ORIGINAL ARTICLE

Assessing Alcohol Expectations in University Students: the APNE Scale

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Abstract

The increasing prevalence of alcohol consumption at early ages has led to major efforts to identify alcohol drinking habits within this highly vulnerable group, and individuals with hazardous patterns of alcohol consumption. The aim of this study was to examine the psychometric properties of the Alcohol Positive and Negative Expectations Scale (APNE; a new screening tool developed to identify expectations toward alcohol), and to examine the patterns of alcohol drinking in young adults. The sample included $n = 1309$ participants (college students) with age range 20 to 25 years. Confirmatory factor analysis (CFA) performed through Generalized Structural Equation Models (GSEM) verified the structure of the APNE, correlational models evaluated convergent-discriminant validity, and logistic regression assessed the discriminative ability to identify harmful drinking. The bifactor structure for the APNE was confirmed (positive and negative expectations toward alcohol drinking), with adequate goodness-of-fit (RMSEA = 0.052, CFI = 0.936, TLI = 0.914, and SRMR = 0.075). Multi-group modeling showed invariance by sex ($p = .543$) and age ($p = .395$) for the measurement coefficients. High correlations with external measures of alcohol use/abuse and discriminant capacity to identify harmful drinking were obtained. Compared to men, women reported higher mean scores in the negative expectations factor ($p = .003$). Polynomial linear trends showed that the likelihood of positive expectations toward alcohol decreased with age, while negative expectations increased. The APNE is a brief, reliable, valid, and accurate tool to assess positive and negative expectations toward alcohol consumption in college students. Tools like the APNE can support policymakers to make informed decisions about the implementation of prevention and treatment programs targeted at this segment of the population, the development of personalized alcohol programs, and the reappraisal of public campaigns.

Keywords Alcohol consumption · Expectations · Factor analysis · Young adults

One of the public health issues that have generated the most social alarm in recent years is excessive alcohol consumption among young people. This age group's inherent vulnerability, limited experience, and incipient development of certain social skills may

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increase its probability of engaging in risky behaviors such as alcohol abuse (Mangrulkar et al., 2001). On entering university, this segment of the population may increase its consumption due to new socialization patterns and changes in responsibilities, habits, and routines (Hallet et al., 2014). Alcohol consumption in such environments can also increase due to engaging in social settings with legal access to alcohol and a shift from parental monitoring to peer influences (Borsari & Carey, 2001; McCann et al., 2019). Precisely in Spain, alcohol is the most consumed psychoactive substance, peaking in the 15 to 34 age group (Observatorio Español de las Drogas y las Adicciones, 2019).

This excessive alcohol intake may be mediated, among others, by many individual and societal factors such as motivation, personality, age, sex, affective states, beliefs, decisional balance, and parenting styles, which may affect consumption patterns and the magnitude of alcohol-related problems (Londoño et al., 2005; Smit et al., 2020; World Health Organization, 2018). We should bear in mind that excessive alcohol consumption has physical and mental effects not only in the short term but in the long term too: liver problems, pancreatitis, acute gastritis, and certain organic-brain syndromes are among the most cited.

Focusing on motivation, cognitive models addressed at explaining this excessive consumption among young people have gained recognition. For example, the Theory of Expectations (Brown et al., 1980) is based on beliefs and/or expectations that people have regarding the effects that alcohol could have on their behaviors and emotions (Witkiewitz & Marlatt, 2004). These expectations are generated by both vicarious learning and direct previous experience, creating memory networks with information about the effects of alcohol intake that in turn influence not only the onset but also the persistence of a given drinking pattern (Goldman et al., 1991; Reich et al., 2012).

Published literature shows that these beliefs can predict heavy consumption (Brown, 1985; Jackson & Matthews, 1988). Consequently, if a youngster has preexisting positive expectations as a consequence of past experiences of excessive alcohol consumption—such as greater enjoyment in social situations or better sexual performance or even reduction of tension—his/her consumption pattern will not only be maintained but also be reproduced and eventually increased (Brown et al., 2008). Unfortunately, several studies have shown that many of these positive expectations are untrue and have been associated with lower risk perception and consequently increased alcohol intake (Goldberg et al., 2002).

