

## PROBLEMATIC CONSUMPTION OF SUBSTANCES AND VIDEO GAME USE IN SPANISH UNIVERSITY STUDENTS DEPENDING ON SEX AND PLACE OF RESIDENCE

## CONSUMO PROBLEMÁTICO DE SUSTANCIAS Y USO DE VIDEOJUEGOS EN ESTUDIANTES UNIVERSITARIOS ESPAÑOLES SEGÚN GÉNERO Y LUGAR DE RESIDENCIA

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### Abstract

**Aims.** This study aims to identify the relationship between problematic consumption of substances and video games use with sex and place of residence in a sample of Spanish university students. **Methods.** The research was conducted with a sample of 490 university students ( $M = 22.8$  years;  $SD = 3.63$ ). The main instruments used were the Fagerström Test for Nicotine Dependence (ftnd), the Alcohol Use Disorders Identification Test (AUDIT), the Questionnaire of Experiences Related to Video Games (QERV) and the Questionnaire of Habits of Video games Consumption (QHVC). **Findings.** The results show a relatively low tobacco consumption and video game use and a high alcohol consumption. With regards to sex, women hardly ever drink alcohol and play with video games less often than men. Participants' place of residence influenced their habits regarding video games, but not regarding tobacco and alcohol consumption. Additionally, regression analyses identified that males were five times more likely to exhibit problematic video game use. **Conclusion.** Technology and problematic consumption of substances can cause health problems, which must be prevented and treated from educational stratum.

**Keywords:** Alcohol, tobacco, video games, sex, place of residence.

### Resumen

**Objetivos.** Este estudio pretende identificar la relación entre consumo problemático de sustancias y uso de videojuegos según el género y el lugar de residencia en una muestra de estudiantes universitarios españoles. **Método.** La investigación fue realizada en una muestra de 490 estudiantes universitarios ( $M = 22.8$  años;  $DT = 3.63$ ). Los principales instrumentos utilizados fueron el Test de Fagerström para la Dependencia a la Nicotina (ftnd), el Cuestionario para la Identificación de Trastornos en el Uso del Alcohol (AUDIT), el Cuestionario de Experiencias Relacionadas con Videojuegos (CERV) y el Cuestionario de Hábitos de Consumo de Videojuegos (CHCV). **Resultados.** Los resultados muestran un consumo de tabaco y un uso de videojuegos relativamente bajo, además de un elevado consumo de alcohol. En relación al género, las mujeres casi nunca beben alcohol y juegan con videojuegos menos que los varones. El lugar de residencia de los participantes influía en sus hábitos de uso de videojuegos, pero no en el consumo de alcohol y tabaco. Asimismo, el análisis de regresión identificó que los hombres tenían una probabilidad cinco veces superior a exhibir un uso problemático de videojuegos. **Conclusión.** La tecnología junto con el consumo de sustancias nocivas puede causar problemas de salud que deben ser prevenidos y tratados desde los estratos educativos.

**Palabras clave:** Adolescente, Consumo de alcohol, Relaciones Familiares.

Substance abuse has become one of the dominant patterns and behaviours among young Europeans. Hernández-Serrano, Font-Mayolas, & Grass (2015) discuss the problematic consumption of substances using data extracted from the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA, 2011). These authors classified the population according to three patterns of consumption based on the types of drugs that are consumed. One of these patterns describes widespread alcohol and tobacco consumption and video game use amongst a young population. This is a particularly interesting pattern to research as it is related to physical and mental problems in adulthood (Redonnet, Chollet, Fombonne, Bowes, & Melchior, 2012). As a result of the negative implications of this Carbonell (2014) established the inclusion of this pattern of behaviours in the American Psychiatric Association (2000) through the Diagnostic and Statistical Manual (DSM).

