Cross-cultural examination of the five-factor model of drinking motives in Spanish and Canadian undergraduates

Estudio transcultural del modelo de cinco factores de motivos de consumo de alcohol en universitarios españoles y canadienses

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Abstract

This study aims to test the cross-cultural suitability of Modified Drinking Motives Questionnaire-Revised (M DMQ-R) (Grant, Stewart, O'Connor, Blackwell, & Conrod, 2007). The sample included 571 Spanish and 571 Canadian undergraduates between the ages of 18 and 22 (65.8% women). The confirmatory factor analysis demonstrated factorial invariance between samples. The regression analysis showed that social, enhancement and low conformity motives were related to drinking frequency and drinking quantity in the total sample. No moderation effect of country on predicting alcohol consumption was found. The results suggest that M DMQ-R is a suitable instrument for comparing drinking motives across Spanish and Canadian undergraduates, and that motives-focused prevention and treatment programmes developed in one country could be generalised to another.

Keywords: Drinking motives, cross-cultural study, alcohol, M DMQ-R, undergraduates.

Resumen

El objetivo de este estudio es testar la utilidad transcultural del Modified Drinking Motives Questionnaire-Revised (M DMQ-R) (Grant, Stewart, O'Connor, Blackwell, y Conrod, 2007). La muestra incluyó 571 universitarios españoles y 571 universitarios canadienses, de 18 a 22 años de edad (65,8% mujeres). El análisis factorial confirmatorio (AFC) mostró invarianza factorial entre las muestras. Los análisis de regresión mostraron que los motivos sociales, de animación y los bajos motivos de conformidad se relacionaban con la frecuencia y cantidad de alcohol consumida en la muestra completa. El país de origen no moderó la relación de los motivos con el consumo de alcohol. Los resultados sugieren que el M DMQ-R es un instrumento adecuado para comparar los motivos de consumo entre los estudiantes españoles y canadienses, y que los programas de prevención y tratamiento centrados en los aspectos motivacionales del consumo desarrollados en un país pueden generalizarse al otro.

Palabras clave: motivos de consumo, estudio transcultural, alcohol, M DMQ-R, universitarios.

Alcohol use is related to performance impairment of different tasks (Vinader-Caerols, Monleón, & Parra, 2014) and neurocognitive anomalies in youths (López-Caneda et al., 2014). Harmful alcohol use is also the main risk factor for incident disability-adjusted life years among 10-24-year-oldsyouths (Gore et al., 2011), and is a worldwide problem that results in millions of deaths, including hundreds of thousands of young lives (World Health Organization (WHO), 2011). For these reasons, understanding why young people drink during this stage of life is important for preventing alcohol-related problems.

Drinking motives (reasons for alcohol use) are among the most specific and proximal variables that have been studied as part of an effort to prevent excessive alcohol consumption (Kuntsche, Knibbe, Gmel, & Engels, 2005). Despite the existence of many psychometric instruments developed to assess drinking motives, the Drinking Motive Questionnaire Revised (DMQ-R: Cooper, 1994) and its variants are the most widely used measures (Kuntsche et al., 2005). DMQ-R (Cooper, 1994) includes four drinking motives scales based on the type of reinforcement desired (positive or negative) and source of reinforcement (internal or external). These are social (positive, external), enhancement (positive, internal), conformity (negative, external) and coping (negative, internal) motives. Given that the mechanisms underlying depression-related drinking may differ from those underlying anxiety-related drinking, Grant and colleagues developed the Modified DMQ-R (M DMQ-R; Grant et al., 2007; Mezquita et al., 2011), in which coping-with-anxiety versus coping-with-depression motives had be separated. Several studies have suggested that each one of these five drinking motive categories is related to specific alcohol outcomes in young adults. Enhancement motives are strongly related to drinking at weekends (Kuntsche & Cooper, 2010; Mezquita, Ibáñez, Moya, Villa, & Ortet, 2014) and indirectly with alcohol-related problems through alcohol consumption (Mezquita et al., 2014; Mezquita, Ruipérez, & Stewart, 2010). Social motives are related to frequency and quantity, but not to alcohol-related problems (Grant et al., 2007; Kuntsche et al., 2005). Conformity motives are usually negative related to alcohol use (Grant et al., 2007; Németh et al., 2011), but are positively related to alcohol-related problems (Merrill & Read, 2010). Finally, while coping-with-depression motives are more strongly related to alcohol-related problems (Goldstein, Flett, & Wekerle, 2010; Mezquita et al., 2014), and coping-with-anxiety are related to drinking on weekdays (Mezquita et al., 2014).

