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Development and psychometric evaluation of a new measure to assess pregaming motives in Spanish-speaking young adults

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HIGHLIGHTS

- We developed and validated a new pregaming motives measure for Spanish-speaking youth.
- This measure encompassed diverse motives distinct from general drinking motives.
- Four multifaceted, yet related, dimensions underlie pregaming motives
- Findings supported adequate reliability and construct and criterion-related validity
- Factors explained pregaming behavior and alcohol-related consequences.

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ABSTRACT

Aims: The present study was divided into two different stages that sought to develop (Stage 1) and validate (Stage 2) the Argentinean-version of the Pregaming Motives Questionnaire (PMQ-Arg), a new, ecologically valid measure to assess pregaming (i.e., the consumption of alcohol prior to attending a social/sporting event where alcohol may or may not be available) motives among Spanish-speaking youth. Method: Two separate samples of Argentinian young adults (all last-year pregamers) were recruited by disseminating an invitation through online social networks and e-mail listings.
Results: In Stage 1, a total of 635 participants answered an open-ended question about their reasons for pregaming. In Stage 2 (n = 361), exploratory factor analysis was conducted with the preliminary set of high-quality, high-frequency pregaming motives that were obtained in Stage 1, yielding a final 23-item measure that was grouped in four factors: (i) Intoxication and Fun, (ii) Gathering and Social Enhancement, (iii) Going with the Flow, and (iv) Beverage Preference. Despite some broad similarities with measures that were developed with U.S. young adults, the present results indicated that the narrow content of some items of the PMQ-Arg were somewhat unique, possibly reflecting cultural differences between the United States and Argentina. The findings supported the adequate reliability, discriminant validity, convergent validity, and criterion-related validity of PMQ-Arg scores.
Conclusions: The findings suggest that the PMQ-Arg meets the psychometric requirements of validity and reliability for its use to assess reasons for pregaming among Spanish-speaking youth.

1. Introduction

At the population level, Argentina has the second greatest per-capita volume of alcohol use in Latin America (PAHO, 2015). The culture of this South-American country is strongly rooted in the traditions of Spanish and Italian cultures and can be classified as a "wet" culture, in which alcohol plays a prominent role in everyday life and is widely available and accessible (Bloomfield, Stockwell, Gmel, & Rehn, 2003). Unsurprisingly, 80% of high-school teenagers (Pilatti, Godoy, Brussino, & Pautassi, 2013) and 93% of college students (Pilatti, Caneto, Garimaldi, Vera Bdel, & Pautassi, 2014) in Argentina reported past-year alcohol use. Importantly for public health, ~50% of Argentinean adolescents (Pilatti et al., 2013; Rivarola Montejano, Pilatti, Godoy, Brussino, & Pautassi, 2016; Sedronar, 2010) and youth (Pilatti, Read, & Caneto, 2016) engage in heavy episodic drinking (i.e., the consumption of ≥42/70 g of pure alcohol, depending on sex and age; NIAAA, 2004).

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Across cultures, there has been growing interest in identifying high-risk contexts and practices that are linked to risky drinking (Finlay, Ram, Maggs, & Caldwell, 2012). One such practice, known as pregaming or prepartying (*previa* in Argentina), is defined as the consumption of alcohol prior to attending a social/sporting event where alcohol may or may not be available (Borsari et al., 2007; Labhart, Ferris, Winstock, & Kuntsche, 2017; Zamboanga et al., 2013). Pregaming is hazardous partially because it is associated with high levels of intoxication (Santos, Paes, Sanudo, & Sanchez, 2015; Wells et al., 2015). This practice typically involves consuming large quantities of alcohol over short periods of time (Foster & Ferguson, 2014). This point was well illustrated by Haas, Smith, and Jacob (2012), who found that pre-college adolescents drank an average of three standard units of alcohol in < 30 min when pregaming. Compared with non-pregamers, pregamers had significantly higher breath alcohol concentrations (Santos et al., 2015). Santos et al. (2015) assessed a sample that was exiting a nightclub, and the prevalence of breath alcohol concentrations that were indicative of binge drinking was significantly higher among pregamers (44.3%) than among non-pregamers (21.9%). Likely because of this rapid and heavy consumption, pregaming has also been linked to high rates of alcohol-related consequences (Hummer, Napper, Ehret, & LaBrie, 2013; Paves, Pedersen, Hummer, & Labrie, 2012), including blackouts (LaBrie, Hummer, Kenney, Lac, & Pedersen, 2011).

Pregaming is a highly prevalent drinking practice in many countries worldwide (Foster & Ferguson, 2014; Labhart et al., 2017). An international study evaluated last-year drinkers from 25 countries and found that 20 of the countries had a pregaming prevalence of ≥ 50% (Labhart et al., 2017). Additionally, data from United States samples showed that around 60% of adolescents (Kenney, Hummer, & Labrie, 2010; Zamboanga et al., 2011), college students (Paves et al., 2012), and young adults (Rutledge, Bestrashniy, & Nelson, 2016) engaged in pregaming behaviors. Nonetheless, there is a paucity of research on pregaming in Argentina and more broadly in South America. To our knowledge, only a few published studies examined pregaming behaviors in youth from Brazil (Labhart et al., 2017; Santos et al., 2015) and Colombia (Labhart et al., 2017). Only one, yet unpublished, study examined these behaviors in Argentinean adolescents and young adults (Del Zotto Libonati, 2015). This is surprising given that other risky drinking practices, such as binge drinking, have been widely reported in countries worldwide, including in Latin America (Ferreira, Martins, Coelho, & Kahler, 2014; Mason-Jones & Cabieses, 2015; PAHO, 2015; Pilatti et al., 2016).

