

COLLEGE STUDENTS: RISK PREFERENCES AND PREGAMING

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1. Introduction

Lifestyle behaviors have become crucial factors in explaining the prevalence of non-communicable diseases and their impact on the mortality rate. The individuals' health capital stock experiences additions and subtractions along the life cycle, which are caused, among others, by healthy and unhealthy behaviors, respectively. Particularly, binge drinking, a risky consumption pattern highly prevalent in the young population has gotten the attention of healthcare professionals, psychologists, public health researchers, and economists. Young adults who attend university are of greater interest, since their academic performance and future productivity may be seriously compromised (Patte et al., 2017; Renna, 2008). One of the main issues related to patterns of harmful use of alcohol is related to the social context in which it takes place. In this sense, binge drinking is frequently associated with social events such as (Borsari, Murphy, et al., 2007; Pedersen & LaBrie, 2007; White & Hingson, 2013; Zamboanga et al., 2011).

According to Borsari et al. (2007) and Pedersen & LaBrie (2007), pregaming consists in drinking alcohol before going out to a social, sporting, or musical event where further alcohol consumption is expected.¹

Pregaming is a highly prevalent practice in young adults. Researchers have found that over 40% of students report pregaming and that this rate is higher among active drinkers (Labhart et al., 2017; O'Neil et al., 2016; Paves et al., 2012; Pedersen et al., 2009; Pedersen & LaBrie, 2007; Pilatti et al., 2018, 2020; Pilatti & Read, 2018; Read et al., 2010; Rutledge et al., 2016; Zamboanga et al., 2021; Zamboanga & Olthuis, 2016).

There is a large body of evidence linking pregaming to binge drinking and drunkenness (Ahmed et al., 2014; Borsari, Boyle, et al., 2007; DeJong et al., 2010; Gray et al., 2011; Miller et al., 2016) and harmful drinking consequences (Borsari, Boyle, et al., 2007; Haas et al., 2012; Hummer et al., 2011; Mallett et al., 2013; Merrill et al., 2013, 2016; Paves et al., 2012; Zamboanga et al., 2013).

According to data from the waves 2011, 2013, and 2018 of the Encuesta Nacional de Factores de Riesgo (INDEC, n.d.) in Argentina, binge drinking prevalence in the population aged 18-24 presents a sustained increase, rising from 27% in 2009 to 28.6% in 2013 and 34.6% in the last wave. In addition, the socioeconomic gradient of this habit has significantly weakened, suggesting that this problem affects all young people, regardless of their household income level (Carrazana Rivera & de Santis, 2021).

In Argentina, only a few studies have been conducted to analyze the pregaming phenomenon (del Zotto Libonati, 2015; Pilatti et al., 2018, 2020; Pilatti & Read, 2018; Zamboanga et al., 2021). In general, the mentioned authors conclude that participation in pregaming is associated with harmful drinking. Among these findings, there is a lack of evidence regarding the individuals' risk preferences, which influence the decision of being involved in unhealthy behaviors (Dave & Saffer, 2008).

The main objective of this study is to expand the current knowledge and evidence about pregaming in Argentina adopting a microeconomic approach to analyze the students' choice, which includes students' preferences regarding their tolerance to the risk. This work was conducted using primary data collected from a survey that took place in August 2019 among 1,320 freshmen students, aged between 18 and 25 years old, who attended two traditional Argentine National Universities: Universidad Nacional de Córdoba (UNC) and Universidad Nacional de Cuyo (UNCu).

Using a Latent Class Analysis (LCA), four types of students were identified according to their attitude towards exposing their health to risks regarding alcohol and other psychoactive substances consumption. The 46,08% of the sample present a high propensity toward risky behaviors and only 3% of the individuals are averse to risk. These

¹ Zamboanga & Olthuis (2016) have identified different terms used to describe *pregaming*, such as pre-partying, pre-drinking, preloading, front-loading and pre-funking, and provide a more comprehensive definition of pregaming. In Argentina this phenomenon is known as *previa*.

preferences were explicitly considered to estimate the probability of pregaming, which is positively associated with risk tolerance.

2. Methods and Materials

To go forward in the understanding of the context in which harmful alcohol use among young people occurs, we aim to characterize and describe the participation in pregaming of Argentinian college students. For that purpose, we identify risk profiles based on their coherence in risk perception and substance use and propensity. Afterward, the decision to participate in pregaming and its association with the risk profiles is analyzed.