Nevertheless, there is no doubt that it is not only positive expectations, but negative ones too, that contribute to the decision to intake excessive amounts of alcohol (Slavinskienė & Žardeckaitė-Matulaitienė, 2014). Much of the literature on the assessment of alcohol-related expectations has focused mostly on positive expectations, leaving aside the negative ones. For example, one of the most widely used tools to measure expectations has been the Alcohol Expectancy Questionnaire (AEQ) (Brown et al., 1987), which exclusively assessed positive expectations and was indistinctively addressed to adolescents and adults. Over the years, the AEQ has suffered several changes and a systematic study by Conde and colleagues found at least 16 different versions of this questionnaire highlighting fluctuations regarding the number of factors assessed, the number of items included, the response format, the targeted population, and the inclusion of positive or negative expectations, among others (Conde et al., 2014).

In front of the above-mentioned inconsistencies related to the AEQ and the scarcity of updated scales examining positive and negative expectations toward alcohol consumption, we decided to develop a new tool from the very beginning, by means of the theoretical-rationale procedure, to measure positive and negative expectations at the same time, and specifically addressed at college students which was our target. We did an extensive search of the literature on the physical effects and behavioral and mental consequences of

excessive alcohol intake and developed items which content was updated to the present-day knowledge about the negative consequences of excessive alcohol consumption. We also browsed the literature on positive expectations regarding alcohol intake in young adults. With all this information, we developed a new tool which we named the Alcohol Positive and Negative Expectations Scale (APNE). This is a self-report questionnaire aimed at assessing positive and negative expectations toward alcohol consumption among university students. The positive expectations scale includes items evaluating optimistic feelings and cognitions regarding consumption, and the negative expectations scale evaluates expectations embracing a wide range of topics from negative feelings to physical and cognitive problems, legal or illegal risky behaviors, and verbal and behavioral aggression. Hence, this new and comprehensive scale contains items that cover a broad range of statements about the positive and negative consequences of alcohol consumption and it is specifically addressed to young adults. With this new tool, we hope to contribute to the understanding of alcohol consumption among an age group in which a large number of public health problems are generated.

Objectives

Despite the increase in alcohol consumption among college students, relatively few instruments have been developed to assess positive and negative expectations at the same time in this specific age group. Accordingly, the aims of this study are to assess (a) the psychometric properties of the APNE to be used as an screening tool among young age population-based samples; (b) the invariance of the factor structure by sex and age; (c) the convergent validity of the APNE by using as external criteria the AEQ-AB (Webb et al., 1992), the AUDIT (Saunders et al., 1993), and the Sensation Seeking Scale (Zuckerman et al., 1978); and (d) to describe the profile of expectations with regard to alcohol consumption in this period of early adulthood and its potential association with the individuals' sex and age. We included the variables gender and age in the description of the profile because published literature shows that women are more concerned about the negative consequences of alcohol intake (Rhodes & Pivik, 2011) and young people became aware of them as they mature (Steinberg, 2007). Furthermore, we tested the discriminative capacity of the APNE for identifying a heightened risk of alcohol intake.

We hypothesize that the APNE will be adequately structured in two factors measuring positive and negative expectations toward alcohol consumption, and will serve as a reliable and valid tool. Furthermore, based on the available evidence, we hypothesize that positive expectations, as measured with the APNE, will be associated with higher consumption in both genders and that these expectations will decrease with age.

Materials and Methods

Participants

We obtained our data with the support of the Universitat Autònoma de Barcelona (Spain), which granted us the necessary permissions to send the battery of questionnaires via its institutional e-mail to all students enrolled at this university. Additionally, other

social networks were used to reach students from other Spanish universities. The inclusion criteria were as follows: (1) age between 18 and 25 years and (2) be a university student.