One way to understand risky drinking practices, such as pregaming, is by understanding the young people's motives to engage in them (Kuntsche, Knibbe, Gmel, & Engels, 2006). Drinking motives, therefore, have received much attention in the literature. However, recent evidence suggests that the motives for pregaming behaviors are distinct from general drinking motives and include reasons that are specific to pregaming itself, such as getting intoxicated before a social event and facilitating access to alcohol (Bachrach, Merrill, Bytschkow, & Read, 2012; LaBrie, Hummer, Pedersen, Lac, & Chithambo, 2012). Measures have been developed to assess these unique motivations for pregaming, including the Pregaming Motives Measure (PGMM; Bachrach et al., 2012) and Pregaming Motivations Inventory (PMI; LaBrie et al., 2012). Pregaming motives positively explained greater pregaming involvement (LaBrie et al., 2012), even after controlling for general drinking motives (Bachrach et al., 2012). Drinking behaviors are highly sensitive to social and cultural factors (Rehm, Mathers, Popova, et al., 2009), and the motivations for pregaming likely differ in countries and cultures outside of the United States. The PMI and PGMM were developed and tested primarily in college students in the United States and may not be applicable to the assessment of similar practices in other geographical regions and cultures. Illustrating this point, Labhart and Kuntsche (2017) recently developed a “culturally appropriate” (pp.137) measure of reasons for pregaming in young adult nightlife-goers from Switzerland. To account for cultural differences between U.S. and Switzerland (for example, minimum legal age to buy alcohol), they elaborated on the PGMM and the PMI by maintaining, rephrasing or adding (i.e., developing new) items. Additionally, O'Neil, Lafreniere, and Jackson (2016) evaluated a sample of Canadian college students and found that not all of the items of the PMI presented a good fit to their data. The authors suggested the inclusion of five other different reasons to enhance content validity.

Notably, there are several cultural and contextual differences between the United States and Argentina. Beyond the aforementioned differences in societal drinking norms, alcohol regulations greatly vary between these two countries. For example, the minimum legal age to buy alcohol is 18 in Argentina and 21 in the United States. These two countries also exhibit different styles of cultural orientation (i.e., individualistic vs. collectivist cultures; Chiou, 2001), which may affect their sensitivity to social norms with regard to alcohol use. Foster, Yeung, and Quist (2014) found a significant positive association between individualism and number of drinks consumed on the heaviest drinking occasion but a significant negative association with alcohol-related problems. The authors interpreted these, somewhat mixed, findings as an interaction between individualism and susceptibility to social pressure. That is, people with greater level of individualism may be more prone to avoid alcohol-related problems that may interfere with personal pursuits but, at the same time, may be less sensitive to social pressure against heavy episodic drinking.

Furthermore, most pregaming studies have been conducted with college samples. Notably, there are substantial differences in college life between the United States and South America, particularly Argentina. For example, affiliations with fraternities and sororities (i.e., social organizations at colleges) have been consistently associated with greater alcohol use among United States college students (White & Hingson, 2014). These on-campus social organizations are almost nonexistent in Argentina. Additionally, in Argentina, college students do not live on campus, which has been positively associated with alcohol use (Lorant, Nicaise, Soto, & d' Hoore, 2013). Accurate and culturally relevant measurements of the reasons for engaging in such high-risk behaviors as pregaming are essential for fundamentally understanding these phenomena. The development of a new instrument for measuring this behavior may be one alternative to the cultural adaption of preexisting instruments and may be more likely to capture potential cultural and social idiosyncrasies. In the present study, we developed (Stage 1) and preliminarily validated (Stage 2) such an instrument to assess pregaming in Spanish-speaking youth.

2. Methods

The present study was divided into two different stages using two separate samples of Argentinian young adults. Stage 1 generated of a pool of items for the development of the Argentinean version of the Pregaming Motives Questionnaire (PMQ-Arg) and sought to establish content validity for these items. In Stage 2, we examined the psychometric properties of the test scores. We sought to obtain a reduced and final set of items for the PMQ-Arg and establish internal, convergent, discriminant, and criterion-related validity.

2.1. Stage 1

2.1.1. Sample 1

An invitation to participate in the study was disseminated through online social networks and e-mail listings. The invitation asked for youth from the general community, 18–30 years old, who had engaged in pregaming behaviors (defined as the consumption of alcohol before attending a social/sporting/musical event) within the previous year. A sample of 635 subjects was recruited (65.7% women; 85.7% college students [80.5% public universities and 5.2% private universities] and 4.6% community college students). According to the last Argentinean census (2010), enrollment in formal education increases as a function of

Table 1
Description of socio-demographic variables for the total sample and as a function of sex.

	Study 1			Study 2		
	Total	Men	Women	Total	Men	Women
Age						
Mean age	22.40 ± 3.21	23.06 ± 3.49	22.06 ± 3.00	23.60 ± 3.20	23.90 ± 3.38	23.49 ± 3.13
18–19	17.5	17.5	17.5	10–8	12.4	10.2
20–21	32.4	24.8	36.5	18.3	14.3	19.9
22–23	18.4	17.9	18.7	24.9	21.9	26.2
24–25	12.1	13.8	11.3	17.5	18.1	17.2
26–27	9.6	11.5	8.6	14.4	15.2	14.1
28–30	9.9	14.7	7.4	14.1	18.1	12.5
College status						
College student	85.7	79.4	88.9	86.1	84.8	86.7
Community college	4.6	6.0	3.8	1.7	1.9	1.6
Non-college student	9.8	14.7	7.2	12.2	13.3	11.7
Employment status						
Do not work	60.5	52.3	64.7	51.5	45.7	53.9
Employed	39.5	47.7	35.3	48.5	54.3	46.1

income. The subjects participated in a raffle (a weekend stay at a tourist resort) as compensation for participation. Table 1 presents the socio-demographic characteristics of the sample.

