

ORIGINAL

Understanding how alcohol environment influences youth drinking: A concept mapping study among university students

Influencia del entorno en el consumo de alcohol en jóvenes: Un estudio utilizando el concept mapping con estudiantes universitarios

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Abstract

The aim of the study was to identify the environmental factors that influence alcohol consumption, according to university students, and assess the relative importance and the frequency attributed to each factor. A study using Concept Mapping methodology was performed with a sample of nursing students, who participated in two face-to-face data collection sessions. In session 1, a consensus about the environmental aspects that influence their alcohol consumption was obtained. In session 2, the statements obtained were rated according to their relative importance and frequency in alcohol use (1 = *minimum*; 5 = *maximum*). Subsequently, all data were analyzed with the RCMAP of the statistical package R 3.6.1.

Resumen

El objetivo del estudio fue identificar los factores del entorno que influyen en el consumo de alcohol según la perspectiva de estudiantes universitarios, y evaluar la importancia y la frecuencia atribuida a cada factor. Se utilizó la metodología del *Concept Mapping* con una muestra de estudiantes de enfermería, que participaron en dos sesiones de recogida de datos. En la sesión 1, se obtuvo un consenso sobre los aspectos del entorno que influyen en su consumo de alcohol. En la sesión 2, los ítems obtenidos se clasificaron en función de la importancia y la frecuencia de estos factores en el consumo de alcohol (1 = mínimo; 5 = máximo). Todos los datos se analizaron con el RCMAP del paquete estadístico R 3.6.1.

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Approximately 60 students participated in each session. Most were women aged 20 to 24. In session 1, a total of 55 statements were obtained and classified into 7 different clusters: Advertising (9 statements); Family environment (4 statements); Social pressure (12 statements); Responsibilities/norms (4 statements); Holidays and leisure time (7 statements); Emotional situations (8 statements); Accessibility (11 statements). Factors related to social pressure, holidays and leisure time, and alcohol accessibility were considered the most important and frequent in alcohol consumption. In contrast, alcohol advertising was considered the least important (mean 2.6 out of 5) and frequent (mean 2.1 out of 5) factor. In conclusion, the factors considered most relevant among nursing students match those having more resources allocated for prevention and health promotion, except for alcohol advertising, which was perceived as less important and frequent compared with the other factors.

Key words: concept mapping, alcohol drinking, young adults, university student

Alcohol consumption is widespread in many countries, and common among different population groups. Adolescents and young adults may be considered a risk group for harmful alcohol consumption (Plan Nacional Sobre Drogas, 2021; World Health Organization, 2018). In Europe, the pattern of alcohol consumption has changed greatly over the past 30 years (Gordon, Heim & MacAskill, 2012). In Spain in particular, a traditional pattern of daily drinking, mainly during meals, evolved to episodic intensive consumption of alcohol during weekends (binge drinking), especially among young people (Galán, González & Valencia-Martín, 2014; Gordon et al., 2012). In fact, this drinking pattern peaks around 20 years of age and then tends to stabilize or decrease (Jackson, Sher, Cooper & Wood, 2002). For instance, in Spain the highest prevalence of binge drinking is observed between the ages of 20 and 24, both in women and men (Plan Nacional Sobre Drogas, 2021). This may be because many young people associate alcohol consumption with weekend nights, fun, and leisure (Pardo, 2002). This situation means that young people are disproportionately affected by acute intoxication and show a higher proportion of deaths attributed to alcohol consumption compared to older people (World Health Organization, 2018, 2019). Finally, alcohol use may be influenced by its wide availability, lack of recreational facilities and entertainment, normalization of drinking behaviours, and advertising and marketing (Bryden, Roberts, McKee & Petticrew, 2012; Muli & Lagan, 2017).

Various studies suggest that university students drink more than their non-university peers (Barnes, Welte, Hoffman & Tidwell, 2010; Quinn & Fromme, 2011). In Spain, 80-97.7% of university students reported alcohol use (Cortés Tomás, Espejo Tort & Giménez Costa, 2007; Moreno-Gómez et al., 2012), and 50.9% had binged in the month prior to their interview (Varela-Mato, Cancela, Ayan, Martín & Molina, 2012). Among university students, alcohol use may be promoted by increased freedom, feeling

Alrededor de 60 estudiantes participaron en cada sesión. La mayoría eran mujeres de 20 a 24 años. En la sesión 1, se obtuvieron un total de 55 ítems que fueron clasificados en 7 grupos: Publicidad (9 ítems); Ambiente familiar (4 ítems); Presión social (12 ítems); Responsabilidades/normas (4 ítems); Vacaciones y tiempo libre (7 ítems); Situaciones emocionales (8 ítems); Accesibilidad (11 ítems). Los factores relacionados con la presión social, las vacaciones y el tiempo libre y la accesibilidad del alcohol, fueron considerados los más importantes y frecuentes en el consumo de alcohol. Contrariamente, la publicidad del alcohol fue considerada el factor menos importante (media 2,6 sobre 5) y frecuente (media 2,1 sobre 5). En conclusión, los factores considerados más relevantes entre los estudiantes coinciden con los que se destinan más recursos para la prevención y la promoción de la salud, a excepción de la publicidad del alcohol, que se percibió como menos importante y frecuente comparado con los otros factores.

