



The dimensionality of DSM5 alcohol use disorder in Puerto Rico[☆]



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HIGHLIGHTS

- This was the first test of DSM-5 unidimensionality in a Latin American country.
- DSM-5 alcohol use disorder has a unidimensional structure in Puerto Rico,
- There were no gender differences in any DSM criterion.
- The tolerance criterion had a higher threshold presence at older ages.

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ABSTRACT

Aims To: Test the dimensionality and measurement properties of lifetime DSM-5 AUD criteria in a sample of adults from the metropolitan area of San Juan, Puerto Rico.

Design: Cross-sectional study with survey data collected in 2013–2014.

Setting: General population.

Participants: Random household sample of the adult population 18 to 64 years of age in San Juan, Puerto Rico (N = 1510; lifetime drinker N = 1107).

Measurement: DSM-5 alcohol use disorder (2 or more criteria present in 12 months).

Results: Lifetime reports of AUD criteria were consistent with a one-dimensional model. Scalar measurement invariance was observed across gender, but measurement parameters for tolerance varied across age, with younger ages showing a lower threshold and steeper loading.

Conclusions: Results provide support for a unidimensional DSM-5 AUD construct in a sample from a Latin American country.

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1. Introduction

Recent research on DSM-5 alcohol use disorder (AUD) criteria lacks focus on assessments of the dimensionality of this new formulation in Latin American cultures. Only one study has reported on the dimensionality of DSM-5 AUD in Latin America, confirming a unidimensional structure in a sample of Sao Paulo, Brazil (Castaldelli-Maia et al., 2015). This is important because the frequency with which different alcohol dependence indicators occur and the interpretation of particular dependence indicators varies across cultures (Bennett, Janca, Grant, & Sartorius, 1993; Caetano, Medina Mora, Schafer, & Marino, 1999;

Room, 1991; Schmidt & Room, 1999). For example, research on the cross-cultural applicability of ICD-10 and DSM-III-R concepts of alcohol dependence showed that tolerance to alcohol was viewed positively in Mexico (Schmidt & Room, 1999). Compulsion to drink and craving were recognized, but were seen as synonyms for dependence or impaired control. Analysis of data from patient samples in the U.S. and Mexico indicated that whereas a unidimensional model of AUD fit data for Mexican Americans in the U.S., it did not for Mexicans in Mexico (Caetano & Schafer, 1996). Cherpitel et al. (2010) reported support for a unidimensional representation of AUDs in emergency room samples from four countries (U.S., Argentina, Mexico and Poland), but significant differential item functioning was also reported for several diagnostic criteria (including craving).

A consistent finding in recent studies of DSM-IV alcohol abuse and dependence measures is that a single dimension of variation can parsimoniously explain observed correlations among criteria (Martin, Chung, Kirisci, & Langenbucher, 2006; Saha, Chou, & Grant, 2006; Saha, Stinson, & Grant, 2007; Slade, Grove, & Teesson, 2009). For

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instance, using taxometric analysis, Slade et al. (2009) argued for a uni-dimensional structure for DSM-IV indicators of abuse and dependence in Australia. Saha et al. (2006, 2007) reported support for one-dimensional models on the basis of exploratory and confirmatory factor analysis and item response theory (IRT). Langenbucher et al. (2004) and Ray, Kahler, Young, Chelminski, and Zimmerman (2008) reported results consistent with these previous findings, using similar analytic approaches. In contrast, Kerridge, Saha, Gmel, and Rehm (2013) reported a hybrid taxonomic-dimensional structure for DSM-IV and DSM-5, depending on whether a 4+ or 3+ threshold, respectively, was used for a positive diagnosis. However, 2 recent papers examining orphans under DSM-5 in the U.S. general population (Agrawal, Heath, & Lynskey, 2011) and in a sample of college students (Hagman, Cohn, Schonfeld, Moore, & Barret, 2014) reported that the new diagnostic criteria incorporates as positives many individuals that were previously categorized as orphans.

The objective of this paper is to test the dimensionality and measurement properties of lifetime DSM-5 AUD criteria in a sample of adults from the metropolitan area of San Juan, Puerto Rico. Factors such as attitudes, alcohol expectancies, and reactions from families and friends may influence symptom reporting, working to shield drinkers from negative consequences associated with excessive alcohol intake. Liberal alcohol-related attitudes in Puerto Rico (Bird et al., 2006; Canino, Anthony, Freeman, Shrout, & Rubio-Stipec, 1993; Canino, Burnam, & Caetano, 1992; Warner, Canino, & Colon, 2001) could delay the recognition of indicators of abuse and dependence as well as act selectively, increasing the likelihood of identification of some indicators (e.g., withdrawal) over others (e.g., failure to fulfill major roles).