The period during which individuals conduct their university studies (late adolescence) can influence the lifestyles as this is a time when living conditions change, potentially altering normal behaviour. Further, as adulthood emerges, young people often become highly self-focused as they begin to explore their identity and exhibit unstable behaviours. This time in life when individuals are neither adolescent nor fully adult has been related to drug use (Arnett, 2005; Baumrind & Moselle, 1985). Additionally, the creation of relationships with new peer groups can lead to new risk behaviours such as the alcohol and tobacco consumption being fostered as a means to achieving social integration (Wang, Hipp, Butts, Jose, & Lakon, 2017). Engagement with one type of risk behaviour can also lead to greater engagement with another type of risk behaviour. For instance, Leatherdale & Burkhalter (2012) established that student's whose alcohol consumption was normally low, increased their alcohol consumption to high levels when they smoked tobacco.

On this basis, the consumption of legal drugs presents a phenomenon of great interest in our society, whether these are consumed habitually or sporadically. The consumption of legal drugs also increases during adolescence with teenagers being the social group most vulnerable to this type of consumption (Arnett, 2005; Leatherdale & Burkhalter, 2012). Factors, which contribute to smoking and alcohol consumption in youth include, peer influence of friends, inaccurate beliefs

about the effects of these substances in our body and permissive parenting (Villanti, Boulay, & Juon, 2011). Further, the increased supply, availability and popularity of recreational drugs at social events frequented by teenagers (Hernández-Serrano et al., 2015; Wang et al., 2015), can encourage intense and sporadic consumption of harmful substances with subsequent negative consequences for academic performance and health (Luis-de Cos, Luis-de Cos y Arribas-Galarraga, 2017; Supski, Lindsay, & Tanner, 2017). As many health-related behaviours track from adolescence into adulthood several researchers are now highlighting the importance of studying this phenomenon in university students from Health Sciences, Physical Activity and Education (Barbosa & Ferreira, 2008; López, Nicolás y Días, 2016).

Another behaviour that is extremely popular in the university context is playing with video games. According to Burgess, Stermer, & Burgess (2013) these devices have grown in popularity amongst adolescents and adults in recent decades. At least fifty percent of the video game playing population is aged between 18 and 49 years old. The negative influence of video games on academic performance is therefore concerning to its pathological use amongst university students (Sahín, Gumus, & Dincel, 2016).

Research conducted by Smohai et al. (2017) demonstrates that excessive video game use is associated with a decrease in dream hours and neglect of academic work, the latter potentially being related to decreased attention capacity, memory and behavioural problems (Ventura, Shute, & Jeon, 2012). Further, Borgonovi (2016) has highlighted some of the negative social effects of playing too many video games which are related with states of depression, anxiety and memory loss.

During the university transition, many young people leave the family home and start to live in shared flats or dormitories which are located at a short distance from the university (Castro-Sánchez et al., 2017; Obradors-Rial Ariza, & Muntaner, 2014). With the removal of family supervision, peer influence through new housemates, classmates and other associated groups supersedes the family as the primary source of influence over immediate behaviour (Zeferino et al., 2015). Thus, the individuals' place of residence often provides the setting in which adolescents consume harmful substances making it an

important factor to be considered by research studies (Harford, Wechsler, & Muthen, 2002).

Stone, Becker, & Catalano (2012) discuss the contextual risk factors that come into play during early adulthood. Such factors can assist our understanding about why students fall into the aforementioned bad habits. This is especially important in the context of students of Education as it is these young people who will become educators themselves.

Base on the above, the objectives of this paper are: a) To describe the frequency of consumption of tobacco and alcohol, and of video game use in a sample of Spanish university students studying Education. b) To determine the relationship between sex and place of residence and engagement in the aforementioned harmful behaviours (tobacco consumption, alcohol consumption and excessive video game use).

## METHOD

### Design and participants

This research discusses an exploratory cross-sectional study conducted with 490 university students enrolled on the undergraduate Education course at the University of Granada in Spain. Of this sample, 61% is female ( $n=297$ ), 39% is male ( $n=193$ ) and the mean age was 22.8 years old (range: 20 to 29;  $SD=3.63$ ). In 2014, a census of all students enrolled on 'Degree in Primary Education' ( $n=628$ ) was disseminated to determine eligibility for participation. It was established a representative sample of 528 participants (error of 0.02;  $CI = 95.5\%$ ) using stratification, proportionality and randomisation techniques. 38 questionnaires were excluded because they had not been completed correctly, leaving a final sample of 490 respondents.

