcomes strongly supported criterion-related validity of this measure across multiple countries and sex with differing strengths in relationships with alcohol-related constructs.

**Conclusions:** Taken together, perceptions of the centrality of alcohol to the college experience appear to be an important target for college student alcohol interventions across various cultures and countries, especially for male college student drinkers.

## 1. Introduction

Globally, extensive research has been conducted identifying risk/protective factors (e.g., personality traits, negative affect, alcohol expectancies) that may contribute to problematic alcohol use among college students, with an eye toward prevention and early intervention (Mallett et al., 2013; Stone et al., 2012; White and Hingson, 2014; Wicki et al., 2010). Perceptions about normative drinking in relevant peer groups (drinking norms) have been found to be a robust risk factor associated with alcohol-related outcomes among college students

(Borsari and Carey, 2003; Mallett et al., 2013; Wicki et al., 2010). Yet, most research has focused on two specific types of normative perceptions, descriptive norms (i.e., beliefs about the drinking behaviors of others, Neighbors et al., 2007; Lewis and Neighbors, 2006) or injunctive norms (i.e., beliefs about the degree to which others approve/disapprove of drinking, Neighbors et al., 2008; LaBrie et al., 2010).

Recent research has identified another type of normative perception that may also be an important influence on drinking behavior, perceptions about alcohol and the college ethos. In 2010, Osberg and colleagues developed and validated the College Life Alcohol Salience

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Scale (CLASS) to assess the internalization of college student drinking culture, or beliefs regarding the degree to which alcohol use is considered an integral part of the college experience. Since its development, the CLASS has been shown to be robustly associated with elevated levels of alcohol use and consequences among college students (Bravo et al., 2017; Osberg et al., 2010, 2011, 2012). Moreover, the CLASS has been shown to have stronger associations with negative alcohol-related consequences than many other established predictors of alcohol outcomes (e.g., descriptive norms, injunctive norms, alcohol expectancies; Hustad et al., 2014; Osberg and Boyer, 2016; Pearson and Hustad, 2014; Ward et al., 2015). Together, these findings suggest that this type of normative perception may be an important target for intervention.

Despite the increasing research conducted on the college alcohol beliefs assessed by the CLASS, no published study to date has examined the CLASS outside of the U.S. As such, how these beliefs differ across countries is unknown. Given that drinking on college campuses and college life greatly differs around the world, we believe cross-cultural research examining these beliefs across countries is needed to determine the extent to which these beliefs are an important intervention target in distinct cultural contexts. For instance, living on campus, which has been positively associated with alcohol use (Lorant et al., 2013), is prevalent among U.S. college students, but not among Argentinean or Spanish students. Further, Argentina and Spain are two Spanish-speaking countries in which regular use of alcohol is deeply entrenched in society and associated with meals, family celebrations, and social events. As already noted, it is yet unknown if results from the U.S. extends to other countries with different cultural milieu and language. In that sense, the present study represents an extraordinary opportunity to further explore social norms regarding the role of alcohol within the college context across three countries with similarities and unique cultural and college-related components.

Beyond cultural differences, sex differences in perceptions about alcohol and the college experience have been observed. For example, using the CLASS, researchers have found that men endorse higher college alcohol beliefs compared to women (Bravo et al., 2017; Hustad et al., 2014; Pearson and Hustad, 2014). To date, it is unclear whether these findings regarding sex and college perceptions reflect actual differences in the degree to which men and women hold these perceptions, or whether they instead reflect measurement bias in the measure itself. That is, differences that have been reported may be attributed to sex differences in item responses, rather than to sex-based differences in the latent trait of college alcohol beliefs (Millsap, 2012). Further, the CLASS has been administered among both drinkers and non-drinkers (Osberg et al., 2010, 2011, 2012), yet how drinking status may influence such perceptions and whether the CLASS measures these perceptions similarly across drinkers and non-drinkers is unknown.

### 1.1. Purpose of present study

The goals of the present study were to: a) test the extent to which college alcohol beliefs are captured using the same items (i.e., measurement invariance) across different countries, sex (men vs women), and drinker status (i.e., non-drinkers vs drinkers), b) examine how men vs. women, drinkers vs. non-drinkers, and individuals in different countries compare on the degree to which college students view drinking to be an integral part of the college experience (i.e., latent mean differences), and c) characterize how this construct relates to drinking motives and alcohol-related outcomes across sex and different countries (i.e., comparing construct validity).

## 2. Method

### 2.1. Participants and procedures

Participants were college students recruited from four universities

across three countries to participate in an online survey regarding personal mental health, personality traits, and alcohol use behaviors (see Bravo et al., *in press* for more information on recruitment procedures). Although 1864 students were recruited across sites, for the present study only data from students that completed the CLASS ( $n = 1841$ ) were included in the final analysis from each sample (two U.S. sites combined,  $n = 1011$ ; 69.7% female; Argentina,  $n = 502$ ; 53.8% female, Spain,  $n = 328$ ; 72.3% female). At the southeastern U.S. site, participants received research credit for completing the study which may be applied as extra credit for courses at the participating university. At the southwestern U.S. site, participants completed the survey voluntarily and did not receive any compensation for their participation. In Argentina, four cash prizes (each of  $\approx$ US \$36) and other items were raffled among the participants who completed the entire survey. In Spain, three checks of 100 euros to be used in office materials (i.e., photocopies, pens, folders) were raffled among the participants. Study procedures were approved by the institutional review boards (or their international equivalent) at the participating universities.

### 2.2. Measurement translation of the CLASS

Four psychologists, bicultural and proficient in English and Spanish, and with expertise in test adaptation and addictive behaviors, translated the original English version (Osberg et al., 2010) to Spanish. Then, two members of the research team compared the versions and, after a thorough discussion, composed a preliminary version of the instrument. We used a different phrase with one item (i.e., “I would prefer it if my college was not considered a party school”). The item conveys the information that a college is better known for its parties than for its academics. Therefore, we re-worded the item to the Spanish translation of this: “I would prefer that my college was not considered a school known more for its parties than for its academics”. Some minor changes were conducted to adapt the wording to Castilian Spanish (see Appendix A for Spanish versions of the items).

### 2.3. Measures

For all measures except the CLASS, composite scores were created by averaging or summing items and reverse-coding items when appropriate such that higher scores indicate higher levels of the construct. Descriptive statistics, reliability coefficients, and significant mean differences across countries for these composite measures are shown in Supplemental Table 1.

#### 2.3.1. Class

College alcohol beliefs were assessed using the 15-item College Life Alcohol Salience Scale (CLASS; Osberg et al., 2010) measured on a 5-point response scale (1 = *Strongly Disagree*, 5 = *Strongly Agree*). In their original psychometric study, Osberg et al. found that the CLASS had excellent internal consistency (samples 1 and 2 combined,  $\alpha = 0.90$ ; Sample 3  $\alpha = 0.94$ ). Both construct (Osberg et al., 2010) and predictive validity (Osberg et al., 2011) have been established for the CLASS.

#### 2.3.2. Drinking motives

Drinking motives were assessed using the 12-item Drinking Motives Questionnaire-Revised, Short Form (DMQ-R SF; Kuntsche and Kuntsche, 2009) at the U.S. sites and the 12-item Spanish version (Spanish DMQ-R SF; Mezquita et al., 2016) at the sites in Spain and Argentina. The measure assesses reasons for drinking within four domains (3 items each): social, conformity, enhancement, and coping.

#### 2.3.3. Alcohol consumption

Alcohol consumption was broken down into several indicators that were measured across all sites including two frequency measures (i.e., past 30-day frequency of alcohol use, past 30-day frequency of getting

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