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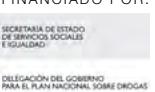
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Clinical guideline for the treatment of dual pathology in the adult population

Guía de práctica clínica para el tratamiento de la patología dual en población adulta

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*** The members of the Expert Group for Dual Pathology Clinical Practice Guide are listed alphabetically in the Appendix.

Introduction

Over the years, we have witnessed a substantial increase in the prevalence in psychiatry of double diagnoses or comorbidity diagnoses. In the literature, special attention has been paid to the association between disorders of mood and anxiety, between a range of psychiatric diagnoses, between the disorders linked to substance consumption, and between axis II disorders, to name but a few examples of comorbidity.

This publishing house is previewing the content of the future Clinical Practice Guide for the Treatment of Dual Pathology, by which we understand the coexistence of psychoactive substance use disorder (SUD) alongside other psychiatric diagnoses, and which is more commonly known as "dual diagnosis" or "dual pathology". This term, however, has acquired multiple connotations, with the purest sense referring to two independent diagnoses occurring simultaneously (Lehman et al., 1989), but in other senses implying that the psychiatric syndrome may have been induced by the substance use, or that the SUD is secondary to a psychiatric disorder (Sáiz Martínez et al., 2014).

There is growing interest in the study of psychopathological manifestations which exist alongside the consumption of psychoactive substances, possibly due to their frequent presence in the general population and in samples of patients, as well as a result of their influence on the course and prognosis of both addictive as well as mental disorders, and

also the little evidence available regarding the pharmacological and/or psychological treatment of this widespread pathology (Lingford-Hughes et al., 2012). At present there is greater knowledge of the effects of drugs on the course of psychiatric disorders, while at the same time comorbidity is linked to poorer adherence and greater resistance to both pharmacological and psychosocial treatments. Thus, treatment programmes are recommended which integrate care for both mental and toxicological pathologies (San, 2004).

Principles of treatment

Our knowledge regarding the treatment of dual pathology patients is constantly growing, but current clinical practice requires experience, knowledge and innovative approaches to deal with the complex problems of diagnosis and therapy of these patients. However, as shown at clinical level, such an integrated approach can be very efficacious in many patients with dual pathology.

Despite the frequency with which substance use and other mental disorders co-occur, patients presenting with both are generally attended in one healthcare system or the other. In the case of primary mental disorders, patients are generally attended in a mental health system, while substance abuse patients usually go to one of the addiction centres. Those who need care for both, however, do not normally receive integral treatment in either of the healthcare systems. Various studies have shown that programmes of integrated

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treatment (treatment for psychiatric disorder and for substance use disorder) yield better results than separate approaches in each of the systems, while a Cochrane review specifically designed for the purpose showed that the majority of programmes present serious methodological limitations which prevent the benefits of an integrated approach over other practices becoming clearly visible (Ley et al., 2002).

Although psychiatrists are the ideal professionals to direct, coordinate and monitor pharmacological and other types of psychotherapies and treatments in dealing with substance abuse patients, most clinicians are skeptical and pessimistic about the efficacy of the treatment of these patients. Nevertheless, with suitable training and experience an interested doctor can achieve notable success with the majority of patients.

Difficulties with treatment

Despite the importance of dual pathology, most of the research is methodologically flawed. For example, most studies analyse exclusively samples of patients under treatment in either psychiatric/mental health clinics or in drug addiction centres. Nevertheless, it is clear that dual patients are found in both treatment systems. No information is available regarding the similarities and differences between these dual patients in mental health as opposed to drug addiction treatment systems. It is generally assumed that SUD in psychiatric patients is less severe than in patients with pure SUD; conversely mental disorders among patients receiving treatment for drug addiction are less severe than those of psychiatric patients. An interesting study in this regard is one carried out among dual patients in the mental health system ($n=106$) or in addiction centres ($n=120$) which compared diagnosis, substance consumption and clinical severity by means of the DIS for the DSM-IV addiction severity index. Very few differences between the groups were found. There were no diagnostic differences except disorders in the schizophrenia spectrum, which were more frequent in the mental health centres (43%) than in addiction centres (31%). Although more substance dependent patients than those with mental health disorders reported drug consumption in the 30 days prior to the start of treatment, the overall number of days on which substances were used in the two groups during this period did not differ. This finding confirms the high prevalence in both therapeutic settings of dual pathology with no differences in the severity of both pathologies as a function of the patient's origin (Havassy et al., 2004).

The reasons for a clinical guideline for dual pathology

A review of the literature on the treatment of dual pathology highlights a great deal of clinical variability, which inevitably raises doubts and creates uncertainty among

clinicians in their decision making at therapeutic level. The clinical practice guides (CPG) of the national health system aim to reduce variability and improve the clinical practice of the professionals by using a standardised methodology in their formulation. This process includes the elaboration, adaptation, updating, evaluation and implementation of the CPG (Manual metodológico. Guías de Práctica Clínica en el SNS [Methodology manual. Clinical Practice Guides in the National Health System], 2007; Fervers et al., 2011).

The participation of scientific societies such as the Spanish Biological Psychiatry Society (the promoter of the guide), the Spanish Psychiatric Society, Spanish Society of Drug Addictions, Socidrogalcohol and the Galician Psychiatry Association (the latter providing the finance for the Guide) was essential in furthering the aims of the CPG for Dual Pathology. Other organisations who have supported this project are CIBERSAM (Centre for Biomedical Research in Mental Health Network) and RTA (Network for Addictive Disorders).

As a first step, a group of experts was created at national level which included psychiatrists, psychologists and pharmacologists with broad clinical experience in the field. The psychiatric diagnoses and drugs to be included in the CPG were established, as were the objectives and the scope of the guide. To this end, we formulated a series of PICO questions (Population, Intervention, Comparison and Outcomes) to address the most relevant knowledge gaps from a clinical point of view. Once the questions had been established, a thorough bibliographic search of the scientific literature on the subject was carried out, with the most relevant and methodologically sound being selected in order to guarantee the analysed results. These publications were entered into the "Grade of Recommendation, Assessment, Development and Evaluation" system (GRADE), which allows an assessment of the quality of evidence for each the results. Finally, depending on the strength and quality of of the evidence, a series of recommendations are proposed in answer to the PICO questions developed previously.

Conflict of interests

Luis San has received funding for this research and has acted as a consultant and lecturer for the following companies and organisations: Adamed, Eli Lilly, Ferrer, Janssen-Cilag, Lundbeck, Otsuka, Rovi y Servier.

Belen Arranz has acted as a consultant/lecturer for the following companies and organisations: Adamed, Esteve, Janssen-Cilag, Lundbeck, Otsuka, Rovi y Servier.

Appendix

B. Arranz, M. Arrojo, E. Becoña, M. Bernardo, L. Caballero, X. Castells, R. Cunill, G. Florez, M.D. Franco, M. Ga-

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Psychiatric comorbidity in a sample of cocaine-dependent outpatients seen in the Community of Madrid drug addiction care network

Comorbilidad psiquiátrica en una muestra de pacientes con dependencia de cocaína atendidos ambulatoriamente en la red drogas de la Comunidad de Madrid

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Abstract

The objective of this study was to estimate the current prevalence of psychiatric disorders in cocaine-dependent patients who attend different treatment centres in the Community of Madrid. A prospective multicentre study was used, and a total of 197 cocaine-dependent subjects were assessed. The assessment instrument used for diagnosis was the Psychiatric Research Interview for Substance and Mental Disorders (PRISM-IV). The main findings of this study were a high prevalence of psychiatric comorbidity in cocaine-dependent patients seeking treatment (64.0%). The most common Non Substance Use Disorders found were attention-deficit/hyperactivity Disorders (34.5%) and depressive disorders (13.7%). The most common Substance Use Disorder was alcohol dependence (28.4%). Cocaine-dependent patients who had a depressive disorder and were alcohol dependent presented a more severe clinical profile and a higher degree of psychopathology, measured using different assessment tools, than the patients who were only cocaine dependent. These data suggest that the presence of psychiatric comorbidity could constitute a risk factor associated with the severity of cocaine dependence. The clinical heterogeneity found also indicates the need to search for individualised treatments that more specifically fit the needs of this population.

Keywords: Cocaine, Substance-Related Disorders, Alcohol Dependence, Depressive Disorder, PRISM.

Resumen

El objetivo de este estudio fue estimar la prevalencia actual de trastornos psiquiátricos en pacientes dependientes de cocaína atendidos en los diferentes centros de tratamiento en la Comunidad de Madrid. Se trata de un estudio multicéntrico prospectivo realizado con una muestra de 197 sujetos con dependencia de cocaína. El instrumento de evaluación utilizado fue la Psychiatric Research Interview for Substance and Mental Disorders (PRISM-IV) (Entrevista de Investigación Psiquiátrica para Trastornos Mentales y Sustancias). La prevalencia actual de comorbilidad psiquiátrica encontrada fue del 64.0%. Los trastornos psiquiátricos más frecuentes no relacionados con el consumo fueron el trastorno por déficit de atención e hiperactividad (34.5%) y los trastornos depresivos (13.7%). El trastorno por uso de sustancias más frecuente fue la dependencia del alcohol (28.4%). Los pacientes dependientes de cocaína que presentaron un trastorno depresivo y los que presentaron dependencia del alcohol mostraron un perfil clínico de mayor gravedad y un mayor grado de psicopatología medido a través de diferentes instrumentos de evaluación en relación con los pacientes que sólo presentaban dependencia de la cocaína. Estos datos sugieren que la presencia de comorbilidad psiquiátrica podría constituir un factor de riesgo asociado a la gravedad de la dependencia de la cocaína. La heterogeneidad clínica encontrada recomienda la búsqueda de tratamientos individualizados que se ajusten de manera más específica a las necesidades de esta población.

Palabras clave: Cocaína, Trastornos Relacionados con Sustancias, Dependencia del Alcohol, Trastornos Depresivos, PRISM.

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Cocaine dependence is a disorder with a chronic course and frequent relapses (McLellan, Lewis, O'Brien, & Kleber, 2000). The consequences of this disorder are associated with a significant number of medical, psychological and social impairments, including the spread of infectious diseases (e.g. AIDS, hepatitis and tuberculosis) and leads to both the individual and society incurring healthcare and legal costs, therefore it has become a substantial public health problem.

According to the European Monitoring Centre for Drugs and Drug Addiction (2014), Spain is one of the European countries with the highest prevalence of cocaine use among the general population. Cocaine is the second most consumed, illegal, psychoactive substance in Spain. Epidemiological surveys estimate that 2.2% of the Spanish population between 15-65 years used cocaine once in the last year (Spanish Drug Observatory, 2011).

On the other hand in Spain, there is little data on the prevalence of psychiatric disorders in cocaine abusers. Information from clinical samples and non-clinical samples (Herrero, Domingo-Salvany, Torrens, & Brugal, 2008; Herrero, Domingo-Salvany, Brugal, & Torrens, 2011; Tortajada et al., 2012) estimate that 42.0% to 65.0% of cocaine abusers have a concurrent psychiatric disorder.

Cocaine use is associated with a wide variety of mental and psychological disorders. Those most usually found are substance abuse (Arias et al., 2013; Carroll & Rounsaville, 1992; Falck, Wang, Siegal, & Carlson, 2004; Herrero et al., 2008; Kleinman et al., 1990; Malow, West, Corrigan, Pena, & Lott, 1992; Regier et al., 1990; Rounsaville et al., 1991; Falck et al., 2004), mood and anxiety disorders (Falck et al., 2004; Herrero et al., 2011; Rounsaville et al., 1991) and those related to impulsivity (Kjome et al., 2010; LoBue et al., 2014; Moeller et al., 2001; Vonmoos et al., 2013), and ADHD (Levin, Evans, & Kleber, 1998; Levin et al., 2004; Vergara-Moragues et al., 2011).

The treatment outcome for cocaine dependence is not particularly good. The high failure rate in outpatient treatment of cocaine-dependent individuals is very frequent and has a very negative impact on their families, on society and on the patients themselves (Ahmadi et al., 2009; Poling, Kosten, & Sofuoglu, 2007). Amongst the different variables that have been associated with the treatment outcome for cocaine dependence, there is a notable presence of associated psychiatric disorders such as alcohol dependence, impulsive disorders and mood disorders (Agosti, Nunes, Stewart, & Quitkin, 1991; Ahmadi, Kampman, & Dackis, 2006; Ahmadi et al., 2009; Alterman et al., 2000; Carroll, Rounsaville, & Bryant, 1993; Heil, Badger, & Higgins, 2001; Levin et al., 2004; Moeller et al., 2001; Poling et al., 2007; Siqueland et al., 2002) but the bearing these variables may have on the prognosis of these patients is not known. An aspect that has been little touched upon in this field of study is the bearing that the presence of a comorbid disorder has on the treat-

ment outcome for these kinds of patients. We think that going into depth in these aspects could be useful for designing strategies for encouraging adherence to treatment and improved handling of these patients.

The objective of this study was to evaluate psychiatric and psychological comorbidity in cocaine-dependent patients in a prospective follow-up study carried out on patients attending different treatment centres in the Community of Madrid. Subjects included in this sample were recruited as part of a prospective multicentre study, aimed at investigating the influence of clinical variables in the prognosis of cocaine dependent patients during the course of one year. This study is part of a general, wider project carried out by the research group "GIPA" (Addiction Psychiatry Investigation Group) for the purpose of determining the weight of the clinical variables in the prognosis of cocaine-dependent patients during one year. To carry out this project, assessment tools designed for dual diagnosis patients (the PRISM interview) (Torrens, Serrano, Astals, Perez-Dominguez, & Martin-Santos, 2004) along with other psychological assessments aimed at determining the severity of the affective symptoms (the Hamilton Rating Scale for Depression), impulsivity (the Barratt Impulsiveness Scale) and other scales for measuring the severity of dependence on cocaine and abuse of other substances (the Addiction Severity Index among others) were used.

Methods

Participants

During the study period 625 outpatients seeking treatment for cocaine dependence from January 2009 to September 2009 were seen in seven centres in the drug addiction care network of the Community of Madrid. Of these, 206 were excluded because they were former patients who came after having relapsed or because the severity of their dependence required their referral to a hospital unit. A total of 57 patients were excluded for being principally dependent on opiates. After completing detoxification treatment, the purpose of the study was explained to the patients and 155 subjects declined to participate. The main reason for not accepting was not wanting to spend the extra time required to complete assessments that were included in the project. Ten patients were not included for failing to attend the interview in which they would have had to sign the informed consent. The sample size was calculated taking into account that 20-30% of those included in the study would drop out.

The target population consisted of 197 individuals with a diagnosis of cocaine dependence and who attended one of the seven-centres in the study, namely those within the network of drug addiction care in the Community of Madrid (the Madrid City Centre Council and the Drug Enforcement Agency). The centres were selected to represent the

overall public drug treatment network in Madrid (two centres were located in the outskirts of the Community and the rest in the central area of the city of Madrid).

The main inclusion criteria to enter the study were: (1) DSM-IV-RT diagnosis of cocaine dependence for the last 12 months; (2) being at least 18 years old (age between 18 and 65); (3) having completed a cocaine detoxification process; (4) knowing how to read and write; and (5) signing the informed consent form. The exclusion criteria were: (1) having medical or neuropsychiatric conditions that entail neuropsychological deterioration (head trauma or intellectual quotient (IQ) <80).

Procedure

The patients went to one the public centres where the study was carried out, voluntarily seeking treatment for their drug addiction. The assessment system used in these centres was similar. Detoxification was undertaken on an outpatient basis and went on for between 10-15 days during which urine drug testing was carried out twice a week. A patient was deemed to be detoxified once he or she had three consecutive urine tests showing him or her to be free of drugs (10 days). Afterwards, the patient was given an appointment so that the study could be explained and once the consent was signed (10 days later) an appointment was scheduled with the researchers to finalise the study protocol (7 days later). Subsequently the clinical examination was conducted (psychological, psychopathological and psychiatric) and the patients were included in the treatment programme in each of the drug centres included in the project. The Ethics Committees from the different hospitals approved the study protocol.

Assessments

Sociodemographic data. The following variables were collected as part of the study protocol: sex, age, current marital status, socioeconomic status, years of education, employment status, legal status, drug use history (age when cocaine use began, age when regular or daily use took place, cumulative use in the last month), prior treatment and status regarding sexually transmitted diseases, tuberculosis, HIV and viral hepatitis.