Palabras clave: Concept Mapping, consumo de bebidas alcohólicas, adultos jóvenes, estudiantes universitarios

that university is a “time out” between adolescence and adulthood, and the peer environment (Bulmer et al., 2016; Caamaño-Isorna, Corral, Parada & Cadaveira, 2008; Colby, Colby & Raymond, 2009; Merrill & Carey, 2016; Mota et al., 2010; Wicki, Kuntsche & Gmel, 2010). Other factors influencing alcohol use among university students include gender (Gaete & Araya, 2017; Mota et al., 2010; Wicki et al., 2010), age of drinking onset (Caamaño-Isorna et al., 2008; Gaete & Araya, 2017; Mota et al., 2010; Wicki et al., 2010), pocket money (Barry & Goodson, 2012; Gaete & Araya, 2017), expectations about alcohol use, e.g. a way to release from stress and from daily and academic activities, and a social facilitator (Bulmer et al., 2016; Caamaño-Isorna et al., 2008; Colby et al., 2009; Dodd, Glassman, Arthur, Webb & Miller, 2010; Merrill & Carey, 2016; Mota et al., 2010), personality traits (e.g. impulsivity and sensation-seeking), and negative emotional states (Barry & Goodson, 2012; Merrill & Carey, 2016; Muli & Lagan, 2017).

However, most studies exploring factors associated to alcohol drinking among university students are from North America, and much less is known about the perspective of university students in Europe. Besides, these studies seldom consider contextual factors such as alcohol advertising, availability and accessibility or the high presence of alcohol where people live, factors that may influence alcohol drinking behaviours (Bryden et al., 2012; Ellickson, Collins, Hambarsoomians & McCaffrey, 2005; Jernigan, Noel, Landon, Thornton & Lobstein, 2017; Mori-Gamarra et al., 2018; Sureda, Villalbí, Espelt & Franco, 2017b).

Techniques such as Concept Mapping (CM) were used in other studies to explore the different effects of alcohol use (Windsor, 2013). CM is a mixed methodology that combines a qualitative approach with a quantitative analysis. The aim is to translate complex qualitative data into a pictorial form (concept maps), which displays the interrelationships between ideas in the form of clusters (Burke et al., 2005; Trochim, 1989). Specifically, CM

methodology integrates group processes of generating ideas, such as brainstorming and unstructured sorting, with multivariate statistical techniques of multidimensional scaling, and with hierarchical cluster analysis. The two aims of this study were: 1) to identify the environmental factors that influence alcohol consumption among university students in Spain; 2) to assess the importance and frequency of each environmental factor, using concept mapping.

Methods

This study is framed within the research lines of the Fundació Universitària del Bages (FUB), Manresa campus of the University of Vic-Central University of Catalonia (UVic-UCC), which has passed the necessary methodological and ethical requirements and has been positively evaluated by the Scientific Research Committee of the Research and Innovation Department of the FUB, certifying its suitability and scientific quality.

In this study, we used concept mapping (Burke et al., 2005; Trochim, 1989). A convenience sample of students participated in two face-to-face sessions between April and June 2019. Students were from the Degree of Nursing of the Faculty of Health Sciences of Manresa of the UVic-UCC, Spain. We carried out the collecting sessions during two hours of class. 59 out of 71 nursing students enrolled in the first data collection session, and 58 in the second session, with a participation rate of 83.1% and 81.7%, respectively. Attendance to class on the study days was similar to that observed throughout the semester.

Data collection and analysis

CM is a methodology consisting of six major steps (Burke et al., 2005; Trochim, 1989), which we carried out as follows.

Preparation (step 1). Researchers established the research focus question, and identified and selected the group of participants. The focus question was “What aspects of your environment influence your alcohol consumption?”. The aim of this step was to obtain the maximum number of statements related to the environment that influence alcohol consumption in young people, regardless of whether the interviewee was a drinker or not. Therefore, we asked those who did not consume alcohol to think about the factors that influence young people in general. All students in the third-year nursing classrooms course were invited to participate, and those who agreed were asked to sign an informed consent form.

Generation of statements (step 2 and data collection session 1). To facilitate students’ participation in generating statements, we randomly divided students from each of the two classrooms of the nursing course into two subgroups of 12-15 students. In each group, a 45-minute brainstorming session was performed to obtain statements based on the focus group question. Participants also responded to a

brief survey on demographic and alcohol-related variables. Alcohol-related variables were collected using the Alcohol Use Disorders Identification Test Consumption (AUDIT-C), a brief alcohol screening instrument with three questions on the frequency and amount of alcohol consumption and the frequency of binge drinking in the last year. This brief screening test has been shown to be effective in detecting hazardous drinkers in university students (from 3 points in women and 4 points in men) (García Carretero, Novalbos Ruiz, Martínez Delgado & O’Ferrall González, 2016). After this session, two researchers revised the statements of the four groups to eliminate duplicates, and grouped together similar statements. Researchers independently performed this revision process and then compared their results (triangulation of researchers). A third researcher intervened when there were discrepancies. Finally, we compiled a list of the statements from the four groups, so that the participants could sort them in the next step.

Data sorting and rating (step 3 and data collection session 2). In this step, all procedures were carried out individually. First, each participant classified the statements from the final list into groups that made sense to him/her, and named each group. Participants were free to use as many groups as necessary. Nevertheless, it was indicated that every group had to contain at least two statements and each statement had only to be in one group. After that, participants rated each statement using a 5-point Likert scale according to two criteria: 1) the importance of the factor in alcohol consumption (1 being very low, and 5 being very high); and 2) the frequency at which they encounter these factors or situations (being 1 never and 5 always).