Research has also shown vast differences in alcohol use and misuse across countries (WHO, 2014). The highest heavy drinking rates among young European people are found in northern Europe cultures, similarly to those found in some areas of North America like Canada (De Witte & Mitchell Jr., 2012; WHO, 2014). Although drunkenness is increasing in young people from southern European counties like Spain (National Plan of Drugs, 2012), the heavy drinking rates there are still lower than in northern countries (WHO, 2014).

Therefore, the aim of this research was to test whether M DMQ-R (Grant et al., 2007) possesses good psychometric properties across cultures (Spain *vs*. Canada), and whether differences in alcohol use across countries can be explained by differences in drinking motives. Specifically, we investigated cross-national similarities and differences in: 1) the five-factor structure of drinking motives and the internal consistency of the scales; 2) mean levels of drinking motives; 3) the moderation effect of country on the relationship of motives-alcohol outcomes.

Materials and method

Study designs and samples

Canadian participants were drawn from a pool of 868 Dalhousie University undergraduates in 2004 (see Grant et al., 2007 for an extended sample description). Those who indicated that they did not drink alcohol (*N*=109, 12.56%), or did drink, but did not provide complete data in M DMQ-R (*N*=33, 3.80%), and were not of typical university undergraduate age (18-22 years old) (*N*=118, 13.59%), were excluded from the analyses. After matching the two samples (age and gender; see Supplementary Material 1), the final Canadian sample consisted of 571 participants (65.8% women) whose mean age was 18.10 years (SD = 1.06).

Data of the Spanish undergraduates were obtained for the purposes of this cross-cultural study at the Universitat Jaume I of Castellón (east Spain) between 2009 and 2010. Initially there were 1,382 participants. Those who indicated that they did not drink alcohol (*N*=48, 3.47%), did drink, but did not provide complete data in M DMQ-R (*N*=7, 0.51%), did not provide information on their gender or age (*N*=51, 3.69%), or who did not provide information on their drinking patterns (*N*=23, 1.66%), were excluded from the analyses. We deleted the answers provided by participants who did not fall within the 18-22 year age group (*N*=270, 19.54%) before matching both samples on age and gender. The final number of Spanish participants was 571 with the same mean age and percentage of women as the Canadian Sample. In both samples, participation was voluntary and anonymous, and data confidentiality was guaranteed.

Measures

The M DMQ-R (Grant et al., 2007; Mezquita et al., 2011) consists of 28 items. Each contributes to one of five subscales: social, coping-with-anxiety, coping-with-depression, enhancement, or conformity. After considering all the times they drank, participants indicated how often they drank for the reason specified in each item on a 5-point Likert scale ranging from 1 (almost never/never) to 5 (almost always/always).

Subscales are scored as the average across the items within a scale, which allows a direct comparison across subscales.

In addition, two alcohol-related questions were analysed: one asked about frequency (fq) of alcohol consumption in the past 30 days (0 = you did NOT drink alcohol, 1=Once, 2=2 or 3 times, 3=4 or 5 times, 4=6 or more times); the other asked about the quantity (qn) of alcoholic beverages consumed per typical drinking occasion in the past 30 days (0 = you did NOT drink alcohol, 1=One, 2=2 or 3, 3=4 or 5, 4=6 to 9, 5=10 or more).