Diagnosis. In order to diagnose the mental disorders a structured clinical interview was used for patients with psychiatric comorbidity (Psychiatric Research Interview for Substance and Mental Disorders and the Structured Clinical Interview for DSM-IV; PRISM) Spanish version (Torrens et al., 2004). The PRISM was administered by a trained psychiatrist in each centre, who assessed patient demographics, and "current" (previous 12 months) DSM-IV Axis I disorders (substance use and psychiatric disorders, mood, anxiety, psychotic and eating disorders), and two Axis II disorders; borderline and antisocial personality disorders. The PRISM interview has demonstrated good psychometric properties in

terms of test-retest reliability (Hasin et al., 2006), inter-rater reliability (Morgello et al., 2006) and validity (Torrens et al., 2004) for diagnosing psychiatric disorders among substance users. Prior to the start of the study a pilot project to improve agreement between researchers (concordance of 75% for the diagnosis of affective and psychotic disorders) was carried out. Diagnoses were assigned using the current diagnoses (criteria met within the last 12 months). Personality disorders were assumed to be characteristic of both current and past adult functioning.

Where there was a suspected diagnosis of adult Attention Deficit Hyperactivity Disorder (ADHD), the adult ADHD self-report scale (ASRS-V1.1) was used (Kessler et al., 2005a). To be diagnosed with adult ADHD, the participant must be deemed to have (1) met full DSM-IV-RT criteria for ADHD (e.g. have at least 6 of the 9 inattentive and/or hyperactive/impulsive symptoms to a clinically significant degree) as an adult, without any remission since childhood, (2) met full DSM-IV- RT criteria for ADHD as a child (in retrospect), and (3) have no other psychiatric disorder that would better explain the ADHD symptomatology.

Assessment of Psychosocial domains. The Hamilton Depression Rating Scale (HDRS) was used for measuring the severity of depressive symptoms. It is an interviewer-administered test, designed to quantitatively assess the severity of the symptoms and the changes in depressed patients (Ramos-Brieva & Cordero-Villafila, 1988). Impulsivity was measured using The Barratt Impulsiveness Scale, Version 11 (BIS-11), which is a self-report, multidimensional measure of impulsivity consisting of 30 items and cognitive, motor and non-planning subscales (Patton, Stanford, & Barratt, 1995). Using a Spanish translation of BIS-11, a good alpha coefficient for the total scale (0.75) was found and the factor structure supported Barratt's 3-factor impulsivity model (Oquendo et al., 2001). Severity of cocaine dependence patterns and circumstances of cocaine use over the 12 months prior to the interview were assessed with the Spanish version of the Severity of Dependence Scale (SDS) (González-Saiz & Salvador-Carulla, 1998). The SDS is a rating scale made up of 5 items that aim to measure the most psychological components of dependence. More specifically, it evaluates the subject's perception of the extent to which their control over their drug use has deteriorated, as well as their concern and anxiousness to obtain the drug. The answer to each item is rated using a Likert-type scale, with scores ranging from 0 to 3. The overall score of the SDS therefore ranges from 0 to 15 and a higher score indicates a greater level of dependence on the drug in question. The seriousness of the withdrawal symptoms when stopping cocaine use was measured by the Cocaine Selective Severity Assessment (CSSA) (Kampman et al., 1998). The CSSA is an 18-item, interviewer-administered instrument that measures the signs and symptoms most often associated with the abrupt cessation of cocaine use. Each item on the CSSA is rated on a 0-7

scale and a total score is obtained by summing up all the individual items. The CSSA appears to be a valid measure of cocaine withdrawal symptoms. Items that receive the highest score on the CSSA are consistent with criteria for cocaine withdrawal identified in DSMIV-TR. To evaluate the seriousness of the addiction we used the Addiction Severity Index (EuropASI, Addiction Severity Index) (Bobes et al., 2007). It is a semi-structured interview designed to address seven potential problem areas in substance-abusing patients: medical status, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status. Finally, the overall impression of the clinical seriousness as well as the global assessment of functioning were evaluated by the Clinical Global Impression Scale (CGI) (Rockville, 1976) and the Global Assessment of Functioning Scale (GAF) (American Psychiatric Association, 2000) respectively. The CGI is a descriptive scale that provides qualitative information about the severity of the symptoms. The GAF, is a scale set out in axis V of the DSM-IV RT Multiaxial diagnostic system, that seeks to determine, with a score from 0 to 100, the adaptability and functioning of an individual.

Statistical Analysis

Simple descriptive statistics were calculated using frequencies and percentages for categorical data and mean and standard deviations for continuous data. Comparisons were carried out using the χ^2 and Fisher's exact tests for categorical variables and the t-test and analysis of variance (ANOVA) for continuous variables. A logistic regression model was used to assess the influence of other variables on psychiatric morbidity. To determine the variables associated with the presence of comorbidity, backward stepwise logistic regression analysis was carried out using the presence of psychiatric comorbidity as the dependent variable. In a second and third regression analysis we determined the variables that could predict the presentation of alcohol dependence or an affective disorder using alcohol dependence and depressive disorders respectively as dependent variables. The Hosmer-Lemeshow statistic was used to assess the goodness of fit of the logistic regression model. SPSS (version 20.0) was used for all analyses.

Results

Of the 197 subjects, 85.8% were men and 14.2% were women. The mean age was 35.2 (SD: 6.0). Mean years of education were 15.0 (SD: 1.2). About 66.5% were currently employed. Nearly 57.4% had never married, 26.4% were married or cohabiting and 29.6% were separated, divorced or widowed. About 76.6% did not have a criminal record, 15.7% had been held at a police station and 7.6% had been in jail or prison overnight or for longer (Table 1). Men tended to be older than women ($p = 0.023$), more likely to be married ($p = 0.000$) and to be employed ($p = 0.043$) but

woman tended to have fewer years of education ($p = 0.016$) and above all more history of having been in prison ($p = 0.001$) (Table 1).

The mean age at which cocaine was first used was 21.6 (SD: 5.4) and the mean age when cocaine was regularly being used (daily use) was 25.6 (SD: 6.9). Subjects showed an average cumulative consumption of cocaine in the last month of 3.0 gr (SD: 1.3). Controlling by gender we did not find any statistical differences.

Overall, 49.7% of the sample had received some lifetime psychiatric or psychological treatment related to drug use (32.0% outpatient treatment, 6.1% in day centres and 5.1% in therapeutic communities). No differences due to gender were found among subjects receiving treatment and those who were not. Regarding infectious diseases 63.0% of the sample had some sort of marker of viral hepatitis. HIV infection was present in only 3.0% of the sample while 79.0 % had previously been seropositive.

As shown in Table 2, 64.0 % of the subjects had co-morbidity with some psychiatric disorder. 36.5% did not meet the criteria for DSM-IV psychiatric disorders except for cocaine dependence. About 40.6% had only one comorbid psychiatric disorder and about 22.8% had one or more comorbid psychiatric disorders. Regarding type of disorder, 50.8% had a current Axis I diagnosis other than cocaine dependence, 3.0% only had a current Axis II diagnosis and 9.6% had both Axis I and Axis II diagnoses (Table 2).

Axis I Disorders

With regard to Substance Use Disorders (SUDs) other than cocaine dependence, 28.4% were diagnosed as having alcohol dependence. With regard to Non Substance Use Disorders (NSUDs), 13.7% met the criteria for current depressive disorders, 3.6% for current bipolar disorder, 4.1% for current psychotic disorders and 34.5% for current (Table 2).

Axis II Disorders

12.7% of the subjects met the criteria for a personality disorder (borderline or antisocial personality disorder (Table 2)).

Gender

There were no significant differences in psychiatric co-morbidity due to gender. Nonetheless significant differences were found in alcohol dependence, which was more prevalent among men ($p = 0.024$) and in personality disorders, which were more prevalent in women ($p = 0.003$) (Table 2).

Associated factors with psychiatric comorbidity

As the Table 2 shows, the comorbid disorders most frequently found in our sample were in axis 1: ADHD, alcohol dependence and depressive disorders. Since a criterion of the diagnosis of ADHD and personality disorders requires that the onset of these conditions took place during child-

Table 1. *Socio-demographic variables and drug use patterns, in the overall sample*

	TOTAL N = 197	Men N = 169 (85.8)	Women N = 28 (14.2)	χ^2/f	Significance ♂ vs. ♀
Age [mean (SD)]	35.2 (6.0)	35.6 (6.0)	32.7 (5.8)	0.121	0.023*
Current marital status					
Never married	113 (57.4)	94 (55.6)	19 (67.9)		
Married/cohabiting	52 (26.4)	49 (29.0)	3 (10.7)	18.113	0.000***
Divorced/separated	26 (13.2)	24 (14.2)	2 (7.1)		
Widowed	6 (3.0)	2 (1.2)	4 (14.3)		
Socioeconomic status					
Low	73 (37.1)	59 (34.9)	14 (50.0)		
Medium	106 (53.8)	96 (56.8)	10 (35.7)	4.408	0.110
High	8 (9.1)	14 (8.3)	4 (14.3)		
Years of education [mean (SD)]	15.0 (1.3)	15.2 (1.3)	14.5 (1.3)	1.532	0.016*
Work					
Employed	131 (66.5)	108 (63.9)	23 (82.1)	3.586	0.043*
Unemployed	66 (33.5)	6 (36.1)	5 (17.9)		
Criminal record					
No criminal record	151 (76.6)	133 (78.7)	18 (64.3)		
Police station	31 (15.7)	28 (16.6)	3 (10.7)	14.141	0.001**
Prison	15 (7.6)	8 (4.7)	7 (25.0)		
Age at first cocaine use [mean (SD)]	21.6 (5.4)	21.4 (5.7)	19.9 (3.4)	7.023	0.059
Age regular use Cocaine [mean (SD)]	25.6 (6.9)	25.5 (6.7)	25.9 (8.1)	0.369	0.799
Cumulative amount of cocaine (gr) during the last month [mean (SD)]	3.0 (1.3)	2.9 (1.22)	3.0 (1.5)	4.565	0.784
Previous treatment					
Yes	98 (49.7)	83 (49.1)	15 (53.6)	0.191	0.688
None	99 (50.3)	86 (50.9)	13 (46.4)		

Note. * p < 0.05; **p < 0.005; *** p < 0.001; N= Number of subjects

hood or adolescence, and our study focused on the presence of current comorbid disorders, when analysing the variables related to the presence of comorbidity and those related to the clinical course, we excluded those disorders from the analysis.

In the logistic regression analysis, we found that among the demographic variables and the dependent variables of use, age when cocaine use began and cumulative cocaine use in the last month respectively were some of the variables retained in the model and showed a statistically significant

OR value, so that these variables would increase the likelihood of developing psychiatric comorbidity (Table 3). In order to analyse which variables could predict the presentation of alcohol dependence only men (vs women) showed a statistically significant OR value, so that men had a higher likelihood of developing alcohol dependence (Table 3).

In a third regression analysis we found that the fact of having received previous treatment would be predictive of the presentation of a comorbid depressive disorder (Table 3).

Table 2. Current psychiatric diagnoses in overall sample categorised by gender

	TOTAL N (%) 197 (100.0)	Men N (%) 169 (85.8)	Women N (%) 28 (14.2)	χ^2/f value	Significance σ vs. φ
Comorbidity	126 (64.0)	105 (62.1)	20 (16.0)	0.896	0.402
Number of disorders					
No disorder (except cocaine dependence)	72 (36.5)	62 (39.0)	8 (28.6)		
1 disorder	80 (40.6)	68 (40.2)	14 (50.0)	1.024	0.599
> 1 disorder	45 (22.8)	39 (23.1)	6 (21.4)		
Axis I other than cocaine dependence	100 (50.8)	89 (52.7)	11 (39.2)	1.720	0.223
Axis II	6 (3.0)	0 (0.0)	6 (21.4)	37.352	0.000
Axis I and Axis II other than cocaine dependence	19 (9.6)	16 (9.5)	3 (10.7)	0.043	0.738
Axis I					
Substance use disorders					
Alcohol	56 (28.4)	53 (31.4)	3 (10.7)	5.033	0.024
Other dependence	2 (1.0)	2 (1.2)	0 (0.0)	0.335	1.000
Non-substance use disorders					
Depression disorders	27 (13.7)	22 (15.6)	5 (17.8)	0.476	0.552
Bipolar disorders	7 (3.6)	5 (2.9)	2 (7.1)	1.227	0.260
Psychotic disorders	8 (4.1)	5 (2.9)	3 (10.7)	3.709	0.088
Attention-deficit/hyperactivity disorder	68 (34.5)	59 (34.9)	9 (32.1)	0.081	0.833
Axis II					
Personality disorders	25 (12.7)	16 (9.5)	9 (32.1)	11.147	0.003

Note. N= Number of subjects.

Table 3. Logistic Regression. First regression analysis using the presence of comorbidity as a dependent variable.
Second regression analysis using the presence of alcohol dependence as a dependent variable.
Third regression analysis using the presence of depressive disorders as a dependent variable.

Variable	Coefficient	S.E.	Wald	p-value	OR	95% CI
Comorbidity						
Age at first cocaine use	0.09	0.03	7.34	0.007	1.10	1.03-1.18
Cumulative amount of cocaine (gr) during the last month	0.57	0.17	10.98	0.001	1.75	1.25-2.44
Alcohol dependence						
Male	1.24	0.64	3.70	0.054	3.48	0.98-12.39
Depressive disorders						
Previous treatment	2.04	0.65	9.65	0.002	7.733	2.12-28.09

Note. SE = Standard Error; OR = Odd Ratio; CI = Confidence interval for the odds ratio.

Variables related to the clinical course

As shown in the Table 4 the cocaine-dependent patients who also had a comorbid depressive disorder exhibited significantly higher scores in the ASI drugs, legal, family and psychiatric status and in the depression scores measured by the HRSD than the cocaine-dependent only patients. In addition, these subjects exhibited higher scores in the SDS and exhibited significantly higher scores in the BIS attentional and non-planning subscales.

On the other hand, the patients with cocaine and alcohol dependence exhibited significantly higher scores in the ASI medical, employment, alcohol, drugs, legal and psychiatric

status and in CSSA subscales in comparison with those patients who only were only cocaine dependent. With regard to the HRDS they exhibited significantly higher scores than cocaine-dependent only patients. On the contrary, the GAF scores were significantly lower than cocaine-dependent only patients. Finally, in terms of the BIS scores, this patient group exhibited higher scores in the BIS motor subscale (Table 4).

Discussion

This study examined the current psychiatric diagnoses among a clinical sample of cocaine-dependent subjects seek-

Table 4. Variables related to the clinical course

	Only Cocaine Dependence N = 72 (64.9)		Cocaine Dependence and Depressive Disorder N = 11 (9.9)			Only Cocaine Dependence N = 72 (64.9)		Cocaine and alcohol Dependence N = 28 (25.2)		
	M	SD	M	SD	p-value	M	SD	M	SD	p-value
ASI medical	0.4	0.9	0.7	1.6	0.196	0.4	0.9	1.0	1.8	0.050
ASI employment	0.7	1.5	0.2	0.4	0.714	0.7	1.5	2.0	3.3	0.007
ASI alcohol	0.8	1.7	0.7	1.6	0.259	0.8	1.7	1.5	2.3	0.040
ASI drugs	1.8	2.5	5.1	2.7	0.045	1.8	2.5	3.0	3.4	0.021
ASI legal	0.2	0.7	1.3	2.8	0.004	0.2	0.7	0.9	1.2	0.015
ASI family	1.1	1.8	3.5	1.1	0.041	1.1	1.8	1.7	2.3	0.154
ASI psychiatric	1.1	2.3	2.8	0.6	0.043	1.1	2.3	2.4	2.9	0.005
SDS	7.3	4.1	10.5	1.4	0.039	7.3	4.1	8.2	4.6	0.190
CSSA	9.2	8.6	11.8	10.2	0.435	9.2	8.6	13.9	9.4	0.025
HDRS	3.4	2.8	8.0	2.1	0.000	3.4	2.8	4.5	3.8	0.036
CGI	2.4	1.2	2.9	1.7	0.928	2.4	1.2	2.3	1.8	0.135
GAF	59.3	36.8	57.3	34.6	0.830	59.3	36.8	49.4	35.4	0.087
BIS - Attentional	12.1	3.5	14.1	4.2	0.035	12.1	3.5	12.7	3.5	0.603
BIS - Motor	10.7	7.1	12.0	5.8	0.465	10.7	7.1	14.0	5.9	0.006
BIS - Non - Planning	18.2	4.5	20.5	2.6	0.025	18.2	4.5	17.4	5.6	0.192
BIS - Total	41.0	12.4	42.8	11.4	0.578	41.0	12.4	43.4	12.9	0.262

Note: M=Mean; SD= Standard Deviation; ASI= Addiction Severity Index; SDS= Severity of Dependence Scale; CSSA= Cocaine Selective Severity Assessment; HDRS= Hamilton Rating Scale for Depression; CGI:=Clinical Global Impression Scale; GAF= Global Assessment of Functioning Scale; BIS= Barratt Impulsiveness Scale.

ing treatment, assessed using the PRISM. The main findings of this study were: Firstly, a high prevalence of psychiatric comorbidity in cocaine-dependent outpatients that were recruited from different treatment settings in the Community of Madrid (64.0%). Secondly, the most common NSUDs found were ADHD (34.5%) and depressive disorders (13.7%) and the most common SUDs was alcohol dependence (28.4%). Thirdly, the cocaine-dependent patients with depressive disorders exhibited a more serious profile as well as a higher level of impulsivity than patients who were only cocaine dependent. Fourthly, the cocaine and alcohol-dependent patients presented a more serious profile, as well as a higher degree of impulsivity than cocaine-dependent only patients.