Representation of statements in maps (step 4). We introduced all data obtained in the previous steps into a software package R-CMap (<https://haim-bar.uconn.edu/software/R-CMap/>). In this way, we obtained different outputs with statistical techniques: 1) point maps indicating the degree of closeness between statements indicated by each student in step 3 (Kruskal and Wish stress index was calculated to evaluate the goodness of fit of the resulting maps); 2) cluster maps to structure the point maps and better interpret the results; 3) ranking the statements and clusters calculated based on the average scores for each criterion (importance and frequency); and 4) scatter plots (go-zone) of rating scores. We calculated Spearman correlations, and divided the statements in four quadrants, based on the mean of each criterion.

Interpretation of maps (steps 5 and 6). First, researchers discussed and interpreted the cluster maps obtained in the previous step. Second, they chose the cluster map that best represented a single concept without losing relevant information. They used a backward process starting with a high number of clusters. Finally, the research team named each cluster based on the names proposed by participants in step 3.

Results

Description of participants

A total of 59 nursing students participated in session 1, whereas 58 participated to session 2. As shown in table 1, we did not observe any statistically significant differences between participants of the two sessions. Most participants were women, aged 20 to 24 years, living with their families, and studying and working at the time of the study. Around half of the participants in each session had binge drank (consumed ≥ 6 drinks on one occasion) at least once in the previous year (Babor, Higgins-Biddle, Saunders & Monteiro, 2001). Moreover, one out of three students were hazardous drinkers according to the AUDIT-C test (García Carretero et al., 2016).

Statements and clusters

We obtained a final list of 55 statements from the four brainstorming session groups (session 1). As shown in table 3, statement 38, “Local or popular festivals (*Patum, Chupinazo, Fallas*, etc.)”, had the highest mean score in both importance and frequency. Other statements in the go-zone (i.e., importance and frequency higher than the mean, figure 1), were: 1) 3, “Partying with friends/university parties”; 2) 22, “Concerts or festivals”; 3) 46, “Easy access to alcohol (extensive purchase places and hours, many places to buy, easy to get, alcohol is everywhere)”; and 4) 52, “Compulsory consumption in nightclubs”. Conversely, statement 33, “Songs related to alcohol consumption”, had the lowest mean score for importance, and statement 8, “To obtain sex”, had the lowest mean score for frequency.

According to the participants’ indications, the research team chose a final map of 7 clusters to group the statements (figure 2): 1) “Advertising” (9 statements); 2) “Family environment” (4 statements); 3) “Social pressure” (12 statements); 4) “Responsibility/norms” (4 statements); 5) “Holidays and leisure time” (7 statements); 6) “Emotional situations/emotional status” (8 statements); and 7) “Accessibility” (11 statements). The stress index of the point plot was 0.307, which suggest that clusters in this study have a good fit (Kane & Trochim, 2007). In general, the mean scores of the clusters related to the importance criterion were higher than those related to frequency. In addition, the average score was very similar among most of the clusters, in both importance and frequency criteria. Nevertheless, students perceived cluster 4, “Responsibility/norms”, as the most important (mean score of 3.7), and cluster 7, “Accessibility”, as the most frequent (mean score of 3.0). Moreover, clusters 7 (“Accessibility”), 5 (“Holidays and leisure time”), and 3 (“Social pressure”) scored as the most important and the most frequent. Means of importance were 3.5, 3.4, and 3.4, respectively; means of frequency were 3.0, 2.8, and 2.7, respectively. Cluster 1, “Advertisement” was considered as the least important and least frequent, with mean scores of 2.6 and 2.1, respectively (tables 2 and 3). The correlation between importance and

Table 1
Characteristics of study participants: School of Nursing students. UVic-UCC, 2019

	Session 1 (n = 59)		Session 2 (n = 58)		p-value
	n	%	n	%	
Sex					
Women	48	81.4	51	87.9	0.324
Men	11	18.6	7	12.1	
Age					
20-24 years	43	72.9	42	72.4	0.775
25-29 years	13	22.0	11	19.0	
30-35 years	3	5.1	5	8.6	
Living arrangements					
Alone	4	6.8	5	8.6	0.962
Parental family	37	62.7	35	60.4	
Peers (friends, student residence or flat)	13	22.0	12	20.7	
Partner	5	8.5	6	10.3	
Employment status					
Only studying	20	33.9	17	29.3	0.692
Studying and working	39	66.1	40	70.0	
Other	0	0	1	1.7	
Self-perceived health					
Good or very good	52	88.1	50	86.2	0.755
Fair, poor or very poor	7	11.9	8	13.8	
Binge drinking					
Never	31	52.5	31	53.4	0.975
Less than monthly	19	32.2	19	32.8	
Monthly or more	9	15.3	8	13.8	
Hazardous drinking (Audit-C)					
Yes	19	32.2	20	34.5	0.794
No	40	67.8	38	65.5	

frequency was 0.74 for the statements and 0.78 for the clusters. Cluster 7, “Accessibility”, had the highest positive correlation between importance and frequency ($r = 0.90$), followed by clusters 6, “Emotional situations/emotional status” ($r = 0.87$), and 5, “Holidays and leisure time” ($r = 0.86$). No negative correlations were obtained. However, the mean score of frequency was below the mean in cluster 6, “Emotional situations/Emotional status”, in cluster 4, “Responsibility/norms”, and in cluster 2, “Family environment”. Therefore, these clusters were considered important but infrequent (figure 1 and figure 3 for the go-zone of rating scores of each cluster independently).

