

FACTOR STRUCTURE ANALYSIS OF THE COMPREHENSIVE EFFECTS OF  
ALCOHOL - SPANISH QUESTIONNAIRE AMONG ADOLESCENTS IN MEXICO

A Thesis

by

CLAUDIA GRACIELA FLATO

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2006

Major Subject: Psychology

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## ABSTRACT

Factor Structure Analysis of the Comprehensive Effects of Alcohol – Spanish  
Questionnaire Among Adolescents in Mexico. (May 2006)

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Chair of Advisory Committee: Dr. Antonio Cepeda-Benito

Expectancies about the effects of alcohol predict alcohol consumption among adolescent children. Although alcohol-expectancy measures have been validated to use with English speaking populations, there is currently no available information on the psychometric properties of the Comprehensive Effects of Alcohol (CEOA) questionnaire with Spanish speaking populations. Using confirmatory factor analysis (CFA), the factor structure of the Spanish version of the CEOA was assessed in a set of scores obtained from a sample of adolescents from Mexico ( $N = 345$ ). The results replicated the 7-factor structure of the CEOA. Moreover, CEOA factor-scale derived scores predicted alcohol use. Overall, the CEOA-Spanish appears to be a valid measure of alcohol expectancies for use with Mexican adolescents.

DEDICATION

To Franklin, Grace, and William Flato  
and to my parents, Baltazar Flores Sanchez and Matiana Stringel de Flores (†)

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## INTRODUCTION

Tolman (1932) conceptualized expectancy as an organism's ability to utilize information stored in memory to guide and organize future behavior (see Goldman, 1999). Outcome expectancies can be defined also as beliefs about the probable consequences of engaging in a behavior (Goldman, 2002). Expectancies define a relationship between a stimulus, a response, and the outcome of a response, and such a relationship is thought to influence future behavior (Goldman, Del Boca, & Darkes, 1999).

Goldman (1999) posited that behaviors guided by expectancies tend to be automatic, as expectancies can be conceptualized as information templates that are reflexively activated and put into motion by the nervous system following stimulation. The hypothesized function of expectancies is to prepare the organism to cope in the future with situations that were encountered in the past (Goldman). Behavior outcome expectancies can be learned through both actual and vicarious experiences, as well as acquired knowledge about how to behave under specific circumstances (Goldman). Alcohol-outcome expectancies have been defined as neurocognitive structures that influence drinking behavior (Del Boca, et al., 2002).

Children's alcohol expectancies are associated with drinking onset and extended alcohol use (Goldman, Brown, Christiansen, & Smith, 1991). The nature of this association is reciprocal, with expectancies influencing motivation to drink and drinking modifying alcohol use expectancies (Goldman, et al., 1991). Alcohol expectancies

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This thesis follows the style of *Assessment*.



develop through both real and vicarious experiences (Tapert, Tate, & Brown, 2001). Thus, variables such as age, family, peers, cultural values, beliefs and customs related to drinking contribute to the shaping of alcohol expectancies (Goldman, et al., 1991; Lindman, Sjöholm, & Lang, 2000).

The two most widely used alcohol-expectancy measures are the Alcohol Expectancy Questionnaire (adult [AEQ; Brown, Goldman, Inn, & Anderson, 1980] and adolescent [AEQ-A; Brown, et al., 1987] forms) and the Comprehensive Effects of Alcohol (CEOA; Fromme, Stroot, & Kaplan, 1993). The AEQ and AEQ-A outline beliefs about the reinforcing effects of alcohol across specific cognitive, affective, behavioral, and physical domains (Brown, et al., 1987). For example, The AEQ-A has 90 items grouped within seven alcohol-expectancy domains: 1) global positive changes, 2) changes in social behaviors, 3) improved cognitive and motor abilities, 4) sexual enhancement, 5) cognitive and motor impairment, 6) increased arousal, and 7) relaxation and tension reduction (Brown, et al., 1987; Christiansen and Goldman, 1983; Goldman, Brown, & Christiansen, 1982).