2.1 Methods

2.1.1 Latent Class Analysis

One of the main contributions of this work is the analysis of students' preferences regarding their tolerance to the risk of exposing their health to dangerous behaviors. To classify the individuals in different risk tolerance classes we employ the Latent Class Analysis (LCA). The LCA is a person-oriented approach based on the patterns of individual characteristics that are relevant to the problem under consideration and presents the advantage of determining the optimal number of classes instead of establishing it discretionally (Bergman & Magnusson, 1997; Collins & Lanza, 2009; Goodman, 1974; Lanza & Rhoades, 2013; Lazarsfeld & Henry, 1968). It is a kind of framework that is typically conducted by researchers in social behavior, medical and health sciences.

The LCA estimation for risk tolerance classes takes into account the alcohol, tobacco, and marijuana prevalences and age of onset, the coherence between the measure of harmful drinking (AUDIT) and the self-risk perception, and the curiosity and propensity to substance use.

Different LCAs are conducted to identify classes of students based on their risk preferences. Alternative solutions are studied, beginning with the most naive (i.e., one class) and increasing the number of latent classes by one to determine the model that featured the best data fit. All LCA analyses are conducted with Stata 15 and LCA-Stata plugin, Version 1.3.2 (Lanza et al., 2018). An advantage of LCA is the variety of tools available to assess the goodness-of-fit of the model and determine the appropriate number of latent classes. AIC is a goodness-of-fit index and smaller values indicate a greater model fit. The likelihood-ratio statistic G^2 is a measure of absolute fit and reflects the correspondence between observed and expected cell counts in the contingency table made up by crossing all indicators of the latent class variable. Absolute model fit refers to whether a specified latent class model provides an adequate representation of the data. Entropy is used to determine the accuracy of assignments of individuals in classes. The parametric bootstrap likelihood ratio test (LRT) for LCA is also used to choose the number of classes for latent class.² The bootstrap LRT is performed using the LCA Bootstrap Stata function (Huang et al., 2016). The LRT compares whether a c class solution fits better than $c - 1$ class solution, where a significant value suggests that the model shows a better fit than $c - 1$ class model. Furthermore, each model is assessed for its interpretability to determine whether the classes represent in effect different categories (Collins & Lanza, 2009; Pilatti et al., 2020).

2.1.2 Analysis of the decision of participation in pregaming and its association with the risk profiles

We analyze the pregaming decision using a microeconomic model. For this purpose, discrete choice models are used. This kind of models are used to explain a choice from a set of two or more distinct and mutually exclusive alternatives. Hence, the problem of consumers' choice is determined by a process of maximizing his expected utility. Discrete choice models operate within a framework of rational choice, i.e. the consumer chooses the option of maximal benefit or utility.³

In this case, the student is confronted with a binary set of options: participate in pregaming or not participate. And it is assumed that when the student chooses to participate in pregaming, the net gain in his utility resulting from pregaming is equal or greater than the utility of not participate (his cost of opportunity).

To estimate the probability of participating in pregaming, we propose a probit model. The preferences toward risk captured by the latent classes are explicitly included, along with demographic, socioeconomic and alcohol-related behavior variables as covariates. In this model, the dependent variable assumes 1 if the individual declares to attend a pregaming and 0 otherwise.

² This test is described in McLachlan & Peel (2000), Nylund et al. (2007); and Collins et al. (1993).

³ Further analysis can be found at Dave & Saffer (2008), Viscusi (1990, 1992), Portillo Pérez de Viñaspre (2007).

2.2 Data

To carry out this study, a specific dataset was designed and generated, which required a great deal of effort. In light of this, we limited our analysis to the case of the FCE-UNC and FCE-UNCu, institutions where three undergraduate degrees are taught: Bachelor of Sciences in Economics, Bachelor of Arts in Administration and Public Accountant. The UNC, also being the oldest university in Argentina, is the second largest after the Universidad de Buenos Aires, with around 115,000 students. In the particular case of the FCE-UNC, it is also among the largest in the country in terms of the number of students, with an area of influence that includes not only the Province of Córdoba, in which capital city is located, but also the center and the north-west of the country. The UNCu is an educational reference institution located in the west of the country and has 48,000 students, of which almost 10% are enrolled in the FCE-UNCu.

Primary data were collected from a survey that took place in August 2019 in the student bodies of the two traditional universities. One thousand three hundred and twenty freshmen, aged between 18 and 25 years old were surveyed. Participation was completely voluntary, and students were informed that they would not be penalized in any way if they chose not to participate. Participants did not receive any compensation.