Table 2

Statements, clusters 1-3 and their scores based on criteria of importance (from 1 very low; to 5 very high) and frequency (from 1 never; to 5 always)

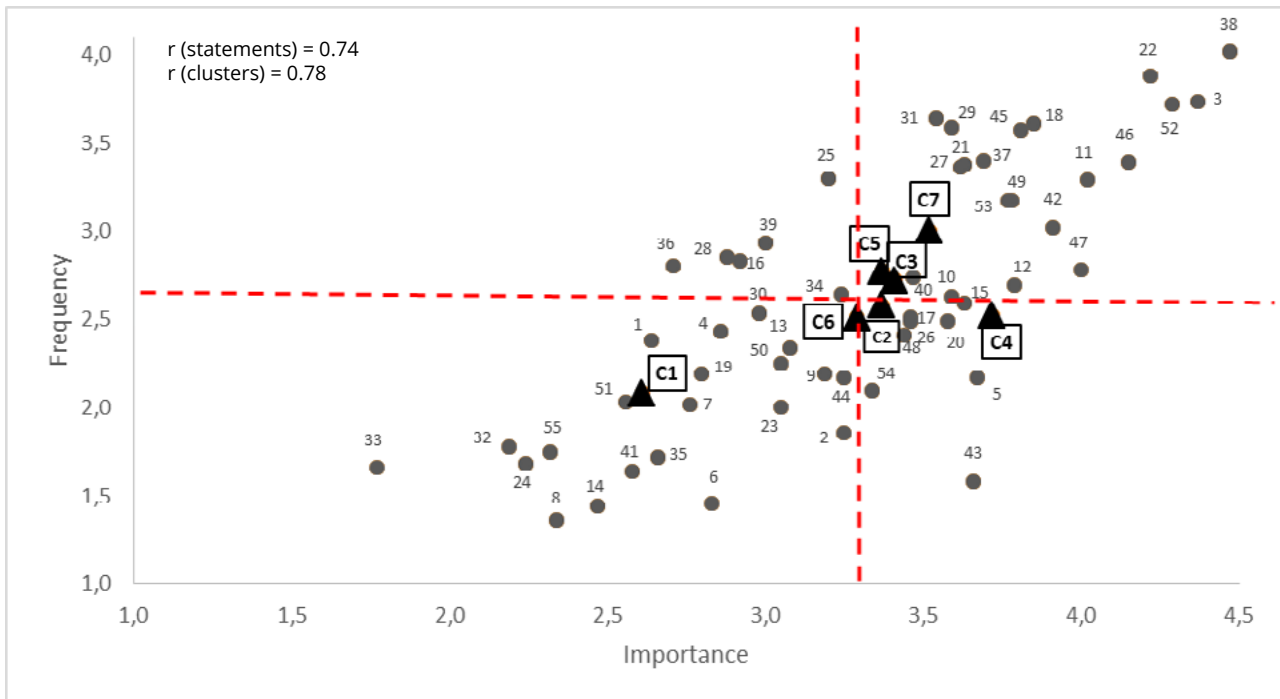
ID	Statement	Importance		Frequency	
		Mean	SD	Mean	SD
	Cluster 1: Advertising	2.61	0.39	2.08	0.30
1	Social networks (when you see pictures or videos of people who are drinking)	2.64	1.17	2.38	1.34
4	Availability of public transport	2.86	1.32	2.43	1.37
7	Drinks that are fashionable or that look good (gintonic, mojito, etc.)	2.76	1.02	2.02	1.01
13	Lack of alternative leisure activities to alcohol consumption	3.08	1.36	2.34	1.31
19	Subliminal advertising of alcohol consumption (alcohol in movies, series, sponsored sporting events, etc.)	2.80	1.10	2.19	1.36
33	Songs related to alcohol consumption	1.77	1.01	1.66	1.11
35	Positive messages related to alcohol (e.g., a glass of wine a day is good for health, beer is a natural drink, etc.)	2.66	1.25	1.72	0.93
51	Alcohol advertisements (TV, radio, bus canopies, billboards, internet, etc.)	2.56	1.10	2.03	1.21
55	Catchy slogans of alcoholic drinks which are repeated	2.32	0.97	1.75	0.96
	Cluster 2: Family environment	3.37	0.28	2.58	0.62
2	Parents and other family members who promote drinking	3.25	1.25	1.86	1.04
21	Family celebrations and special events (Christmas, Easter, carnival, birthdays, weddings, communions, etc.)	3.63	1.08	3.38	1.04
26	Family permissiveness toward drinking alcohol	3.46	1.09	2.49	1.37
30	Family habits or traditions related to alcohol consumption	2.98	1.00	2.53	1.21
	Cluster 3: Social pressure	3.41	0.57	2.72	0.62
3	Partying with friends/university parties	4.37	1.00	3.73	1.11
9	Associations or young clubs	3.19	1.15	2.19	1.41
17	Being pressured by friends who are drinking (through WhatsApp), inviting you	3.46	1.21	2.51	1.19
20	Student apartments	3.58	1.09	2.49	1.51
23	Not living with parents or relatives	3.05	1.18	2.00	1.38
31	Go out for a drink (go out for a drink, go for a beer, etc.)	3.54	1.02	3.64	0.92
32	Partner	2.19	1.11	1.78	0.97
36	Climate	2.71	1.18	2.80	1.23
37	Friends paying rounds of drinks or shots	3.69	0.95	3.40	1.08
40	Alcohol drinking games	3.47	1.34	2.74	1.22
47	Social pressure from the environment	4.00	1.19	2.78	1.31
48	Pressure from friends over WhatsApp to meet to drink	3.44	1.07	2.41	1.19

