Short Communication

The Spanish version of the Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ): A Rasch Model analysis

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HIGHLIGHTS

- The Item Response Theory was conducted to validate the Spanish version of the B-YAACQ.
- The verification of the global fit showed adequate indexes for the persons and items.
- B-YAACQ scores were strongly related to measures of hazardous alcohol drinking.
- This version allows identifying alcohol problems in Spanish-speaking college students.
- These 24 items do not provide a full coverage of the continuum of alcohol problems.

ARTICLE INFO

ABSTRACT

The present work was aimed at analyzing the psychometric properties of the Spanish Brief YAACQ in a sample of Argentinean college students applying the Item Response Theory. Participants were 302 college students (59.9% females) who reported drinking alcohol within the last month. The B-YAACQ was translated into Spanish and the psychometric properties of this Spanish version were analyzed applying the Rasch Model, as well as testing group difference and conducting correlational analyses. The verification of the global fit of the data showed adequate indexes for the persons and items. The reliability estimate of the items was very high (.97), while the reliability estimate of the persons was modest (.65). All but one item had adequate fit indexes. B-YAACQ scores were strongly related to measures of hazardous alcohol drinking, including frequency of drunkenness episodes and frequency of heavy episodic drinking, indicating concurrent validity. The item content along the severity continuum was fairly similar to that found with US and Dutch samples. Three items had a gender bias against men and another three items showed a gender bias against women, indicating the presence of differential item functioning cancelation. The map of items and persons suggests that these 24 items do not provide a full coverage of the continuum of alcohol problems at the lower levels of the continuum. Overall, results from the present study suggest that the Spanish B-YAACQ offers a brief and efficient way to identify alcohol problems in Spanish-speaking college students.

1. Introduction

Heavy drinking and its associated consequences among college students are central public health issues in many countries (Fillmore & Jude, 2011; Hingson, Edwards, Heeren, & Rosenbloom, 2009; Johnston, O'Malley, Bachman, & Schulenberg, 2011). Accurate and efficient assessment of these consequences is essential to the identification of and early intervention for at-risk students.

The Young Adult Alcohol Consequences Questionnaire (YAACQ; Read, Kahler, Strong, & Colder, 2006) was developed to assess drinking consequences in college students. Both the YAACQ and its brief version, the B-YAACQ have psychometric support for use in U.S. college students (Kahler, Hustad, Barnett, Strong, & Borsari, 2008; Kahler, Strong, & Read, 2005; Read, Merrill, Kahler, & Strong, 2007; Read et al., 2006). Yet, there have been no translations of either the full or the Brief YAACQ into Spanish, the native language of nearly 406 million people worldwide.

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Here, we sought to validate a Spanish version of the B-YAACQ in Argentina. Epidemiological data are sparse, but some evidence suggests that 40–50% of Argentinian adolescents (Pilatti, Godoy, Brussino, & Pautassi, in press) and college students (Garimaldi, Vera, Caneto, & Pilatti, 2013; Vera, Caneto, Garimaldi, & Pilatti, 2013) drink heavily. These data underscore the importance of studying negative alcohol consequences in Argentinean adolescents and young adults.

Kahler et al. (2005) and colleagues used the Rasch Model to identify 24 non-redundant YAACQ consequence items falling along a unidimensional spectrum. Based on this work, we sought to validate the Spanish version of the B-YAACQ in a sample of Argentinean college students, using the Item Response Theory (IRT). Specifically, we sought to evaluate item functioning, including gender bias, to examine the B-YAACQ's unidimensional structure, and to evaluate convergent validity with other risky drinking indexes.

2. Methods

2.1. Sample

Participants (N = 424) were undergraduates enrolled in psychology, biology and engineering courses of the National University of Cordoba. Only those (n = 302; 59.9% females) who reported alcohol consumption within the last month were considered in these analyses.

2.2. Procedure

Informed consent was obtained and then questionnaires were administered collectively in the classrooms. All study procedures were approved by the university IRB.