2.1.2. Procedure and results

All the procedures were approved by the university's internal review board (SECyT), and the protocol was reviewed by the National Agency for Promotion of Science and Technology (FONCyT). The participants answered, via an online survey (LimeSurvey), an open-ended question about their reasons for pregaming and questions about their pregaming behaviors (frequency of pregaming and average number of standard drinks consumed when pregaming). The participants reported a mean of 2.76 ± 2.18 pregaming days within the previous month and a mean of 5.59 ± 3.42 standard units (SU) consumed when pregaming. One SU was defined as containing 14 g of pure alcohol (equivalent to 12 oz of beer, 5 oz of wine, or 1.5 oz of distilled spirits; NIAAA, 2004). We followed the procedure that was outlined by LaBrie et al. (2012), with some minor modifications. Three members of the research team independently rated, based on their frequency, the 635 motives that were obtained. These members had received extensive training on the rating procedure by the principal investigator. To establish content validity, the 60 most frequently endorsed motives were evaluated by four expert psychologists who were proficient in test construction and addictive behaviors. Each judge independently rated (from 1 = poor fit to 10 = very good fit) each item based on the following: (1) correspondence of each phrase with the construct, (2) quality (i.e., clarity), and (3) adequacy to the target population (i.e., adolescents and youth). After grouping similar items (based on the judges' evaluation) and retaining high-quality items (score ≥ 8), we obtained a preliminary set of 28 items (Table 2).

Table 2
List of the 28 most frequently reported reasons for pregaming (Stage 1).

To meet new people
To get into the party mod
To facilitate hooking up
To wait/pass time until the event “really” begins
To play drinking games
To arrive drunk at the event
To get uninhibited at the event
To go out with trusted people
To go out in group
To be sure about the content of the drink
To interact in a place more relax than the one at the event
To get high at the event
To drink alcohol beverages I like and may not be at the event
To drink more with less money
To spent a fun time before going out
Because this is what my friends do
Because it is the meeting place before the event
To get relax at the event
Because it is part of the event
To drink better quality alcoholic beverages than the ones at the event
Because it is what adolescents and youth do
Because drinks cost less than at the place of the event
Because my friends invited me to go
So the night starts earlier and last longer
To get more fun at the event
To spent a nice time before going out
To have a nicer time at the event
To prepare the drinks the way I like it, instead to rely on how they prepare them at the event

2.2. Stage 2

2.2.1. Sample and procedures

A separate sample of participants was recruited following the identical procedures and inclusion criteria as in Stage 1. The participants (n = 361; 70.9% women; 86.1% college students [81.4% public universities and 4.7% private universities] and 1.7% community college students) completed an online survey. Three cash prizes (~USD $20) and 13 small items were raffled among the participants. The participants received electronic prompts for each missing response to minimize the likelihood of incomplete data. The participants were assured of the confidential handling of the data. Although no personally identifiable information was collected, the students were invited to provide their e-mail address or telephone number to be contacted by the research team in case they won one of the prizes. Table 1 presents the sociodemographic characteristics of this sample.

2.2.2. Measurement translation

To examine the convergent validity of the PMQ-Arg with the PGMM (Bachrach et al., 2012) and PMI (LaBrie et al., 2012), the latter two instruments were translated to Spanish. Two independent judges who were proficient in both English and Spanish and familiar with the aims of the study translated the measures from English to Spanish. The versions of each measure were compared, and a final version of each measure was obtained.

2.2.3. Measures of pregaming motives

Three different measures were used to assess pregaming motives. One of these measures encompassed the items that resulted from Stage 1 (PMQ-Arg). The other two instruments (PGMM and PMI) are two consolidated and valid measures that were developed to assess motivations for pregaming in United States samples.

2.2.3.1. PMQ-Arg (locally generated version). The set of 28 items that were obtained in Stage 1 was used. The participants indicated how frequently they engaged in pregaming behaviors for each of the listed reasons. The response scale ranged from 1 = almost never/never to 5 = almost always/always.

2.2.3.2. PGMM (Bachrach et al., 2012). This is a 15-item three-subscale (Inebriation/Fun [five items], Social Ease [five items], and Instrumental [five items]) measure to assess pregaming behaviors (α = ≥ 0.78; Bachrach et al., 2012). The participants indicated how frequently (from 1 = almost never/never to 5 = almost always/always) they engaged in pregaming behaviors for each of the listed reasons. Each subscale has five items. In the present study, two subscales exhibited less than recommended values of internal consistency (Instrumental α = 0.62; Inebriation/Fun α = 0.68), whereas Social Ease had adequate reliability (α = 0.76).

2.2.3.3. PMI (LaBrie et al., 2012). This is a 16-item four-factor (Interpersonal Enhancement [six items], Situational Control [four items], Intimate Pursuit [three items], and Barriers to Consumption [three items]) measure (α = ≥ 0.74; LaBrie et al., 2012). The participants rated how frequently (1 = almost never/never to 5 = almost always/always) they engaged in pregaming behaviors for each of the listed reasons. In the present study, three of the subscales had adequate internal consistency (α = 0.77 to 0.88), but Barriers to Consumption did not (α = 0.48).

2.2.4. Pregaming behavior

Pregaming was defined as in Stage 1. According to previous work (Bachrach et al., 2012; LaBrie et al., 2012), the participants indicated the following: last year (from 0 = not in the previous year to 12 = 4 times or more per week), last month (number of days of pregaming behavior), and number of SU they usually consumed when pregaming (one drink = 14 g of alcohol). An image described the volume (in milliliters) of different alcoholic beverages that corresponded to one SU. We calculated typical last-year alcohol drinking when pregaming by computing the quantity by the frequency index.