Fromme et al. (1993) noted that the AEQ and AEQ-A might be impractically lengthy for some testing situations. Another weakness of the AEQ measures is that they assess positive alcohol-effect expectancies but neglect to inquire about the negative consequences of drinking alcohol (except for alcohol impairment in the AEQ-A). In response to these weaknesses, Fromme et al. created the CEOA, a 38-item measure that can be used to assess beliefs about the effects of alcohol (alcohol expectancies), as well as the extent to which the expectancies are perceived as good or bad outcomes

(outcome-expectancy evaluation). The outcome evaluation of alcohol expectancies was a theoretically and practically important innovation in the CEOA. Whereas positive expectancies may predict the likelihood that a person will start to drink, negative-outcome expectancies may be better predictors of how much and how often alcohol is consumed (Brown, et al., 1987; Fromme, et al., 1993; Valdivia & Stewart, 2005).

Using EFA, Fromme et al. (1993) defined four positive and three negative factors. The positive factors measured 1) facilitation of social interactions, 2) tension reduction effects, 3) liquid courage (feeling courageous, brave and daring, unafraid, powerful, and creative ), and 4) sexual enhancement (being a better lover, enjoying sex more, feeling sexy and being able to act out fantasies). The negative factors assessed 1) cognitive and behavioral impairment, 2) risk-taking and aggressiveness augmentation, and 3) negative self-evaluation. Fromme & D'Amico (2000) determined that the CEOA is appropriate for use with adolescents. These authors compared the CEOA and the AEQ-A and found that scores from both measures were similarly reliable and predictive of drinking behavior. Valdivia and Stewart (2005) partially replicated the seven factor structure of the CEOA. Using Exploratory Factor Analysis (EFA), these authors replicated the seven positive-expectancies factors, but the negative expectancy evaluation items yielded two factors: 1) cognitive and behavioral impairment and, 2) a combination of risk-taking and aggressiveness augmentation with negative self-evaluation. Valdivia and Stewart (2005) reported evidence of incremental validity for the negative expectancies factors in an analysis that supported Fromme's et al (1993) notion that negative expectancies aid in the prediction of quantity of alcohol consumption.

Attempts to replicate the factor structures of the AEQ (6 factor) and AEQ-A (7 factors) with non-English speaking samples have not been very successful. Mora-Rios, Natera, Villatoro, and Villalvazo (2000) studied the factorial validity of a Spanish version of the AEQ (Brown et al, 1987) using university students from Mexico. A total of 678 participants completed the AEQ. Using EFA and confirmatory factor analyses (CFA), these authors indicated that an 8-factor solution, rather than the 6-factor solution of the English version provided the best fit for the data. Similarly, Ronnback et al. (1999) examined the factor structure of a Finnish version of the AEQ-A using a sample of young military personnel from Finland. These authors reported that five of the seven factors of the AEQ-A (Brown, et al., 1987) did not replicate. Pérez-Aranibar, Van den Broucke, and Fontaine (2005) adapted and evaluated a Spanish version of the AEQ-A with a sample of 672 university students from Peru. These authors recommended a 3-factor solution and much briefer measure rather than the original 7-factor, 90-item AEQ-A.

Given the discouraging attempts to translate and validate the AEQ and AEQ-A with non-English speaking populations, the present study sought to examine the psychometric properties of a Spanish version of the CEOA in a sample of Mexican adolescents. This would be the first study to test the CEOA in a Spanish speaking population, and the first study to examine alcohol expectancies with Spanish speaking, school-age adolescents.

The findings from the present study should have both theoretical and practical implications. A stringent test of the validity of a psychological construct is to examine

whether the construct replicates across different cultures. Human behaviors and their controlling variables can be common (*etic* or universal), different (*emic* or culture-specific), or have both *etic* and *emic* characteristics across different cultures (Matsumoto, 1996). When constructs do not replicate across two cultures, two possibilities exist: 1) the construct is ill defined and really does not exist in either of the two cultures, or 2) the construct exists but it is specific to only one of the two cultures. However, construct replication across different cultures suggests the construct has *etic* validity, at least across the cultures tested. That is, it is not only important to develop assessment tools to study alcohol expectancies in non-English speaking adolescents, but also to examine the extent to which the construct underlying alcohol expectancies is similar or different in non-Anglo cultures (Cepeda-Benito & Reig-Ferrer, 2000).

At the practical level, there are no published studies that describe the psychometric characteristics of alcohol expectancies in Spanish speaking, school-age adolescents. Thus, the present study contributes to avoid the all-too-common practice of researchers and clinicians working with non-Anglo populations of using invalid translations and adaptations of assessment instruments developed in Anglo countries (Fabregat, 1996). The absence of measures of alcohol expectancies developed for Spanish-speaking adolescents is particularly striking, considering that Spanish ranks fourth among languages in worldwide prevalence with nearly 400 million speakers (Wikipedia contributors, 2006).