2.3. Measures

2.3.1. Alcohol use

On a Likert-type scale, participants rated (1) the type of alcoholic beverage usually consumed, and typical past year (2) frequency, and (3) quantity of consumption of that beverage. Item 1 and 3 responses were used to calculate alcohol grams consumed per drinking occasion. One standard drink was defined as containing 14 g of alcohol (Dawson, 2003).

2.3.2. Negative consequences of alcohol drinking

The original English version of the B-YAACQ (Kahler et al., 2005) was translated to Spanish by three independent translators. Versions were compared and subjected to discussion until a final consensus was reached. Using a dichotomous response format, participants indicated whether they have experienced each of the 24 Spanish-translated B-YAACQ consequences during the past three months. Consistent with previous studies (Kahler et al., 2008; Verster, van Herwijnen, Olivier, & Kahler, 2009), the B-YAACQ showed adequate reliability in this sample (α = .78).

2.3.3. Hazardous drinking

One question asked about occurrence of drunkenness episodes during the last month and past three months (never to 15 + times). Participants who reported drinking > 4/5 drinks (females/males, respectively) were classified as heavy episodic drinkers and those who reported drinking < 4/5 drinks were classified as non-heavy episodic drinkers. Participants were asked about the frequency of drinking the equivalent of 4 + drinks per drinking occasion in a two-hour period (Courtney & Polich, 2009).

2.4. Data analysis

With Student's *t*-test and chi-Square tests we examined differences based on gender and hazardous drinking (drunkenness episodes, heavy episodic drinking). The association between the Spanish B-YAACQ and ordinal measures of hazardous drinking was examined with correlation analysis.

In the Rasch IRT model, the first step is to verify data fit to the predicted model, using the mean square residual (Mnsq; Wright & Linacre, 1994). Fit of the items to a Rasch Model was examined using infit and outfit statistics. Using differential item functioning (DIF) analysis, we examined whether, at a given level of severity, the proportion of women who endorsed an item was significantly different to the proportion of men.

3. Results

3.1. Descriptive analyses

B-YAACQ scores ranged from 0 (9.6%; n = 29) to 18 (.3%, n = 1). The number of negative consequences (M = 5.13±3.65) was similarly distributed for women (4.98±3.53) and men (5.35 ± 3.84). Table 1 shows the frequencies for each of the 24 B-YAACQ items. Despite gender equivalence in the global B-YAACQ (*t* = .86, p = .39), men showed a higher prevalence in five consequences.

3.2. Correlation analysis

The total number of B-YAACQ consequences was strongly and positively correlated with frequency of drinking 4 + drinks per drinking occasion (r = .49), frequency of drinking 4 + drinks within a two-hour period (r = .42), and past 3 months drunkenness episodes (r = .59).

3.3. Group differences

Participants who reported past month drunkenness episodes had more drinking consequences (M = 7.25 ± 3.92) than participants who did not engage in this pattern (M = 4.22 ± 3.14) (*t* = 7.07). Additionally, participants with heavy episodic drinking reported more drinking consequences (M = 6.33 ± 3.42) than those with non-heavy episodic drinking (M = 3.86 ± 3.46) (*t* = 6.24).

3.4. Rasch Model

The verification of the global fit of the data showed adequate indexes for the persons and items (Table 1). The 24 items had adequate infit indexes (.84 to 1.15), and all but item 24 had adequate outfit statistics (.59 to 1.41).

The item reliability estimate was very high (.97), while the person reliability estimate was modest (.65). The modest person reliability reflects that these items are somewhat too severe to adequately capture consequences of college drinkers in the lower region of the alcohol problems continuum. Accordingly, the mean person-level estimates of alcohol problem severity for this sample was −1.86 logit units (SD 1.19), suggesting that these items are measuring a higher level of severity than the severity level usually experienced by college student drinkers.