Table 3

Statements, clusters 4-7 and their scores based on criteria of importance (from 1 very low; to 5 very high) and frequency (from 1 never; to 5 always)

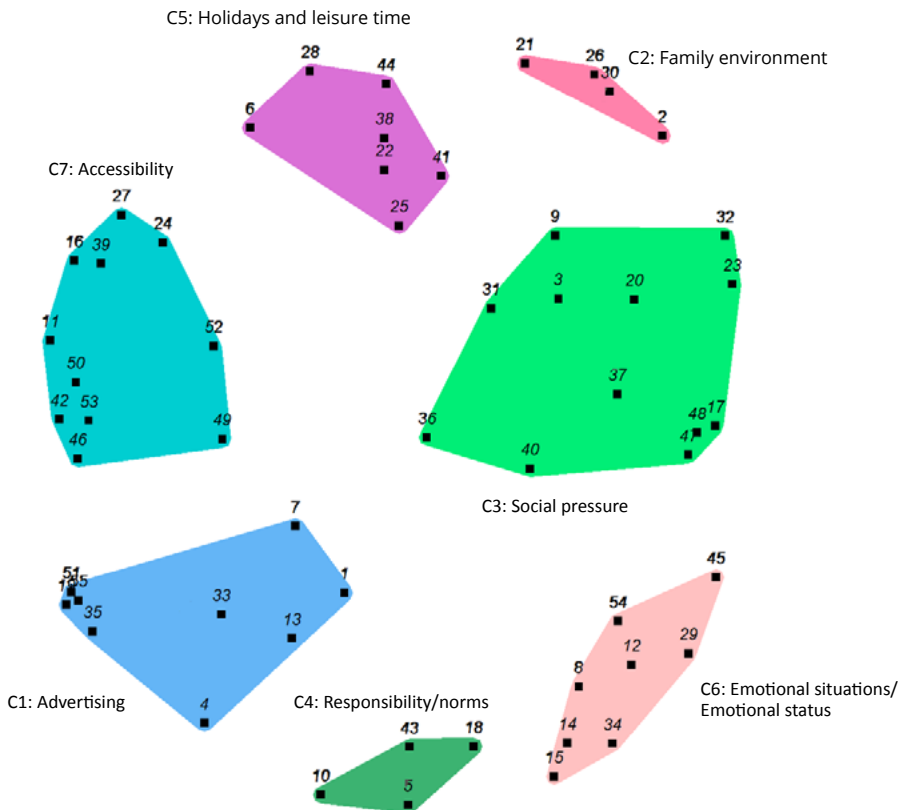
ID	Statement	Importance		Frequency	
		Mean	SD	Mean	SD
	Cluster 4: Responsibility/norms	3.72	0.13	2.52	0.87
5	Low perception of the risks of alcohol consumption	3.67	1.23	2.17	1.19
10	Knowing/thinking that there will be no police checkpoints	3.59	1.24	2.63	1.43
18	No next day responsibilities (having the day off from work or college, not having to take care of family members, etc.)	3.85	1.20	3.61	1.20
43	Use of other drugs	3.66	1.47	1.58	1.07
	Cluster 5: Holidays and leisure time	3.37	0.72	2.77	1.04
6	Workplace (hostelry, nightlife, etc.)	2.83	1.07	1.46	0.82
22	Concerts or festivals	4.22	0.94	3.88	1.03
25	Dinner outside the home	3.20	0.92	3.30	0.96
28	Gastronomic traditions and Mediterranean diet (drink wine with meals, use wine for cooking, etc.)	2.88	1.08	2.85	1.06
38	Local or popular festivals (patum, chupinazo, fallas, etc.)	4.47	0.71	4.02	1.25
41	Going to watch football or other sports	2.58	1.28	1.64	1.00
44	Going on holiday or traveling to places associated with drinking (Belgium, la Rioja, Basque Country, Eivissa, etc.)	3.25	1.15	2.17	1.04
	Cluster 6: Emotional situations/ Emotional status	3.29	0.58	2.51	0.85
8	To obtain sex	2.34	1.33	1.36	0.66
12	To get uninhibited and socialize	3.79	1.00	2.69	1.16
14	Willing to infringe established rules	2.47	1.13	1.44	0.82
15	Emotional situation (mood, personal problems, difficulty managing problems, etc.)	3.63	1.17	2.59	1.26
29	To disconnect or have a break, release stress (weekends, after a period of exams, etc.)	3.59	1.08	3.59	1.12
34	Desire to experience or live the moment	3.24	1.20	2.64	1.24
45	Good news and wish to celebrate (victory or triumph, finishing school year or exams, etc.)	3.81	1.01	3.57	1.04
54	To feel good in a place or environment	3.34	1.14	2.10	1.20
	Cluster 7: Accessibility	3.52	0.63	3.00	0.58
11	Alcohol promotions in bars, discos and restaurants (2x1, happy hour, drink included with entrance free, "tapa" + drink offer, etc.)	4.02	0.86	3.29	0.93
16	Restaurants that offer you a free shot after the meal	2.92	1.16	2.83	1.31
24	University bar that sells alcoholic drinks	2.24	1.10	1.68	1.11
27	Premises leading to drinking alcohol (beach bars, musical bars, terraces)	3.62	1.04	3.36	0.92
39	Restaurant and bar menus that include alcohol	3.00	1.09	2.93	1.31
42	Cheap price of alcohol compared to other beverages, in the leisure venues (bars, pubs, discos, etc.)	3.91	0.98	3.02	1.20
46	Ease of access to alcohol (extensive purchase hours, many places to buy, easy to get, alcohol is everywhere)	4.15	1.03	3.39	1.14
49	Extensive nightlife opening hours	3.78	1.05	3.17	1.18
50	Supply of alcoholic drinks on the street (street vendors of beer, etc.)	3.05	1.23	2.25	1.12
52	Compulsory consumption in nightclubs	4.29	0.79	3.72	1.27
53	Low price of alcohol	3.77	1.02	3.17	1.14