The study of alcohol outcome expectancies in Spanish speaking countries is important to the extent that children's expectation regarding the consequences of using

alcohol may motivate or curb their drinking (Goldman et al., 1999). Consumption of alcohol by adolescents in Spanish speaking countries has become very problematic in a number of countries. For example, from 1995 to 2001, alcohol use within the past 30 days among adolescents (ages 15 to 17) from Spain increased from 56.8% to 60.2% (for boys) and from 37.7% to 49.3% (for girls) (Plan Nacional sobre Drogas - Observatorio Español sobre Drogas [PND-OED], 2003). About 8.6% of Spaniards (ages 14 to 65) are problematic drinkers or abuse alcohol, whereas problematic drinking among school-aged adolescents (15 to 19) is alarmingly high (7.2%). In Mexico, alcohol use among adolescents has increased substantially since the late 1990s. From 1998 to 2002, alcohol use within the past 12 months among Mexican adolescents (ages 12 to 17) increased from 27% to 35% for boys and from 18% to 25% for girls (Encuesta Nacional de Adicciones [ENA], 2002). Alcohol consumption in the past month increased from 27.5% to 32.3% for 14-year olds and from 49.8% to 56.7% for 17- year olds, with similar increases for 15 to 16-year olds (Villatoro et al., 2004). The prevalence of heavy drinking among 12 to 17 year olds was most problematic for boys in urban areas (10.5%), however boys from rural areas had the greater risk for alcohol dependence (4.1%; ENA, 2002).

## METHOD

### *Participants*

The participants were 345 adolescents (59% female) attending high school within a school district in Mexico City, D.F, Mexico. The participants were adolescents between the ages of 14 to 17 years of age ( $M = 15.6$ ;  $SD = .795$ ). Approximately 77% reported living with both of their parents, 18% reported living only with their mothers, 1% reported living with their fathers, and approximately 4% reported living with someone other than a parent. Socioeconomic status was assessed through 9 questions derived from the ENA (2002), an epidemiological study conducted in Mexico approximately every three years by the Instituto Nacional de Psiquiatría Ramón de la Fuente y la Secretaría de Educación Pública in Mexico. The questions were scored in a five-point Likert scale ranging from never able to afford specific commodities (1) to always able to afford specific commodities (5). The average response to each item was  $M = 4.24$ , 95%  $CI = (4.17, 4.31)$ , suggesting that the majority of the responses were in the upper end of the scale.

Most participants reported drinking alcohol at least once in their lifetime (78%), and most of these had their first drink between the ages of 15 and 17 (66%). Three questions addressed frequency and quantity of alcohol use in a scale of 0 (I have never drank alcohol) to 5 (one time in the last week). Thus, the sum of the scores of the three items could range from 0 to 15 to provide a measure of *alcohol involvement*. The responses ranged from 0 to 15, with a mean of alcohol involvement that was low,  $M = 4.52$ ,  $SD = 3.48$ .

### *Measures*

*The Comprehensive Effects of Alcohol (CEOA; Fromme et al., 1993).* The CEOA is a 38-item questionnaire that assesses beliefs about the effects of alcohol. Respondents are asked both, the extent to which they *disagree* or *agree* with the outcome expectancies described in each item, as well as the extent to which each item describes a *good* or a *bad* drinking outcome. Both types of responses are measured using Likert-type scales that range from 1 to 4 for expectancy items and 1-5 for expectancy evaluations, with higher numbers indicating greater agreement with the expectancy and a more positive outcome evaluation, respectively. The 38 items of the CEOA are classified into seven subscales, with the number of items per scale ranging from 3 to 8. The CEOA subscales measure: 1) sociability enhancement, 2) tension reduction, 3) liquid courage, 4) sexual facilitation, 5) cognitive and behavioral impairment, 6) risk taking and aggressiveness augmentation, and 7) negative self-evaluation (Fromme, et al., 1993). The four first scales listed above assess positive outcome expectancies (20 items), whereas the three latter scales assess negative outcome expectancies (18 items).

In the present sample, the internal consistency estimates of the scales ranged from .61 to .82, with the lower value corresponding to the negative self-evaluation scale (4 items) and the higher value corresponding to cognitive and behavioral impairment subscale (9 items; see Table 1). These values are comparable to those reported by Fromme and D'Amico, (2000) where the internal consistency estimates of the original scales ranged from .59 (negative self-evaluation) to .89 (cognitive and behavioral impairment).