A total of $n = 1513$ participants answered the online battery during the months of February and March 2019. In order to ensure a certain extent of quality of the obtained data, we included control items in the test battery (i.e., at different points, we asked for the date of birth and age in years, and contrasted both data), and also repeated items. Accordingly, some participants were not selected for the study because of inconsistencies in control items ($n = 187$), or problems related to the access to the assessment tools ($n = 17$).

The final total sample included $n = 1309$ participants. Considering the usual sample size rules of thumb based on the ratio of the number of cases and the number of variables involved in the factor analysis (between 10 and 15 subjects per variable) (Pett et al., 2003), the number of participants is large, with a ration equal to 27 participants per item.

After browsing the published literature on alcohol expectations, it seems that there is a shortage of comprehensive instruments that measure positive and negative expectations at the same time and that are specifically addressed at university students. From this starting point, we reviewed the present-day knowledge on the physical and mental effects of alcohol consumption and generated our own bank of items.

As a second step and with the aim of assessing content validity, we performed a bibliographic search to identify five qualified Spanish experts in the area of personality and individual differences, outcome expectations, and methodology that acted as expert judges. We used the system of independent judges (Boateng et al., 2018) to assess the relevance, appropriateness, language, and conceptual orientation of the new generated items grouped into two scales. We informed the judges about the purpose of the study and the theoretical background behind the items we had developed. They received a table designed for this purpose and were asked to evaluate the items according to their suitability for one of the two scales as previously described. Once we had received their comments, we performed a quantitative assessment of each item (attributing a value from 1 = "Excellent" to 4 = "Poor"), and identified those that did not achieve the cut-off point set at 3 = "Regular." With this feedback from the judges, we either improved or deleted the item.

Finally, at the end of this process, we obtained a new tool containing 47 items, which we named the Alcohol Positive and Negative Expectations Scale (APNE).

All participants received, via e-mail, a link which contained a test battery including sociodemographic data (sex, age, and academic level) and the psychological instruments (APNE, AEQ-AB, AUDIT, and Sensation Seeking Scale). All the measures of the study were collected in an online format, defining a global questionnaire using the Google Forms system. The test battery was protected against out of range data for each item and missing values.

Materials

Alcohol Positive and Negative Expectations Scale (APNE). This is a self-report questionnaire developed for this study to assess positive expectations (PEx) and negative expectations (NEx) toward alcohol consumption among university students. As previously described, we generated this new questionnaire by means of a theoretical-rationale

procedure based on the following steps: (a) identification of behaviors indicative of positive and negative expectations toward drinking alcohol; (b) deciding the optimal number of items to assess each of the different effects of alcohol consumption, as well as the format; and (c) generating the items, as well as their distribution within each of the two expected factors/dimensions. The resulting scale contained 47 items that cover a broad range of statements about the positive (20 items) and negative (27 items) consequences of alcohol consumption. The PEx scale includes questions assessing feelings and cognitions with regard to consumption and the NEx scale assesses expectations embracing physical and cognitive problems, legal or illegal risky behaviors, verbal and behavioral aggression, and negative feelings. The response format is a 5-point Likert scale (from 0 = "I disagree" to 4 = "Totally agree"). The total score for the PEx scale can range from 0 to 80, while the NEx scale can range from 0 to 108. In our study, the internal consistency of the PEx and NEx scales was very good ($\alpha = 0.89$ and $\alpha = 0.90$ respectively).

Alcohol Expectancy Questionnaire-Adolescent, Brief (AEQ-AB) (Webb et al., 1992). The Spanish version of this scale (Gázquez et al., 2015) reports beliefs about the positive and negative effects of alcohol consumption on the social and emotional behavior of adolescents. It consists of seven items grouped into two scales: AEQ-ABp (4 items, measuring positive expectations) and the AEQ-ABn (3 items, measuring negative expectations). The response format is a 5-point Likert scale (from 1 = "Totally disagree" to 5 = "Totally agree"). The English version reports a Cronbach's alpha of $\alpha = 0.49$ and $\alpha = 0.51$ respectively for the two scales (Stein et al., 2007). Unfortunately, the Spanish version does not report these statistics. In our study, the internal consistency was similar to the original English version: $\alpha = 0.49$ for the AEQ-ABp and $\alpha = 0.51$ for the AEQ-ABn. These values, however, must be considered with caution due the small number of items in each scale. The Omega-consistency index, a more appropriate estimation for scales with only a few items (Dunn et al., 2014), was in the adequate range ($\omega = 0.71$ for AEQ-ABp and $\omega = 0.72$ for AEQ-ABn).

Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993). As an external criterion of alcohol intake, we used the Spanish adaptation of this self-report (Contel Guillamón et al., 1999). It consists of 10 statements that were originally developed to assess the frequency and intensity of consumption of alcoholic beverages, through a 4-point Likert scale (from 0 = "never" to 4 = "4 or more times a week"). The total score ranges from 0 to 40. The Spanish version showed good psychometric properties in terms of its factorial and content validity, and reliability with a Cronbach's alpha of $\alpha = 0.88$. In our study, the internal consistency of the AUDIT was $\alpha = 0.79$, which is an expected value in non-alcoholic populations (Contel Guillamón et al., 1999).

Sensation Seeking Scale (SSS) (Zuckerman et al., 1978). We used the Spanish version of the scale (Pérez & Torrubia, 1986) to assess the sensation-seeking trait. It consists of 40 self-report items, structured as four subscales and a total scale score. All answers are scored as a dichotomous choice between "Yes" and "No," where each affirmative answer scores one point. The maximum possible score is 40 points. The Spanish version of this instrument shows good psychometric properties, with a Cronbach's alpha of $\alpha = 0.82$ and $\alpha = 0.77$ for the male and female sample respectively. In our study, the internal consistency was $\alpha = 0.79$ for the total scale, similar to previous studies with college students (Legrand et al., 2007).

Ethics Statement

This study was conducted pursuant to Article 13 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data. All procedures were performed in accordance with the Declaration of Helsinki of 1975, as revised in 2013 (World Medical Association, 2013). All participants were informed about the research and provided informed consent for being included in the study. Participation was voluntary and it was not remunerated.

Statistical Analysis

The statistical analyses were carried out with Stata17 for Windows (Stata-Corp, 2021). Based on the theoretical method used to develop the APNE, this study used confirmatory factor analysis (CFA) performed through Generalized Structural Equation Models (GSEM). An initial bifactor model was defined, as well as two additional models assessing the invariance of the measurement coefficients by sex and age (multi-group GSEM procedure). The GSEM method is an extension of the classical structural equation models, which allows generalized linear response functions for both continuous and discrete variables (that can be grouped together in the same latent construct). An initial bifactor GSEM was defined (for the dimensions positive and negative expectations), and the next two multi-group models were also tested, valuing the invariance of the measurement coefficients by the participants' sex and age. Adequate goodness-of-fit was considered for root mean squared error of approximation (RMSEA < 0.08), comparative fit index (CFI > 0.90), Tucker-Lewis index (TLI > 0.90), and standardized root mean squared residuals (SRMR < 0.10) (Barrett, 2007). Significant and high factor loadings (standardized coefficients above 0.30 with $p < 0.05$) for each item with its latent factor were also required to consider the adjustment to be good. Internal consistency of the factors was valued with Cronbach's alpha coefficient, considering low-poor for $\alpha < 0.70$, moderate-medium for $\alpha > 0.70$, good for $\alpha > 0.80$, and excellent for $\alpha > 0.90$.

The convergent-discriminant validity of the APNE scale scores was assessed through Pearson's correlation (R) with external measures related to alcohol consumption: AEQ, AUDIT, and SSS scores. Since the results obtained in the correlation model significance tests are strongly related with the sample size (poor-small R coefficients tend to achieve significant results in large samples, while large-high R coefficients tend to non-significant results in small samples), the correlation estimates were interpreted according to their effect size (Rosnow & Rosenthal, 1996): null for $|R| < 0.10$, low-poor for $|R| > 0.10$, moderate-medium for $|R| > 0.24$, and large-high for $|R| > 0.37$ (these thresholds correspond to Cohen's d of 0.20, 0.50, and 0.80 respectively).