Table 1 also shows individual item severity estimates and the associated standard errors for the 24 items. The B-YAACQ items covered a range of consequence severity ranging from −3.44 (low severity) to 3.72 (high severity). Item severity at the end of the continuum (23 and 24) is less precisely estimated. More severe items assess alcohol dependence, blackouts and interpersonal or academic impairment; less severe items pertain to having hangovers, feeling tired or sick.

Table 1

B-YAACQ item: prevalence of alcohol related problems for the total sample and as a function of gender and measurement parameters.

Item content (from least to most severe)	Prevalence (%)[a]					Mnsq[b]		Gender bias[c]		
	Total	Women	Men	Sev. E.	S.E.	I	O	Men	Women	Dif Cont.
I have had a hangover (headache, sick stomach) the morning after I had been drinking.	70.2	70.7	69.4	−3.44	.16	1.15	1.15	−3.32	−3.53	0.21
While drinking, I have said or done embarrassing things	54.6	56.4	52.1	−2.40	.14	1.00	1.08	−2.17	−2.55	0.37
I have had less energy or felt tired because of my drinking.	47	50.8	41.3	−1.95	.14	1.06	1.11	−1.55	−2.22	0.67[*]
When drinking, I have done impulsive things that I regretted later.	38.4	42	33.1	−1.46	.14	.84	.74	−1.07	−1.72	0.65[*]
I often have ended up drinking on nights when I had planned not to drink.	35.8	37	33.9	−1.31	.14	1.04	1.06	−1.12	−1.43	0.32
I have felt very sick to my stomach or thrown up after drinking.	30.5	31.5	28.9	−.99	.14	1.12	1.08	−0.81	−1.1	0.3
I've not been able to remember large stretches of time while drinking heavily.	30.1	27.1	34.7	−.97	.14	.95	.90	−1.17	−0.83	−0.34
I have found that I needed larger amounts of alcohol to feel any effect (…)	28.1	27.1	29.8	−.84	.15	1.08	1.24	−0.86	−0.83	−0.03
I have taken foolish risks when I have been drinking.	26.8	21.5[*]	34.7	−.75	.15	1.08	1.15	−1.17	−0.44	−0.72[*]
I have felt badly about myself because of my drinking.	22.5	24.9	19	−.46	.15	.94	.90	−0.1	−0.68	0.58
I have often found it difficult to limit how much I drink.	20.2	18.8	22.3	−.28	.16	.91	.84	−0.36	−0.23	−0.12
My physical appearance has been harmed by my drinking.	12.6	12.7	12.4	.40	.19	.93	.70	0.52	0.32	0.2
I have spent too much time drinking.	12.3	7.7[**]	19	.44	.19	.93	1.15	−0.1	0.96	−1.06[**]
I have become very rude, obnoxious or insulting after drinking.	10.9	9.9	12.4	.59	.20	.95	.83	0.52	0.64	−0.12
My drinking has created problems between myself and my boyfriend/girlfriend/spouse (…)	10.6	8.3	12.4	.63	.20	1.05	.88	0.52	0.87	−0.35
My drinking has gotten me into sexual situations I later regretted.	9.9	7.7[*]	14.9	.71	.21	.95	.60	0.26	0.96	−0.69
I have driven a car when I knew I had too much to drink to drive safely.	9.6	3.3[***]	19	.76	.21	1.15	1.41	−0.1	1.93	−2.03[***]
I have not gone to work or missed classes at school because of drinking, a hangover (…)	9.3	10.5	7.4	.80	.21	1.01	.92	1.18	0.57	0.61
The quality of my work or schoolwork has	8.9	7.7	10.7	.85	.22	.93	.67	0.71	0.96	−0.24

Table 1 (*continued*)