### *Procedure*

*Spanish adaptation of the CEOA.* English and Spanish versions CEOA were obtained from Dr. Fromme, the creator of the CEOA. Dr. Jazmin Mora, a drug addiction researcher for the Instituto Nacional de Psiquiatría Ramón de la Fuente examined the Spanish versions of the questionnaires and modified the wording of some phrases to make them grammatically congruent with the colloquial Spanish used in Mexico. The modified Spanish version was translated back into English and two independent English speakers examined and considered the back translations and the original English versions equivalence.

*Data collection.* Data collection procedures were implemented as requested by Mexican school-administrators. Parents could object to their children's participation by signing and returning a decline-to-participate form sent home by the test administrators. Graduate students and professional staff from the Instituto Nacional de Psiquiatría Ramón de la Fuente in Mexico City explained the nature and purpose of the study to the school students in the absence of the students' teachers. Children were told that their grades would not be affected by their decision to participate or not participate in the study, as well as that no other benefits or negative consequences were associated with their decision to participate or not participate. They were also told that teachers would never know who had assented or declined to participate because records would not be kept regarding who had agreed or declined to participate in the study. Those who decided not to participate were allowed to use the data-collection time for reading or studying. Adolescents allowed to participate in the study by their parents assented to



participate by signing an informed consent form prior to the test administration.

Informed assent forms were kept separated from the data and children were reminded not to write their names in any of the questionnaires.

## RESULTS

### *Confirmatory Factor Analysis*

In order to assess the factorability of the data, we used Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity (Kaiser, 1974; Bartlett, 1954). The KMO values range from 0 to 1, with values over .80 and .90 suggesting that the data is adequate for factor analysis (Kaiser, 1974). The Bartlett's test of sphericity, should be significant ( $p < .05$ ). The KMO measure of sampling adequacy and Bartlett's test of sphericity suggested that the data were adequate for factor analysis (KMO = .853;  $\chi^2[703, N=239] = 3563.613, p < .0001$ ).

To examine the factor structure of the Spanish version of the CEOA, the 38 expectancy items were submitted to a CFA to assess the goodness of fit of the hypothesized seven factor structure (Fromme et al., 1993). Given that the data set was incomplete, the CFA was conducted using two different methods. The first analysis used the Full Information Maximum Likelihood (FIML) method, which applies multiple imputation techniques for missing values and is considered the most appropriate method for data sets with missing data (Toit & Mels, 2005). A second analysis was conducted with the Maximum Likelihood (ML) method, using pairwise deletion (Newman, 2003).

In addition to reporting the customary  $\chi^2$  statistic (and associated p value), we wanted to evaluate model fit using the standardized root mean squared residual (SRMR; Bentler, 1990), the root mean squared error of approximation (RMSEA; Steiger & Lind, 1980; see Hu and Bentler [1999]), and the Comparative Fit Index (CFI; Bentler, 1990). Hu and Bentler (1999) recommended that a 2-index combination strategy was the best

approach to test model fit. These authors concluded that models with a SRMR close to .09 combined with either an RMSEA close to .06, or a CFI close to .95 resulted in the least sum of Type I and Type II error rates. Whereas, conducting the CFA using the FIML method provides only the  $\chi^2$  statistic (and associated p value) and the RMSEA fit index (Jöreskog & Sorbom, 2005), the analysis conducted with the ML method, using pairwise deletion, allowed us to obtain the RMSEA and CFI indices.

The CFA with the FIML method suggested an excellent fit. Although the chi-square statistic was significant,  $\chi^2(644, N = 345) = 1387, p < .0001$ , the RMSEA = .0584 value was very small and well within recommended values for good fit interpretations (Finch & West, 1997). The CFA using the ML method with a pairwise deletion of the data also suggested replication of the 7-factor model. The effective sample size varied from 309 to 343, with a harmonic mean of 332, which was used as the sample size for this CFA. Although the chi-square statistic was significant,  $\chi^2(644, N = 332) = 1403.518, p < .0001$ , the RMSEA = .0628 value was low and within the range of a good fit (Browne & Cudeck, 1993; Finch & West, 1997). Moreover, the SRMR = .084 and CFI = .93 values obtained to follow the recommendation to use a 2-index combination rule (Hu & Bentler, 1999), suggested the 7-factor model should not be rejected whether we used the SRMR and RMSEA combination, or the SRMR and CFI combination.