Statistical analysis

Using the EQS (version 6.1), we explored the questionnaire structure in each sample separately by performing a confirmatory factor analysis (CFA) and calculating the internal consistency of each scale. To test if the factorial structure was invariant between countries, we performed a multi-group CFA with hierarchical steps (Byrne, 2006). As the data showed evidence of kurtosis, we used the heterogeneous kurtosis (HK) estimator. We evaluated the model's goodness of fit using these fit indices: the root mean square error of approximation (RMSEA); the comparative fit index (CFI); the incremental fit index (IFI) (see Byrne, 2006). RMSEA ≤ .10, CFI ≥ .90, and IFI ≥ .90 are considered indicators of an adequate data fit (Weston & Gore Jr, 2006). To compare the adequacy of the multi-group models when constraints between groups were added, we used ΔCFI. To consider that there were no differences between groups, ΔCFI could not exceed .01 (see Byrne, 2006).

Using the SPSS statistic package, version 21, a MANCOVA was calculated to determine cross-national similarities or differences in the mean levels of the five drinking motives after controlling for age and gender. Regression analyses were used to explore if country moderated the associations of drinking motives with drinking frequency and quantity. The following were introduced: age and gender in the first step; the variable "country" (Spain=0; Canada=1) in the second step; the five scales of drinking motives in the third step; the five interactions of country x motive in the last step (see Dawson, 2014).

Results

Testing factorial invariance across countries

The hypothesised correlated five-factor model of drinking motives provided an adequate data fit in the Spanish sample, $\chi^2(340, N = 571) = 1124.67$, $p < .001$; RMSEA= .064; CFI= .936; IFI= .936, and in the Canadian sample, $\chi^2(340, N = 571) = 1136.03$, $p < .001$; RMSEA= .064; CFI= .942; IFI= .942, separately. The standardised loadings of the indicator variables on their hypothesised factors were all salient (i.e., ≥.30) in both samples, save item 1 ("As a way to celebrate") from the social motives scale, which showed a loading of

only .24 in the Canadian sample (see Figure 1). The internal consistencies of each scale for both countries (also presented in Figure 1) varied from .65 (coping-with-anxiety, Spanish sample) to .91 (coping-with-anxiety, Canadian sample).

The multi-group analysis showed an adequate data fit, $\chi^2(680, N = 1142) = 2260.92$, $p < .001$; RMSEA = .064; CFI = .939; IFI = .939. The ΔCFI (lower than .01) when we added cross-country equivalence constraints for the factor loadings (ΔCFI = .005), variances of each factor (ΔCFI = .004) and factor covariances (ΔCFI = .001), suggested invariance.

Exploring cross-national similarities or differences in drinking motives

The MANCOVA results indicated that although the informed mean rank order of drinking motives was equal among countries (social > enhancement > coping-with-anxiety > coping-with-depression > conformity), the Canadian undergraduates scored significantly higher in drinking motives (F (5) = 60.50, $p < .001$) than the Spanish undergraduates. The *post hoc* Bonferroni analysis showed that these differences were significant ($p < .001$) for the enhancement and coping-with-anxiety motives.

Regression analysis

The regression analysis showed that after controlling for the effect of age and gender, being Canadian predicted a higher drinking frequency (β=.21, $p<.001$), but not a larger drinking quantity (β=-.02, $p>.05$). Both dependent variables were similarly predicted by the social (fq: β=.09, $p<.05$; qn: β=.10, $p<.05$), enhancement (fq: β=.33, $p<.001$; qn: β=.38, $p<.001$) and low conformity (fq: β=-.21, $p<.001$; qn: β=-.14, $p<.001$) motives. In both cases, country did not moderate the relationship of each drinking motive with alcohol use (all the β coefficients were not significant, i.e. $p>.05$).