The comparison of the APNE scores between the groups defined by the participants' sex and age was based on ANOVA for independent samples. These significance tests were complemented with the effect size of the mean differences, estimated using the standardized Cohen's d coefficient (considering null effect for $|d| < 0.20$, low-poor for $|d| > 0.20$, mild-medium for $|d| > 0.50$, and large-high for $|d| > 0.80$) (Cohen, 1988; Kelley & Preacher, 2012).

The discriminative capacity of the APNE to identify a high risk of alcohol use/abuse according to the AUDIT was assessed through binary logistic regression (for the criterion

AUDIT positive versus negative screening) and negative binomial regression (for the criterion AUDIT total score). The negative binomial regression is a generalized linear model that is useful for the analysis of count data (discrete events), particularly for handling overdispersion. These models were adjusted by the covariates of the participants' sex and age.

In this study, the increase in the type I error due to multiple statistical comparisons was controlled with the Finner correction method, a family-wise procedure that has been shown to have greater capacity than the classical Bonferroni method (Finner, 1993; Finner & Roters, 2001).

Results

Descriptive of the Sample

This study analyzed data recruited among $n = 909$ women (69.4%) and 400 men (30.6%). Age was between 20 and 25 years ($M = 22$, $SD = 1.5$). The academic level was distributed as follows: $n = 1086$ (83%) were in bachelor's or graduate degrees, and $n = 223$ (17%) were in postgraduate degrees.

Psychometric Properties of the APNE

Table 1 displays the coefficients obtained in the GSEM testing the bifactor model among the total sample. This initial model achieved adequate goodness-of-fit in all the fitting indexes (RMSEA = 0.052 [95% CI: 0.051 to 0.054], CFI = 0.936, TLI = 0.914, and SRMR = 0.075). The multi-group GSEM valuing the invariance by sex also achieved adequate fitting (RMSEA = 0.053 [95% CI: 0.052 to 0.055], CFI = 0.921, TLI = 0.906, and SRMR = 0.080), and no significant differences attributed to the participants' sex were found in the invariance test for the measurement coefficients ($p = 0.543$ in the join test). In the same line, the GSEM valuing the invariance by age also reported adequate fitting (RMSEA = 0.054 [95% CI: 0.052 to 0.055], CFI = 0.929, TLI = 0.907, and SRMR = 0.086), and no significant differences were attributed to the age group in the invariance tests for the measurement coefficients ($p = 0.395$ in the join test). Tables S1 and S2 (supplementary material) contain the complete results for the GSEM in the study, including the test for the invariance of all the measurement coefficients. Table S3 (supplementary material) contains the frequency distribution of the APNE items and the item-total indexes.

These results provided empirical evidence for the bifactor structure of the APNE and invariance by sex and age: (a) adequate goodness-of-fit was obtained for the different GSEMs; (b) all the items reported significant high factor loadings for their specific factor (standardized coefficients were all above 0.30); and (c) internal consistency was in the very good to excellent range ($\alpha = 0.89$ and $\alpha = 0.90$, for the APNE positive and negative factor respectively). In addition, and as expected, correlation between the APNE latent factors was in the poor low range ($R = 0.161$).

Expectations Toward Alcohol by Sex and Age

Table 2 shows the frequency distribution of the APNE scores for the total sample and stratified by the groups defined by sex and age. Women reported a statistically higher mean in the APNE negative scale ($p = 0.003$; effect size in the low range $d = 0.18$) compared to

Table 1 Standardized coefficients in the CFA for the bifactor model among the total sample