2. Method

2.1. Sample and procedure

Between May 2013 and October of 2014, trained interviewers administered a Computer Assisted Personal Interview (CAPI) covering alcohol use and associated behaviors to 1510 adult residents of the metropolitan area of San Juan, Puerto Rico. The present analyses are restricted to individuals who reported consuming 12 or more drinks during at least one year of any year of their life ($N = 1107$). A standard drink was defined as a 5 oz glass of table wine, a 12 oz can of beer, or a 1.5 oz shot of spirits (a U.S. fluid ounce is equal to 29.6 ml). Using a multistage cluster sampling procedure, 220 primary sampling units (PSUs; Census Block Groups) were first divided into segments of 10 households. One segment was randomly selected from each PSU. All households in the selected segment were then screened, and a Kish table (Kish, 1949) was used to randomly select one member of each household to receive the CAPI interview. The survey response rate was 83%. All respondents consisted of Spanish-speaking, self-identified Puerto Ricans aged 18 or older who had no incapacitating cognitive impairment. The pre-programmed CAPI interview instrument was developed in Spanish by the study's principal investigators (Caetano, Canino) and lasted for approximately 1 h within the respondent's home. All respondents provided written, informed consent and received \$25 compensation for participating. The study was approved by the Committee for the Protection of Human Subjects at the University of Texas Houston Health Science Center and the University of Puerto Rico.

2.2. Measures

2.2.1. DSM-5 lifetime alcohol use disorder criteria

All 11 of the DSM-5 AUD criteria (American Psychiatric Association, 2013) were assessed using the Spanish version of the World Health Organization's Composite Diagnostic Interview (CIDI). To date the CIDI has not been fully adapted to DSM-5. Rather than considering separately the two DSM-IV disorders of alcohol abuse and dependence, all criteria for these two categories in DSM-IV were considered together,

with any two or more of 11 indicators need to be met within a period of 12 months for a positive diagnosis. In addition, DSM-5 eliminated the legal problems criteria, while adding a craving criterion that was already measured in the CIDI. These changes were followed to achieve a positive diagnosis of DSM-5 alcohol use disorder.

The CIDI was originally translated from English and adapted for use in Spanish speaking populations following the cultural adaptation model described by Alegria et al. (2004) that emphasizes cross-cultural equivalence across five dimensions: semantic, content, technical, criterion and conceptual. This version of the instrument exhibits adequate concordance with the Structured Clinical Interview for Axis I Disorders (SCID) ($\kappa = 0.51$; specificity = 0.82 for lifetime substance use disorders (Alegria et al., 2009). According to DSM-5 criteria, those who experience 2 or more criteria within a one-year timeframe are considered positive for DSM-5 AUD.

2.2.2. Sociodemographic characteristics

Additional variables in regression models included self-reported age, gender, and marital status. Annual household income was measured as a 4-category variable, derived from a 12-category measure ranging from "under \$4000" to "over \$100,000". Employment status was assessed as a categorical variable with groups defined as a) unemployed, b) under-employed (employed part time and wants more work), c) part time (and does not want more work), d) full-time, and e) not in the workforce (e.g., retired, homemakers, students, disabled). A four-level education variable distinguished individuals who a) did not obtain a high school diploma, b) received a high school diploma, c) attended some college or technical/vocational school, or d) received a college degree.

2.2.3. Statistical analyses

All analyses accounted for the complex sampling design of the study. Tabulations and regression models were estimated using Stata 13.1 (StataCorp, 2015). Factor analyses were conducted with Mplus 7.2 (Muthén & Muthén, 2012). The dichotomous criteria were

Table 1
Oblique solutions from an exploratory factor analysis of 11 DSM-5 AUD criteria.

	1-Factor	2-Factor		3-Factor		
		1	2	1	2	3
Pattern coefficients						
Obligations	0.837	0.908		0.448	0.490	
Social	0.820	0.841		0.424	0.447	
Hazardous use	0.779	0.832			0.879	
Craving	0.753	0.689		0.705		
Tolerance	0.749	0.744		0.457		
Withdrawal	0.838	0.803		1.14		
Larger/longer	0.852	0.776			0.702	0.717
Quit/cut	0.878	0.769	0.428	0.764		
Time spent	0.878	0.881		0.905		
Activities	0.905	0.912		0.924		
Health	0.874	0.865		0.907		
Factor correlations						
1			0.19		0.83	0.28
2						0.08
Structural coefficients						
Obligations		0.861	−0.079	0.823	0.852	0.058
Social		0.827	0.079	0.798	0.799	0.170
Hazardous use		0.801	−0.006	0.734	0.884	0.079
Craving		0.737	0.387	0.752	0.586	0.402
Tolerance		0.748	0.162	0.731	0.685	0.246
Withdrawal		0.830	0.294	0.866	0.611	0.300
Larger/longer		0.828	0.422	0.784	0.760	0.773
Quit/cut		0.850	0.573	0.854	0.662	0.517
Time spent		0.880	0.162	0.893	0.749	0.194
Activities		0.907	0.145	0.919	0.784	0.159
Health		0.873	0.207	0.886	0.730	0.232

Note. Loadings are shown that exceeded an absolute value of 0.40. All depicted loadings differed significantly from zero ($p < 0.05$). An orthogonal 2-factor solution differed in no substantive way from the 2-factor oblique solution. The first two eigenvalues from the initial extraction were 7.85 and 0.66 (ratio: 11.8).

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