As we have previously indicated, we will focus the discussion about our results on those disorders that do not need to have begun in childhood or adolescence in order to be diagnosed, as is the case with personality disorders and ADHD. In our sample of cocaine abusers, rates of primary comorbidity of other mental disorders, specifically alcohol dependence and affective disorders were very high. This suggests that these disorders may be risk factors that influence the development or severity of cocaine abuse.

Our results showed a high current prevalence of psychiatric diagnoses (64.0%) although these figures were lower than those found by other authors who calculated prev-

alence rates between 73.5% to 75.0% (Alonso & Lepine, 2007; Andrews, Slade, & Issakidis, 2002; Arias et al., 2013; Carroll & Rounsvaille, 1992; Chan, Dennis & Funk, 2008; Falck et al., 2004; Grant et al., 2004; Herrero et al., 2008; Kessler, Chiu, Demler, Merikangas, & Walters, 2005b; Levin, Evans, & Kleber, 1998; Rounsvaille et al., 1991; Tortajada et al., 2012; Vergara-Moragues et al., 2012; Ziedonis, Rayford, Bryant, & Rounsvaille, 1994). These differences may be a result of the variations in the study methodologies used on the population analysed, including tools used to obtain diagnoses, eligibility criteria and other variables as cohort effects.

We found that 13.7% of the cocaine-dependent patients had a current depressive disorder. The data available on comorbid mood disorders estimate figures between 14.0% and 61.0%, which are higher than those found in our study (Araos et al., 2014; Brown et al., 1998; Falck et al., 2004; Herrero et al., 2008; López & Becoña, 2007; McKay et al., 2002; Weiss, Griffin, & Mirin, 1992; Ziedonis et al., 1994). In the studies showing higher prevalence rates of depressive disorders, one relevant factor is the timing of diagnostic assessments. While we placed assessments between 7-10 days after admittance, some previous studies conducted diagnoses shortly after the patients entered into treatment, thus maximizing possible confounding effects of intoxication/withdrawal. The high prevalence of cocaine use in patients with a depressive disorder is not easy to explain. On the one

hand, it supports the notion that cocaine abusers with affective illness may be more pharmacologically sensitive to the effects of cocaine (Sofuoglu, Brown, Babb, & Hatsukami, 2001). Alternatively, it could be that these patients use cocaine as a way of self-medicating their depression (Krantzian, 1985) or that both disorders share common risk factors (Kessler, 2004). Given the complexity of this relationship, treatment must be individualised in each case, determining the relevance of each disorder independently. In the regression analysis the only variable that increased the likelihood of suffering an affective disorder was having a history of receiving previous treatment. These data were consistent with the clinical observation that cocaine-dependent patients with a depressive disorder have a greater need to consume cocaine and there is a greater likelihood that they will drop out of treatment than cocaine users who do not have an associated depressive disorder (Brown et al., 1998). In addition, some studies have shown that cocaine-dependent patients with an affective disorder perceive a greater need for drug abuse treatment than those without depression (Falck, Wang, Carlson, Eddy, & Siegal, 2002). On the other hand, the patients who were cocaine-dependent and had an associated affective disorder differed from cocaine-dependent only patients in that they had higher scores in the ASI drugs, legal, family and psychiatric status, more severity of dependence, more psychopathology, an overall more serious condition and greater attentional and non-planning impulsivity. These data are consistent with data reported by other authors (Falck et al., 2002; McKay et al., 2002). Because the clinical characteristics associated with comorbid depression may interact with treatment, it is important to understand the clinical profiles of single diagnosis and dual diagnosis cocaine users in order to consider whether cocaine abusers with clinical depression may benefit from acute treatments targeting depressive symptoms.

Regarding impulsivity, it has been stated that unipolar depressive disorder is associated with increased impulsivity during depressive episodes (Corruble, Benyamina, Bayle, Falissard, & Hardy, 2003). Also impulsivity appears to be associated with susceptibility to substance abuse and with behavioural effects of abused drugs (Jentsch & Taylor, 1999; Moeller et al., 2002). Behavioural and rating scale measures of impulsivity are elevated in patients with substance abuse (Allen, Moeller, Rhoades, & Cherek, 1997; Moeller et al., 2002). Acute administration of either alcohol (Dougherty, Bjork, Bennett, & Moeller, 1999) or cocaine (Casella et al., 1994; Fillmore, Rush, & Hays, 2002) increases behavioural laboratory measures of impulsivity. Bearing in mind this data it is possible to hypothesise that cocaine dependent-subjects with a depressive disorder have a higher level of impulsivity than cocaine-dependent patients who do not have a depressive disorder.

With regard to alcohol dependence, 28.4% of the sample had an alcohol dependence disorder. Alcohol dependence

is a more frequent disorder among the cocaine dependent population. In the general population, 84.0% of individuals with lifetime cocaine abuse have also had an alcohol use disorder (Helzer & Pryzbeck, 1988). Results from the Epidemiological Catchment Area study indicate a higher degree of association between alcohol and cocaine dependence than between alcohol and any other type of drug dependence (Helzer & Pryzbeck, 1988). Studies of treatment-seeking and non treatment-seeking cocaine-dependent patients suggest that 60.0% or more of these individuals also meet criteria for a lifetime diagnosis of alcohol dependence (Carroll et al., 1993; Heil et al., 2001; Higgins, Budney, Bickel, Foerg, & Badger, 1994). Results from the present study demonstrate that patients concurrently dependent on cocaine and alcohol have a broader array and more complex set of problems than cocaine-dependent patients who are not alcohol dependent. We found that these patients had more serious medical, unemployment, alcohol, drugs, legal and psychiatric problems, more serious withdrawal symptoms, more depressive symptomatology and a more serious overall condition (Table 4). In this respect our results concur with the profile described by other authors that indicate that individuals with concurrent cocaine and alcohol dependence show greater behavioural, psychological, and psychiatric impairment than individuals with only one of the disorders (Brady, Sonne, Randall, Adinoff, & Malcolm, 1995; Carroll et al., 1993; Cunningham, Corrigan, Malow, & Smason, 1993; Hedden, Malcolm, & Latimer, 2009; Heil et al., 2001). This pattern of dual substance abuse may result from a variety of factors, including the use of alcohol to "come down" from a binge or to cope with cocaine cravings (Magura & Rosenblum, 2000).

The relationship between substance abuse and impulsivity is a relevant research topic that has been examined in recent years. Several studies have shown higher rates between substance misuse and impulsivity-related disorders (Dawe & Loxton, 2004a; Petry, Stinson, & Grant, 2005). These findings support the hypothesis that dysfunctional personality as a personality trait may increase vulnerability to alcohol and cocaine disorders (Bjork, Hommer, Grant, & Danube, 2004; Dawe, Gullo, & Loxton, 2004b). In this respect our data support the link between impulsivity and alcohol dependence shown in another studies (Dawe et al., 2004b; Rubio et al., 2008).

These results underscore the importance of individualised treatments for cocaine dependence to address the multiple needs of this heterogeneous population, including the substantial subgroup of patients who are also alcoholic.

The prevalence of psychotic disorders found in the study was low (4.1%), lower than the figures found in other studies [6.9% in samples who did not seek treatment (Herrero et al., 2008), 12.0% in patients hospitalized in any type of department of a General Hospital (Sopeña et al., 2008), 15.5% in outpatients seeking treatment (Araos et al., 2014)

and up to 100% in experimental studies of users who met substance dependence criteria (Kalayasiri et al., 2006)]. This low prevalence has not permitted the examination of risk factors associated with substance-induced psychotic disorders. It is possible that patients with psychotic disorders were not captured in our samples recruited from treatment settings, as these settings were limited to substance abuse treatment centres. Dual diagnosis patients with psychosis are more frequently seen in emergency departments and mental health services than in substance abuse treatment services (Martín-Santos et al., 2006).

This study has a number of limitations. Firstly, our study consisted of cases of cocaine-dependent outpatients and therefore may not be representative of the overall cocaine-dependent population. Samples of patients in treatment are likely to be skewed toward more severity and chronicity of illness and more comorbidity (Cohen & Cohen, 1984). Another problem is that samples of cocaine abusers may be subject to rapid cohort effects, since changes in cocaine price, availability, and social attitudes alter its penetration into different demographic groups. Secondly, our study emphasizes current prevalence, whereas other studies have reported lifetime prevalence (Arias et al., 2013; Carroll & Rounsaville, 1992; Falck et al., 2004; Herrero et al., 2008; Herrero et al., 2011; Tortajada et al., 2012; Vergara-Moragues et al., 2012). Thirdly, most parameters in the study were self-reported and recall bias could be expected. However, some previous studies have shown that assuring confidentiality and anonymity of the data (as was done in this study) maximizes the subjects' response accuracy. In this way, the information obtained from substance users tends to be reliable and valid (Del Boca & Darkes, 2003):

Despite these limitations, the study contained a number of strengths in comparison to other studies of its kind. For instance, all participants were examined using the same diagnostic criteria (DSM-IV) and the assessment instrument (PRISM) was administered by trained professionals. In addition, the study was conducted in the same urban area, from January 2009 to September 2009 when there were no changes with regard to the availability of and accessibility to treatment, in the availability of and accessibility to legal and illegal drugs and no change in the rate of other relevant events, such as HIV or hepatitis C infection. Finally, before making any conclusive decisions regarding our findings, this study should be replicated in other regions/countries to determine whether these findings vary in accordance with geographical region.

In summary we can conclude that this study has shown a high prevalence of psychiatric comorbidity in cocaine users seeking treatment. These data suggest that the presence of psychiatric comorbidity could constitute a risk factor associated with the severity of cocaine dependence. The clinical heterogeneity found also indicates the need to search for

individualised treatments that fit the needs of this population more specifically.

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Competing interests

The authors declare that they have no competing interests.

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Validity and Reliability of the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) in University Students

Validez y confiabilidad de la prueba de detección de consumo de alcohol, tabaco y sustancias (ASSIST) en estudiantes universitarios

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Abstract

The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), developed by the World Health Organization (WHO), has been used successfully in many countries, but there are few studies of its validity and reliability for the Mexican population. The objective of this study was to determine the psychometric properties of the self-administered ASSIST test in university students in Mexico. This was an *ex post facto* non-experimental study with 1,176 undergraduate students, the majority women (70.1%) aged 18-23 years (89.5%) and single (87.5%). To estimate concurrent validity, factor analysis and tests of reliability and correlation were carried out between the subscale for alcohol and AUDIT, those for tobacco and the Fagerström Test, and those for marijuana and DAST-20. Adequate reliability coefficients were obtained for ASSIST subscales for tobacco ($\alpha = 0.83$), alcohol ($\alpha = 0.76$), and marijuana ($\alpha = 0.73$). Significant correlations were found only with the AUDIT ($r = 0.71$) and the alcohol subscale. The best balance of sensitivity and specificity of the alcohol subscale (83.8% and 80%, respectively) and the largest area under the ROC curve (81.9%) was found with a cutoff score of 8. The self-administered version of ASSIST is a valid screening instrument to identify at-risk cases due to substance use in this population.

Keywords: Screening test, ASSIST, university students, substance use, reliability, validity.

Resumen

La Organización Mundial de la Salud desarrolló la Prueba de Detección de Consumo de Alcohol, Tabaco y Sustancias (Alcohol, Smoking and Substance Involvement Screening Test [ASSIST]) que se ha empleado con éxito en muchos países. Sin embargo, hay pocos estudios acerca de su validez y fiabilidad en la población mexicana. El objetivo del estudio fue determinar las propiedades psicométricas de la versión autoaplicable del ASSIST. Para ello, se realizó un estudio no experimental, *ex post facto* con una muestra de 1.176 estudiantes universitarios mexicanos. El 70,1% eran mujeres, el 89,5% tenían entre 18 y 23 años y el 87,5% eran solteros. Se obtuvo la fiabilidad mediante la prueba de consistencia interna Alfa de Cronbach. La validez concurrente se determinó con pruebas de correlación entre el ASSIST, AUDIT, FTND y CAD-20; se realizaron análisis factoriales exploratorio y confirmatorio para evaluar la validez de constructo. Se obtuvieron coeficientes de fiabilidad aceptables para las subescalas de tabaco ($\alpha = 0,83$), alcohol ($\alpha = 0,76$) y marihuana ($\alpha = 0,73$). La subescala de alcohol obtuvo una correlación significativa con la puntuación total del AUDIT ($r = 0,71$). La prueba de sensibilidad y especificidad mostró que al usar una calificación de 8 como punto de corte en la subescala de alcohol se obtiene un mejor balance entre ambos indicadores (83,8% y 80%, respectivamente), así como un área bajo la curva (ROC) mayor (81,9%). La versión autoaplicable del ASSIST es un instrumento de cribado aceptable, válido y sensible para la identificación de casos de riesgo asociados al consumo de sustancias.

Palabras clave: prueba de cribado, ASSIST, estudiantes universitarios, uso de sustancias, fiabilidad, validez.

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Programs of early identification and timely treatment are an effective means of reducing the incidence of illness associated with the use of psychoactive substances (Babor, 2002). Such an approach requires the use of screening tests that are easy to use, valid, and reliable, and that can be administered in different environments. Tests capable of detecting risky or dangerous use currently exist, but these present certain limitations, as described by Babor (2002). Principal among these are: 1) the time required to carry them out, which renders them unfeasible in the context of primary care; and 2) their focus on dependency, which fails to address the situation of those who are not addicted yet experience problems. Given these limitations, tests that are rapid and self-administered would be a useful alternative.

In 1997, the World Health Organization (WHO) promoted the development of the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) (Newcombe, Humeniuk & Ali, 2005; WHO ASSIST Working Group, 2002). The purpose of the project was to provide a valid, reliable instrument that could be employed in diverse environments and cultural contexts, that could evaluate different substances, and that could be used in conjunction with a brief intervention.

Various studies have evaluated the effectiveness of the ASSIST test when administered by a professional, and they report acceptable values of reliability, construct validity, and concurrent validity (Hides et al., 2009; Humeniuk et al., 2008; Khan et al., 2011; Smith, Schmidt, Allensworth-Davis, & Saitz, 2010; Soto-Brandt et al., 2014; WHO ASSIST Working Group, 2002).

Pérez, Calzada, Rovira, and Torrico (2012) report adequate psychometric properties for self-administered versions of the ASSIST test. The Spanish version distributed on the internet shows an acceptable Chronbach's alpha ($\alpha=0.779$) for the cocaine subscale only. The exploratory factor analysis identified a single factor that explains 47% of the variance, and this was consistent with the results of the confirmatory analysis.

It is important to have effective instruments for the detection of risky substance abuse in the university environment. According to More, Werch, and Bian (2012), university students are at risk of developing behavior patterns that adversely affect their health and quality of life, including the use and abuse of drugs; at this stage of life, with its marked increase in stress, they often fail to establish healthy behaviors.

The results of studies carried out in Mexico suggest that young people are most affected, since university students have shown a constant increase in their use of legal, illegal, and prescription drugs (Quiroga et al., 2003; Villatoro et al., 2012). At the same time, tobacco and alcohol use increase as they reach the age of 18, the age at which they can legally buy these substances in Mexico. There are 4.4

tobacco users aged 18 for each one aged 14 or younger, 38% of those aged 17 years report alcohol abuse (Chávez et al., 2013), which is particularly worrying, as there is evidence of deleterious effects of large quantities of alcohol on the brain and on various physiological and psychological parameters associated with drinking during adolescence and youth (López-Caneda et al., 2014; Vinader-Caerols, Monleón, & Parra, 2014).

Using data from university students in the health-care field, this study reports on the psychometric properties of a self-administered version of the ASSIST test and the prevalence of substance abuse among those students.

Method

This is an *ex post facto* non-experimental study with students in the health field from a university campus in Mexico City.