2.3 Measures

2.3.1 Participation in pregaming

We adopt the conventional pregaming definition: drinking before attending another event at a different location (Zamboanga & Olthuis, 2016). The variable pregaming is dichotomous assuming 1 if the student reported participation in pregaming and 0 otherwise. It is considered that a student participates in pregaming when the following questions are answered affirmatively: “Do you attend meetings held in private homes, where alcoholic beverages are shared?”, “Do you consume alcohol in these meetings?”, and “Do you attend these meetings prior to going to a discotheque/club?”

2.3.2 LCA Indicators

The indicators employed to estimate the risk preference' classes are dichotomous variables that represent the attitudes toward the use of alcohol and other psychoactive substances.

- Use of psychoactive substances

We employ lifetime prevalence of alcohol, tobacco and marijuana. Additionally, early psychoactive substance use is captured by considering if the individual onset begins before 15 years old of age.

- Risk perception coherence

The survey includes the AUDIT questionnaire, which allows for identifying risky drinking behaviors, according to the score obtained by each individual. They can be classified as low risk, risky and harmful drinkers, by their drinking characteristics. This measure of risky behavior regarding alcohol consumption is called in this study, objective risk. The subjective risk is assessed by the individual risk perception about his behavior related to alcohol. At the individual level, when the objective risk matches with the subjective risk, it is scored as “1” to the variable coherence. If the individual perceives a different risk exposure than the objective risk, it is scored as “0” to the variable coherence.

- Propensity and accessibility to psychoactive substances

Regarding propensity to psychoactive substance use (alcohol, tobacco, marijuana, cocaine, ecstasy, or tranquilizers), two variables are included in the analysis. If the respondent manifests that would try or have curiosity on any of the substances mentioned they are scored as “1” in the variables *Would try psychoactive substances* and *Curiosity on psychoactive substances*, respectively, and “0” otherwise.

Accessibility to substances is assessed by the behavior of their friends, when the individual declares that have friends that get drunk or consume marijuana frequently the variable “Friends get drunk and/or consume marijuana” is scored as “1”, and “0” otherwise.

2.3.3 Other variables

To analyze the students' choice of participation in pregaming, the following covariates are used:

- Demographic variables:

Include age, gender (scores “1” if the student is male), single (scores “1” if the student is single), living with parents (scores “1” if the student shares the household with his family), and city (scores “1” if the student comes from a city of more than 50 thousand inhabitants).

- Socioeconomic variables:

These are dummies that capture if the student works, belongs to medium or high socioeconomic status, and college-educated household (scores “1” if at least one parent has a college degree).

- Alcohol-related variables

Knowledge about harmful drinking is evaluated using an ad-hoc index (knowledge index). This index is built using ten questions to which respondents are likely to answer true (1) or false (0). The sum of the correct answers gives the knowledge index of each individual.

The enhancement motives variable scores “1” if the student declares drinking to enhance positive mood or well-being, and “0” otherwise.

The AmEDs variable scores “1” if the student claims to consume alcohol mixed with energy drinks, and “0” otherwise.

3. Results

3.1 Participation in pregaming

Almost 42% of the sample claims to participate in pregaming. Table 1 presents the t-test of some relevant variables. The t-test shows differences in some features among the group of students that participate in pregaming and the group that does not do it. The pregamers exhibit more risk measured by AUDIT index and more harmful drinking (binge drinking, and AmED), live with their family, come from a city of more than 50 thousand inhabitants, belong to the highest socio-economic stratum, are single, and study at FCE-UNC, compared with non-pregamers. No differences in gender, employment status, and knowledge about harmful consequences of drinking are observed.

Table 1. Means test for attendance and pregaming

| Variables | Attendance (n= 1,224) | Pregaming (n= 550) |
|-------------------------|--------------------------|-----------------------|
| Total sample prevalence | 0.9266 | 0.4164 |
| AUDIT Low risk (0-7) | 0.0846 *** | 0.2541 *** |
| Binge drinking | -0.0797 *** | -0.1956 *** |
| Male | -0.0226 | 0.0271 |
| FCE-UNC | -0.0084 | -0.1658 *** |
| Single | -0.0590 | -0.1611 ** |
| Lives w/family | -0.0175 | 0.0757 ** |
| Big city | -0.0410 *** | 0.0703 ** |
| Works | 0.0312 ** | 0.0269 |
| High SES | 0.0945 * | 0.1968 ** |
| High mother education | -0.0404 *** | -0.0741 *** |
| Correct knowledge | -0.0108 | 0.0334 |
| Enhancement motives | -0.1394 *** | -0.2212 *** |
| AmED | -0.1075 *** | -0.2938 *** |

Note: *** p<0.01, **p<0.05, * p<0.1

Source: own elaboration.