2.2.4.1. General drinking motives. We used the short-form of the Spanish Drinking Motives Questionnaire (S-DMQ-R SF; Mezquita et al., 2016). The S-DMQ-R SF is a 12-item measure that assesses coping, social, enhancement, and conformity drinking motives. The participants indicated how often (from 1 = almost never/never to 5 = almost always/always) they had drunk alcohol for each motive. All four subscales had adequate internal consistency (α = ≥ 0.70) in previous work (Mezquita et al., 2016) and in the present study (α = ≥ 0.78).

2.2.4.2. Alcohol use. The participants indicated the frequency of last-year alcohol drinking (from 1 = 1–5 times to 10 = almost every day) and usual number of SU consumed per drinking occasion (up to 30 SU). We calculated typical last-year alcohol drinking by computing the quantity by the frequency index.

2.2.4.3. Alcohol consequences. We used the Spanish version (Pilatti et al., 2016) of the Young Adult Alcohol Consequences Questionnaire (S-YAACQ; Read, Kahler, Strong, & Colder, 2006). The participants indicated whether they had experienced (yes or no) each of the 48 drinking consequences within the previous year. Total scores reflected the total number of consequences that the individual had experienced. In the present study, the reliability for the total score was α = 0.91.

2.3. Statistical analysis

We used descriptive statistics (i.e., percentage and central tendency and deviation indices) to examine pregaming behaviors, alcohol drinking involvement, and alcohol-related consequences.

2.3.1. Exploratory factor analysis

We first inspected normality of the distribution of each item through the inspection of asymmetry and kurtosis scores. Values of ± 2 are considered appropriate (George & Mallery, 2003). Exploratory factor analysis (EFA) was then conducted using the principal axis factoring as a method of factor extraction to examine the underlying structure of the PMQ-Arg. The number of factors was determined according to the results of the scree-test and taking into account the coherence and interpretability of the factors. Items that were allocated to a specific factor with a factorial saturation ≥ 0.32 on that factor were retained (Tabachnick & Fidell, 2001). Items with cross-loadings (≥ 0.32 on two or more factors) were excluded (Bachrach et al., 2012; LaBrie et al., 2012). Based on previous work (Bachrach et al., 2012; LaBrie et al., 2012), we expected inter-correlations between the dimensions; therefore, we employed an oblique (promax) rotation to facilitate interpretation of the factorial solution.

2.3.2. Reliability

We estimated Cronbach's α for each factor of our final solution using items that were assigned uniquely to the factors. We also estimated the α coefficient by individually eliminating the items from each scale. This procedure allowed identification of the unique contribution of each item to the general reliability of the scale. We also examined indices of discrimination for each item (correlation item-total), in which low correlation values (≤ 0.30) indicated that these items should be reviewed.

2.3.3. Evidence of validity

We first examined the presence of substantial and significant correlations between scores for each of the PMQ-Arg dimensions and scores for the PGMM and PMI (i.e., evidence of convergent validity) and scores for the DMQ (i.e., evidence of discriminant validity). We expected to find positive associations between the dimensions of the PMQ-Arg and subscales with similar content from the PMI and PGMM (i.e., convergent validity). We also expected to find positive associations between the dimensions of the PMQ-Arg and those that were derived from the DMQ (i.e., discriminant validity), but the strength of such associations was expected to be lower than the strength of the associations between measures that assessed pregaming motives. We examined the correlation between scores for each of the PMQ-Arg dimensions and pregaming behaviors (1: frequency of pregaming; 2: average number of standard drinks consumed when pregaming) to obtain criterion-related evidence. We also analyzed the correlation between general drinking motives and pregaming behaviors to determine whether pregaming-specific motives were better predictors of pregaming behaviors than general drinking motives. Finally, we conducted two regression models: one model with the frequency of pregaming as the outcome variable and one model with pregaming drink consumption as the outcome variable. In each model, we examined the ways in which pregaming-specific motives predicted these outcome variables while controlling for the effects of age, sex, last-year consumed volume of alcohol, and general drinking motives.

3. Results

3.1. Descriptive results

3.1.1. Alcohol consumption and alcohol-related consequences

The participants indicated an average of 58.23 ± 49.44 drinking days (approximately once/week) in the previous year, and they reported drinking an average of 5.04 ± 3.32 standard drinks on each drinking occasion. The participants reported experiencing an average of 11.24 ± 8.26 negative alcohol-related consequences.

3.1.2. Pregaming behaviors

The participants indicated an average of 27.59 ± 30.44 pregaming episodes within the previous year. The majority of the sample (63.6%) reported pregaming at least once per month, and almost half of the sample (48%) reported pregaming at least twice per month. The participants reported consuming an average of 5.27 ± 3.30 SU per pregaming episode.

3.1.3. Proportion of consumed alcohol when pregaming relative to total volume of consumed alcohol

The participants reported an average of 350.14 ± 460.60 standard drinks within the previous year, and nearly 50% of that volume was consumed when pregaming (average, 170.81 ± 272.72).

3.2. Exploratory factor analysis: construct validity

The feasibility of the analysis was evaluated using the Kaiser-Meyer-Olkin (KMO) index (0.892) and Bartlett's test of sphericity ($\chi^2_{378} = 4243.12$, $p \leq 0.001$). Skewness values were adequate for all but one item ("to facilitate hooking up"), and kurtosis values were between recommended values for all but two items ("to facilitate hooking up" and "to meet new people").