Participants

Students at all levels of the academic program participated in the study. Subjects selected were those found in classrooms at the time the test was administered and who met the following inclusion criteria: a) 18 years of age or older; b) enrolled in the university; and c) freely consenting to participate. The sample consisted of 1,176 participants from a total of 1,307 students in the program (a non-response rate of 10.02%). The majority were women (70.1%), with a high proportion aged 18-23 (89.5%),

Table 1. Demographic characteristics of participants

	%
Sex	
Women	70.1
Men	29.9
Age (years)	
18-20	52.5
21-23	37.0
24-26	7.6
27-30	2.9
Marital Status	
Single	87.5
Married	10.0
Separated	2.3
Widowed	0.2
Employment	
None	68.6
Weekends	11.8
Part-time (4 hours/daily)	10.1
Full-time (8 hours/daily)	8.0

single (87.5%), and full-time students (68.6%), and 29.9% reported working (Table 1).

Instruments

Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST). The ASSIST identifies the use of ten different types of psychoactive substances: tobacco, alcohol, marijuana, cocaine, amphetamine-type stimulants, inhalants, sedatives, hallucinogens, opioids, and other drugs. It consists of eight questions: Q1- substance use ever; Q2- substance use in the previous three months; Q3- strong desire or urge to use during the previous three months; Q4- Personal, social, financial, or legal problems associated with use in the previous three months; Q5- failure to meet role obligations in the previous three months; Q6- expressions of concern by persons close to the user about his/her use of drugs ever or in the previous three months, Q7-; attempts to end drug use; and Q8- use of intravenous drugs ever (WHO-ASSIST Working Group, 2002). The ASSIST test's validity and reliability have been reported in international studies, with a test-retest coefficient of 0.58-0.90 and an internal consistency of 0.80. The test determines a risk score for each substance that can be categorized into three levels: low risk (0-3 points), moderate risk (4-26 points), and high risk (>26 points) (Hides et al., 2009; Humeniuk et al., 2008; Khan et al., 2011; Smith et al., 2010; WHO ASSIST Working Group, 2002).

In order to determine the concurrent validity of the ASSIST, the following other tests, all considered valid measures of substance use, were administered:

Alcohol Use Disorders Identification Test (AUDIT). The AUDIT test is a screening instrument consisting of ten questions that identify problems related to alcohol use. Each question has three to five response options that categorize the frequency and quantity of consumption. The total score is obtained by adding the numerical value of each selected response (Babor, de la Fuente, Saunders, & Grant, 1989). This instrument has been tested with various populations in Mexico, with acceptable levels of reliability ($\alpha=0.85$ for the complete version and $\alpha=0.83$ for the brief version) (Carreño, Medina-Mora, Martínez, Juárez, & Vázquez, 2006, Morales et al., 2002; Medina-Mora, Carreño, & de la Fuente, 1998).

Drug Abuse Screening Test (DAST-20). The DAST-20 test was developed by Skinner (1982) and adapted to the Mexican population by De las Fuentes and Villalpando (2001). It consists of 20 yes/no questions that measure the subject's level of involvement and perception of consequences of drug use. The final score is the sum of affirmative answers, and levels of risk are categorized as follows: 0, none; 1-5, low; 6-10, intermediate; 11-15, significant; 16-20, severe. The reliability of the Mexican adaptation was determined to be 0.86 (De las Fuentes & Villalpando, 2001).

Fagerström Test for Nicotine Dependence (FTND). This test evaluates nicotine dependency by means of six questions about the number of cigarettes smoked per day, time from waking to first cigarette of the day, difficulty in not smoking where prohibited, time of day of smoking, the cigarette most difficult to give up, and smoking even while sick. The first three questions each have four response options, with values from 0 to 3; the other four have two options of 0 or 1. The total score is the sum of these points, and the degree of dependence is categorized as follows: 0-3, low; 4-6, medium; 7-10, high (Fagerström, 1978). This instrument has an internal consistency of 0.55-0.74, and a test-retest reliability of 0.58-0.91 (Meneses, Zuardi, Loureiro, & Crippa, 2009).

Procedure

Students in both shifts of the academic year 2013-14 were recruited (N=1307). Four health professionals who received prior training gave instructions and administered the tests. The questionnaire was administered in groups. The goals of the study and the requirements of participation were explained to each group; those who agreed to take part were given a questionnaire and two answer sheets. Administration lasted approximately 40-60 minutes. The answer sheets were collected and sent to the university computer center for optical scoring.

Ethical Considerations.

The project and protocol were approved by the university ethics committee and the approval ratified by the ethics committee of the Ramón de la Fuente Muñiz National Institute of Psychiatry.

Students were given preventive and self-help information. They were advised to seek help if they felt that their responses indicated some level of risk.

The anonymity of participants and the confidentiality of data were guaranteed.

Statistical analysis

Internal consistency of the whole test and for the alcohol, tobacco, and drug subscales was estimated using Chronbach's alpha. Construct validity was determined by means of a maximum likelihood estimation exploratory factor analysis with varimax rotation for each sub-scale and principal components with oblimin rotation for the full scale (Kerlinger, 1986, 2002). Concurrent validity was analyzed using the Pearson product-moment correlation coefficient to relate the alcohol subscale of the ASSIST test to the AUDIT test, the tobacco subscale to the FTND test, and the drug scale to the DAST-20. Statistical analyses were carried out using SPSS for Windows (version 21). Confirmatory analyses for the alcohol and tobacco subscales were carried out with EQS structural equation modeling (SEM) software.

Results

Internal consistency of the ASSIST subscales.

The reliability coefficient for the entire test (Q1-Q8) was 0.87; with questions 2 through 7 only, it was 0.85. Estimates were also acceptable for the tobacco (alpha=0.83), alcohol (alpha=0.76), and marijuana (alpha=0.73) subscales. The analysis was not performed for other drugs because of the small number of users identified.

Construct validity of the ASSIST test.

The factor analysis for the tobacco subscale produced a single factor that explains 51% of the variance, with factor loads greater than 0.50 for each of the questions. For alcohol, a single factor accounts for 35% of the variance, with loads greater than 0.50 for each question. The marijuana subscale, however, shows two factors, which together explain 61% of the variance. The first of these comprises Questions 2, 3, 6, and 7 (43% of the variance), with factor loads greater than 0.61 for each question; the second includes Questions 4 and 6 (18% of the variance), with factor loads of 0.80 and 0.86, respectively.

Confirmatory factor analysis

The analysis of the tobacco subscale was based on the results of the exploratory factor analysis, which suggests a unidimensional scale. Using the Lagrange Modifer test, the best adjustment of the model was found by correlating Questions 2 and 3 ($r=0.43$) as well as Questions 4 and 6 ($r=0.18$) ($X^2_{SB}=3.7792$, $df=3$, $p=0.28631$) ($CFI=0.999$, $RMSEA=0.016$, $CI_{90\%RMSEA}=0.000-0.057$), although the confidence interval was marginal (Figure 1).

The same procedure was applied to the alcohol subscale: Question 2 was related to 3 ($r=0.29$) and Question 6 to 7 ($r=0.24$) ($X^2_{SB}=3.9479$, $df=7$, $p=0.78576$) ($CFI=1.000$, $RMSEA=0.000$, $CI_{90\%RMSEA}=0.000-0.025$) (Figure 2). The marijuana subscale did not show proper adjustment in the analysis.

Concurrent validity

To assess the concurrent validity of the ASSIST, the scores of each subscale were correlated with the scores obtained in the test used as parameter; the correlation between the alcohol subscale and AUDIT score was acceptable and significant ($r=0.719$, $p\leq 0.001$), and the analysis conducted by sex showed similar results for men ($r=0.719$, $p\leq 0.001$) and women ($r=0.718$, $p\leq 0.001$). The correlation coefficients between the tobacco subscale and the FTND score ($r=0.13$, $p\leq 0.001$), and the correlation between the score for other drug consumption and the score obtained on the DAST-20 ($r=0.187$, $p\leq 0.01$) were very small.

Sensitivity and specificity

To determine the sensitivity and specificity of the alcohol subscale of the ASSIST, we considered the score for Questions 2-7 with a cutoff point of 11 or more, while the gold standard was the total score of the AUDIT with a cutoff point of 8 or more (Medina-Mora, Carreño & de la Fuente, 1998). The prevalence and the area under the curve were calculated for all participants, as well as for men and women separately. The global functionality of the subscale was 84% (Table 2).

The cutoff point of 8 on both scales shows the best balance between sensitivity (83.8%) and specificity

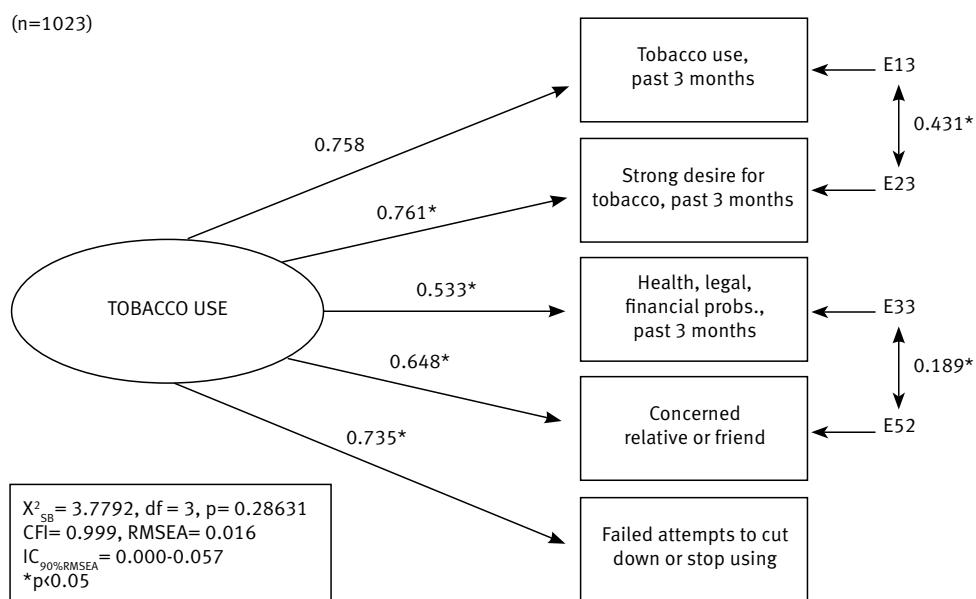


Figure 1. Confirmatory Factor Analysis of the ASSIST Tobacco Subscale

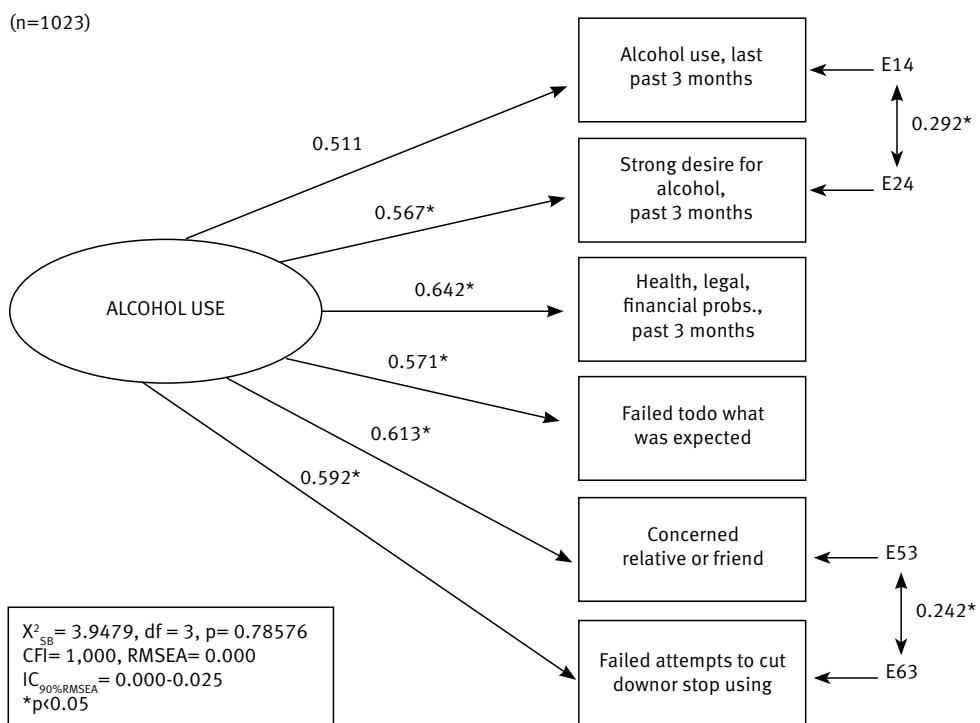


Figure 2. Confirmatory Factor Analysis of the ASSIST Alcohol Subscale

Table 2. Sensitivity, specificity, and area under curve (ROC), ASSIST alcohol subscale with AUDIT

ASSIST Cutoff	Sensitivity %	Especificity %	Positive Predictive Value %	Negative Predictive Value %	Rate of False Positives %	Rate of False Negatives %	Rate of Erroneous Classification %	Prevalence (cases) %	ROC %
TOTAL (n = 996)									
6 or more	93.1	68.5	36.2	98.1	31.5	6.9	27.5	39.3	80.8
7 or more	88.8	74.4	39.9	97.2	25.6	34.4	23.3	33.9	81.6
8 or more	83.8	80.0	44.5	96.3	20.0	16.3	19.6	29.0	81.9
9 or more	78.8	84.1	48.6	95.4	15.9	21.3	16.7	25.1	81.4
10 or more	70.6	87.2	52.4	93.9	12.8	29.4	15.4	21.3	78.9
11 or more	65.6	88.5	52.2	93.1	11.5	34.4	15.1	19.6	77.1
MEN (n = 296)									
6 or more	89.9	63.9	43.1	95.4	36.1	10.1	30.0	48.6	76.9
7 or more	87.0	69.2	46.2	94.6	30.8	13.0	26.6	43.9	78.1
8 or more	84.1	74.9	50.4	93.9	25.1	15.9	22.9	38.9	79.5
9 or more	78.3	78.9	52.9	92.3	21.1	21.7	21.2	34.5	78.6
10 or more	72.5	83.7	57.5	90.9	16.3	27.5	18.9	29.4	78.1
11 or more	65.2	84.6	56.3	88.9	15.4	34.8	19.9	27.0	74.9
WOMEN (n = 693)									
6 or more	95.6	70.1	32.3	99.1	32.3	4.4	26.5	38.4	82.9
7 or more	90.0	76.3	36.2	98.1	23.7	10.0	21.9	32.3	83.1
8 or more	83.3	81.9	40.8	97.1	18.1	16.7	17.8	26.6	83.6
9 or more	78.9	86.1	45.8	96.5	13.9	21.1	14.8	22.4	82.5
10 or more	68.9	88.6	47.3	95.0	11.4	31.1	13.9	18.9	78.7
11 or more	65.6	90.0	49.6	94.6	10.0	34.4	13.1	17.2	77.8

The ASSIST test demonstrated an adequate reliability coefficient, with values similar to those found in another study carried out with university students (Barreto, de Oliveira-Christoff, & Boerngen-Lacerda, 2014). The characteristics of the alcohol subscale are similar to those found in studies carried out by the WHO (WHO ASSIST Working Group, 2002).

The exploratory and confirmatory factor analyses show a unidimensional model for both tobacco and alcohol, consistent with the findings of Pérez et al., (2012). The differing results for the marijuana subscale may be due to the small number of users found in this population, as other authors have also reported (Rubio et al., 2014). Marijuana is also illegal in Mexico and is probably associated with different social problems than alcohol or tobacco. It is thus necessary to carry out studies with larger samples that allow for a better understanding of the context of marijuana use and provide for a better understanding of these data.

With regard to concurrent validity, the alcohol subscale showed a good correlation with the AUDIT test, meaning that it allows for the efficient identification of at-risk alcohol users. However, the relation between the combined use of other drugs with the DAST-20 score was significant but very low, possibly because the number of drug users is very low in this population, as reported also by other researchers (Linage & Gómez-Maqueo, 2013; McNeely et al., 2014).

The tobacco subscale showed an acceptable reliability coefficient and effectiveness in the exploratory and confirmatory factor analyses. Still, it is important to mention that the relation with the FTND was significant but very low, as also found by other authors (Courvoisier & Etter, 2010; Etter, 2005, 2008; Okuyemi et al., 2007). It is thus necessary to investigate further the structure and function of this scale.

In this population the substances with the greatest prevalence of at least one lifetime use were alcohol and tobacco. The prevalence of ever-use of alcohol was higher than the national average for the adult population aged 18-65 years. Women had a higher prevalence than the national average for this age group, while for men the rate was close to the average (Medina-Mora et al., 2012).

The prevalence of ever-use of tobacco among participants in this study was also higher than the national average. Although the prevalence among men was slightly lower than the average, the rate for women was nearly double the national average (Reynales et al., 2012). Two factors may help to explain this finding. First, our sample is made up primarily of women, a group that has shown a marked increase in substance abuse in the last ten years. Second, university students are at a highly-stressful stage of life, in which they have a greater risk for psychoactive substance use, as noted by Quiroga et al. (2003) and Villatoro et al. (2012).