The inter-factor correlations of the PHI matrix ranged from .05 to .67 ( $M = .38$ ;  $SE = 0.05$ ), with only 5 of 23 correlations above .60. None of the confidence intervals around the inter factor correlations ( $\pm 2$  standard errors) contained 1.0, which suggests discriminant validity between the factors (Anderson & Gerbing, 1988).

Overall, the item factor loadings in the present study and the study by Fromme et al (1993) were very similar and, overall high (see Table 2). For instance, in the sociability facilitation scale, the factor loadings ranged from .46 to .70 and the item, “I would act sociable” had the highest loading in this factor. In the study by Fromme et al. the same factor’s loadings ranged from .40 to .76 and the item “I would act sociable” was also the item with the highest loading. This pattern of results was repeated in the tension reduction, liquid courage, and sexuality enhancement scales. For the negative factors, the factor loading ranges were similar also across the present and Fromme’s et al. (1993) study, although the only scale with the same highest loading item across both samples was the low self-evaluation expectancy scale (see Table 3 for the *item-total* correlations with each scale of the Spanish-CEOA).

#### *Construct Validity*

We conducted a correlation in addition to a multiple linear regression analysis to examine the association between the scales of the CEOA-Spanish and the total alcohol involvement score, or dependent variable in the regression model (see Table 4). The independent variables were entered in four blocks. In the first block we entered age and gender of the participants; the second block included the four scales that purportedly measure positive alcohol outcome expectancies; the third block added the three scales that were originally intended to measure negative outcome expectancies; and the fourth and last block consisted of the average evaluation score across all outcome expectancy items.

At the first level of analysis, we evaluated the multiple regressions between the dependent and the 10 independent variables (see Table 5). Alcohol involvement scores were significantly and positively associated with age, social facilitation expectancies, reduction of negative tension expectancies, sexual enhancement expectancies, and the evaluation (bad to good) of outcome expectancies. Moreover, alcohol involvement scores were significantly and negatively correlated with two of the three negative outcome expectancies, cognitive-behavioral impairment and negative self-evaluation expectancies. Overall, the pattern of correlations supported the construct validity of the data, with alcohol involvement scores being positively and negatively correlated with the positive and negative alcohol-effect expectancies, respectively. Also in support of the construct validity of the CEOA, alcohol involvement was positively associated with evaluation expectancy-scores (more positive evaluations higher alcohol involvement).

The multiple regression model was statistically significant and accounted for about 20% of the variance of alcohol involvement scores, Adjusted  $R^2 = .22$ ,  $F(10, 328) = 10.2$ ,  $p < .01$ . The analysis indicated that each block of variables contributed significantly to the model above and beyond the variance accounted for by the variables entered in the previous steps (see Table 5). At the last step, with all the variables entered simultaneously, the unique predictors of alcohol involvement were age, sociability (social facilitation), sexuality (enhancement), cognitive and behavioral impairment, and overall outcome-expectancy evaluation (see Table 6).

*CEOA-Spanish Alcohol Expectancies and Evaluation Ratings*

The mean item-score per each of the scales of the CEOA-Spanish are reported in table 7. Mexican adolescents agreed more with the negative outcome-expectancy than with the positive outcome-expectancy statements. Overall, Mexican adolescents evaluated all alcohol outcomes as more bad than good. That is all mean-item values for each of the CEOA-Spanish scales, except for the social facilitation scale, were below 2.5 in a Likert-type scale that ranged from 1 (bad) to 5 (good). However, in support of the developers of the CEOA, adolescents evaluated more negatively those expectancies corresponding to the three negative-outcome expectancy scales than the expectancies described by the four positive-outcome expectancy scales (see Table 7).

## DISCUSSION AND CONCLUSION

The present paper is the first study to replicate successfully the factor structure of an English version of an alcohol expectancy questionnaire using a Spanish-speaking sample of young adolescents. That is, the results suggested that the 7-factor structure of the original English version of the CEOA (Fromme et al., 1993) was replicated using a sample of Spanish-speaking adolescents from Mexico. The findings appear to be robust as the fit indices, regardless of the CFA method, suggested that the 7-factor model provided an excellent fit for the data. Moreover, the overall modest correlation values between the factors and the fact that none of the confidence intervals around the interfactor correlations included 1.0, gave further evidence of the discriminant validity of the model (Anderson & Gerbing, 1988).