Factor positive		Factor negative		Model	Fit statistics					
Item	Coeff	Item	Coeff	GSEM	RMSEA	95%CI-RMSEA		CFI	TLI	SRMR
2	0.514	1	0.490	1 Bifactor	0.052	0.051	0.054	0.936	0.914	0.075
4	0.474	3	0.456	2 Sex-invar	0.053	0.052	0.055	0.921	0.906	0.080
6	0.349	5	0.341	3 Age-invar	0.054	0.052	0.055	0.929	0.907	0.086
8	0.494	7	0.544							
10	0.590	9	0.515							
14	0.569	11	0.497							
16	0.534	12	0.585							
18	0.434	13	0.538							
20	0.398	15	0.520							
21	0.578	17	0.515							
24	0.588	19	0.532							
26	0.412	22	0.500							
28	0.366	23	0.405							
30	0.624	25	0.555							
31	0.610	27	0.502							
34	0.296	29	0.502							
36	0.448	32	0.492							
38	0.636	33	0.493							
40	0.524	35	0.496							
42	0.598	37	0.527							
45	0.602	39	0.561							
		41	0.647							
		43	0.245							
		44	0.569							
		46	0.482							
		47	0.450							

RMSEA, root mean squared error of approximation; 95%CI, 95% confidence interval

CFI, comparative fit index; TLI, Tucker-Lewis index

SRMR, standardized root mean squared residual

GSEM: 1, initial bifactor model; 2, multi-group valuing invariance by sex; 3, multi-group valuing invariance by age

Table 2 Distribution of the APNE scale scores

	Total (n=1,309)		Women (n=909)		Men (n=400)		Age 20–21 (n=577)		Age 22–23 (n=494)		Age 24–25 (n=238)	
	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx
Minimum	4	1	4	1	4	5	4	1	4	5	6	20
Maximum	81	100	81	100	80	100	76	98	81	100	72	100
Mean	45.3	69.3	45.6	70.1	44.6	67.6	45.9	68.2	45.6	70.2	43.3	70.3
SD	12.6	14.5	12.9	14.4	12.1	14.6	12.5	13.7	12.8	15.2	12.5	14.5

PEx, positive expectations scale; NEx, negative expectations scale; SD, standard deviation

men. Both APNE positive and negative scales were significantly related to the participants' age ($p = 0.027$ and $p = 0.041$, respectively): while positive expectations toward alcohol consumption tended to decrease with age, negative expectations tended to rise.

Association of the APNE with External Measures Related with Alcohol Consumption

Table 3 shows the correlation matrix between the APNE scale scores and the AEQ-AB, AUDIT, and SSS measures. Within the total sample ($n = 1309$), the APNE positive factor was positively correlated with the AEQ-AB positive ($R = 0.588$) and negative ($R = 0.343$) scales and the AUDIT ($R = 0.248$) and the SSS total score ($R = 0.256$); and the APNE negative factor positively correlated with the AEQ-AB negative ($R = 0.337$). The correlation pattern was fairly similar when stratifying the groups by sex and age.

Discriminative Capacity of the APNE in Identifying the Risk of Alcohol Abuse

Table 4 shows the results of the binary logistic regression and the negative binomial regression measuring the discriminative capacity of the APNE scales on the AUDIT measures. The first model obtained for the AUDIT screening score (positive versus negative) suggested that after adjusting for the covariates of the participants' sex and age, the likelihood of a positive screening score for alcohol use/abuse was related to higher scores in the APNE positive factor ($OR = 1.02$; $p = 0.001$). The second model obtained for the AUDIT total score showed that more severe alcohol use was related with both a higher score in the APNE positive factor ($B = 0.02$, $p < 0.001$) and a lower score in the APNE negative factor ($B = -0.01$, $p < 0.001$).

Discussion

One of the main objectives of this study was to examine the psychometric properties of a newly developed tool, named APNE, to assess both positive and negative expectations toward alcohol consumption in college students. All the aforementioned indicators yield empirical evidence of the psychometric goodness of the APNE scale: confirmatory factor analysis implemented in GSEM verified the two-factor structure and the invariance by sex

Table 3 Association of the APNE scale with the external measures

APNE	Total (n=1,309)		Women (n=909		Men (n=400)		Age 20–21 (n=577)		Age 22–23 (n=494)		Age 24–25 (n=238)	
	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx	PEx	NEx
AEQ-AB (+)	**.588**	−.169	**.596**	−.147	**.569**	−.229	**.583**	−.190	**.569**	−.111	**.629**	−.223
AEQ-AB (−)	**.343**	**.337**	**.361**	**.332**	**.298**	**.330**	**.346**	**.289**	**.321**	**.409**	**.363**	**.319**
AUDIT	**.248**	−.159	.223	−.151	**.319**	−.163	.205	−.165	**.267**	−.162	**.307**	−.146
SSS	**.256**	−.095	**.246**	−.059	**.307**	−.086	**.241**	−.091	**.249**	−.052	**.274**	−.078