3.2 Latent Class Analysis

Table 2 represents goodness-of-fit indexes, entropy, likelihood-ratio statistic G^2 and LRT for different LCA models. The 4-class model provides the most parsimonious⁴ model based on the LRT and AIC. As entropy ranges

⁴ Parsimony is a philosophical principle stating that all else being equal, simpler models are preferred to more complex models. According to this principle, statistical models should estimate no more parameters, than is absolutely necessary to represent the data adequately (Box et al., 2015; Collins & Lanza, 2009).

between 0 to 1, a value of 0.78 is high, suggesting the model succeeds to find homogeneous groups of students with separate profiles.

Table 2. Fit statistics for different LCA solutions

| LCA solutions | df | AIC | Adjusted AIC | BIC | Adjusted BIC | Entropy | G2 | LRT | LRT test (p) |
|------------------|------------|---------------|---------------|---------------|---------------|-------------|--------------|-----------------|--------------|
| 1-Cluster | 247 | 1485.04 | 1534.53 | 1526.53 | 1501.12 | 1.00 | 1469.04 | -4587.61 | 0.00 |
| 2-Cluster | 238 | 531.30 | 636.47 | 619.47 | 565.47 | 0.72 | 497.30 | -4101.74 | 0.00 |
| 3-Cluster | 229 | 198.68 | 359.52 | 333.52 | 250.92 | 0.82 | 146.68 | -3926.42 | 0.00 |
| 4-Cluster | 220 | 163.51 | 380.03 | 345.03 | 233.85 | 0.77 | 93.51 | -3899.84 | 0.11 |
| 5-Cluster | 211 | 162.83 | 435.02 | 391.02 | 251.25 | 0.80 | 74.83 | -3890.50 | 0.26 |
| 6-Cluster | 202 | 164.18 | 492.05 | 439.05 | 270.69 | 0.77 | 58.18 | -3882.18 | 0.59 |
| 7-Cluster | 193 | 170.52 | 554.06 | 492.06 | 295.12 | 0.70 | 46.52 | -3876.35 | 0.61 |

Source: own elaboration.

Therefore, the LCA allows us to identify four clearly defined groups regarding their preferences toward risky behaviors: Class 1 labeled as All-in players comprises 46.08% of the sample; Class 2 labeled Senior onset players represents 14.89% of the sample; Class 3 labeled as Junior onset players comprises 35.89% of the sample; and Class 4 labeled as Cautious players represents 3.15% of the sample. Table 3 present latent class prevalences and item-response probabilities across risk preferences.

Table 3. Latent Class prevalences and Item-Response Probabilities

| Class prevalences/Item-response probabilities | Total sample | All-in player | Senior onset player | Junior onset player | Cautious player |
|---|--------------|------------------|---------------------|---------------------|------------------|
| Latent Class prevalences | N=1321 | 46.08% (0.02) | 14.89% (0.04) | 35.89% (0.04) | 3.15% (0.01) |
| 1. Behaviors | | | | | |
| Lifetime alcohol use | 95.53% | 99.83% (0.00) | 87.51% (0.00) | 99.99% (0.00) | 19.65% (0.00) |
| Lifetime tobacco use | 52.27% | 89.60% (0.00) | 11.80% (0.00) | 25.59% (0.00) | 2.69% (0.00) |
| Lifetime marijuana use | 37.27% | 77.60% (0.00) | 10.04% (0.00) | 0.17% (0.00) | 0.23% (0.00) |
| Early psychoactive substance use (<15 y.o.) | 66.74% | 88.25% (0.00) | 0.59% (0.00) | 72.03% (0.00) | 5.32% (0.00) |
| 2. Risk perception vs AUDIT score | | | | | |
| Coherence | 72.65% | 58.43% (0.00) | 96.66% (0.00) | 79.94% (0.00) | 84.87% (0.00) |
| 3. Propensity and accesibility | | | | | |
| Would try psychoactive substances | 96.21% | 99.81% (0.00) | 97.58% (0.00) | 98.00% (0.00) | 16.82% (0.00) |
| Curiosity on psychoactive substances | 97.05% | 99.83% (0.00) | 99.59% (0.00) | 100.00% (0.00) | 8.18% (0.00) |
| Friends get drunk and/or consume marijuana frequently | 85.23% | 96.71% (0.00) | 74.26% (0.00) | 78.67% (0.00) | 44.10% (0.00) |