Examination of the item-factor loadings further corroborated the factorial similarity between the CEOA-Spanish and the original CEOA (Fromme et al., 1993). Not only the ranges of item-loadings within the factors were very similar across the present and Fromme's et al. study, but the rank orderings of the loadings within each scale were also strikingly similar across studies. For example, the highest loading in five of the seven factors corresponded to the same item in both the present and Fromme's et al. investigation. Further evidence of the similarity between the Spanish and the previously examined English version of the CEOA can be defended by contrasting the internal consistency of the overall measure and of the individual factor-derived scales. As in the Fromme's et al. study, the internal consistency of the scores of most scales

ranged from appropriate-to-good, with the reliability of the negative self-evaluation scale yielding a questionable internal consistency value.

The present study also found convincing evidence in support of the construct validity of the CEOA-Spanish. First, the five of the seven correlations between the CEOA-Spanish scales and the measure of alcohol involvement were, although small, statistically significant. Also importantly, all the scales that purportedly measured positive-outcome expectancies were positively correlated with alcohol involvement, whereas the scales that were constructed to assess negative consequences of drinking were negatively correlated with alcohol involvement. Likewise, favorable outcome-expectancy evaluations were positively correlated to level of experience with alcohol.

The results from the multiple regression analysis demonstrated that the small correlations between level of alcohol involvement and the various alcohol expectancy scale-scores were not trivial. That is, the block of positive expectancy scales predicted reported alcohol use above and beyond age and gender, whereas the negative expectancy scales predicted reported alcohol use above and beyond the previous variables. Finally, expectancy evaluation scores predicted alcohol use above and beyond the two demographic variables and the 7 alcohol expectancy scales. Examination of the simple bivariate correlations between the alcohol use and the expectancy scales, together with the beta coefficients of the regression analysis, suggests that social facilitation expectancies and the positive evaluation of alcohol expectancies may contribute to alcohol use among adolescents in Mexico. Conversely, increased cognitive and



behavioral impairment expectancies may help curb alcohol consumption among Mexican adolescents.

However, our results support the notion that the CEOA is useful in the prediction of alcohol use. For instance, similar to the findings in the present study, Valdivia and Stewart (2005) reported evidence of incremental validity for the negative expectancies factors above and beyond the positive expectancy factors as well as additional variance explained when the expectancy evaluations were entered into the model. Both findings support the Fromme's et al (1993) and Fromme and D'Amico (2000) concept that negative expectancies aid in the prediction of quantity of drinking.

The conclusion that the CEOA seems to measure the same multifactorial construct in Spanish and English populations was reached by comparing the results from the present study with the results from Fromme et al. (1993), rather than by direct comparison between responses from an English Speaking and Spanish speaking participants. However, the pattern of results invariably support a multifactorial conceptualization of alcohol expectancies, the notion that alcohol expectancies may develop with little if any alcohol drinking experiences, and the notion that alcohol expectancies predict alcohol use. Thus, the results provide *etic* support for the alcohol expectancy construct as described by Matsumoto, 1996.

At the practical level, the present study supports the appropriateness of the CEOA for use with Mexican adolescents. Previous attempts to replicate the factor structure of expectancy measures among non-English speakers have not demonstrated support for the original versions of the measures (i.e. AEQ and AEQ-A; Mora-Rios &

Natera (2000); Ronnback, et al., 1999). However, the results from the present study support the notion that the CEOA-Spanish can be useful in the assessment of alcohol expectancies among Spanish speaking adolescents. The results from the present study can facilitate and promote comparative studies across Spanish and English-speaking countries, but in particular across the United States and Mexico. Additionally, the CEOA-Spanish may be used as a clinical tool for clinicians working with Spanish speaking adolescents in prevention and treatment centers in both the United States and abroad.

In the future, the results of this investigation can be used to design comparative studies regarding alcohol expectancies and assessment methods between Mexican-American, and Mexican adolescents residing in the United States. Future studies may assess and monitor significant changes in alcohol expectancies and drinking patterns of adolescents who migrate or whose parents migrate to the United States. Cross-cultural studies can influence the development of culture sensitive measures, treatment models and prevention programs that take into account the specific characteristics of ethnic or cultural populations. Through the psychometric assessment of the CEOA in Spanish among Mexican adolescents, the present study contributes to the culture-specific research literature that has focused on the needs and characteristics of Hispanics in the United States.