PEx, positive expectations scale; *NEx*, negative expectations scale; *AEQ-AB*, Alcohol Expectancy Questionnaire-Adolescent, Brief; *SSS*, Sensation Seeking Scale

In bold, correlations with an effect size into the range mild-moderate (|R|>0.24) to high-large (|R|>0.37)

Table 4 Discriminative capacity of the APNE scale to identify high risk of alcohol use/abuse

¹Criterion: AUDIT (screening score)

		B	SE	Wald	p	OR	95%CI (OR)	
Covariates	Sex (0=women; 1=men)	0.655	0.148	19.50	**<.001**	1.926	1.440	2.576
	Age (years old)	0.018	0.048	0.14	.712	1.018	0.927	1.117
APNE	Factor positive	0.020	0.006	11.14	**.001**	1.020	1.008	1.033
	Factor negative	0.003	0.005	0.45	.503	1.003	0.993	1.014

²Criterion: AUDIT(total score)

		B	SE	Wald	p	95%CI (B)	
Covariates	Sex (0=women; 1=men)	0.090	0.066	1.84	.175	−0.040	0.220
	Age (years old)	0.011	0.021	0.27	.606	−0.030	0.052
APNE	Factor positive	0.019	0.003	57.25	**<.001**	0.014	0.024
	Factor negative	−0.011	0.002	27.65	**<.001**	−0.016	−0.007

[1]Binary logistic regression,
[2]negative binomial regression
SE, standard error; *OR*, odds ratio
In bold: significant parameters

and age; Cronbach's alpha internal consistency demonstrated satisfactory reliability (alphas were in the very good to excellent range for the APNE positive ($\alpha = 0.89$) and negative ($\alpha = 0.90$) factors); convergent validity with external measures as the AUDIT ($R = 0.248$) and SSS total scale score ($R = 0.256$) were achieved (Pearson's $R = 0.30$ is considered evidence of relevant association (Cicchetti, 1994)).

The results obtained with the APNE suggest that this tool is adequately structured into two factors measuring positive and negative expectations toward alcohol consumption and that the internal consistency was in the very good to excellent range. Regarding the association of the APNE with other tools used as external indices, the results were in the expected direction, in that the positive factor of the APNE was positively associated with the AUDIT scores, indicating that the higher the positive expectations are, the higher the frequency and intensity of consumption of alcoholic beverages. These results are in line with published literature on this topic (Goldberg et al., 2002; Reyna & Farley, 2006).

Regarding the association of both factors of the APNE with both scales of the AEQ-AB, positive and negative factors of both questionnaires were associated in the expected direction. Nevertheless, the AEQ-AB negative scale was also positively associated with the APNE positive factor. This result does not come as a surprise since the psychometric properties of the original English version of the AEQ-AB have to be considered with caution (Stein et al., 2007; Webb et al., 1992) due to the small number of items in each scale (4 and 3 respectively). We should stress that although the AEQ-AB is not designed for college students, but rather for assessing adolescents, we included this scale in our study because it was one of the few tools that was translated into Spanish and contained both positive and negative expectations. Furthermore, the positive factor of the APNE was also positively associated with the SSS total score, indicating that individuals who are prone to consider the positive aspects of alcohol consumption tend to be sensation-seekers and risk-takers. These results are also consistent with previous studies on college students that suggest that higher sensation-seeking scores are related to higher alcohol intake (Adams et al., 2012; González-Iglesias et al., 2014; Legrand et al., 2007).