Cattell's scree plot suggested an underlying structure of four factors for the set of 28 items. Four items ("To meet new people," "To play drinking games," "To be sure about the content of the drink," and "So the night starts earlier and last longer") had loadings ≤ 0.32, and one item ("To drink more with less money") had loadings ≥ 0.32 on two factors. These five items were deleted. The analysis was re-estimated with the remaining 23 items (KMO = 0.889; Bartlett's test of sphericity, $\chi^2_{253} = 3478.616$, $p \leq 0.001$). All four factors showed interfactor correlations between 0.38 and 0.58. As shown in Table 3, the 23 items all had factorial loadings ≥ 0.38. The first factor (eight items) comprised motives that were mostly related to getting intoxicated/drunk before the event and to have more fun and enjoyment at the event. We named this factor Intoxication and Fun (IF). The second factor (five items) comprised motives that were mostly related to going out in groups and enhancing ambient characteristics (i.e., socializing in a more relaxed environment, to share a good time before the event). We named this factor Gathering and Social Enhancement (G-SE). The third factor (six items) comprised items that were mostly related to social norms with regard to pregaming, such as "pregaming is a part of the event" or "it is what all my friends do." We named this factor Going with the Flow (GF). Finally, the fourth factor (four items) comprised items that were related to characteristics of the alcoholic beverage, such as "drinking alcohol beverages that may not be at the event" or "preparing alcohol beverages in a better fashion than at the event." We named this factor Beverage Preference (BP).

3.3. Reliability

Cronbach's α suggested adequate internal consistency across the four dimensions ($\alpha_{IF} = 0.87$, $\alpha_{G\text{-}SE} = 0.82$, $\alpha_{GF} = 0.79$, $\alpha_{BP} = 0.75$). Table 3 shows that the individual elimination of each item did not increase α values, and all of the items were positively correlated with their corresponding dimension (item/total correlation).

3.4. Convergent validity

Table 4 presents correlations between each dimension of the PMQ-Arg and each dimension of the PGMM and PMI. Overall, subscales of the PMQ-Arg had positive correlations with most of the subscales of the PGMM and PMI. The highest correlations were found between Intoxication-Fun and Inebriation/Fun (PGMM), between Intoxication-Fun and Social Ease (PGMM), and between Intoxication-Fun and

Table 3
Exploratory factor analysis (Principal Axis Factoring) with oblique (Promax) rotation of argentinean pregaming motives questionnaire. Reliabilities and item-total correlations.

	1	2	3	4	% of EV	α	α if D	itc
Intoxication and fun					31.07	0.87		
To get into the party mod (Para entrar en clima de fiesta o de salida)	0.475						0.862	0.55
To facilitate hooking up (Para facilitar el "levante")	0.523						0.874	0.38
To arrive drunk at the event (Para llegar borracho al evento)	0.767						0.852	0.65
To get uninhibited at the event (Para llegar desinhibido al evento)	0.836						0.843	0.72
To get high at the event (Para llegar entonado/picado al evento)	0.804						0.841	0.72
To get more fun at the event (Para divertirme más en el evento)	0.708						0.840	0.73
To get relax at the event (Para llegar relajado al evento)	392						0.866	0.51
To have a better time at the event (Para pasarla mejor en el evento)	0.728						0.837	0.75
Gathering and social enhancement					10.93	0.82		
To spent a fun time before going out (Para pasar un momento divertido antes de salir)		0.531					0.774	0.61
To go out with trusted people (Para salir con gente de confianza)		0.775					0.750	0.68
To go out in group (Para salir en grupo)		0.792					0.791	0.55
To interact in a place more relax than the one at the event		0.708					0.772	0.63
(Para interactuar en un espacio más relajado que el espacio del evento)								
To spent a nice time before going out (Para pasar un buen momento antes de salir)		0.608					0.790	0.55
Going with the flow					7.85	0.79		
Because this is what my friends do (Porque es lo que hacen mis amigos/as)			0.735				0.771	0.46
Because it is the meeting place before the event (Porque es lugar de encuentro antes de la salida)			0.562				0.743	0.58
Because it is part of the event (Porque forma parte de la salida)			0.598				0.744	0.58
To spent time until the event really begins			0.498				0.733	0.62
(Para hacer tiempo para llegar a la hora que se "pone" el evento)								
Because it is what adolescents and youth do (Porque está de moda entre adolescentes y jóvenes)			0.632				0.773	0.45
Because my friends invited me to go (Porque mis amigos/as me invitan)			0.541				0.757	0.53
Beverage preference					6.58	0.75		
To prepare the drinks the way I like instead to rely on how they are prepared at the event				0.750			0.697	0.55
(Para tomar bebidas alcohólicas preparadas como me gustan y no depender de cómo las preparen)								
To drink alcohol beverages I like and may not be at the event				0.678			0.637	0.60
(Para tomar bebidas alcohólicas que me gustan y pueden no estar en el evento)								
To drink better quality alcoholic beverages than the ones at the event				0.779			0.654	0.59
(Para tomar bebidas alcohólicas de mejor calidad que las del evento								
Because drinks cost less than at the place of the event				0.379			0.749	0.44
(Porque la bebida es más barata que en el evento (boliche, recital, etc)								

Note: % of EV = percentage of explained varience; α if D = Alpha de Cronbach if the item is deleted; itc = item-total correlation.

Table 4
APMQ correlations with general drinking motives (DMQ) and other measures of pregaming motives (PGMM and PMI).