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## APPENDIX

Table 1  
*Internal consistency of the expectancy CEOA-Spanish scales*

Scales (number of items)	Mean	SD	Cronbach's Alpha
Sociability (8)	2.442	6.099	.791
Tension Reduction (3)	1.903	2.617	.698
Liquid Courage (5)	2.206	4.361	.790
Sexuality (4)	1.570	2.678	.671
Cognitive and Behavioral Impairment (9)	2.942	6.738	.821
Risk and Aggression (5)	2.284	4.195	.727
Self Perception (4)	2.425	3.374	.609

Note: The CEOA-Spanish expectancy scales were scored on a Likert scale (1 = disagree to 4 = agree).



Table 2  
*Scales (Cronbach's Alpha) and expectancy standardized factor loadings from confirmatory factor analysis of the CEOA-Spanish*

Scales (alphas)	Factor Loadings
<b>Sociability (.791)</b>	
38. Sería más sociable	0.724
14. Sería amistoso(a)	0.669
31. Me sería más fácil hablarle a la gente	0.622
5. Sería más fácil expresar mis sentimientos	0.595
1. Sería sociable	0.564
24. Me sentiría energético(a)	0.478
34. Sería parlanchín	0.469
3. Sería cómico(a)/chistoso(a)	0.467
<b>Tension Reduction (.698)</b>	
29. Me sentiría calmado(a)	0.707
27. Me relajaría físicamente	0.684
18. Me sentiría tranquilo(a)	0.595
<b>Liquid Courage (.790)</b>	
22. Sería valiente/osado(a)	0.799
19. Sería valiente y atrevido(a)	0.781
20. No tendría miedo	0.698
37. Me sentiría poderoso	0.556
21. Me sentiría creativo(a)	0.485
<b>Sexual Enhancement (.671)</b>	
32. Sería un mejor amante	0.650
12. Disfrutaría más el sexo	0.632

Table 2  
Continued

Scales (alphas)	Factor Loadings
16. Mis fantasías se harían realidad	0.538
7. Me sentiría sexy	0.554
Cognitive and Behavioral Impairment (.821)	
8. Tendría dificultades para pensar	0.743
11. Me sentiría confundido(a)	0.707
9. Descuidaría mis obligaciones	0.681
15. Sería torpe	0.599
26. Mis reacciones serían lentas	0.564
23. Me sentiría tembloroso(a) al siguiente día	0.527
6. Escribiría peor	0.506
13. Me sentiría mareado(a)	0.466
2. Mis sentidos serían embotados	0.424
Risk-Taking and Aggressiveness Augmentation (.727)	
25. Actuaría agresivo	0.826
35. Actuaría agresivamente	0.754
36. Tomaría riesgos	0.635
10. Sería dominante	0.447
17. Sería bullicioso/relajiento(a)	0.305
Negative Self-Evaluation (.609)	
30. Me sentiría malhumorado(a)	0.625
28. Me sentiría culpable	0.583
4. Mis problemas parecerían empeorar	0.508
33. Me criticaría más a mi mismo(a)	0.440

Table 3  
*Item-total correlations with each scale of the Spanish-CEOA*

Scales	Items	Corrected Item-Total Correlations
Sociability	38. Sería más sociable	.639
	14. Sería amistoso(a)	.594
	31. Me sería más fácil hablarle a la gente	.522
	5. Sería más fácil expresar mis sentimientos	.513
	1. Sería sociable	.485
	24. Me sentiría energético(a)	.397
	34. Sería parlanchín	.431
	3. Sería cómico(a)/chistoso(a)	.401
Tension Reduction	29. Me sentiría calmado(a)	.546
	27. Me relajaría físicamente	.513
	18. Me sentiría tranquilo(a)	.485
Liquid Courage	22. Sería valiente/osado(a)	.707
	19. Sería valiente y atrevido(a)	.679
	20. No tendría miedo	.624
	37. Me sentiría poderoso	.449
	21. Me sentiría creativo(a)	.398
Sexuality	32. Sería un mejor amante	.492
	12. Disfrutaría más el sexo	.507
	16. Mis fantasías se harían realidad	.418
	7. Me sentiría sexy	.402