Among other drugs, the greatest prevalence of ever-use was for marijuana, followed by sedatives, suggesting that this population has ready access to drugs for medical use. This represents a special risk factor for this group that should be considered in the design of targeted prevention programs.

Although the majority of participants in the study were found to be at low risk, the highest proportion at moderate risk were users of tobacco and marijuana, followed by users of stimulants, inhalants, and hallucinogens (the latter in equal proportions). Tobacco users were the group with the greatest proportion at high risk, followed by users of alcohol, sedatives, and marijuana. No users of other drugs showed a high level of risk.

Given that a large majority of participants in this study were women, the data cannot be generalized. The small numbers of participants who reported use of such drugs as inhalants and hallucinogens (Lee, Delbanco, Wu, & Gourevitch, 2011) also prevented the analysis of sensitivity and specificity for these subscales (McNeely et al., 2014; Rubio et al., 2014). It is thus important to continue research into different sectors of the population in order to gather further evidence of the effectiveness of the ASSIST.

The results of this study are of great importance, given the necessity for an instrument that can quickly and easily be administered to university students and other groups at risk. Recent use of prescription drugs—sedatives and amphetamines—is of particular concern here, as participants in this study were future health professionals who will one day be working in an environment where these substances are easily available. There is a need for development and implementation of prevention and intervention programs adapted to the needs of the university environment.

Universities that train students in healthcare-related fields should include materials in their curricula related to the risks of drug use and their prevention. They should also support and strengthen the implementation of early detection programs that refer students to brief interventions or, where necessary, specialized treatment. Regular screening tests like the ASSIST, that students themselves can monitor, would be highly useful for individuals and institutions.

Conflict of Interest

All authors declare that they have no conflicts of interest.

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Videogamers of *League of Legends*: The role of passion in abusive use and in performance

Videojugadores del League of Legends: El papel de la pasión en el uso abusivo y en el rendimiento

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Abstract

There is growing concern about the addictive potential of Massively Multiplayer Online Role Playing Games (MMORPG). The Multiplayer Online Battle Arena (MOBA) is a new genre, poorly studied but very popular, in which performance holds priority over immersion. The aim of the current study was to explore the influence of passion both on abuse and performance, using the dualistic model of passion. A total of 369 participants completed an online questionnaire that included problematic use and the Passion Scale. From players' nicknames, performance statistics were obtained. The results show that harmonious passion is a protector from negative consequences. On the other hand, obsessive passion predicts negative consequences and use of videogames for evasion. Obsessive passion also predicts better performance. These results suggest that distinguishing the two kinds of passion is important because they influence vulnerability to developing maladaptive behaviors and also players' performance.

Keywords: Passion, Multiplayer Online Battle Arena, League of Legends, Internet Gaming Disorder, Performance

Resumen

Los juegos Massively Multiplayer Online Role Playing Games (MMORPG) han suscitado preocupación por su potencial adictivo. Los Multiplayer Online Battle Arena (MOBA) son un nuevo género poco estudiado, pero que goza de gran popularidad, en el que prima el rendimiento por encima de la inmersión. El objetivo del presente estudio era explorar qué influencia tenía la pasión tanto en el rendimiento como en el uso abusivo a partir del Modelo Dual de la Pasión. Un total de 369 participantes completaron un cuestionario en línea que incluía usos abusivos y la Escala de la Pasión. A partir del alias del jugador se obtuvieron estadísticas de rendimiento. Los resultados muestran que la pasión armónica es un protector de sufrir consecuencias negativas de jugar. Por otro lado, la pasión obsesiva predice consecuencias negativas y el uso para la evasión. La pasión obsesiva también predice mejores resultados de rendimiento. Estos resultados sugieren que el tipo de pasión de los videojugadores es importante, ya que influye en la vulnerabilidad de sufrir conductas desadaptativas y en el rendimiento del jugador.

Palabras clave: Pasión, Multiplayer Online Battle Arena, League of Legends, Internet Gaming Disorder, Rendimiento.

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In recent decades, there has been a revolutionary phenomenon with regard to leisure due to the incursion of new technologies, setting up a new digital entertainment. Computers, consoles, and mobile devices are platforms on which any user can enjoy this type of entertainment. Among the various options are videogames, a kind of voluntary activity in which one interacts with software for fun or to achieve some reward (Carbonell, Talar, Berany, Oberst, & Graner, 2009). The access of videogames to the Internet opens a field towards social, cooperative, and competitive games because they allow users to interact with each other through the game. This type of videogames are called massive (Massively Multiplayer Online, hereafter MMO), and the most popular titles can have thousands of players connected simultaneously on one server.

The most popular MMO genre is currently the Multiplayer Online Battle Arena (MOBA), and the League of Legends (LoL) was the computer game most frequently played in North America and Europe in 2012 (Gaudiosi, 2012) and the most played worldwide in May 2014, according to the specialized website Raptr.com (Scheld, 2014). In MOBA, the most skilled players compete with each other continuously to prove their worth as the best in their game. So much so, that this type of competitions has been regulated and, thanks to their great popularity among other users, there are generous prizes. It is noteworthy that the final LoL of the year 2013 was followed by more than 32 million spectators and more than two million dollars were distributed in prize money, with the presence of companies sponsoring the players for their own promotion.

The vast majority of studies on MMO focused on online role-playing games (the so-called Massively Multiplayer Online Role Playing Games- MMORPG), but there is very little literature on the MOBA (e.g., Kahn et al., 2015; Pobiedina, Neidhardt, Calatrava, & Werthner, 2013). Although they are two similar MMO genres, they have notable differences. In the MMORPG, the players control an avatar who personifies them and who obtains a reward of gold and experience from the confrontations. These resources allow the players to improve skills and the team to be more competent. In the MOBA, players also improve their features similarly, but the evolution of the character is much faster, as one starts from the first level in each game (unlike the MMORPG, in which the same level and objects are maintained for the next game session). Gold investment is an important tactical feature that influences the strategy that will be used during the game (Nuangjumnonga & Mitomo, 2012). In relation to the gaming experience, the MMORPG are open worlds where thousands of users meet to perform "missions" and explore the large map, so that immersion in the game is primordial (Fuster, Chamarro, Carbonell, & Vallerand, 2014). The MOBA game experience is completely different, as the stage of the game is highly focused towards team play, and it is difficult for a single player to lead his team to victory. The

main objective of the team is to destroy the "base" of the opposing team. Through specialized websites like OPGG.com or Lolking.com, the category of the player can be found (in LoL, there are 25 ranges) or the objective performance statistics such as Gold per Minute - GPM) or KDA (the times that the player has been involved in the elimination of an opponent divided by the times that the player has been eliminated), which is the index used in the competitions. The immediacy of the availability of these data allows comparing the players' skills with great precision (Pobiedina, 2013).

Despite its increasing popularity, given the potential loss of identity and of control experienced in the MMO, concerns about its possible addictive capacity have been raised (Carbonell, Talar, Beranuy, Oberst, & Graner, 2009; King, Delfabbro, & Griffiths, 2013; Kiraly, Griffiths, & Demetrovics, 2015). In the fifth edition of the *Statistical Manual of Diagnostic and Mental Disorders* (DSM-V) in Section III, reserved for conditions that require further study, MMO addiction is included under the name of *Internet Gaming Disorder* (American Psychiatric Association, 2013; Ko, 2014). This type of behavioral addiction has been considered to be the first in the field of new technologies and equated, unprecedentedly, to substance consumption (Carbonell, 2014).

In order to detect people with problems of abuse in MMO, Chamarro et al. (2014) have created the "Cuestionario de Experiencias Relacionadas con los Videojuegos" (CERV; Videogames-related Experiences Questionnaire) which assesses two factors: Psychological dependence and use for evasion, and Negative consequences of the use of videogames. The use of videogames to avoid tasks and life problems can create some psychological dependence, given its powerful inhibitory effect on negative feelings (Tejeiro & Morán, 2002). The negative consequences of videogames have been widely studied and include core elements of the Internet Gaming Disorder (Ko, 2014), such as academic performance and work responsibility, and social relations both in the family and in groups of friends (Griffiths & Davies, 2005).

An adequate approach to study the implications of the use of videogames is the dual model of passion of Vallerand et al. (2003). Vallerand defines passion as a strong tendency to perform an activity that pleases the individual, seems important to him or her, and in which he or she invests time and energy. It also has a strong implication in identity, making exciting activities become a part of who we are. The way an activity is internalized in a person's identity is important, such that two types of passion are distinguished: harmonic passion (HP) and obsessive passion (OP). HP is the result of autonomous internalization of the activity in the person's identity. In this type of passion, the activity occupies an important place in the person's identity without being overwhelming and it can be shared harmoniously with other aspects of life. People with HP can quit the activity if they decide that it has become a negative factor in their

lives. OP emerges from a controlled internationalization of the activity in the person's identity. This control is the result of an intrapersonal and/or interpersonal pressure towards performing the activity. As commitment to the activity is beyond the person's control, the exciting activity ends up occupying a disproportionate place in the person's identity and comes into conflict with other life activities. A consequence of this process is persistence, which becomes rigid and is present even if the activity does not provide positive feelings and entails personal costs such as the deterioration of relationships or the failure of work obligations (see Vallerand, 2012, for a review).

Although no studies on passion in MOBA players have been published, there is some literature about passion in MMORPG players. Thus, for example, HP has been associated with users' positive gaming experiences and focusing on social interaction. These users belonged to groups that were more focused on cooperating for the common good and promoting the autonomy of their components (Fuster et al., 2014). Conversely, OP has been associated with problem behaviors associated with playing excessively, such as excessive time spent playing or sleep disorders (Lafrenie, Vallerand, Donahue, & Lavigne, 2009). Another study (Wang, Khoo, Liu, & Divaharan, 2008) has linked OP with addictive tendencies and membership in groups of players that are very hierarchical and that have authoritarian leaders. Also in this line are the results of Fuster et al. (2014), showing, on the one hand, the relationship of HP with exploration and socialization and, on the other, the relationship of OP with dissociation and motivation toward achievement, because, for this type of fans, challenge predominates over exploratory experience and socialization.

In other activities such as sports, HP has been related to goals involving the mastery of skills, and OP with outcome-oriented goals (Vallerand et al., 2008). Studies of Vallerand and his collaborators suggest that passion is the force needed to reach the level of expertise in an activity, which depends on persistence in its practice. In this sense, HP should be an enhancer of long-term performance, as it offers some protection against quitting (Curran, Appleton, Hill, & Hall, 2011). In parallel, OP contributes to focusing on the development of the activity towards victory due to the pressure of protecting one's identity as a competent player (Donahue, Rip, & Vallerand, 2009).

Ultimately, the studies suggest that passion plays an essential role both in the use of videogames and performance in competitive activities. It seems that HP is related to adaptive game use, whereas OP is related to maladaptive use (Fuster et al., 2014; Lafrenie et al., 2009; Wang et al., 2008). Both types of passion seem to be related to performance (Curran et al., 2011; Donahue et al., 2009; Vallerand et al., 2008).

In accordance with the above, the overall goal of this study is to explore the possible influence of passion for playing

MOBA on its use and on performance in the game itself. Taking into account the above arguments, the specific goals are to explore and analyze: (a) the possible relationship between the two types of passion and abusive, maladaptive uses of LoL; (b) the type of relationship between the two types of passion and performance in LoL. On the basis of these goals and the studies on the subject, three hypotheses were established: (H1) we expect that HP will have a negative correlation both with evasion and negative consequences; (H2) we expect that OP will correlate positively with evasion and negative consequences; (H3) we expect that the two types of passion will be related to better performance.

Method

Participants

Participants were 369 Spanish-speaking LoL players who agreed to complete an online questionnaire (see Table 1). The conditions for participation were being over 16 years of age and playing LoL periodically. Participants' mean age is 21.59 years ($SD = 3.58$). The average playing time per week is 17.72 hours ($SD = 12.46$).

Instruments

The instrument was a single questionnaire containing some questions and other questionnaires. Sociodemographic data such as age, sex, educational level and occupation, the alias used in the game, and the hours devoted to playing were also collected. Participants were also asked to complete the questionnaires of the Passion Scale and the CERV.

Using the player's alias (the nickname that the player uses in the game), we had access to the data of the games in which the players had participated, through the specialized website *OP.GG*. The data collected were the murders (Kills), the assisting of murders (Assists), and the deaths (Deaths) in non-ranking games to calculate the mean KDA: (Kills+Assists)/Deaths. The player's classification category was also recorded.

Passion was assessed with the Spanish version of the Passion Scale (Vallerand et al., 2003), which consists of two subscales of six items each, evaluating HP and OP, as well as five criterion items to assess the degree of passion for the activity. Each item is scored on a 7-point Likert scale ranging from *completely disagree* to *completely agree*. For example, an HP item is "This activity is in harmony with other things that are part of me", and an example of an OP item is "I have difficulty controlling the urge to practice this activity". In the criterion items, the participants were asked to indicate the degree to which they valued the activity, devoted time and energy to it, and considered it a passion. If the score on these items is higher than four points, the subjects consider themselves to be passionate. For the types of passion, the Cronbach alpha coefficients were .75 for HP and .83 for OP.

To assess abuse, we used the CERV (Chamorro et al., 2014), a version for videogames of the “Cuestionario de Experiencias Relacionadas con Internet” (CERI; Internet-related Experiences Questionnaire; Beranuy, Chamorro, Graner, & Carbonell, 2009). The CERV has 17 items assessing two factors: Psychological dependency and evasion and Negative consequences, with 8 and 9 items, respectively. It is rated on a 4-point Likert-type scale, depending on the individual's approximate frequency. The Cronbach alphas for the subscales in our study were $\alpha = .67$ for Evasion and $\alpha = .81$ for Negative consequences (see Table 2).

Procedure

Data was collected between March and May 2014. Access to the questionnaire was free via an online link. The researchers of the study published messages in several specialized game forums, calling for the cooperation of players in the study. In the first part of the questionnaire, there was a section in which the goals of the study were explained, as well as the voluntary, confidential, and anonymous nature of the answers. This section requested the informed consent, which had to be accepted if the players wished to complete the questionnaire. It also indicated that they could quit at any time and refuse to continue taking part in the research. At the end of the questionnaire, we requested the participants to recommend the questionnaire to other players, if they deemed it appropriate.

When the results of questionnaires were collected, 457 responses were obtained. Of them, 88 cases presenting incomplete data and extreme cases of hours of game play (more than 50 hours during the week and more than 30 hours on weekends) were discarded.

Data Analysis

Data analysis was performed with the SPSS statistical program, version 17.0 in Spanish. The techniques used were: (a) descriptive analysis, (b) correlational analysis, and (c) step-wise multiple linear regression analysis, in which the sociodemographic variables were introduced in the first step and the two passions in the second step. Abusive use and performance measures were considered the dependent variables (Evasion, Negative consequences, KDA, and Category).

Results

Descriptive characteristics of the sample

We obtained 369 valid responses. The average age of the participants was 21.59 years ($SD = 3.22$), ranging from 16 to 33 years. Table 1 shows that participants were mostly male (88.3%), had higher education (80.2%), and were students at the time of answering the questionnaire (64.8%). The descriptive statistics of the psychological and performance variables are shown in Table 2.

Table 1. Descriptive Characteristics of the Sample

		n (%)
Sex	Male	326 (88.3%)
	Female	43 (11.7%)
Studies	Primary	4 (1.1%)
	Secondary	69 (18.7%)
	Higher studies	296 (80.2%)
Occupation	Unemployed	30 (8.1%)
	Student	239 (64.8%)
	Employed	39 (10.6%)
	Student and working	61 (16.5%)

Table 2. Descriptive Statistics

	n	M	SD	Min.	Max.	α
Passión Criterion	369	21.05	5.99	9.00	35.00	.79
HP	369	26.14	6.71	7.00	42.00	.75
OP	369	14.70	6.87	6.00	40.00	.83
Evasion	369	17.84	3.85	8.00	32.00	.67
Negative Consequences	369	16.25	4.95	9.00	36.00	.81
KDA	362	2.67	.99	1.10	11.75	
Classification Category	266	10	5.36	1.00	24.00	

Note. OP = obsessive passion; HP = harmonic passion.

Correlations

As shown in Table 3, the most notable aspect is that OP had moderately high, positive correlations with Negative consequences and Evasion. HP had positive but low, significant correlations with OP and Evasion. On the other hand, Evasion had a positive, significant, and moderately high correlation with Negative consequences. It also correlated positively, but to a lesser extent, with KDA and Category.

Regression analysis

The results of the step-wise multiple linear regression analysis are shown in Table 4. Age, OP, and HP explained 50.1% of the variance of the dependent variable Negative consequences. Being younger and scoring higher in OP were predictors of negative consequences of LoL use. Higher HP levels predicted lower levels of negative consequences. When considering Evasion as the dependent variable, OP explained 43.8% of the variance of LoL use as the main evasive activity.