### Variables and Measures

The variables and the instruments used to measure them are listed below:

*Ad hoc questionnaire.* This instrument include Sex - reported as being male or female-, and place of residence, regarding whether university students live in the family home, shared flat or student residence.

*Tobacco consumption.* This research used the tobacco consumption scale from the questionnaire "Fagerström Test for Nicotine Dependence (ftnd)", which was developed by Heatherton, Kozlowski, Frecker, & Fagerström (1991) and adapted to Spanish by Villareal-González (2009). The questionnaire assesses the level of tobacco dependence using six items. The first four items are dichotomous and the remaining two items are rated on a four-point Likert scale. The items are then summed and coded to enable categorisation of the participant as a Non-smoker (score of 0), low dependent smoker (score between 1 and 4), moderately dependent smoker (score between 5 and 6) or highly dependent smoker (score greater than 6). The data produced a Cronbach's alpha of  $\alpha=.960$ .

*Alcohol consumption.* Consumption of alcohol is assessed using the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993) which was translated into Spanish by Rubio (1998). It is composed of 10 items. The first eight items are evaluated using a five-point Likert scale (Never = 0; Daily = 4). The last two items are evaluated using a three-point Likert scale which produces a point score of 0, 2 or 4 points. The first three items of the AUDIT describe the frequency of consumption, the next three items describe the level of dependence and the remaining four items are related to problematic consumption. Responses are summed to produce an overall score relating to each dimension. The data produced a Cronbach's alpha of  $\alpha=.767$ .

*Problematic use of video games.* The problematic use of video games was assessed using the "Questionnaire of Experiences Related to Video Games (QERV)" which was developed by Chamarro et al. (2014) and has been validated in a sample of Spanish teenagers. The QERV consist of 17 negatively worded items rated on a four-point Likert scale (a = Hardly ever; b = Sometimes; c = Often; d = Always). Responses were summed to create a variable which described participants behaviour relating to video game use (Without problems = from 17 to 25; Potential problems = from 26 to 38; Severe problems = from 39 to 68). The Cronbach's alpha obtained was  $\alpha=.89$ .

*Habitual use of Video Games.* Habits pertaining to the use of video games were assessed using the questionnaire Habits of Video games Consumption (QHVC) which was developed by López (2012). This

instrument contains 24 items, of which the first 19 represent a single dimension which describes the attraction to and use of video games. Each item is scored using a five-point Likert scale (1 = Strongly disagree; 5 = Strongly agree). Responses are then summed to give an overall level of dependence on video games. According to this score, participants were classified according to three -levels of attraction to and use of video games (low, medium and high). The Cronbach's alpha was  $\alpha=.94$ .

## Procedure

Participation of students of the Primary Education degree at the University of Granada was requested through a newsletter produced by the Department of Corporal at the University of Granada. The project was termed *“Educational intervention program using active video games and motor games to support the teaching in the areas of nutritional health and physical education in the pre-school and primary school”* and carried the code PID 14-81. Data collection was performed during non-teaching hours in the Faculty of Education. No problems were reported. Members of the research team were present during data collection to ensure that instruments were appropriately administered and to respond to any queries from participants. Participants were provided with full participant information and provided consent.

## Data analysis

Data were analysed using SPSS® version 20.0. Descriptive analysis was performed using frequencies

and averages, whilst the relational study was carried out with cross tabs. Statistical differences were examined using the chi-square test, with significance being established at  $p\leq.05$ . To develop the causal model, binary logistic regression was used. The reliability Index (CI) for the Exp(B) was set at 95%. Hosmer-Lemeshow plots were used to determine the goodness of fit and the Pearson Chi-square ( $p\leq.05$ ) for the significance of relationships. The reliability Index (CI) for the Exp(B) was set at 95%.