	APMQ				PMI				PGMM			DMQ			
	IF	G-SE	GF	BC	IE	SC	IP	BC	IF	SE	I	CP	S	E	CF
IF		0.40**	0.44**	0.43**	0.78**	0.29**	0.41**	0.33**	0.64**	0.66**	0.31**	0.33**	0.70**	0.59**	0.30**
G-SE			0.52**	0.33**	0.29**	0.24**	0.01	0.10	0.45**	0.23**	0.07	0.08	0.24**	0.24**	0.12
GF				0.34**	0.43**	0.21**	0.16**	0.18**	0.42**	0.39**	0.15*	0.16*	0.35**	0.178**	0.37**
BC					0.34**	0.66**	0.05	0.35**	0.34**	0.26**	0.32**	0.22**	0.30**	0.31**	0.04
IE						0.29**	0.47**	0.35**	0.61**	0.76**	0.25**	0.27**	0.63**	0.50**	0.43**
SC							0.06	0.52**	0.24**	0.26**	0.41**	0.23**	0.21**	0.21**	0.03
IP								0.34**	0.23**	0.35**	0.38**	0.17**	0.30**	0.23**	0.36**
BC									0.15*	0.28**	0.58**	0.26**	0.27**	0.27**	0.14*
IF										0.58**	0.20**	0.29**	0.64**	0.57**	0.20**
SE											0.35**	0.37**	0.57**	0.45**	0.50**
I												0.24**	0.27**	0.26**	0.26**
CP													0.33**	0.29**	0.21**
S														0.67**	0.27**
E															0.17**

PMQ IF = Intoxication and Fun; PMQ G-SE = Gathering and Social Enhancement; PMQ GF = Going with the Flow; PMQ BC = Beverage Control; PMI IE = Interpersonal Enhancement; PMI SC = Situational Control; PMI IP = Intimate Pursuit; PMI BC = Barriers to Consumption; PGMM IF = Inebriation-Fun; PGMM SE = Social Ease; PGMM I = Instrumental; DMQ CP = Coping; DMQ S = Social; DMQ E = Enhancement; DMQ CF = Conformity. $^{*}p \leq 0.05$; $^{**}p \leq 0.01$.

Interpersonal Enhancement (PMI). Beverage Preference was also highly correlated with Situational Control (PMI), and Gathering and Social Enhancement had a moderate association with Inebriation/Fun (PGMM).

3.5. Discriminant validity

Overall, associations between the PMQ-Arg subscales and those that measured general drinking motives were lower than those that were found with the PGMM and PMI, with the exception of Intoxication-Fun, which was strongly associated with both Social and Enhancement subscales of the DMQ (Table 4).

3.6. Criterion-related validity

3.6.1. Bivariate results

All of the pregaming motives were positively correlated with the frequency of pregaming ($r_{IF} = 0.25$, $p \leq 0.001$; $r_{G\text{-}SE} = 0.22$, $p \leq 0.001$; $r_{GF} = 0.20$, $p \leq 0.001$; $r_{BC} = 0.15$, $p \leq 0.01$). All of the motives, with the exception of Going with the Flow, had a positive correlation with the average number of standard drinks consumed when pregaming ($r_{IF} = 0.20$, $p \leq 0.001$; $r_{G\text{-}SE} = 0.12$, $p \leq 0.05$; $r_{BC} = 0.24$, $p \leq 0.001$). Overall, the correlation between general drinking motives and pregaming behaviors did not reach statistical significance. Specifically, only enhancement motives had a positive correlation with pregaming frequency ($r = 0.14$, $p \leq 0.05$) and the number of standard drinks consumed when pregaming ($r = 0.13$, $p \leq 0.05$).

3.6.2. Multiple regression analyses

In the first regression (frequency of pregaming as the dependent variable), the independent variables accounted for 21% of the variance of the frequency of pregaming. In the first step, sociodemographic variables did not have a significant effect on the criterion variable. In the second step, the last-year total volume of consumed alcohol had a significant positive effect on the frequency of pregaming ($\beta = 0.41$, $t = 6.75$, $p \leq 0.001$, $R^2 = 0.18$). None of the general drinking motives had a significant effect on the dependent variable. Finally, the inclusion of the four PMQ-Arg dimensions in the third step did not significantly increase the total explained variance ($\Delta R^2 = 0.03$, $p = 0.097$), and none of the pregaming motives had a significant effect on pregaming frequency. In the second regression (quantity of standard drinks while pregaming as the dependent variable), the independent variables accounted for 36% of the variance of the frequency of pregaming. In the first step, sex but not age had a significant effect on the quantity of alcohol consumed when pregaming ($\beta = 0.20$, $t = 3.158$, $p \leq 0.01$, $R^2 = 0.04$). In the second step, the total volume of consumed alcohol had a significant positive effect on the dependent variable ($\beta = 0.51$, $t = 9.100$, $p \leq 0.001$, $R^2 = 0.31$). None of the general drinking motives had a significant effect on the dependent variable. Finally, the inclusion of the four PMQ-Arg dimensions in the third step significantly increased the total explained variance to 36% ($\Delta R^2 = 0.05$, $p \leq 0.01$). Intoxication-Fun ($\beta = 0.19$, $t = 2.248$, $p \leq 0.05$) and Beverage Preference ($\beta = 0.13$, $t = 2.185$, $p \leq 0.05$) had a significant positive effect on the quantity of drinks when pregaming. In this step, social motives for general alcohol use also had a significant but negative effect on the criterion variable ($\beta = -0.24$, $t = -2.936$, $p \leq 0.01$). The latter most likely reflected a suppression effect.

4. Discussion

In the present study, we sought to develop an ecologically valid measure to assess the motives that underlie pregaming behaviors among Argentinean young adults. Although this was not a cross-cultural study (i.e., we lacked samples that were drawn from different countries or cultures), we sought to determine the extent to which these motives were culturally specific (i.e., different) or universal (i.e., similar) by comparing our results with those that were previously reported among youth in the United States. The PMQ-Arg, similar to the PGMM (Bachrach et al., 2012) and PMI (LaBrie et al., 2012), encompassed diverse motives for consuming alcohol prior to attending social or sporting events. These motives were arranged in multifaceted but related dimensions. In agreement with studies that were conducted in the United States, we found that the reasons for engaging in pregaming were distinct from those that underlie general drinking behaviors. Despite these broader similarities, the narrow content of some items of the PMQ-Arg was unique, likely reflecting cultural differences between the two countries.