Figure 1
Scatter plots (go-zone)



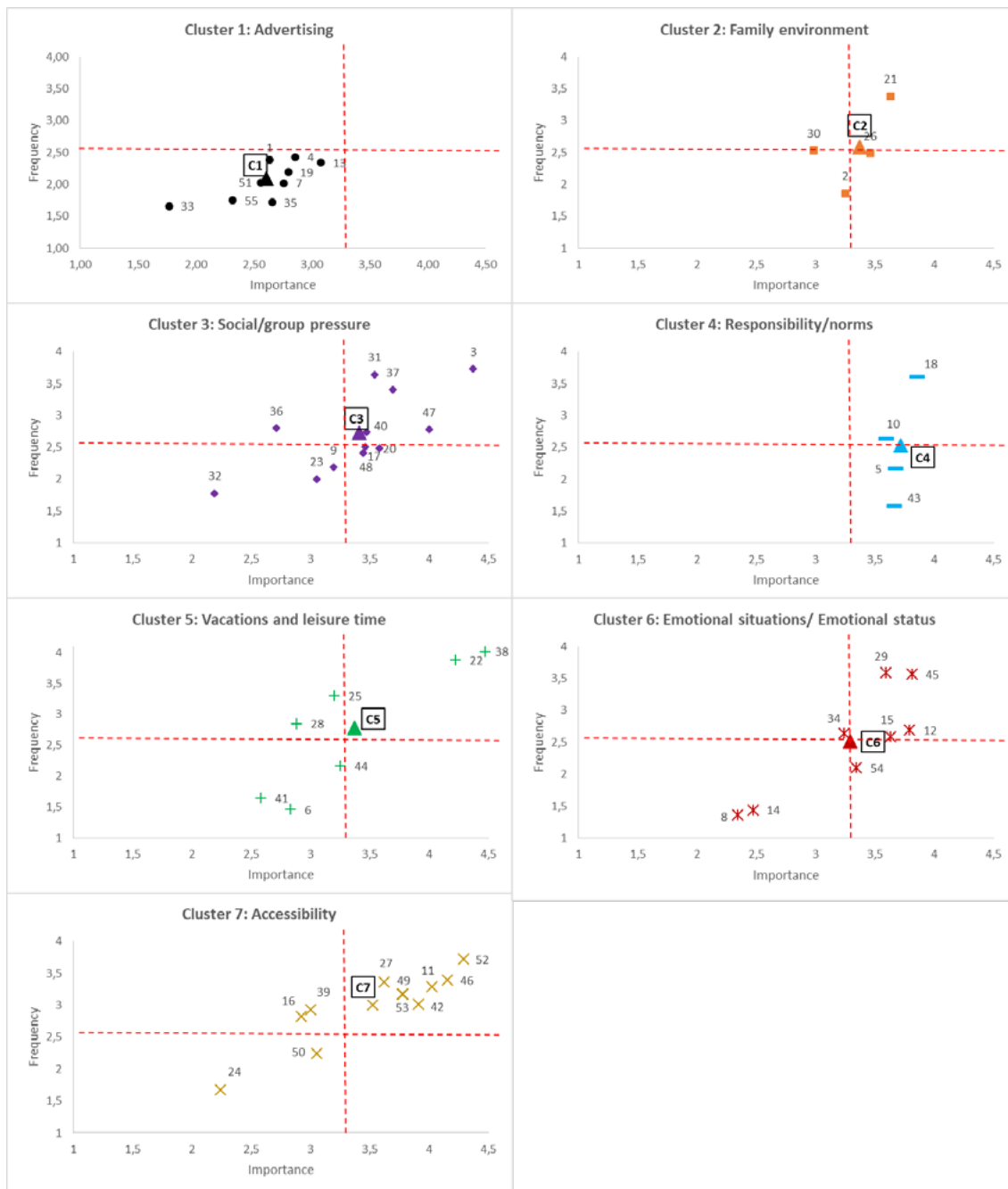
Note. Go-zone of rating scores. Point for statements and triangle for the average of the cluster. C1=average score of cluster 1; C2=average score of cluster 2; C3=average score of cluster 3; C4=average score of cluster 4; C5=average score of cluster 5; C6=average score of cluster 6; C7=average score of cluster 7.