In terms of performance, considering KDA as the dependent variable, being female and having high levels of OP predicted 2.6% of the variance. For classification Category as the dependent variable, only OP predicted 1.5% of the variance.

Table 3. Correlations between Psychological Variables and Performance

	Passion		Evasion	Negative consequences	KDA	Classification category
	Harmonic	Obsessive				
HP	1	.14**	.12*	-.05	.01	.07
OP		1	.66**	.68**	.11*	.12*
Evasion			1	.78**	.15**	.16*
Negative consequences				1	.03	.10
KDA					1	.08
Classification category						1

Note. OP = obsessive passion; HP = harmonic passion.

**p < .05. *p < .01.

Table 4. Result of the Hierarchical Multiple Regression Analysis

Dependent variable	R ²	Predictor variables	β	t-value	p-value
Evasion	.438	OP	.66	16.91	.001
Negative consequences	.016	Age	-.01	-2.68	.008
	.460	OP	.7	18.77	.001
	.025	HP	-.16	-4.24	.001
KDA	.011	Sex	.12	2.2	.028
	.015	OP	.12	2.32	.021
Category	.015	OP	.12	1.97	.049

Note. Only the significant correlations are shown. OP = obsessive passion; HP = harmonic passion.

Discussion

The present study was designed to explore the relationship between passion, abusive use, and performance in LoL players. It was hypothesized that OP would be positively related to abuse and performance, whereas HP would be negatively related to abuse, but positively related to performance. Our results partially confirm the hypotheses: players who have greater OP present higher levels of abuse and better performance, whereas players with higher HP present lower levels of negative consequences, but no effects were found in performance.

The sample of this study had higher passion criterion and OP scores than MMORPG players (Fuster et al., 2014), and similar scores in HP. Their higher degrees of OP might be due to the fact that competition and performance predominate in LoL, unlike MMORPG, where players are more focused on socialization or immersion (Nuangjumonga & Mitomo, 2012). The models obtained from the regression analysis show that OP is related to the two dimensions of abuse and to the two performance indicators, whereas HP is negatively related to the negative consequences of LoL use. Altogether, these results suggest that the dimensions of passion seem to

play an important role in the definition of the consequences of LoL use. OP appears as a predictor of maladaptive playing, whereas HP seems to be a shield against the negative consequences of LoL use. This may be due to the fact that HP allows players to quit the activity if it produces some kind of deterioration in their daily lives, in social or work areas (Vallerand et al., 2003). The lack of relationship between HP and dependence and evasion coincides with the findings of Fuster et al. (2014), who found no relationship between HP and evasive and dissociative reasons for playing. The relationship between OP and abusive use and performance is also consistent with the findings of Fuster et al. (2014), who showed that OP predicted players' orientation towards performance and for videogames to be considered an evasive activity and an escape from reality. When playing LoL becomes an exciting activity for reasons that are not internalized autonomously, the person loses control over it. The consequences of this loss of control are assessed by the subscales of abusive use. Hence, the results are consistent with the study of Wang et al. (2008), who relates OP to maladaptive addictive tendencies.

With regard to abuse, the sample presents high levels of LoL use for evasion as well as of negative consequences, in comparison with the study of Chamarro et al. (2014). This may be because the present study has focused specifically on players who played more than 25 hours per week, whereas the sample of Chamarro et al. was general population of high school students. On the other hand, we observed that evasion shows a moderately high positive correlation with negative consequences, and significant but low correlations with KDA and category. In the first case, this is expected, because negative consequences are two dimensions of the same construct (abuse), whereas in the second case, performance seems to be associated with LoL use as an evasive activity, so players have more capacity for concentration and, therefore, better performance when playing. The results suggest that HP is a protector against the negative consequences and it has no relationship with evasion.

The fact that the performance variables selected are based on outcomes and not on the perfection of skills could explain

why HP has no influence on these variables (Vallerand et al., 2008). Data from this study are in this line as well because OP is related, albeit weakly, to the two performance variables. In the study of Vallerand et al. (2008), this type of passion is related to outcome goals. The classification category serves to achieve social recognition within the game and should be the primary goal in players with OP because, according to Donahue et al. (2009), social desirability is one of the causes of non-autonomous interiorization in one's identity due to the need to demonstrate competence.

This study is limited with regard to the positive consequences of playing. The fact that the main goal of videogames is to carry out an activity for fun leads to overlooking a strong motivational component (Carbonell et al., 2009). Well-being or socialization are direct positive consequences of playing videogames and could be related to HP in LoL players (Fuster et al., 2014; Lafrenie et al., 2009). Therefore, in future research, it would be appropriate to clarify the relationship between this dimension of passion and different types of positive consequences of LoL. Another limitation of the study is the lack of other performance indicators, such as gold per minute (GPM), much used in the competitive panorama to analyze players' performance individually and which assesses mastery goals, as it does not depend on direct confrontation. The gold won during the game is spent on improvements for the avatar and gives an advantage in the match, such that the best players will be those who win more gold to increase their potential. It could therefore be expected that high levels of this index would be related to HP, because it depends on mastering the game skills (Vallerand et al., 2008). For future studies, it is recommended to have access to this variable, given its accuracy to assess performance and its possible relationship with HP. Regarding the sample of the study, as it was mostly young people with higher education, the generalizability of the results is limited. In future research, it would be useful to have a wider spectrum of participants.

In conclusion, it is observed that the player's type of passion greatly affects both the addictive potential of evasion and its negative consequences, such as neglecting job or academic commitments. It is possible that the social alarm about the *Internet Gaming Disorder* is disproportionate, but we should address the possible relationship between maladaptive uses and the obsessive passion for playing LoL, given the growing popularity of the MOBA. As other authors have proposed in studies of psychological skills training in competitive sports contexts (Birrer & Morgan, 2010), it would be interesting to develop HP in conditions of game practice. For this purpose, more emphasis should be placed on mastery of skills, such as achieving performance goals that do not involve confrontation with the opposing team, and at the same time, are rewarded with gold during the game. This would be important especially for new players, because they are in a vulnerable situation with regard to the

internalization of the activity in their identity, and if this is controlled by social pressure, they are more likely to develop OP (Vallerand et al., 2003). As performance is also affected by OP, the effect of rewarding maladaptive behaviors should be taken into account, because such behaviors would have positive consequences on the results. A high degree of abusive use can be detrimental to the player's life. By promoting behaviors that favorably influence HP, we could protect players from developing abusive practices related to the negative consequences of playing.

Conflict of interest

The authors report they have no conflict of interest.

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Alcohol-related expectancies in adults and adolescents: Similarities and disparities

Expectativas relacionadas con el alcohol en adultos y adolescentes: Semejanzas y diferencias

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Abstract

This study aimed to contrast student and non-student outcome expectancies, and explore the diversity of alcohol-related cognitions within a wider student sample. Participants ($n=549$) were college students (higher education-typically aged 15-18 years), university students (further education-typically aged 18-22 years) and business people (white collar professionals <50 years) who completed questionnaires in their place of work or education. Overall positive expectancies were higher in the college students than in the business or university samples. However, not all expectancy subcategories followed this pattern. Participant groups of similar age were therefore alike in some aspects of their alcohol-related cognitions but different in others. Similarly, participant groups whom are divergent in age appeared to be alike in some of their alcohol-related cognitions, such as tension reduction expectancies. Research often homogenises students as a specific sub-set of the population, this paper highlights that this may be an over-simplification. Furthermore, the largely exclusive focus on student groups within research in this area may also be an oversight, given the diversity of the findings demonstrated between these groups.

Palabras clave: Alcohol, Expectativas sobre los efectos, Edad, Experiencia vital.

Resumen

El propósito de este estudio es contrastar las expectativas sobre los efectos del alcohol entre estudiantes y no-estudiantes, y explorar las diversas cogniciones relacionadas con el alcohol en una muestra estudiantil más amplia. Los participantes ($n = 549$) son estudiantes de bachillerato (estudios superiores, habitualmente cursados entre los 15-18 años), estudiantes universitarios (estudios habitualmente cursados entre los 18-22 años) y empleados profesionales (oficinistas menores de 50 años) que completaron los cuestionarios en su lugar de trabajo o estudio. En general, los estudiantes de bachillerato tuvieron expectativas positivas más altas que los estudiantes universitarios u oficinistas. No obstante, no todas las subcategorías de expectativas cumplieron este patrón. Respecto de sus cogniciones relacionadas con el alcohol, los grupos de participantes de edades similares mostraron similitudes en algunos aspectos y diferencias en otros. Igualmente, los grupos de participantes de edades dispares tenían algunas cogniciones similares relacionadas con el alcohol, por ejemplo, en las expectativas sobre la reducción de estrés. Con frecuencia, las investigaciones homogeneizan a los estudiantes como un subgrupo específico de esta población; este estudio subraya que esto puede ser demasiada simplificación. Además, el enfoque casi exclusivo sobre grupos estudiantiles en este campo de investigación también puede ser una equivocación, dada la diversidad en los resultados hallados entre estos grupos.

Palabras clave: Alcohol, Expectativas sobre los efectos, Edad, Experiencia vital.

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In the UK, the legal age at which alcohol may be consumed is 18. As such, younger persons may have less direct experience of alcohol consumption to inform their alcohol-related beliefs. The over-reliance on student samples in alcohol research may therefore result in findings which are not necessarily reflective of those older samples with more experience of consumption. Further, variations in experiences within the student cohort may also result in differences in cognitions. Any alcohol use which college students do experience is likely to be substantially different from those University student respondents who can legally drink. Drinking in parks and at home is much more common in those under 18 (Honess, Seymour, & Webster, 2000). On the other hand, drinking in licensed premises is more common from those of 18 and over, but less likely those of UK college age (c.f. Roe & Ashe, 2008). Research based solely student samples, or focussing on individual student groups (college or university students as opposed to both), may therefore incorrectly homogenise alcohol-related cognitions.

Outcome expectancies – the anticipated consequences of alcohol consumption (Reich, Below, & Goldman, 2010) – have a well established role in the decision to drink or exercise restraint (Brown, Goldman, Inn & Anderson, 1980; Goldman, 1994). However, in a systematic review of the literature on this area, Monk and Heim (2013c) found that 79% of the studies identified were based upon student samples. There is limited existing research which appears to suggest age-related variations in alcohol-related cognitions (c.f. for example, Leigh & Stacy, 2004). The over-reliance on student based research may however largely obscure these variations and limit the success of interventions which should be sensitive to the varying social and personal contexts which shape substance use (Davies, 1997). Accordingly, the presented research aimed to assess alcohol expectancies utilising a wider population, in order to assess (dis) similarities which may further elucidate our understanding of alcohol-related cognitions. Specifically, college students, university students and business professionals were examined. It was predicted that positive expectancies (Leigh & Stacy, 2004) would be greater among student than the older, non student, participants.

Method

Participants

Responses from 549 participants who drink alcohol (63 % Female, 87% White British) were assessed from UK businesses ($n = 146$, $M = 35.63$, $S.D = 9.24$), colleges ($n = 264$, $M = 17.61$, $S.D = 3.20$) and universities ($n = 146$, $M = 20.22$, $S.D = 3.68$)¹.

¹ In the UK, college is the higher education system which follows mandatory schooling. Here, students are typically aged 15-18 years. University education is classified as further education and may be entered after college. UK university students are typically aged 18-22 years.

Procedure and measures

Following ethical approval, paper and electronic questionnaires were distributed at a number of UK colleges, universities and businesses which had agreed to allow their students/employees to participate. This dual approach was used to increase ease of participation (Evans & Mathur, 2005; Schleyer & Forrest, 2000) and flexibility (Sheehan & McMillan, 1999) and this methodology has proved successful in previous research (e.g. Kypri, Saunders, & Gallagher, 2003). It has also been found that responses do not differ whether paper or electronic alcohol questionnaires are used (Kypri, Saunders, Williams, Mcgee, Langley, Cashell-Smith & Gallagher, 2004; Miller, Neal, Roberts, Baer, Cressler, Metrik, & Marlatt, 2002). Each questionnaire consisted the counterbalanced Alcohol Outcomes Expectancy questionnaire (Leigh & Stacy, 1993) was utilised to assess both positive and negative expectancies on a 6 point likert scale (where 1 = no chance of happening, and 6 = certain to happen). For the purposes of this research, these outcome expectancies were assessed in terms of both cumulative positive expectancies (Cronbach's alpha = .90) and negative outcome expectancies (Cronbach's Alpha = .82). Standardised sub categories were also assessed, as per Leigh and Stacy's (1993) factor analysis.² Demographic and alcohol consumption questions were also included within the questionnaire. In line with recommendations (McAllister & Davies, 1992), this remained the final component in the questionnaire. These were distributed and completed on campus, within university/college lectures or seminars, or at participants' place of work. Participants were asked to privately complete their questionnaires at the time of distribution before returning their responses.

Results

Preliminary analyses

Demographic comparisons (see Table 1) revealed that the significant majority of participants were White British and there were more females than would be expected by chance. Whilst there was no gender split within the business sample ($p > .05$), there were significantly more females than males in both the university ($p < .001$) and college samples ($p < .001$), perhaps owing to the greater numbers of females continuing in education in England (Usher & Medow, 2010). There were also differences revealed between alcohol consumption quantity and frequency, frequency of drunkenness and attitudes towards drinking and

² These sub categories were as follows and all showed good consistency: Positive Social (Cronbach's alpha = .88), Fun (Cronbach's alpha = .89), Tension reduction (Cronbach's alpha = .69), sex (Cronbach's alpha = .78), Negative Social (Cronbach's alpha = .84), Emotional Relief (Cronbach's alpha = .71), Physical (Cronbach's alpha = .71), Cognitive/Performance (Cronbach's alpha = .76).

In light of these preliminary findings, further analyses were conducted to examine positive expectancies in terms of their sub categories (social, fun, sex & tension). A 4 (Positive expectancy: social, fun, sex, tension reduction) \times 3 (Participant group: college student, university student or business person) Factorial ANOVA of mixed design was conducted (sphericity not assumed, Greenhouse-Geisser correction implemented). This revealed significant main effects of positive expectancy ($F(3, 1464) = 1017.98, p < .001$, $\eta^2 = .68$) and participant group ($F(2, 488) = 15.18, p < .001$, $\eta^2 = .06$), with these results being qualified by a significant 2 way interaction between positive expectancy and participant group ($F(6, 1464) = 21.91, p < .05$, $\eta^2 = .02$). A series of post hoc analyses demonstrated that positive social expectancies were significantly more endorsed in the college ($t(337.13) = 6.04, p < .001$) and university samples ($t(230) = -3.39, p < .01$) than in the business sample. Yet, positive social expectancies did not differ significantly between the college and university students ($t(349) = 1.36, p = .18$). Positive fun ($t(359.79) = 5.47, p < .001$) and tension reduction ($t(398.65) = 3.66, p < .001$) outcome expectancies were also significantly higher in the college than in the business sample. Furthermore, university students endorsed positive fun expectancies ($t(276.41) = 4.93, p < .001$) significantly more than the business sample, whilst neither fun nor tension reduction expectancies differed between college and university students. University students' tension reduction expectancies did not, however, differ from those of the business sample. Finally, positive sexual expectancies were found to be comparable across the three participant groups ($p > .05$).

Discussion

As anticipated, it was found that positive expectancies were higher in the college students than in the university or business samples. Such findings may suggest that the culmination of early social observations/development (Critchlow, 1986) and experiences of consumption throughout adolescence (Leigh & Stacy, 2004), may result in a shift in expectancies in late adolescence/early adulthood (Bekman et al., 2011; Leigh & Stacy, 2004; Johnson & Johnson, 1995; Shope, Copeland, Maharg, Dielman, & Butchart, 1993). However, the examination of positive expectancies sub categories further elucidates these results.

Here, alcohol-related cognitions were not consistently divergent between participant groups. For instance, positive fun and social outcome expectancies were higher in the college and university samples than in the business sample. The college and university sample did not, however, differ in their social and fun outcome expectancies. However, tension reduction expectancies were only higher in the college than the business sample, whilst the university and business samples did not differ in these tension

reduction expectancies. There was therefore a variation in outcome expectancies which could not seemingly be explained by age alone.

It is reported that the fun and socialisation components of alcohol consumption are particularly important to UK student alcohol consumption (Plant & Plant, 2006). In mature alcohol consumption, however, such constructs seem less important (Labouvie, 1996). The shared student experience of alcohol consumption may therefore be the cause of the observed homogeneity between college and university students' fun and socialisation expectancies. Furthermore, the social/communal focus on alcohol may make social outcomes seem particularly pertinent for student samples (c.f. 'Focus Theory of Normative Conduct' Kallgren, Reno, & Cialdini, 2000). Conversely, the experience of using alcohol as a method of emotion regulation has predominately been evident in younger adolescents (Pohorecky, 1991) and this may therefore account for the higher tension reduction expectancies observed in college students relative to the other groups in this study.