In order to further analyze the psychometric properties of the APNE, we checked its discriminative capacity for identifying a heightened risk of alcohol intake as measured by the AUDIT and adjusting by sex and age. The results again indicated that the APNE is a valid tool to assess positive and negative expectations, in that the AUDIT total score showed that higher severity in the alcohol use was related with both higher scores in the APNE positive expectations factor and lower scores in the APNE negative expectations factor. Moreover, the AUDIT screening score suggested that the likelihood of a positive screening score for alcohol use was related to higher scores in the APNE positive expectations factor.

All in all, the results regarding factor structure, invariance by sex and age, internal consistency, convergent, and discriminative capacity support the adequate psychometric properties of the APNE for assessing positive and negative expectations toward alcohol consumption in university samples. Moreover, the fact that women reported a higher mean in the APNE negative expectations scale points in the right direction as women have always been more concerned about the negative consequences of alcohol consumption and less prone to take health-related risks (Rhodes & Pivik, 2011; Zuckerman & Kuhlman, 2000). Concerning the influence of age on expectations, our results indicate that positive expectations toward alcohol consumption tend to decrease while negative expectations tend to increase with age. This is also good news as it seems to indicate that due to personal experiences, maturity, or increased conscientiousness with age (Ledgerwood & Petry, 2006; Leigh & Stacy, 2004; Ryb et al., 2006), young people gradually become aware of the harmful effects of alcohol intake (Reyna & Farley, 2006; Steinberg, 2007).

Limitations and Strengths

As any, this study has certain limitations to consider. First, we obtained the data through self-reports. This strategy involves limitations and biases regarding the subjectivity and sincerity of participants, but we sought to overcome this bias by administering three further questionnaires and analyzing convergent validity, and adding some control questions. Second, the generalizability of the obtained results to general adult population samples could be compromised as data was obtained from college students. This could imply less endorsement of negative expectations due to the higher educational level of the sample, which may imply a higher level of information regarding the harmful effects of excessive alcohol intake. Third, this study used multi-group GSEM procedure for assessing the structure of the APNE, including the analysis of the invariance by sex and age. Future studies should explore the invariance of the measurement coefficients by other features, such as the geographical origin of the participants or the studies field. Furthermore, other psychometric strategies to complement CFA, (such as Item Response Theory, with item easiness parameters, person parameters, and additional information regarding item difficulty or discriminative capacity) would be wellcome.

Nevertheless, this study has important strengths that should also be mentioned. Over the years, researchers have sought to find out what cognitive factors affect the way people consume alcohol. The scarcity of updated instruments examining positive and negative expectations in college students inspired us to address this gap by developing the APNE. One of the strengths of this new tool is that its scope is not solely limited to the harmful physiological consequences of drinking; the APNE also assesses a wide range of expectations embracing physical and cognitive problems, legal and illegal risky behaviors, verbal and behavioral aggression, and negative feelings. Moreover, the APNE is one of the few updated instruments specifically designed for assessing simultaneously both positive and negative expectations among young adults. Its brevity speaks in pro of its application as a screening tool in moderate- to high-risk populations, enabling early identification of youngsters at high risk of developing alcohol-related problems and the adverse psychosocial consequences thereof. Finally, the inclusion of three external indicators to assess expectancies, frequency and intensity of alcohol consumption, and the sensation-seeking trait attributes additional value in terms of the validity and accuracy of the APNE.

Conclusion

The results obtained on the psychometric properties and discriminative capacity of the APNE are encouraging in that individuals that appreciate the positive aspects of drinking but at the same time disregard the harm related to alcohol use are the ones who report the heaviest alcohol consumption. We maintain that the APNE can be used as a brief, reliable, valid, and accurate tool to assess positive and negative expectations toward alcohol consumption in college students. Future research should assess the usefulness of the APNE in adult samples too.

In the current era of pandemic, in which heavy alcohol consumption has increased so much among young adults (Smith et al., 2021) and US excessive drinking projections by 2023 have estimated a dramatic increase of additional deaths (Julien et al., 2022), tools like the APNE can be useful for understanding positive and negative beliefs with regard to consumption and can therefore support policymakers to make informed decisions about the implementation of

prevention and treatment programs targeted at this segment of the population, the development of personalized alcohol programs, and the reappraisal of public campaigns.

Declarations

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