Item content (from least to most severe)	Prevalence (%)[a]					Mnsq[b]		Gender bias[c]		
	Total	Women	Men	Sev. E.	S.E.	I	O	Men	Women	Dif Cont.
suffered because of my drinking.										
I have been overweight because of drinking.	8.3	9.9	5.8	.94	.22	1.04	1.18	1.48	0.64	0.84*
I have woken up in an unexpected place after heavy drinking.	7	4.4*	10.7	1.16	.24	.89	.59	0.71	1.61	−0.9
I have neglected my obligations to family, work, or school because of drinking.	6.3	5.5	7.4	1.28	.25	1.00	.88	1.18	1.36	−0.18
I have passed out from drinking.	2	1.1	3.3	2.57	.42	1.05	.86	2.13	3.1	−0.98
I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	.7	1.1	0	3.72	.72	.99	.32	4.8	3.1	1.7
Persons Mean				−1.86	.68	.99	.93			
SD				1.19	.19	.28	.66			
Items Mean				.00	.22	1.0	.93			
SD				1.54	.12	.08	.24			

Sev. E. = severity estimate, S.E. = standard error, Dif cont. = reflects the difference in item severity estimates obtained in males compared to females (positive values indicate that particular item is more severe for males, and negative values indicate that particular item is less severe for males).
 [a] Prevalence (presented in percentages) of alcohol related problems for the total sample and as a function of gender.
 [b] Mnsq = mean square residual: infit (I) and outfit (O) statistics.
 [c] Gender bias = differential item functioning as a function of gender (shows the item severity estimates for males and females).
 * p < .05.
 ** p < .01.
 *** p < .001.

Table 2 shows the estimated severity level that is expected to be associated with each of the possible raw scores. Note that the great majority of the sample is concentrated on the continuum's lower levels, with 36.8% scoring between 1 and 4, while none of the participants scored 19 or higher and only ten of the 302 participants scored 13 or higher. With regard to the measurement precision, the 9.6% fell within the range of scores between −∞ and −5.46 logits, which corresponded

to a raw score of zero, with an estimated error of 1.88, 7.9% fell between −5.45 and −4.12 logits, corresponding to a raw score of one (estimated error of 1.09). Ten percent of the sample fell in the range from −4.11 to −3.24, corresponding to a raw score of two (estimated error of .82). The rest of the sample was located between −3.23 and 1.51 logits (estimated error .48−.70). No one in the sample was located between 1.52 and 5.54 logits.

Table 2
Raw total scores on the sum of the 24 items (B-YAACQ), estimated severity of the scores in logit units, and frequencies and cumulative frequencies of scores in the sample.

Raw score	Severity estimate	S.E.	Frequency	% of the sample	Cumulative frequency	% of the sample
0	−5.46	1.88	29	9.6	29	9.6
1	−4.12	1.09	24	7.9	53	17.5
2	−3.24	.82	31	10.3	84	27.8
3	−2.67	.70	28	9.3	112	37.1
4	−2.22	.63	28	9.3	140	46.4
5	−1.86	.59	33	10.9	173	57.3
6	−1.53	.55	38	12.6	211	69.9
7	−1.24	.53	16	5.3	227	75.2
8	-.97	.51	22	7.3	249	82.5
9	-.71	.50	15	5.0	264	87.4
10	-.46	.49	13	4.3	277	91.7
11	-.23	.49	9	3.0	286	94.7
12	.01	.48	6	2.0	292	96.7
13	.24	.48	3	1.0	295	97.7
14	.48	.49	2	.7	297	98.3
15	.72	.49	2	.7	299	99.0
16	.97	.50	0	.0	299	99.0
17	1.23	.52	2	.7	301	99.7
18	1.51	.55	1	.3	302	100.0
19	1.83	.58	0	.0	302	100.0
20	2.19	.63	0	.0	302	100.0
21	2.64	.71	0	.0	302	100.0
22	3.23	.84	0	.0	302	100.0
23	4.15	1.12	0	.0	302	100.0
24	5.54	1.90	0	.0	302	100.0

3.5. Differential item functioning (DIF)

Table 1 displays severity estimates by gender. A significant gender bias was found in six of 24 items, three that were more likely to be endorsed by men, and three more likely by women.