## RESULTS

The relationship between problematic behaviours of consumption, use of video games and sex is shown in Table 1. These results reveal that most participants do not consume tobacco, while nearly 90% of students have some dependency with alcohol. Further, approximately 80% of university students indicated that they rarely engaged with video games and that they never experienced any problems related to video game use. The relational study does not show statistical differences between men and women in tobacco consumption ( $X^2=3.07$ ;  $p=.380$ ), although these can be observed in other substances (Alcohol:  $X^2=19.24$ ;  $p<.001$ ; Problematic use:  $X^2=97.58$ ;  $p<.001$ ; Video games consumption:  $X^2=85.83$ ;  $p<.001$ ). Moreover, we can observe that women rarely drink, have fewer video game related problems and play video games less often than men.

Table 1. Frequency of substance consumption and use of video games by sex and results of Chi-squared

		Male (n=193)	Female (n=297)	Total (n=490)	$X^2$ (p)
TOBACCO (n=490)	Non-smoker	76%	82%	79%	.380
	Low dependence	4%	2%	3%	
	Medium dependence	19%	16%	18%	
	High dependence	1%	0%	0%	
ALCOHOL (n=490)	Non-consumer	7%	16%	12%	< .001
	Low dependence	77%	78%	78%	
	Medium dependence	15%	6%	9%	
	High dependence	1%	0%	1%	
PROBLEMATIC USE (n=490)	Without problems	58%	94%	79%	< .001
	Potential problems	35%	6%	18%	
	Severe problems	7%	0%	3%	
VIDEO GAMES CONSUMPTION (n=490)	Low	61%	94%	81%	< .001
	Medium	34%	6%	17%	
	High	5%	0%	2%	

Table 2 shows the relationship between substance consumption (tobacco, alcohol and video games) and place of residence. Significant associations were found only for engagement with video games ( $\chi^2 = 10.84$ ;

$p < .001$ ). This finding is driven by the 9.7% of university students who live in residences and have a high use of video games, versus those who live in shared flats or in a family home.

Table 2. Frequency of substance consumption and use of video games by place of residence

		Family home (n=232)	Shared flat (n=227)	Residence (n=31)	Total (n=490)	$\chi^2$ (p)
TOBACCO (n=490)	Non-smoker	81%	77%	87%	79%	.764
	Low dependence	2%	4%	0%	3%	
	Medium dependence	17%	19%	13%	18%	
	High dependence	0%	0%	0%	0%	
ALCOHOL (n=490)	Non-consumer	16%	10%	9%	12%	.144
	Low dependence	77%	78%	84%	78%	
	Medium dependence	7%	12%	7%	10%	
	High dependence	0%	0%	0%	0%	
PROBLEMATIC USE (n=490)	Without problems	80%	80%	74%	80%	.925
	Potential problems	17%	17%	23%	18%	
	Severe problems	3%	3%	3%	2%	
VIDEOGAME CONSUMPTION (n=490)	Low	78%	84%	74%	81%	.028
	Medium	19%	15%	16%	17%	
	High	3%	1%	10%	2%	

Table 3 provides the findings from the binary logistic regression model developed to predict the three harmful behaviours according to sex (place of residence was not further examined as it had no significant relationship with the variables). Findings show that being male increases 5.23 times the probability of experiencing problems related to video game use. Being male also increased the probability of playing video games 3.66. The model demonstrated good fit ( $\chi^2 = 114.57$ ;  $p < .001$ ).

Table 3. Results of the binary logistic regression to predict the substance consumption and the use of video games by sex

	B	Sig.	O.R	C.I. 95%	
				Lower	Upper
Problems with video games	1.655	.000	5.230	2.675	10.228
Use of video games	1.299	.000	3.667	1.825	7.368
Tobacco	0.293	.258	1.340	0.807	2.225
Alcohol	0.456	.188	1.577	0.801	3.107
Constant	-2.245	.000	0.106		

## DISCUSSION

The present research describes in detail engagement of Spanish university students in harmful behaviours. In addition to providing data on the frequency of consumption of tobacco, alcohol and video game use, the present study describes the association of these variables with students' place of residence and sex.