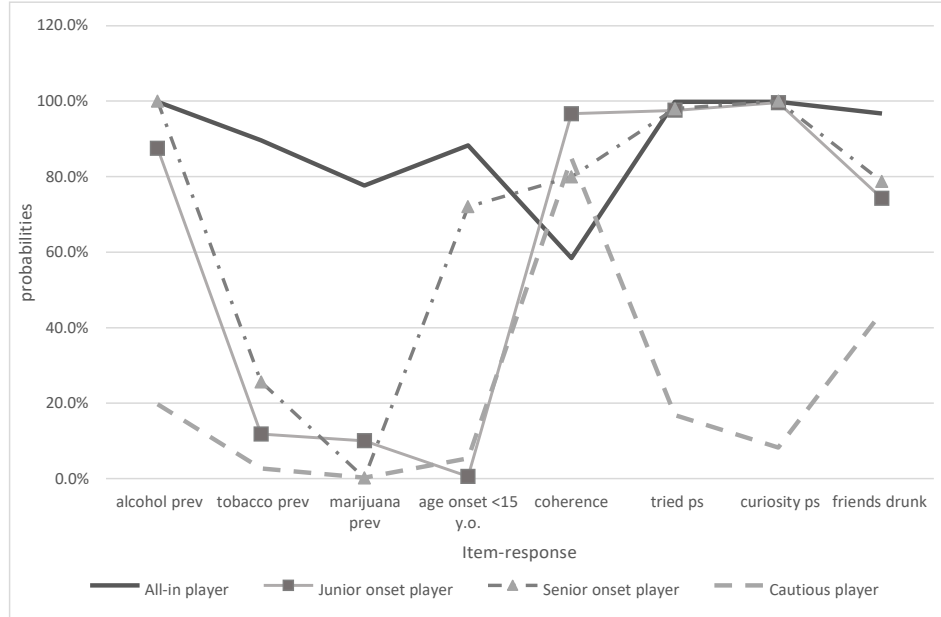
Note: standard errors in parentheses.

Source: own elaboration.

Regarding the indicators employed in the LCA, All-in players are the ones that show the greatest probability of having risky behaviors, as they present the highest prevalences of substance use, earlier onset, the highest curiosity and propensity and the lowest probability to assess coherently the risk associated to self-behavior. The opposite profile is represented by the Cautious players who show the less risky behavior.

Junior onset and Senior onset players exhibit less risky behaviors than the All-in players, but riskier than the Cautious players. The difference between these two groups is found in the age of onset of substance use. It is worth nothing that the Senior onset players exhibits the highest probability to assess coherently the risk associated to self-behavior.

Figure: Item-response probabilities conditional on latent class membership



Source: own elaboration.

3.3 Participation on pregaming

All-in players have higher participation in pregaming and binge drinking prevalence than the total sample.

Table 4. Attendance, pregaming, harmful drinking and knowledge by classes

| Variable | Total Sample | All-in player | Junior initiation player | Senior initiation player | Cautious player |
|---------------------------|--------------|---------------|--------------------------|--------------------------|-----------------|
| Attending | 92.66% | 97.71% | 92.23% | 88.00% | 45.24% |
| Pregaming | 41.64% | 52.13% | 40.21% | 22.80% | 2.38% |
| AUDIT Low risk (0-7) | 71.23% | 53.96% | 81.23% | 97.60% | 95.24% |
| Binge drinking prevalence | 51.17% | 70.58% | 41.55% | 22.80% | 2.38% |
| Correct knowledge | 70.10% | 68.60% | 70.51% | 74.40% | 64.29% |

Source: own elaboration.

Table 5 shows the estimates of different specifications of the participation in pregaming decision model. As can be observed, attitude towards risk have a statistically significant positive effect on the probability of pregaming in all specifications in which they are included. The results are robust to the addition of demographic, socioeconomic, and alcohol-related variables.

Table 5. Probit regression model predicting participation in pregaming

| Variables | Model 1 (1) | Model 2 (2) | Model 3 (3) | Model 4 (4) | Model 4 (5) |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------|
| <i>Risk Profiles</i> | | | | | |
| All-in player | 2.0343*** [0.422] | 2.1314*** [0.415] | 2.0837*** [0.420] | 1.5781*** [0.390] | NO |
| Junior onset player | 1.7330*** [0.425] | 1.7547*** [0.418] | 1.7162*** [0.422] | 1.2691*** [0.391] | NO |
| Senior onset player | 1.2353*** [0.429] | 1.3092*** [0.422] | 1.2715*** [0.426] | 0.9404** [0.391] | NO |
| <i>Demographic Variables</i> | NO | YES | YES | YES | YES |
| <i>Socioeconomic Variables</i> | NO | NO | YES | YES | YES |
| <i>Alcohol related variables</i> | NO | NO | NO | YES | YES |
| Observations | 1,321 | 1,320 | 1,320 | 1,320 | 1,320 |
| Pseudo-R: | 0.059 | 0.096 | 0.100 | 0.137 | 0.111 |
| Log-Likelihood: | -844.399 | -810.468 | -806.495 | -772.997 | -796.780 |
| Chi-squared | 83.654 | 141.195 | 150.015 | 228.036 | 187.223 |
| Prob Wald: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Note: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Source: own elaboration.