Discussion

The first aim of the present study was to explore the psychometric properties of M DMQ-R across two samples of young adults from two different countries: Spain and Canada. The multi-group CFA suggested that the M DMQ-R structure is virtually the same in both undergraduate samples. All the alpha coefficients were .65 across countries, or higher, which indicates acceptable internal consistency for all the scales given their small number of items (Loewenthal, 1996). These results are similar to those found in previous cross-cultural studies with other versions of the questionnaire (Kuntsche et al., 2014; Németh et al., 2011), and they suggest that M DMQ-R is a suitable instrument for comparing drinking motives across countries in undergraduate students.

In both countries, positive reinforcement drinking motives were more strongly endorsed than negative reinforcement drinking motives, as in previous studies with the four-factor DMQ-R (social > enhancement > cope > con-
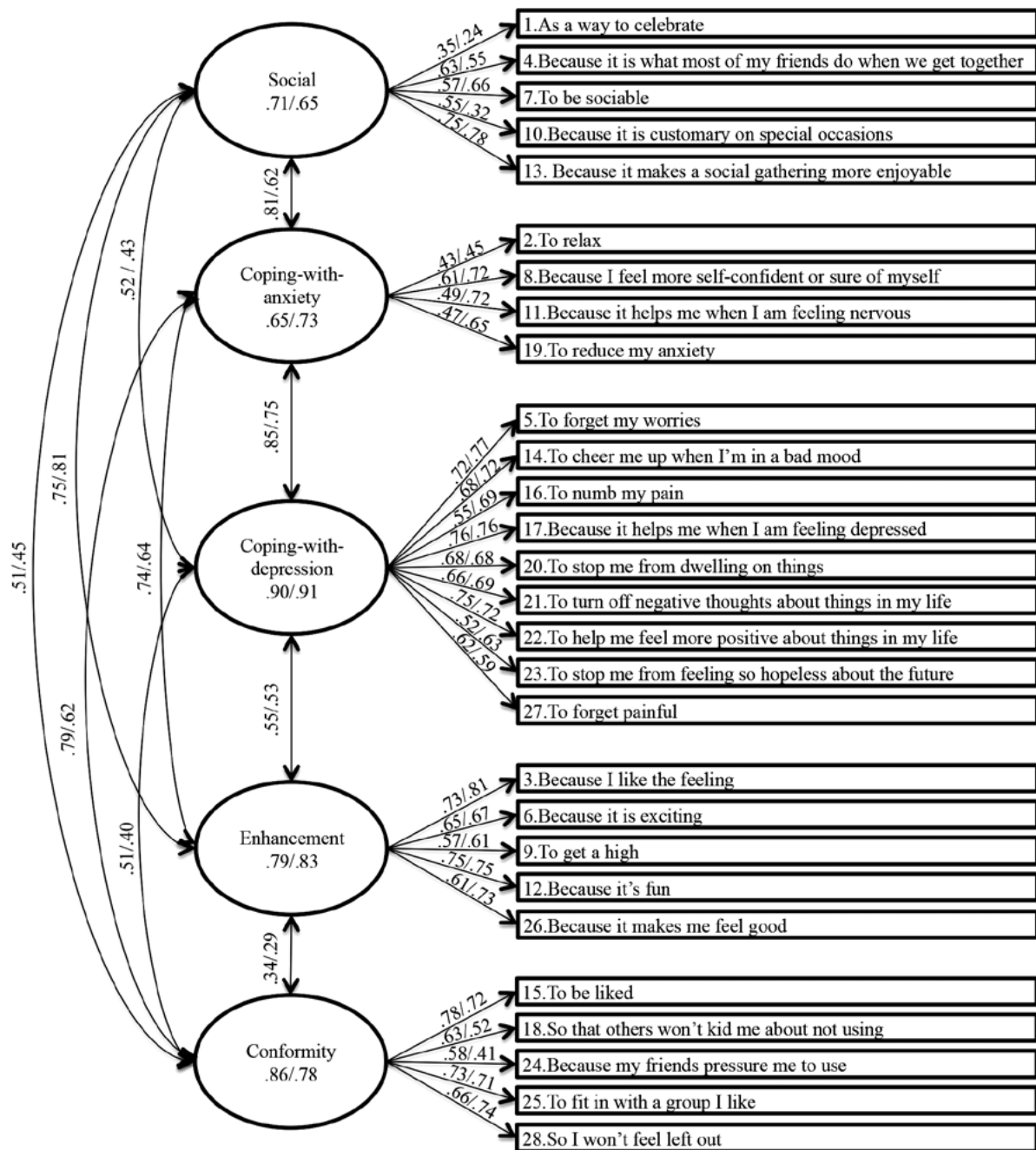
Figure 1. CFA in Spanish (before the slash) and Canadian (after the slash) undergraduates. Above unidirectional arrows, factor loadings. Above bidirectional arrows, correlations. All the parameters were significant at p <.001. In circles, Cronbach's alphas.