Specifically, the main factor includes motives that refer to greater disinhibition, getting into a “party” mood, and having more fun, ostensibly by becoming intoxicated before attending the event. Arriving at an event already under the influence of alcohol was associated with more fun and enjoyment at the event, including the facilitation of “hooking up.” This is a central similarity between the PMQ-Arg and measures that were developed with young adults in the United States. Unsurprisingly, Intoxication and Fun had the highest correlation with two subscales of the PGMM (Inebriation/Fun) and PMI (Interpersonal Enhancement), thus providing evidence of convergent validity. The

Intoxication and Fun subscale also had a strong positive association with the Social Ease dimension (PGMM), most likely because both subscales encompass reasons for becoming disinhibited (PMI) or more social and relaxed (PGMM). These results suggest some universality in the core, main reasons that underlie pregaming behaviors.

We also identified one dimension (Beverage Preference) that included items that measured beverage-related motives, such as drinking alcoholic beverages that may not be at the event or preparing alcoholic beverages in a particular way. This subscale was strongly positively associated with the Situational Control subscale (PMI), thus providing further evidence of convergent validity. Additionally, Beverage Preference had some overlapping (i.e., positive but moderate correlation) with the Instrumental subscale (PGMM). One important similarity between the Beverage Preference and both English measures is they include motives that are related to controlling the type, quality, and taste of the alcoholic beverages that are consumed when pregaming. In other words, youth across countries appear to pregame as a way to guarantee the consumption of their most preferred alcoholic drinks. The prepared-as-they-wish motive, at least in the Argentinean context, might refer to preparing highly alcohol-concentrated beverages that could be, in turn, associated with intoxication motives. Notably, motives that are related to dealing with the impossibility of buying alcohol (e.g., because of legal restrictions of underage drinking) or difficulties obtaining alcohol (e.g., because of restrictions of availability) at the final destination are highly absent in the Argentinean version. Although speculative, this might reflect cultural and contextual differences in alcohol availability between these two countries. As mentioned above, the minimum legal age to buy alcohol is 21 in the United States and 18 in Argentina. Additionally, the “wet” nature of this South-American country, together with the relatively lax enforcement of laws and regulations that prevent access to alcohol to underage drinkers or the selling of alcoholic beverages outside legal ages, might also influence the perception of greater alcohol accessibility among Argentinian youth compared with their United States counterparts.

The Gathering and Social Enhancement scale encompasses motives that refer to having a nice-and-fun time before the event and spending some quality time in a more relaxed space than the one at the event where the crowd and loud environment may impede or make difficult communication. This scale also encompasses motives that refer to going out in groups with reliable people. These latter reasons may be particularly relevant within the Argentinean context and more broadly for other Latin-American countries and Spain where some events begin very late at night (e.g., discotheques open around 1 AM, but it is not until 3 AM that the event is in full function). These motives might reflect more protective, less risky, incentives. This subscale was strongly and significantly associated with Intoxication-Fun (PGMM), likely because of the overlapping social components (i.e., to have fun and to socialize with friends). However, the association with the rest of the pregaming motives was very low and even nonsignificant, presumably reflecting some uniqueness of this dimension or its apparent distance from drinking-related reasons.

Another novelty is that the PMQ−Arg includes motives, such as pregaming because this is a defining element of the overall event or pregaming is what most youth do, which is largely absent in the two English instruments. Despite its apparent uniqueness, the Going with the Flow scale was positively, although moderately, associated with Interpersonal Enhancement (PMI), Inebriation-Fun (PGMM), Social Easiness (PGMM). Although somewhat unexpected when considering the lack of overlap in item content, this association presumably reflects the social component (i.e., external reasons for pregaming) of these subscales (O'Hara, Armeli, & Tennen, 2015).

One important aim of our work was to provide evidence of the distinctness of pregaming motives relative to more general drinking motives. Specifically, we examined whether pregaming motives were orthogonal to general drinking motives (i.e., evidence of discriminant validity) and whether pregaming motives predict pregaming behaviors beyond general drinking motives (i.e., evidence of criterion-related validity). Overall, and despite a strong positive association between Intoxication and Fun and social and enhancement motives (DMQ), our results supported this independence. Each of the four dimensions of the PMQ−Arg had stronger associations with at least one dimension of the PGMM or PMI than with the dimensions of the DMQ. Our findings also provided evidence of criterion-related (concurrent) validity. Similar to previous studies with young adults in the United States (Bachrach et al., 2012; LaBrie et al., 2012), all of the PMQ-Arg's dimensions were modestly yet positively and significantly correlated with the frequency of pregaming, and three dimensions had significant positive correlations with the amount of alcohol consumed when pregaming. Overall, general drinking motives had nonsignificant zero-order correlations with pregaming behaviors, suggesting that the motives that underlie pregaming behaviors are specific to and different from those that are associated with general alcohol drinking. This provides additional evidence of the discriminant validity of the PMQ-Arg. At the multivariate level, none of the pregaming motives significantly predicted how often young adults pregame when controlling for total alcohol consumed. How often youth pregame appears to be mainly determined by how often and how much they drink. Pregaming motives, however, significantly explained how much alcohol young adults consumed when pregaming, even after controlling for last-year volume of alcohol consumed and general drinking motives. Specifically, Intoxication-Fun and Beverage Preference had significant positive correlations with the number of drinks consumed when pregaming. These results, similar to Bachrach et al. (2012), suggest that these motives might represent a prominent risk factor for greater alcohol consumption in high-risk contexts. Notably, we found this significant effect not only when controlling for general drinking motives (Bachrach et al., 2012) but also when controlling for general alcohol consumption. Altogether, these results suggest that how much alcohol youth consumed when pregaming is at least partially guided by motives that are mostly associated with having fun at the event by getting drunk with certain alcoholic beverages.