Age and being male are negatively and significantly associated with the decision of pregaming. On the contrary, being single is positively associated with the probability of pregaming. Lastly, being a student at UNC-FCE is positively associated with the probability of pregaming (Table 5A).

The variables related to alcohol consumption present the expected signal and are statistically significant with exception of the level of knowledge about alcohol effects: drinking for improving social life and combining alcohol with energy beverages (AmEDs) are positively related with the chances of pregaming (Table 5A).

It can be noted that traditionally, cross-section data do not allow controlling heterogeneity in preferences, which can be overcome with panel data. In this study, the preferences are estimated by LCA and explicitly included in the model to estimate the likelihood of participating in a pregaming. This approach made it possible because the data base is especially designed for dealing with these typical constraints.

Table 6 shows the marginal effects at means. The variables that have the strongest association with the likelihood of pregaming are those related to preferences: being an all-in player is associated with a 60-percentage point (p.p.) increase in the likelihood of pregaming, 12 p.p. more than being a Junior onset player and almost 30 p.p. more than being a Senior onset player.

The enhancement motive and AmEDs are associated with an increase of 13% and 22%, respectively, in the probability of participating in pregaming (Table 6A).

Being single and studying at FCE-UNC are related with increases of 19 p.p. and 10 p.p., respectively, in the probability of participating in pregaming (Table 6A).

On the contrary, being male is associated with a decrease of 5 p.p. in the probability of participating in pregaming (Table 6A).

The results suggest that exposing health to dangerous behaviors is related to individuals' preferences. That is, controlling by the effect of socioeconomic, demographic and other variables, it can be concluded that the chances of being involved in pregaming is positively related to the tolerance of exposing health to dangerous behaviors.

Table 6: Marginals effect on pregaming

| Variables | Model 1 (1) | Model 2 (2) | Model 3 (3) | Model 4 (4) | Model 5 (5) |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------|
| <i>Risk Variables</i> | | | | | |
| All-in player | 0.7871*** [0.162] | 0.8217*** [0.158] | 0.8025*** [0.160] | 0.6046*** [0.148] | NO |
| Junior onset player | 0.6705*** [0.163] | 0.6764*** [0.159] | 0.6609*** [0.161] | 0.4862*** [0.149] | NO |
| Senior onset player | 0.4780*** [0.165] | 0.5047*** [0.161] | 0.4897*** [0.163] | 0.3603** [0.149] | NO |
| <i>Demographic Variables</i> | NO | YES | YES | YES | YES |
| <i>Socioeconomic Variables</i> | NO | NO | YES | YES | YES |
| <i>Alcohol related variables</i> | NO | NO | NO | YES | YES |
| Observations | 1,321 | 1,320 | 1,320 | 1,320 | 1,320 |

Note: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Source: own elaboration.

4. Discussion

4.1 Summary of results

The present study examines the decision of participating in pregaming among college students in Argentina. Students' preferences were identified and explicitly introduced in the model, which allowed a discrete approximation of their utility function. Four types of individuals were identified based on their attitudes towards health risk exposure associated with the consumption of alcohol and other psychoactive substances. A figure of concern is that a mere 3% of the individuals in the sample were averse to risk or Cautious player, while in the other extreme, 46.08% presented the highest probabilities of lifetime alcohol, tobacco and marijuana use, beginning consumption before age 15, and the highest propensity and accessibility to psychoactive substances (All-in player). More than 40% of the students in this latent class did not show coherence in their risk perception. The other 50% of the sample is characterized by high probabilities of alcohol consumption, high propensity to psychoactive substances uses and high risks perception coherence, low lifetime tobacco and marijuana prevalence, although with some differences in the onset age.

To explain the decision about participating or not in pregaming, a microeconomic approach is used. It is pointed out that individuals are involved in pregaming when the utility derived from positive results overwhelm the one from potential negative effects. This subjective evaluation is influenced by the preferences or attitude about risk tolerance. It is found that, as it was expected, the more tolerant the individual, the higher the likelihood of pregaming will be after controlling by demographic and socioeconomic factors.