Figure 2
Final Clusters map



Note. These 7 clusters are comprised of the 55 statements generated in the brainstorming session (step 2; session 1). The numbers within the clusters correspond to the statement number. The clusters name was based upon participants suggestions. Statements in close proximity to each other are conceptually closer than statements which are further apart. The closeness is based on the individual sorting of students (step 3; session 2).

Figure 3
Go-zone of rating scores for each cluster independently



Note. C1=average score of cluster 1; C2=average score of cluster 2; C3=average score of cluster 3; C4=average score of cluster 4; C5=average score of cluster 5; C6=average score of cluster 6; C7=average score of cluster 7.

Discussion

We used mixed methods (CM) to identify environmental factors related to students' alcohol consumption. The students identified seven groups of environmental factors. The most important and frequent factors were related to social pressure, holidays and leisure time, and alcohol accessibility (clusters 3, 5 and 7). In contrast, alcohol-related advertisement (cluster 1) was considered the least

important and least frequent. In general, there was a positive linear correlation between the score of importance and the score of frequency in all the statements.

Social pressure

In line with previous studies, our results suggest that social pressure is an important factor influencing alcohol drinking among university students (Barry & Goodson,

2012; Borsari & Carey, 2001; Gaete & Araya, 2017; Muli & Lagan, 2017). Peer environment may contribute to risky alcohol consumption through different mechanisms, such as 1) direct influences (overt offers of alcoholic beverages); 2) modelling (imitation of others' behaviour), and 3) perceived drinking norms among peers (Borsari & Carey, 2001). In some statements, study participants indicated direct influences as a key factor for promoting youth drinking. Such influences included friends paying for drinks or friends inviting one to drink through WhatsApp. Also, a previous study described the popularity of drinking-related chatter on Twitter, and the positive view toward alcohol use in drinking-related Tweets (Cavazos-Rehg, Krauss, Sowles & Bierut, 2015). Other statements from the social pressure cluster, such as university parties and drinking games, may involve the three routes of peer pressure indicated above. In this regard, students are known to consume high amounts of alcohol at university parties. For example, an American study found that over 50% of students reported drinking to intoxication the last time they attended a university party (Marzell, Bavarian, Paschall, Mair & Saltz, 2015). A review showed that drinking games are common in university campuses and some students felt pressured to play or pressured someone else to play (Zamboanga et al., 2014).

Holidays and leisure time

In this cluster, we identified “concerts or festivals” and “local or popular festivals” as the most important and frequent statements for students' alcohol consumption. This view coincides with other studies conducted in drinking environments, such as festivals and nightlife places, which reported that most people in these places consumed alcohol and a significant proportion of them were highly intoxicated (Feltmann, Elgán & Gripenberg, 2019; Hughes et al., 2011). Similarly, in this group of factors, it seems that the main reason for drinking is to have fun, which is one of the main reasons for drinking among university students as also described in other studies (Dodd et al., 2010). In agreement with this, other studies indicate that alcohol drinking is highly normalized in our society. It is considered a part of our culture and customs, and it is usually associated with fun and good times, such as celebrations, meetings with friends, and leisure time (Pons & Buelga, 2011; Suárez, Del Moral, Martínez, John, & Musitu, 2016). Another social aspect that is indicative of the participants' view is the need to differentiate between typical drinking and drinking in special occasions (holidays, sporting events, celebrations, birthdays, etc.). When drinking in special occasions, it seems that either the typical weekly alcohol consumption significantly increases (Bellis et al., 2015), or the standard binge drinking threshold doubles or even triples (Patrick & Azar, 2018).

Alcohol accessibility

Participants identified alcohol availability and accessibility as aspects of their environment that influence their alcohol consumption. These aspects include offers and promotions in bars and restaurants, the low price of alcohol, and extensive purchase hours, and may increase normalization and social acceptance of alcohol. Several Spanish studies confirm this students' perspective, reporting a high availability of alcohol in urban environments (Sureda et al., 2018; Sureda et al., 2017b; Villalbí et al., 2019). In addition, international studies showed that the number of alcohol outlets, and hours and days of sale had an impact on different alcohol-related variables (Lu, Zhang, Holt, Kanny & Croft, 2018; Popova, Giesbrecht, Bekmuradov & Patra, 2009). Finally, an American study was conducted in different university campuses and found that alcohol specials, promotions, and advertisements were prevalent in the alcohol outlets around campuses. This was because campus environments are associated with higher binge-drinking rates (Kuo, Wechsler, Greenberg & Lee, 2003). Three different mechanisms were suggested for how higher availability of alcohol and accessibility to alcohol outlets may increase consumption: (i) by providing a more competitive local market, which can lower the price of alcohol products; (ii) by offering more opportunities for alcohol promotion (alcohol can be promoted in alcohol outlets); (iii) by affecting social norms related to alcohol consumption, turning it into a more acceptable practice (Sureda, et al., 2017a).