Table 3  
*Continued*

Scales	Items	Corrected Item-Total Correlations
Cognitive-Behavioral Impairment	8. Tendría dificultades para pensar	.647
	11. Me sentiría confundido(a)	.616
	9. Descuidaría mis obligaciones	.594
	15. Sería torpe	.573
	26. Mis reacciones serían lentas	.505
	23. Me sentiría tembloroso(a) al siguiente día	.505
	6. Escribiría peor	.474
	13. Me sentiría mareado(a)	.431
Risk and Aggression	2. Mis sentidos serían embotados	.369
	25. Actuaría agresivo	.603
	35. Actuaría agresivamente	.638
	36. Tomaría riesgos	.532
	17. Sería bullicioso/relajiento(a)	.277
Self-Perception	10. Sería dominante	.399
	30. Me sentiría malhumorado(a)	.450
	28. Me sentiría culpable	.425
	4. Mis problemas parecerían empeorar	.342
	33. Me criticaría más a mi mismo(a)	.342

Table 4  
*Correlations between alcohol involvement and the expectancy scales*

Scales	1	2	3	4	5	6	7	8
1. AI	-	.220*	.158*	.030	.161*	-.229*	-.085	-.182*
2. SOC		-	.464*	.558*	.473*	.161*	.306*	.073
3. TR			-	.370*	.349*	.049	.108	.034
4. LC				-	.519*	.255*	.560*	.306*
5. SX					-	.146*	.356*	.155*
6. CI						-	.477*	.467*
7. RA							-	.430*
8. SP								-

Note: AI = Alcohol Involvement, SOC = Sociability, TR = Tension Reduction, LC = Liquid Courage, SX = Sexuality, CI = Cognitive Impairment, RA = Risk Aggression, SP = Self-Perception. \* significant at  $p < .01$

Table 5  
*Summary of the full Multiple Regression model between the expectancy CEOA-Spanish scales and alcohol involvement(dependent variable)*

Variables	<i>R</i>	Adjusted <i>R</i> <sup>2</sup>	<i>SE</i>	Change in <i>R</i> <sup>2</sup>	Change in <i>F</i>	<i>df</i>	<i>p</i> of <i>F</i> change
1	.32	.10	1.1	.10	18.7	326	< .0001
2	.41	.15	1.1	.06	6.3	322	< .0001
3	.47	.20	1.0	.05	7.4	319	< .0001
4	.49	.22	1.0	.02	8.5	318	< .004

Note: 1 = gender, and age; 2 = gender, age, sociability, tension reduction, sexuality, and liquid courage; 3 = gender, and age, sociability, tension reduction, sexuality, liquid courage, cognitive behavioral impairment, self-perception, and risk and aggression; 4 = gender, and age, sociability, tension reduction, sexuality, liquid courage, cognitive and behavioral impairment, self-perception, risk and aggression, and total expectancy evaluation scores.

Table 6  
*Summary of multiple regression estimates for the prediction of and alcohol involvement from age, gender, CEOA-Spanish scales, and overall evaluation of alcohol expectancies*

Scales	B	SE B	$\beta$
Age	.418	.073	.288**
Gender	-.083	.120	-.035
Sociability	.244	.102	.162*
Tension Reduction	-.051	.078	-.039
Liquid Courage	-.155	.096	-.116
Sexuality	.229	.107	.132*
Cognitive and Behavioral Impairment	-.257	.094	-.163**
Risk and Aggression	.033	.093	.024
Self Perception	-.117	.081	-.085
Evaluations of Expectancies	.301	.103	.176**

Note: \*\* significant at  $p < .01$ ; \* significant at  $p < .05$

Table 7  
*Means and standard deviations of participants' responses to the CEOA-Spanish*

Scales	Level of Agreement	Expectancy Evaluation
	<i>Mean (SD)</i>	<i>Mean (SD)</i>
Positive Expectancies	2.02 (.61)	2.19 (.83)
Sociability	2.43 (.76)	2.52 (.98)
Tension Reduction	1.91 (.88)	2.22 (1.1)
Liquid Courage	2.20 (.87)	2.08 (.96)
Sexuality	1.54 (.67)	1.91 (.87)
Negative Expectancies	2.55 (.65)	1.66 (.62)
Cognitive and Behavioral Impairment	2.93 (.75)	1.52 (.57)
Risk and Aggression	2.29 (.83)	1.71 (.77)
Self Perception	2.42 (.86)	1.75 (.79)



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