Experience of alcohol consumption, and not solely age, may therefore offer a better explanation of variations on alcohol-related expectancies. This may account for the cognitive similarities observed between groups of participants whom are vastly different in age, whilst, on the other hand, different cognitions were exhibited within the UK student population (i.e. between the college and university students) despite their similar ages. In other words, there appear to be sub-categories within the UK student population in terms of their shared expectancies. In a similar vein, expectancy based sub-categories have been identified within the university student population (Leeman, Kulesza, Stewart, & Copeland, 2012). Homogenising student populations may therefore be unwise, just as it is unwise to focus on exclusively student samples.

It must be noted that this study administered questionnaires in only one setting (lecture/work place), meaning that future research may be improved by examining responses in other environmental contexts, where beliefs may be different (c.f. Labrie, Grant, & Hummer, 2011; Monk & Heim, 2013a; 2013b; 2013c; 2014; Wall, McKee, & Hinson, 2000; Wall, Hinson, McKee, & Goldstein, 2001). It may also be advisable that future research examines the effect of the alcohol consumption measure used (c.f. Zamboanga, Horton, Leitkowsky, & Wang, 2006), in light of previously observed variations depending on the quantity/frequency measure administered (e.g. Baldwin, Oei, & Young, 1993). It must also be noted that there was a gender imbalance in the current university and college student samples – with more females being present, perhaps owing to the greater numbers of females continuing in education in England (Usher & Medow, 2010). The current results may not therefore generalise to male students in these groups and future research may be advised to purposefully sample this

group in order to test this assertion. Lastly, it should be noted that age and alcohol consumption may be confounding variables in the present research. Indeed, the younger age group (college sample) may have contained a number of people who consumed very little, whilst the older groups may contain people who have reduced drinking for various reasons, which may have altered expectancies and beliefs (Leigh & Stacy, 2004). Nonetheless, the present study offers further insight into the dynamic nature of alcohol-related cognitions in both adolescent and adult samples.

Conflict of interest statement

The authors declare no conflicts of interest.

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Iudicium: An Educational Intervention for addressing Risk Perception of Alcohol Abuse in Adolescents

Iudicium: Una intervención educativa para abordar la percepción de riesgo del consumo problemático de alcohol en adolescentes

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Abstract

Negative consequences of alcohol abuse during adolescence have been extensively described. Consequently, different interventions have been developed to address this issue. This article describes the implementation and evaluation of *Iudicium*, an educational drama-based intervention designed to increase risk perception of alcohol abuse. In this activity, high school students judge a case in which alcohol consumption had negative consequences (e.g., fights, unwanted pregnancy, and car accident). A trial is simulated and after that, a debriefing takes place during which the activity is discussed and informational materials on the effects of alcohol is provided and commented. A total of 318 students (55.7% females and 44.3% males) from five high schools participated in the study. Data regarding risk perception of alcohol abuse and adequacy of the activity was collected before and after the intervention. Results suggest that *Iudicium* was effective in increasing risk perception of abusive drinking, reaching a 34% of increase regarding risk perception. Participants highlighted the experiential component of *Iudicium* as a strength. The intervention was well-accepted, easy to understand and apparently an effective tool for increasing risk perception of alcohol abuse amongst high school students.

Keywords: alcohol use, educational intervention, risk perception, adolescents.

Resumen

El consumo abusivo de alcohol en la adolescencia se asocia a importantes consecuencias negativas y por tanto diversos programas e intervenciones se han desarrollado para tratar esta problemática. En este artículo presentamos *Iudicium*, una actividad realizada en contextos educativos y basada en una dramatización, cuyo objetivo es incrementar la percepción del riesgo del consumo abusivo de alcohol en adolescentes. En la actividad se realiza un juicio grupal a un caso ficticio, donde los protagonistas sufren consecuencias severas a causa del consumo excesivo de alcohol (p. ej., peleas físicas, embarazo no deseado, y accidente automovilístico). A continuación, se procede a una reflexión grupal y a la discusión de información sobre los efectos del consumo de alcohol. Participaron en la actividad 318 estudiantes (55,7% mujeres y 44,3% hombres) procedentes de 5 centros de bachillerato. La percepción de riesgo de consumo de alcohol fue evaluada pre y post intervención. Los resultados indican que la actividad tuvo un impacto positivo, observándose un aumento de un 34% en la percepción de riesgo de abuso de alcohol. La aceptación de la intervención fue buena y los participantes destacaron el componente experiencial como una de sus fortalezas. En suma, *Iudicium* parece ser una intervención eficaz para aumentar la percepción del riesgo de consumo abusivo de alcohol en estudiantes.

Palabras clave: consumo de alcohol, intervención educativa, percepción del riesgo, adolescentes.

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Excessive alcohol consumption during adolescence represents a major concern for health and educational systems. Abusive drinking at that age entails a large amount of negative consequences on psychological, social and physical domains (e.g., Perkins, 2002). Among them, the most frequently reported are: difficulties in emotion regulation (Dvorak et al., 2014; Vinader-Caeiros, Monleón, & Parra, 2014) physical aggression and fights (Giancola, 2002), risky sexual behaviors (Cooper, 2002), and nausea, hangovers and vomiting (Turner & Shu, 2004). Moreover, alcohol abuse comprises also neurotoxic effects on memory, learning, attention (Thoma et al., 2011; Zeigler et al., 2005), as well as changes in brain structures and its functionality (see López-Caneda et al., 2014 for a revision).

Data obtained from different samples show that adolescent excessive alcohol consumption is widely spread, showing prevalence rates in Latin American countries (Sedronar, 2011; Galduroz & Carlini, 2007) that are alike to the ones reported in the North hemisphere (Johnston, O'Malley, Bachman, & Schulenberg, 2005). In Uruguay, a South American country, data regarding alcohol consumption among adolescents is similar as the one reported by our neighbors, Argentina or Brazil. The 5th Survey of Drug Consumption in high school Uruguayan students yielded that the mean age of alcohol consumption initiation is around 13 years, 82.3% of the students have a history of alcohol consumption, and that 48.2% have consumed in the last month (Junta Nacional de Drogas, 2011).

As alcohol consumption usually starts during adolescence, educational interventions have a crucial role in preventing alcohol abuse and promoting healthy habits. Traditionally, school-based interventions follow a classical lecture format in which the teacher or the school psychologist provides information about negative consequences of alcohol misuse. However, the effectiveness of these types of interventions has been questioned (Cuijpers, 2002) and therefore, alternative methods to promote healthy habits have also been explored. Programs that employ interactive methods, which combine the use of role playing, drama, simulations and in-group discussion (Joronen, Rankin, & Päivi, 2008), might be particularly useful when working with social dynamics and decisions involved in everyday behaviors (Denman, Pearson, Moody, Davis, & Madeley, 1995). In fact, these type of programs appeared to be more effective than non-interactive ones for drug use prevention, including alcohol (Cuijpers, 2002).

In the present work, an educational classroom activity called *Iudicium* (which means “trial” in Latin) is presented. *Iudicium* was designed for increasing risk perception of alcohol abuse among adolescents by providing and opportunity to rehearse real life situations and discuss them among peers, promoting critical thinking. Specifically, this intervention attempts to: (1) increase risk perception of alcohol abuse by confronting the students to real life negative consequences of excessive alcohol consumption, (2) inform and discuss

possible negative consequences of alcohol abuse, in terms of biological, interpersonal or legal consequences and (3) promote responsible consumption by generating an opportunity to examine and reflect upon self habitual experience with alcohol.

The main aim of the current work was to evaluate the impact of *Iudicium* on risk perception of alcohol abuse among adolescents. For that purpose, a pilot study was designed in which pre and post intervention assessments of risk perception of alcohol abuse were conducted. Considering that this was the first implementation of *Iudicium*, adequacy of the intervention was also assessed.

Methods

Participants

Participants were recruited in five different Uruguayan high schools of culturally diverse backgrounds (two private and three public) during the school year (2012). One private school was catholic and the others professed no religion. Private schools were from down town locations. The three public schools were from different geographic locations: one from the countryside, one from a down town location and the other from a suburb. All of the high schools that were contacted agreed to participate in the study. We worked with a convenient sample consistent of participants of both genders, all being aged 14-17 years old. Students received no retribution for participate. Assistance during the intervention was controlled as in a regular class day. A description of the intervention as well as date and time was provided for parents in a letter. Since participants were minors, parents had to sign a letter of consent.

A total of 425 students were enrolled in the study and assessed prior to the intervention. Twenty-two did not attend school the day of the intervention. Of the 403 participants who attended the session, 85 did not complete any post-intervention measure and therefore were excluded from the analyses. Analyses related to the acceptability of the intervention were carried out in a sample of 318 students. Due to incomplete questionnaires, analyses of changes in risk perception were performed on a sample of 284 students. Flow of participants through the study is shown in Figure 1. No significant differences were found for gender, age, or Audit scores between the five different high schools.

Intervention

Iudicium is an educational classroom intervention designed to increase risk perception of alcohol abuse among high school students. In *Iudicium*, students perform a dramatization of a trial in which a case regarding negative consequences of alcohol misuse is discussed. To develop the intervention and to ensure that the content of the simulation was adequately tailored to participants, three focus groups were conducted to uncover typical situations of alcohol abuse by

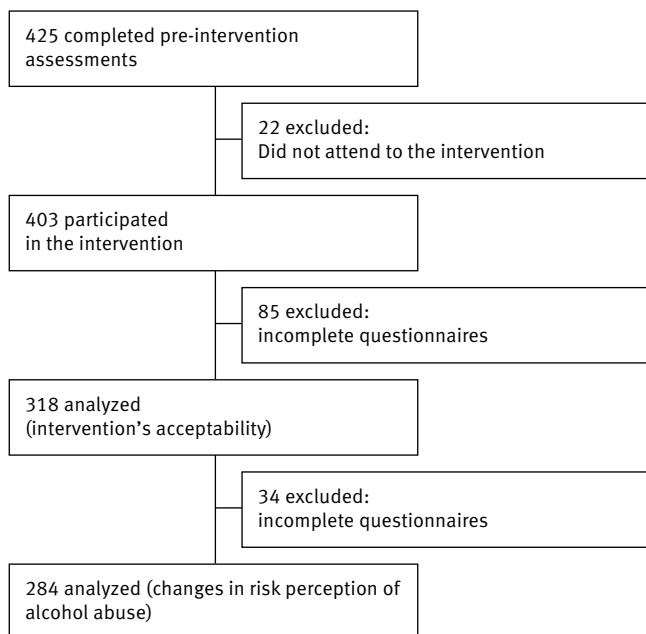


Figure 1. Participants flow chart through the study

college students. As a result of these focus groups, five fictional cases involving negative consequences of alcohol abuse were developed (see Table 1 for a brief description of the cases). The intervention was implemented in the classroom in a single session of approximate three hours. At the beginning of the activity, facilitators explained the dynamic of the intervention, and roles to perform during the simulation were assigned to all participants: father, mother, girlfriend, driver, doctor, policeman, store owner, counsel for the defense, prosecutor, and members of the jury. After the trial, a debriefing part took place. Five posters with scientific information regarding alcohol abuse were shown and discussed. The content of these posters was adapted from previous material (Junta Nacional de Drogas, 2011) and consisted of: (1) biological consequences of alcohol abuse regarding brain function and physical symptoms; (2) factors that con-

tribute to alcohol affectation (e.g., doses, binge drinking, gender, age, poly-consumption; (3) definition of hazardous drinking according to World Health Organization criteria (Babor, 1994); (4) specific risky situations for alcohol abuse in adolescents (e.g., driving, social pressure, fights); and (5) first aid for abusive consumption (safety position).

A facilitator, a co-facilitator and an assistant conducted the intervention. Their primary role was to coordinate logistics, give instructions for the simulation and guide the debriefing. The team was intensively trained in the intervention before its implementation and all facilitators were familiar with group dynamics.

Procedure

Informative sessions about the program were conducted for schools authorities, after which all schools decided to participate in the study. Schoolteachers informed participants about the date and hour of the intervention. Participants were told that a simulation activity would take place in which consequences of alcohol abuse were going to be discussed. Students were informed that participation was voluntarily and that in case of preferring not to participate actively they could be “observers”. Self-reported data were obtained before and after the intervention. For the simulation, the arrangement of tables and chairs in the classroom was adapted in order to represent a courtroom. The facilitator explained the activity and roles were assigned among those students who offered voluntarily to participate.

Measures

Sample characteristics. A questionnaire was applied in order to collect data about demographics and alcohol consumption (i.e., age at alcohol consumption initiation and hazardous drinking during last month).

Alcohol consumption. To evaluate alcohol consumption, the Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) was used.

Table 1. Description of the five cases used for the intervention

Case	Description
Car accident	After heavily drinking in a birthday party, two 16-year-old adolescents leave in a motorcycle. The driver is drunk and they have a car accident. The girl wasn't wearing a helmet. He broke his leg and she ended up in the ICU with a brain traumatism. Her parents go to trial.
Alcoholic coma	Three male friends go to a nightclub. They drink the whole night, until one gets involved in a fight with other kids and the clubs securities. The protagonist ends up in the hospital. After looking in all the city emergencies rooms, his father finally found him a day later.
Unwanted pregnant	The parents are overseas and the children throw a party in their home. Friends bring alcohol and they start drinking. Unconscious a girl had sex with a friend of a friend that is in the party. This was her first sexual relation and she became pregnant.
Fight	Adolescent fight in the door of a club. Girls and boys are involved; they started to throw bottles to each other. The police come and start shooting rubber bullets. One of the boys gets arrested; the other goes to the hospital. He has lost an eye and is severely injured.
Loss boyfriend – Bad school year	A girl drinks heavily almost every time she goes out. Her boyfriend also drinks and gets jealous and violent. One day she gets drunk and they have a fight and he told her that she is “disgusting” and dumps her. After that, she starts to drink every day, even in school breaks, she misses school several times and the school director is preoccupied.

AUDIT is a self-report 10-item scale and provides a total score ranging from 0 to 40. Total scores above 8 are considered to reflect hazardous or harmful drinking. In addition, 4 levels of drink severity (or zones) are distinguished, and a particular intervention recommendation is associated with each zone: (1) Zone one, refers to low risk drinking or abstinence (scores between 0 and 7), (2) Zone II, simple advice (scores between 8 and 15), (3) Zone III, indicates the need to provide subjects with brief counseling and continued monitoring (scores between 16 and 19), and (4) Zone IV, indicates that the subject has to be evaluated and treated by specialist (scores above 20).

Risk perception of excessive alcohol consumption. A 10-point visual analogue scale was created to assess risk perception of excessive alcohol drinking (1= not risky at all, 10=very risky).

Intervention adequacy. An ad-hoc questionnaire with four questions was created to evaluate the adequacy of the intervention. Questions were as follows: (Q1) Which is your general opinion about the activity? (1=very bad, 5=very good); (Q2) To which extent do you consider that the dynamics of the intervention were easy to understand? (1= very hard to understand, 5= very easy to understand); (Q3) How would you evaluate facilitator's performance? (1= very bad, 5=very good); (Q4) Here is a list of characteristics of the activity, please mark those characteristics that you like the most: (1) the content of the case, (2) the acting part, (3) the debriefing part, (4) none, (5) others.

Data analyses

Descriptive statistics and t-test were used to analyze sample characteristics regarding socio-demographic data and alcohol-related variables, as well as the adequacy of the intervention.

To analyze changes on risk perception of alcohol abuse after the implementation of the program, a t-test for related samples was performed and Cohen's d was calculated. Since the effect size for the main analysis was considered small, a secondary analysis was conducted but considering only a sub-sample of participants that showed low risk perception at baseline. Low risk perception was defined as the mean minus 1 standard deviation: $M = 7.7$, $SD = 1.4$ and $M - 1SD = 6.3$. Additionally, the percentage of change from baseline was calcula-

ted as an index of the magnitude of relevant changes. To further describe the characteristics of this sub-sample a t-test was performed to analyze AUDIT scores. All data were analyzed using PASW Statistics 19.0 software package for Windows.

Results

Sample characteristics and alcohol consumption related-variables

The final sample comprises 318 students, of which 55.7% ($n = 177$) were females and 44.3% ($n = 141$) were males. Mean age of the whole sample was 15.38 yrs ($SD = .89$) and mean age of alcohol use initiation was 12.49 yrs ($SD = 1.93$). A large proportion of the sample (81.7%) scored on AUDIT zone 1 category and a 14.7% scored on zone 2 (see Table 2). No significant differences were found between genders in any of the aforementioned variables (data non shown), except for age at alcohol use initiation in which females reported alcohol use initiation a little bit later than males ($M = 12.87$, $SD = 1.61$ vs. $M = 12.01$, $SD = 2.18$, $p < .001$).