4.2. Comparison with previous studies

This study corroborates that pregaming is an extended practice among Argentine college students, as it noticed in the literature (Zamboanga et al., 2021). Almost 42% of the sample participate in pregaming, similar to the results obtained by Pilatti et al. (2018), Miller et al. (2016), but less than the findings of Haas et al. (2012), DeJong et al. (2010), Borsari, Boyle, et al. (2007), Paves et al. (2012), Merrill et al. (2016), O'Neil et al. (2016), Riordan et al. (2018), and Zamboanga et al. (2021).

Del Zotto Libonati (2015) finds that in Spain, the phenomenon of "botellón"⁵ is extended among all socioeconomic strata, although is more popular among middle class, students of college who live with their parents. These results are similar to ours, since that belonging to the middle socio-economic level is positively related with the participation in pregaming.

⁵ The Spanish equivalent of pregaming.

We find that women participate in pregaming more than men. Merrill et al. (2013) observed a marginal gender difference towards women being more likely to experience adverse consequences as a function of pregaming. And, Haas et al. (2012) found that pregaming frequency was associated with demographics (gender, ethnicity, Greek affiliation), heavy drinking, drinking game frequency, and two scales of the Alcohol Expectancy Inventory (Addiction Research Center, n.d.). Although, Borsari, Boyle, et al. (2007), DeJong et al. (2010), Paves et al. (2012) and Pilatti & Read (2018) find that men do not pregaming more than women.

As it was mentioned, the prevalence of early drinkers is noticeably high among All-in players and Junior players. The results of the model show that belonging to those groups increase the chances of attending a pregaming, which are in line with those of Pilatti et al. (2018), who find that early drinkers attend pregamings more frequently than others.

As Linden-Carmichael & Lau-Barraco (2017), we find that AmEDs is positive linked with pregaming. This pattern may be a particularly risky situation, given that AmEDs can reduce the feeling of sedative effects or feelings of intoxication without reducing actual intoxication (Linden-Carmichael & Lau-Barraco, 2017; Marczynski & Fillmore, 2006, 2014).⁶

4.3 Strengths and limitations

This work is a contribution to the literature since it is one of the few that explains the pregaming decision from a microeconomic approach, including variables that approximate the utility function. It also provides evidence of this phenomenon among Argentine students of two traditional universities located in different regions of the country. It is noteworthy that it is carried out with a primary database specially designed for the study.

One of the possible reasons for pregaming is to access alcoholic beverages at cheaper prices than at other events. Unfortunately, this study is not able to capture this price differential. Despite this limitation, the results are relevant and deserve to be deepened in the future.

4.4 Implications and further research

This study provides important information by identifying risk profiles among Argentine university students. It is of great concern that the highest risk group represents more than 45% of the studied population. It is also important to note that the risk profiles are linked to facts before university entrance, namely the onset age of substance use. Without undermining the importance of prevention policies at the university level, this implies that prevention policies should focus on upstream educational levels.

In considering our results and their policy implications, it is worth emphasizing that given the cross-sectional nature of available data, this analysis is descriptive and is still a way to go on further research to find causal pathways.

In addition, pregaming among the young population should be studied deeply to acknowledge and foresee future negative effects (drunkenness, binge drinking, poor academic performance, traffic accidents, violence).

5. Conclusions

This study highlights the importance of risk profiles in the assessment and characterization of a phenomenon as popular as pregaming among young adults.

⁶ If students are consuming AmEDs while pregaming, they may be even more likely to drink heavily throughout the rest of the night because they may not feel the sedative effects of alcohol, which could have normally caused a person to cease drinking (Linden-Carmichael & Lau-Barraco, 2017).