4. Discussion

Overall, results of our IRT-based examination of the Spanish B-YAACQ in an Argentinian college sample support the use of these 24 translated items to measure negative drinking consequences. The high reliability estimates of the items were consistent with work in both U.S. (Kahler et al., 2005; Read et al., 2007) and Dutch samples (Verster et al., 2009). Consistent with prior work with the English version (Kahler et al., 2005), we found support for a single underlying problem dimension. We also found evidence for item progression, indicating that some items are more likely to precede others (Shea, Tennant, & Pallant, 2009; Van der Wal et al., 2012).

The average prevalence of alcohol related problems was similar to that found by Verster et al. in a Dutch sample of college students, but lower to that found with US samples (Kahler et al., 2005; Read et al., 2007). This may be because we used a briefer assessment than has been used previously (Kahler et al., 2005; Read et al., 2007; Verster et al., 2009). Nonetheless, the lower endorsement of items may have contributed to lower reliability of person ordering in the sample than in prior studies.

Interestingly, the item content along the severity continuum was generally very similar to that found by both Kahler et al. (2005) and Verster et al. (2009). At both the most and least severe ends of the spectrum, the items being endorsed were similar across the three samples (Kahler et al., 2005; Verster et al., 2009). This consistency across student samples of different nationalities, languages, and cultural backgrounds speaks to the stability of these severity estimates, and also provides some preliminary evidence regarding cross-cultural validation of the B-YAACQ.

Three items had a gender bias indicating that it takes a higher level of severity in men before there is a 50% chance that the item is endorsed. Another three items showed gender bias in the opposite direction (women). This pattern of differential functioning in opposite directions, DIF cancelation, allows for comparison of group means at the test level without losing validity (Boorsboom, 2006; Teresi, Ramirez, Lai, & Silver, 2008; Wyse, 2013). As such, at least at the test-level, it appears that the Spanish B-YAACQ can be used to describe hazardous drinking in men and women.

Gender bias observed in this Argentinian sample could be due to the translation process or to differential interpretation of the items (Boorsboom, 2006). Another possibility is that some items are biased due to cultural characteristics regarding what are more typical behaviors for men and women in Argentinian versus American culture.

Also in accordance with Kahler et al. (2005) and Verster et al. (2009), we found support for concurrent validity of the Spanish B-YAACQ, as this measure correlated strongly with indexes of hazardous alcohol consumption.

The modest person reliability is suggesting that these items are somewhat too severe to measure alcohol consequences in college students with patterns of alcohol consumption such as we observed in our sample. Results from the present study suggest that persons in the lower and higher ends of the alcohol problems continuum are measured with less precision than they are in U.S. samples (Kahler et al., 2005). It is possible that common drinking consequences for Argentinean college students are somewhat different from those experienced by American students, especially at the lower levels of the continuum. In future studies, investigators should consider using broader measures, like the 48-item YAACQ (Read et al., 2006), which assesses a greater diversity of consequences. Still, given its overall psychometric strength, we contend that the Spanish version of the B-YAACQ could be used effectively in a number of settings where capturing lower-level consequences is not essential. For example, the Spanish B-YAACQ might be well-applied as a screen for high-risk drinking in indicated populations.

This study had limitations. We used an incidental sampling procedure, potentially limiting generalizability to other youth samples. Also, although the Spanish B-YAACQ was correlated with other indexes of problem use, we did not examine its association with other measures of alcohol problems. Though this Spanish version of the B-YAACQ shows adequate measurement of drinking consequences in Argentinean college students, this version may not be appropriate for other Spanish speaking samples. Validation in Spanish-speakers from other parts of the world will be an important next step.

Despite these limitations, the present study offers preliminary validation for what is to our knowledge the only Spanish-language version of a well-established measure of harmful alcohol consequences in college students. Overall, our results suggest that the Spanish B-YAACQ offers a brief and efficient way to identify alcohol problems in these students, although it is suggested that the development of a measure with a broader coverage of alcohol problems may allow for measurement of this construct with greater precision at the lower end of the severity spectrum.

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