formity) (Kuntsche et al., 2014; Németh et al., 2011). Coping-with-anxiety motives were more strongly endorsed than coping-with-depression, similarly to those found in previous and independent samples of Spanish adults, clinical samples and undergraduates (Mezquita et al., 2011, 2014).

The regression analysis results showed that in the overall sample higher enhancement motives, lower conformity motives and, to a lesser extent, social motives were related to greater alcohol use (quantity and frequency). This result is consistent with previous studies in which "drinking for fun" or "because it is exciting" is the strongest predictor of alcohol use among young adults, while other positive reinfor-

cement motives, social motives, usually show a moderate or non-significant relationship with alcohol use (Grant et al., 2007; Kuntsche et al., 2008; Németh et al., 2011). The negative regression coefficient between conformity and alcohol use has also been consistently found in the present and previous studies (Grant et al., 2007; Mezquita et al., 2011; Németh et al., 2011). This suggests that what is unique to conformity motives (i.e., not shared with other drinking motives) is negatively associated with overall alcohol use.

In addition, when differences among countries were explored, no moderation effect of country was found on the relationship of motives-alcohol outcomes, which is similar

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to those found among European young adults (Kuntsche et al., 2014; Németh et al., 2011), even when being Canadian was associated with higher drinking frequency. This result is especially relevant because it suggests that the relation between motives and alcohol outcomes is consistent, at least with drinking frequency and drinking quantity, and that similar prevention and treatment programmes may be applied among different countries.

It is possible that the higher level of enhancement and coping-with-anxiety motives reported by the Canadian undergraduates could be responsible for the higher heavy and binge drinking level found in Canadian samples compared with southern Europe ones as cultures where drinking to intoxication are less common (De Witte & Mitchell Jr., 2012). However, future research works are required to test this hypothesis.

The main limitation of the present study was that we did not assess other drinking patterns apart from drinking frequency and drinking quantity. The inclusion of binge drinking and others variables, such as alcohol-related problems, drinking on weekdays, and drinking at weekends, would also be relevant, and especially so in internal drinking motives as previous studies found that coping-with-anxiety, coping-with-depression and enhancement motives relate differently with them (Mezquita et al., 2011, 2014; Studer et al., 2014).

To summarise, the results of this research suggest that M DMQ-R has suitable psychometric properties, can be used for comparing drinking motives, and should be used in future research to explore differences in alcohol use patterns (e.g. binge drinking, weekend alcohol use, etc.) across countries, at least among Spanish and Canadian undergraduates.

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Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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Supplementary material 1.
Matching process.

With the aim of controlling the differences between the original samples in age (Spain: N = 983, mean age = 19.43 [SD = 1.34] years; Canada: N = 608, mean age = 18.66 [SD = 1.04] years; t = 12.02, p < .001), we pseudo-randomly matched the samples as follows: In each age/gender group (e.g., 18 year old women), we used the sample (Canadian or Spanish) with fewer participants as the primary sample unit (i.e., Spanish in the 18 and 19 year old groups, Canadian in the 20, 21 and 22 year old groups) and randomly found a match for each successive case from the other sample. We then used SPSS to delete the remaining participants in each age/gender group. The total number of participants deleted was 37 in Canada vs. 412 in Spain, resulting in final samples of 571 participants from each country.