6. References

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Annex

Table 5A. Probit regression model predicting participation in pregaming

| Variables | Model 1 (1) | Model 2 (2) | Model 3 (3) | Model 4 (4) | Model 5 (5) |
|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Risk Variables</i> | | | | | |
| All-in player | 2.0343*** [0.422] | 2.1314*** [0.415] | 2.0837*** [0.420] | 1.5781*** [0.390] | NO |
| Junior onset player | 1.7330*** [0.425] | 1.7547*** [0.418] | 1.7162*** [0.422] | 1.2691*** [0.391] | NO |
| Senior onset player | 1.2353*** [0.429] | 1.3092*** [0.422] | 1.2715*** [0.426] | 0.9404** [0.391] | NO |
| <i>Demographic Variables</i> | | | | | |
| age | | -0.0874*** [0.023] | -0.0819*** [0.025] | -0.0786*** [0.025] | -0.0743*** [0.025] |
| male | | -0.1437* [0.074] | -0.1519** [0.075] | -0.1338* [0.077] | -0.1171 [0.076] |
| single | | 0.5706*** [0.211] | 0.5604*** [0.213] | 0.4870** [0.227] | 0.3853* [0.227] |
| lived with family | | -0.0338 [0.092] | -0.0239 [0.095] | -0.0162 [0.095] | -0.0688 [0.093] |
| city | | -0.1300 [0.088] | -0.1303 [0.089] | -0.1504* [0.090] | -0.1321 [0.089] |
| UNC-FCE | | 0.4196*** [0.076] | 0.4083*** [0.077] | 0.2742*** [0.080] | 0.2383*** [0.078] |
| <i>Socioeconomic Variables</i> | | | | | |
| work | | | 0.0019 [0.089] | -0.0057 [0.091] | 0.0419 [0.091] |
| medium socioeconomic status | | | 0.1867* [0.097] | 0.2078** [0.099] | 0.2334** [0.098] |
| high socioeconomic status | | | -0.5059 [0.386] | -0.4787 [0.393] | -0.5218 [0.365] |
| college-educated household | | | 0.0495 [0.078] | 0.0798 [0.080] | 0.1279 [0.079] |
| <i>Alcohol related variables</i> | | | | | |
| knowlegde index | | | | -0.0194 [0.026] | -0.0223 [0.026] |
| enhacement motive | | | | 0.3470*** [0.094] | 0.4596*** [0.091] |
| AmEDs | | | | 0.5674*** [0.083] | 0.6760*** [0.080] |
| Constant | -1.9808*** [0.419] | -0.9521 [0.685] | -1.1753* [0.710] | -1.1617 [0.748] | 0.0589 [0.632] |
| Observations | 1,321 | 1,320 | 1,320 | 1,320 | 1,320 |
| Pseudo-R: | 0.059 | 0.096 | 0.100 | 0.137 | 0.110 |
| Log-Likelihood: | -844.399 | -810.468 | -806.679 | -773.038 | -797.627 |
| Chi-squared | 83.654 | 141.195 | 148.449 | 225.218 | 179.538 |
| Prob Wald: | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Note: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1
Source: own elaboration.

Table 6A. Marginals effect on pregameing

| Variables | Model 1 (1) | Model 2 (2) | Model 3 (3) | Model 4 (4) | Model 5 (5) |
|----------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Risk Variables</i> | | | | | |
| All-in player | 0.7871*** [0.162] | 0.8217*** [0.158] | 0.8025*** [0.160] | 0.6046*** [0.148] | NO |
| Junior onset player | 0.6705*** [0.163] | 0.6764*** [0.159] | 0.6609*** [0.161] | 0.4862*** [0.149] | NO |
| Senior onset player | 0.4780*** [0.165] | 0.5047*** [0.161] | 0.4897*** [0.163] | 0.3603** [0.149] | NO |
| <i>Demographic Variables</i> | | | | | |
| age | | -0.0337*** [0.009] | -0.0316*** [0.010] | -0.0301*** [0.010] | -0.0297*** [0.010] |
| male | | -0.0554* [0.029] | -0.0585** [0.029] | -0.0513* [0.030] | -0.0362 [0.029] |
| single | | 0.2200*** [0.081] | 0.2158*** [0.082] | 0.1866** [0.087] | 0.1566* [0.088] |
| lived with family | | -0.0130 [0.036] | -0.0092 [0.036] | -0.0062 [0.036] | -0.0263 [0.036] |
| city | | -0.0501 [0.034] | -0.0502 [0.034] | -0.0576* [0.034] | -0.0425 [0.034] |
| UNC-FCE | | 0.1617*** [0.029] | 0.1573*** [0.029] | 0.1050*** [0.031] | 0.0940*** [0.030] |
| <i>Socioeconomic Variables</i> | | | | | |
| work | | | 0.0007 [0.034] | -0.0022 [0.035] | 0.0162 [0.035] |
| medium socioeconomic status | | | 0.0719* [0.037] | 0.0796** [0.038] | 0.0902** [0.038] |
| high socioeconomic status | | | -0.1948 [0.149] | -0.1834 [0.151] | -0.2017 [0.141] |
| college-educated household | | | 0.0191 [0.030] | 0.0306 [0.031] | 0.0494 [0.031] |
| <i>Alcohol related variables</i> | | | | | |
| knowledge index | | | | -0.0074 [0.010] | -0.0086 [0.010] |
| enhancement motive | | | | 0.1329*** [0.036] | 0.1777*** [0.035] |
| AmEDs | | | | 0.2174*** [0.032] | 0.2614*** [0.031] |
| Observations | 1,321 | 1,320 | 1,320 | 1,320 | 1,320 |

Note: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

Source: own elaboration.