Although not a main aim of the present study, our results highlight the ubiquity of pregaming behaviors and heavy episodic drinking among Argentinean youth. The participants reported engaging in an average of ~2.5 pregaming episodes per month and consuming ~5 SU of alcohol at each pregaming event. These results, together with the heightened occurrence of alcohol-related consequences among pregamers (which almost doubled the average found among Argentinean drinkers; Pilatti et al., 2014), are fairly similar to those found in the United States (Hustad et al., 2014; LaBrie et al., 2012; Merrill, Vermont, Bachrach, & Read, 2013).

In summary, the present findings support a four-factor structure of pregaming motives. Future studies should attempt to extend the present findings and confirm the underlying structure in similar and also different samples (e.g., adolescents and other Spanish-speaking populations). Additionally, our sample was clearly biased toward 18- to 25-year-old college students. Therefore, unclear is whether the present results (i.e., structure, item content) would be maintained in a sample with a more balanced distribution of college and non-college students. Future work would benefit from examining measurement invariance across sex and across college vs. non-college students. Another limitation with regard to the present sample is that it was limited only to those with internet availability. We were also unable to distinguish whether youth drank more on days they pregamed relative to other drinking days. Notably, half of the last-year volume of alcohol consumed was consumed while pregaming, thus further suggesting that pregaming represents a largely prevalent high-risk behavior among Argentinean young adults. Our aim was not to investigate cross-cultural differences between samples that were assessed with the same instrument. Instead, our aim was to develop and validate a new, culturally sensitive measure to assess pregaming motives among Spanish-speaking youth. The lack of framing our results within the context of the extensive literature on etic vs. emic approaches is a limitation of the present study. Another

limitation is that we did not incorporate a master coder (see Syed & Nelson, 2015) and did not employ a deductive approach (Saldaña, 2015) to systematically derive the preparty motive themes.

Despite these limitations, our findings suggest that the PMQ-Arg meets the psychometric requirements of validity and reliability for assessing reasons for pregaming among Spanish-speaking youth. These reasons, different from those that underlie general alcohol drinking, were positively and significantly associated with a greater level of pregaming involvement and significantly explained the greater number of alcohol-related problems. Therefore, this instrument may be helpful for identifying youth who have a greater vulnerability to engaging in high-risk behaviors or developing alcohol-related problems and who may benefit from specific intervention strategies. Motives are not immutable constructs (O'Hara et al., 2015)—they change across time and even across circumstances (Littlefield, Sher, & Wood, 2010). As such, they are potentially modifiable. For example, the frequency of implementing protective behavioral strategies varies as a function of reasons for engaging in alcohol drinking behaviors (Patrick, Lee, & Larimer, 2011), offering a promising venue to address this complex phenomenon.

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Contributors

Pilatti designed the study and conducted the statistical analysis. Pilatti and Read prepared the first draft of the manuscript and subsequent versions of it.

Conflict of interest

Both authors declare that they have no conflicts of interest.

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Appendix A. PMQ-Arg

Cuestionario de Motivos de Previas-versión Argentina (CMP-Arg)

A continuación, hay una lista de razones por las que algunas veces las personas “hacen” PREVIA. Piensa en todas las veces “hiciste” previa: ¿con que frecuencia podrías decir que “hiciste” PREVIA por cada una de las siguientes razones? Recuerda que PREVIA es “*consumir alcohol antes de asistir al evento de la salida (i.e. evento social, deportivo o musical) donde puede, o no, consumirse más alcohol*”.

Para responder, usa las opciones de respuesta que figuran a continuación:

[1] casi nunca/nunca
[2] algunas veces
[3] la mitad de las veces
[4] la mayoría de las veces
[5] casi siempre/siempre

1. Para entrar en clima de fiesta o de salida.	1	2	3	4	5
2. Para pasar un momento divertido antes de salir as.	1	2	3	4	5
3. Porque es lo que hacen mis amigos/as.	1	2	3	4	5
4. Para tomar bebidas alcohólicas preparadas como me gustan y no depender de cómo las preparen en el evento.	1	2	3	4	5
5. Para facilitar el “levante”.	1	2	3	4	5
6. Para salir con gente de confianza	1	2	3	4	5
7. Porque es el lugar de encuentro antes de la salida.	1	2	3	4	5
8. Para llegar borracho al evento.	1	2	3	4	5
9. Para tomar bebidas alcohólicas que me gustan y pueden no estar en el evento.	1	2	3	4	5
10. Para interactuar en un espacio más relajado que el espacio del evento.	1	2	3	4	5
11. Para llegar desinhibido al evento.	1	2	3	4	5
12. Para tomar bebidas alcohólicas de mejor calidad que las del evento	1	2	3	4	5
13. Para llegar entonado/picado al evento.	1	2	3	4	5
14. Porque forma parte de la salida.	1	2	3	4	5
15. Porque la bebida es más barata que en el evento (boliche, recital, etc).	1	2	3	4	5
16. Para salir en grupo	1	2	3	4	5
17. Para divertirme más en el evento	1	2	3	4	5
18. Para hacer tiempo para llegar a la hora que se “pone” el evento	1	2	3	4	5
19. Para llegar relajado al evento	1	2	3	4	5
20. Porque está de moda entre adolescentes y jóvenes	1	2	3	4	5
21. Para pasar un buen momento antes de salir	1	2	3	4	5
22. Porque mis amigos/as me invitan	1	2	3	4	5
23. Para pasarla mejor en el evento	1	2	3	4	5

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