Tobacco consumption reported in the present study was lower than the percentages reported by Nelson et al. (2006) who reported 30% tobacco consumption in a sample with similar characteristics. Additionally, the pattern of alcohol consumption uncovered by our research is similar to that of Supski et al. (2017) and Whitehome-Smith et al. (2012). It is possible that the present sample had a high intake of alcohol because they were trying to integrate with a new social group, evading stress caused by moving to a new place and having a higher workload and/or succumbing to peer pressure (Obradors-Rial et al., 2014).

One of the main interests of this research was to determine the association between substance consumption and the use of video games with sex in university students. Females proved to drink less alcohol

and exhibited less problematic use of video games. Social learning theory (Bandura & Walters, 1979) presents an explanation of this finding as being the result of personal, cultural and socio-environmental factors, which are more prominent in males. Similarly, Chacón et al. (2016) and Zeferino et al. (2015) reported tobacco and alcohol consumption to be higher in men than women.

Further, Redonnet et al. (2012) and Wang et al. (2015) have discussed with the myriad of possible psychosocial factors which contribute to these outcomes. When young adults embark upon a university degree, they become the recipients of a substantial amount of lofty expectations, professional projects and new challenges. The majority will also experience a logistical and environmental transition when they change their place of residence and establish new forms of contact with social peers.

During this time they must adapt to a new social context which for many can lead to an increased pressure to consume harmful substances (as a way of leisure), causing potential damage to health (Arnett, 2005; Hernández-Serrano et al., 2015). The present study did not find any evidence to support the negative influence of these factors.

Finally, the logistic model presented in the present study, suggests that sex is not a significant predictor of students consumption of substance as substance consumption was similar in both men and women. On the other hand, the use of video games and reporting problems related to device use was significantly higher in men. Technological advances in recent decades mean that this generation of students (i.e. from which our participants belong) have largely grown-up with technology and have been exposed to technology at most of the important developmental stages of their lives.

Previous generations, or indeed mature students within our sample may not have grown up with the same exposure to technology but will have had to adapt to its presence in society (Bourgonjon, Valcke, Soetaert, & Schellens, 2010). Baggio et al. (2016) have previously reported that women tend to play video games less frequently as they increase in age, whereas men maintain their playing frequency throughout their life. Further, a report published by the Infectious Diseases Society of America (IDSA) in 2003 indicates that 75% of men use videogames relative to just 28 % of women. Similar

figures have also been reported by Borgonovi (2016). The present generation of male students, who have grown-up with technology looming, are absorbed easily by new technologies such as social networks and video games and the feelings of competence, self-esteem, autonomy and cognitive benefits that they bring (Buelow, Okdie, & Cooper, 2015; Weinstein, Ben, Timor, & Mama, 2016).

It is important to note the main limitations of this study. The study recruited a relatively small number of students and it is important to replicate the findings with a larger sample. Further, the sample was convenient and more rigorous methods should as random sampling should be used in future. A next step should be to recruit students from across Spain in order to be more representative of Spanish university students. In addition, only the problematic consumption of substances and video games were related to sex and place of residence. It would be interesting to examine other substances and to investigate the role of psychosocial and academic components in order to determine the impact of academic, social and emotional levels on legal drug consumption.

## Conclusions

The consumption of tobacco was lower in this sample of Spanish university students than has been previously found in other research studies, however alcohol intake is very high. Moreover, problems resulting from video games use were very low because only two out of ten students play with them daily.

Women drink less alcohol, report fewer problems associated with video games and play less video games in general than men. Place of residence was not a significant factor.

According to the logistic regression model the probability of experiencing problems associated with video game use was five times greater for men than for women, and the probability of playing video games was three times greater for men than women.

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