Alcohol-related advertising

Students participating in the study had a perspective that was different from the growing evidence on the effects of alcohol advertising exposure on alcohol-related behaviours. In Spain, alcohol advertising is widespread (Pastor et al., 2020) and people may underestimate its actual influence in their behaviour. For example, in Barcelona, 61% of on-premises alcohol establishments with terraces had alcohol marketing items. Moreover, 91% of off-premises establishments had items that can be considered stimuli for selling or consuming alcohol beverages (Villalbí et al., 2019). Also, adolescents and young adults are highly exposed to alcohol marketing, especially digital marketing (e.g. Twitter, Facebook, and Instagram) (Barry et al., 2016; Jackson, Janssen & Gabrielli, 2018). In turn, alcohol marketing has been associated with different alcohol-related behaviours, such as drinking initiation, and risky drinking in young people (Anderson, de Bruijn, Angus, Gordon & Hastings, 2009; Jackson et al., 2018), and in university students in particular (Hoffman, Pinkleton, Weintraub Austin & Reyes-Velázquez, 2014). It seems that alcohol advertising activates the brain's reward system in a way that motivates drinking (Courtney, Rapuano, Sargent, Heatherton & Kelley, 2018). Nevertheless, advertising may not only influence drinking but also attitudes, social norms, and knowledge and awareness of

alcohol effects (Petticrew et al., 2016). However, participants in the study did not perceive alcohol advertising as an important and frequent aspect influencing their drinking behaviour. A possible explanation for this result could be that from childhood, young people perceive alcohol drinking as something completely normal and related to social relationships, fun, and celebrations, and this same message is received from alcoholic beverage advertising (Pons & Buelga, 2011). Moreover, brands of alcoholic beverages use multiple strategies to get integrated into the daily lives and lifestyles of users and to become part of their identity (Jernigan, 2009; Lobstein, Landon, Thornton & Jernigan, 2017). Many of these marketing strategies do not necessarily consist of messages that explicitly refer to and suggest alcohol consumption. For instance, in digital marketing, a broader brand-focused conversation is encouraged and interactive material is developed to attract attention and promote discussions on alcohol-related behaviours.

Limitations of the study

Some limitations of this work must be recognized. First, we selected a convenience sample of nursing students that was predominantly female, due to the female/male ratios in this field. Thus, statements such as “to obtain sex” or “the partner” may be sensitive to the fact that the study sample consisted mainly of women. It is possible that students attending health-related courses have a greater awareness of factors related to behaviours affecting health, such as alcohol consumption. However, this greater awareness may provide a more accurate picture of factors influencing youth drinking. On the other hand, it seems that there are no statistically significant differences between the prevalence of binge drinking in Spanish university students from health-related fields (including nursing) and students from other disciplines (Varela-Mato et al., 2012). In fact, although health sciences students are more aware of health risk behaviours than other students, this does not appear to influence actual health risk behaviours (Peltzer, Pengpid, Yung, Aounallah-Skhiri & Rehman, 2016). Second, it was not possible to discuss the maps obtained in step 4 with the participants, because of organisational issues. Nevertheless, researchers from sessions 1 and 2 discussed and chose the cluster map that best represented the ideas and the individually made groupings. This process led to unanimous agreement among researchers. Finally, CM does not allow one to form clusters with a single statement, and it may be that some statements cannot be easily grouped. In this sense, the statements “Availability of public transport” and “Lack of alternative leisure activities to alcohol consumption” are included in cluster 1, but they do not seem to be representative of this group. Nevertheless, in relation to the latter, it is possible that students have associated common leisure activities, such as concerts or festivals, with alcoholic beverages brands sponsoring them.

Implication for Public Health policies

This study identified several factors that influence young people’s drinking. The main environmental factors were: peer pressure, accessibility and availability, and using alcohol as a way to have fun. These factors should be taken into consideration when designing interventions and policy measures that target young people’s drinking. Indeed, several studies showed that restricting the availability of alcohol and accessibility to it, can be effective in reducing its consumption and alcohol-related harm (Allamani, 2018; Villalbí, Bosque-Prous, Gili-Miner, Espelt & Brugal, 2014). Thus, the point of view of young people should be taken into account, not only for identifying factors that influence their drinking behaviour, but also for designing strategies to prevent alcohol use among them. Likewise, it would be interesting to develop promotion and prevention strategies to reduce alcohol drinking in situations and places where young people say they drink alcohol, such as concerts, parties, and festivals. In this sense, in Spain there are already some programs targeting alcohol drinking in nightlife settings, such as “Q de Festa” in Catalonia (<https://www.qdefesta.cat>) or “Piensa la noche” in la Rioja (<https://www.infodrogas.org>).

Although study participants identified advertising as a relevant factor, they attributed less frequency and importance to it, compared to the other identified factors. Nevertheless, evidence indicates that advertising regulation is an effective measure to reduce alcohol use and related harm (Allamani, 2018; Villalbí et al., 2014). Therefore, potential underestimation of advertisements’ influence should be taken into account when designing interventions targeting young people’s drinking. Finally, unforeseen circumstances may occur that change the factors influencing young people’s drinking. For example, after the extreme confinement due to the COVID-19 pandemic, as nightlife settings were locked, there was an increase in the practice of “botellones” (drinking alcohol in groups in open areas, such as squares or parks) in Spain.

Conclusions

The use of CM methodology made it possible to quickly capture the students’ perspective in a field as complex as alcohol consumption, and to obtain specific information that allows prioritizing areas of intervention. Peer pressure, alcohol accessibility and availability, and using alcohol as a way to have fun were identified as the most important and frequent factors for the participants’ alcohol consumption. Conversely, alcohol-related advertisement was considered the least important and least frequent factor, compared to the other identified factors. These results suggest priority areas for further development of public health measures related to alcohol consumption in young adult populations.

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Conflict of interests

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