Table 2. Characteristics of the sample and alcohol consumption related variables

Gender	(n), %
Females	(177), 55.7
Males	(141), 44.3
Age M (SD)	15,38 (0.89)
Age at initiation M (SD)	12,49 (1.93)
AUDIT Total Score M (SD)	4,58 (4.46)
AUDIT Categories	
Zone I: Alcohol Education	(251), 81.7
Zone II: Advice	(45), 14.7
Zone III: Advice plus Brief Counseling and Continued Monitoring	(7), 2.3
Zone IV: Referral to Specialist	(4), 1.3

Note. AUDIT = Alcohol Use Disorder Identification Test. M = Mean. SD = Standard Deviation.

Table 3. Risk perception of alcohol abuse pre and post intervention

Risk perception of alcohol abuse						
	PRE intervention M (SD)	POST intervention M (SD)	t	p	% of change	Effect size Cohen's d
Whole sample (n = 247)	7.70 (1.43)	7.99 (1.68)	-2.77	.006	3.76	-0.35
Sub-sample (n = 37)	4.95 (1.39)	6.62 (1.90)	-4.48	<.0001	33.73	-1.5

Note. M = Mean. SD = Standard Deviation.

Change in risk perception of alcohol abuse

A significant increase in risk perception of alcohol abuse was found after the intervention ($M = 7.70$, $SD = .091$, vs. $M = 7.99$, $SD = .107$, $t(1,283) = -2.77$, $p = .006$), however, the effect size of this increase was small (Cohen's $d = 0.35$). A secondary analysis revealed that participants who scored low risk perception at baseline ($n = 37$, $M < 6.3$) increased in almost a 34% their risk perception of alcohol abuse (see Table 3 for a detailed description). In addition, AUDIT scores of this sub-sample were significantly higher than scores in the whole sample [$M = 7.61$, $SD = 5.43$ vs. $M = 4.17$, $SD = 4.14$; $t(1,282) = 4.59$, $p < .0001$, respectively].

Intervention acceptability

A large proportion of the sample (95.3%, $n = 303$) perceived the intervention as very good or good, only a 3.5% ($n = 11$) considered it as neither good or bad, and 3 students (.9%) considered that it was bad or very bad. Almost 80% ($n = 252$) reported no difficulties in understanding the activity methodology and dynamics. 38.7% ($n = 123$) of the students considered that the content of the activity (the topic of the cases) was what they liked the most, meanwhile 27% ($n = 81$) highlighted that they liked the fact that it was an experiential learning activity, which gave them the opportunity to act and to have an active role during the session. In addition, 90.9% of the sample ($n = 289$) considered that the facilitators did a good job.

Discussion

Results of this pilot study provide preliminary evidence regarding the effects of *Iudicium*, an educational activity developed to increase risk perception of alcohol abuse among high school students. The present results suggest that after participating in *Iudicium* participants increased significantly their risk perception of alcohol abuse.

A high percentage of participants display high scores on risk perception of alcohol abuse on baseline levels. Because of this, and although statistically significant, the change on risk perception after the intervention was not large. Interestingly, a sub-group of participants who presented lower risk perception at baseline levels were the ones who benefited the most from the intervention. In those cases, risk perception of alcohol abuse increases a 34%, providing a large effect size. Furthermore, Audit scores in this sub-sample indicate a heavier drinking pattern, compared to whole sample values. Together, these results are of interest for at least two reasons. First, they indicate that *Iudicium* might be better delivered as a selective prevention program, rather than a universal one: students with low risk perception of alcohol abuse and higher consume profile, might comprise the target population of this program. Although these results provide a good starting point, further assessments of other variables related to alcohol consumption (e.g., expec-

tancies in regard to alcohol consumption or parents alcohol consumption; Pilatti, Brussino, & Godoy, 2013) is needed in order to determine more accurately which students could benefit the most from this intervention. Secondly, and in accordance to other studies (Park, 2004; Patrick & Maggs, 2008) this result also suggests that is an inverse relationship between alcohol consumption and low risk perception. Future studies should evaluate the effects of *Iudicium* on alcohol consumption, in order to clarify if the increase in risk perception is related to a decrease in alcohol intake.

In regards to quality of the intervention, the large majority of the sample indicated that they liked the activity and that it was easy to understand. As previously suggested (Cuijpers, 2002), interactive methods including drama-based activities are considered attractive, and the "act part" is well received. It is likely that these results are affected by temperamental variables (e.g., extraversion) or social desirability. However, we pretended to mitigate this, by including more "passive" roles such as the observers, in which more introvert individuals might feel more comfortable.

Limitations of the present study include the lack of a control group and the absence of follow up assessments. In addition, the intervention assessment was conducted by means of self-reported measures, and this may have biased our outcomes. As previous research suggests (e.g., Barlés Arizón, Escario, & Galbe Sánchez-Ventura, 2014; Cassola, Pilatti, Alderete, & Godoy, 2005; Cortés Tomás, Giménez Costa, Motos Sellés, & Cadaveira Mahía, 2014; Kuntsche, Knibee, Gmel, & Engels, 2006) some variables (e.g., consumption expectancies, parents excessive drinking, age of drinking initiation, personality traits) are predictors of alcohol intake and risky behaviors. Even though the sample proceed from diverse culturally and socio-demographic backgrounds we did not collect these kind of data, which would have been interesting in order to analyze the potential impact of these variables on alcohol risk perception.

In sum, results of this pilot study are promising, showing that *Iudicium* increases the risk perception of abusive drinking. Moreover, the fact that *Iudicium* is carried out on one single session makes it easy to implement in almost every school setting and can be adapted to the school curricula. Future studies should compare *Iudicium* to other interventions and should continue assessments in order to determine in a more accurate way the target population of the program.

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Author's contributions

HB conceived and designed the study in collaboration with AIM/BURKE. Assessment was design and performed

by DM and LL from Junta Nacional de Drogas, Uruguay. All authors (HB, AFS, DM, LL and ME) contributed equally to the interpretation of results. All authors read and approved the final manuscript.

Conflict of interest

CABA S.A funded the study. The first author (HB) is CABA's CEO, which is a company that produces alcoholic beverages. IUDICIUM was designed as part of their Corporate Social Responsibility Program. To avoid conflicts of interest regarding the results of this study, assessment was designed and performed by Junta Nacional de Drogas. DM and LL work in Junta Nacional de Drogas. The rest of the authors (AF and ME) declare no conflict of interest.

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Substance abuse and crime: considerations for a comprehensive forensic assessment

Abuso de drogas y delincuencia: consideraciones para una valoración forense integral

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Abstract

There is a strong link between drug use and crime, but this relationship is complex. Drug use does not necessarily lead to an increase in crimes, such as theft, rape or assault, even among regular users or addicts. However, in cases of individuals who consume drugs excessively and commit crimes, both factors are linked. Poverty, personality disorders, social and cultural variables, relationships with other users and previous incarceration or drug use are all factors. These issues play an important role in understanding the risk of crime and drug use. Most addicts should be held liable for most criminal behaviour motivated by addiction, but that addiction can, in some cases, affect one's capacity for self-control over one's actions. This paper examines the current response of the Spanish Criminal Justice System to various aspects of drug abuse, focusing on court decisions related with the nature and enforcement of drug laws. It also addresses aspects of criminal responsibility for drug abuse and drug-related crimes and suggests legislation on drugs, sentencing alternatives for drug offenses, and drug treatment options. Expert evidence plays a crucial role in this area in the court.

Key words: Substance abuse, addiction, criminal responsibility, criminal justice system, expert evidence.

Resumen

Hay una estrecha relación entre el uso de alcohol/drogas y la delincuencia, pero esta relación es compleja. El consumo de drogas no conduce inexorablemente a conductas delictivas, como robos, asaltos o violaciones, ni siquiera entre las personas que las consumen regularmente o que han desarrollado una adicción. Sin embargo, hay algunas personas en que el exceso de alcohol/drogas está relacionado directamente con la delincuencia. Son muchos los factores que pueden dar cuenta de este fenómeno: pobreza, trastornos de personalidad, factores culturales y sociales, amigos consumidores o contacto con la prisión. Estos aspectos sirven para comprender el riesgo de delincuencia y de drogodependencia. La mayoría de los adictos son responsables penalmente de las conductas delictivas cometidas relacionadas con la adicción, pero la adicción puede en algunos casos socavar la libertad de la persona para controlar su conducta. Se analiza en este artículo el Código Penal español, reformado por la Ley Orgánica 1/2015, y la jurisprudencia existente sobre este tema, especialmente en relación con las circunstancias eximentes y atenuantes de la responsabilidad penal en los supuestos de adicción. Los informes forenses desempeñan un papel muy importante en los tribunales para ayudar al juez a tomar la decisión adecuada entre las distintas alternativas existentes.

Palabras clave: Abuso de drogas, adicción, responsabilidad penal, sistema judicial, informes forenses.

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There exists a clearly established relationship between abusive consumption of alcohol and other drugs with delinquency in both general (property crime) and violent crime. Furthermore, the consumption of alcohol or other drugs triggers many crimes, mostly committed by individuals with other mental illnesses, especially in the case of personality disorders, chronic psychosis, impulse control disorders, mood disorders and paraphilic (Esbec & Echeburúa, 2010).

Therefore, for example, according to the report on the prevalence of mental illnesses in prisons in Spain (Vicens et al., 2011) with a sample of 783 males, 75% had problems associated with drug consumption. In the study by Swanson et al. (1990) on individuals who committed violent acts in the last year, there had been an abusive consumption of cannabis by 19.3%, of alcohol by 24.6%, and of other drugs by 34.7%. In turn, amongst homicides, substance-related disorders are present in 35.4% of indicted and in 11.8% of unindicted offenders (Fielitz & Cardozo, 2006); among sex offenders, 85% presented substance-related disorders (Dunsieth et al., 2004).

According to the meta-analysis of Bennett, Holloway and Farrington (2008), the possibility of committing crime is three or four times greater for drug users (heroin and cocaine, but less in the case of cannabis) than for non-users. However, stigmatization must be avoided as the majority of drug users and even addicts to some type of drug have never committed crime. No drug in itself is conducive to crime. Crimes derive of a great number of personal, family, social and situational factors (Echeburúa, Fernández-Montalvo & Amor, 2006).

In relation to specific drugs, most crimes committed by heroin addicts are property crimes, but violent crimes are a minority. As to cocaine, acute intoxication frequently causes agitation, hyperactivity, excitation and paranoid symptoms. These symptoms are dose-dependent and may occur in cocaine users without any psychiatric histories (Romero-Martínez & Moya-Albiol, 2015).

Likewise, the relationship between the consumption of cannabis and violent delinquency is scarcely documented, except for when the drug triggers psychotic symptoms (Fernández-Montalvo, López-Goñi & Arteaga, 2015). Furthermore, psychotropic drugs (benzodiazepines, antidepressants, etc.), when mixed with alcoholic beverages, may cause inappropriate or intense reactions of rage, with total loss of control.

Finally, there may be a relationship between the abuse of solvents and problematic behaviour, such as vandalism, fights and theft of products containing these substances. Intoxication by volatile substances may reduce awareness and self-control (Elonheimo et al., 2014).

Many studies have found a relationship between alcohol consumption and violence in general, accidents, gender-based violence, homicide and sexual aggression. The alco-

hol-violence relationship is greater among persons with certain antisocial personality traits, deterioration of cognitive functions and violent history. Most cocaine users also abuse alcohol, resulting in an inhibitory effect on behaviour that may translate into impulsivity, impaired judgment capacity and explosivity. The group of cocaine and alcohol addicts comprises a highly heterogeneous population, wherefore violence is intimately associated with one's personality structure and with other mental illnesses (Delgado, Maza & De Santiago, 2013; Echeburúa, Bravo de Medina & Aizpiri, 2009).

The purpose of this article is to analyse the existing relationship between drug consumption and different delinquency types, as well as to propose several alternatives set forth in amendments to the Criminal Code from the perspective of a comprehensive forensic assessment.

Types of delinquency in relation to drug consumption

The crimes most frequently committed by the drug addict population are given below (Goldstein, 1995):

- a. Crimes due to direct or indirect pharmacological effects of the substance. Cocaine activates the Limbic System, related with impulsivity or aggression, and alcohol inhibits the cerebral regions responsible for self-control ("inhibitory brakes", as used currently in the legal setting). The majority of violent and reckless crimes occur in this case, but there are also others due to omission, as occurs with opiates or cannabis (Bravo de Medina, Echeburúa & Aizpiri, 2010).
- b. Functional or instrumental delinquency, generally property crime, the purpose of which is to obtain enough money to cover one's consumption-related expenses.
- c. Minor drug traffic offenses, the purpose of which is to obtain drugs for personal use, pay debts and resolve situations of economic hardship or basic needs.
- d. Major drug traffic offenses, which also include cases of money laundering, tax evasion, trafficking and illegal possession of arms, coercion, homicide, fraud, etc. This way, violence may be a tool for resolving hierarchical conflicts amongst drug traffickers to settle territorial disputes amongst rival gangs or to seek revenge against traitors or informants.

Nevertheless, not all drug addicts are criminals as a result of their dependency. Some property crimes arise merely of a capricious attitude, or crimes against sexual freedom, or against one's partner, having nothing to do with this pathology.

As regards drug trafficking, the following are evidence of possession for purposes of trafficking (Ujala, 1999):

- a. the quantity of the substance seized,
- b. the drug distribution channels,
- c. the place in which the drug is located,

- d. the purchasing power of the offender in relation to the value of the drug,
- e. the attitude adopted by the person at the time of confiscation,
- f. the variety and abundance of the drugs in one's possession,
- g. the tools used, such as analytical balances or substances that are ideal for altering drugs,
- h. the possession of considerable amounts of money.

Malice, as regards the crime of drug trafficking, includes both the knowledge of the substance's harmful effects on health as well as the personal intent to incur in any of various conducts classified in article 368 of the Criminal Code (the *animus* (intent) of cultivating, elaborating, trafficking or promoting illegal drug consumption). Malice is not considered in the classification when personal use is intended.

Connecting link between drugs and delinquency

The causal relationship between drug use and delinquency is complex and not always one-way. Therefore, it is important to distinguish between *drug addict-offender* (intoxication, abstinence, addiction) that commits crime as a direct result of the effects of the drug (pharmacological assumption) or due to its absence (functional delinquency) of the *offender-drug addict*, who frequently presents an underlying antisocial or narcissistic disorder as well as a far-reaching criminal record, in which drug use is an incidental fact (Esbec, 2005; Echeburúa & Fernández-Montalvo, 2007).

For example, a considerable proportion (30-50%) of heroin addicts have committed crimes before initiating their use of opiates. In these cases, criminal activity continues during non-addiction periods, but there is a sharp drop in criminal activity when use is minimal or nonexistent. Decreased crime is also observed when reduced consumption is the result of an effective treatment, as well as under conditions of release on parole or due to spontaneous discontinuance of drug use. Heroin addicts commit six times more offenses when they are users than when they are abstinent. For long-term heroin addicts with repeated failures in drug-free programs, the best results are obtained (in terms of abstinence from heroin and decreased criminal activity) with methadone maintenance therapy (Delgado et al., 2013).

The causal link between drugs and delinquency frequently appears in the following circumstances: (a) violent acts in cases of intoxication by alcohol, cocaine or psychodysleptics; (b) functional delinquency (theft, petty theft, fraud, falsification of prescriptions, etc.) to avoid abstinence, especially in heroin and cocaine addicts; and (c) small-scale production and trafficking solely for purposes of self-supply (Bean, 2014).

The relationship between drugs and crime in response to a latent, unobservable factor underlying both behaviours

cannot be overlooked, including conditions of vulnerable households, social exclusion or a syndrome of antisocial behaviour in general (Contreras, Molina & Cano, 2012; Valenzuela & Larroulet, 2010).

The Criminal Code and jurisprudence as regards “functional delinquency”, drug trafficking and drugs that cause “serious health problems”

The Criminal Code (CC), amended by Organic Law 1/2015 and Organic Law 2/2015, in its article 21.2 makes reference to mitigating circumstances when the offender's actions are motivated by a serious drug addiction. This is not an issue, therefore, of cases of abstinence-related syndromes or intoxication, nor of drug-induced psychosis. The mitigating circumstance intends to address those so-called cases of “functional delinquency”, in which the drug addict commits a crime to obtain enough money for purchasing the drug object of the addiction, as long as the causal link is clear.

The relationship between addiction-criminal act may be logically inferred, without requiring specific proof (Sentence of the Supreme Court, hereinafter SSC, dated December 21, 1999, SSC dated March 8, 2010 and Sentence of the Provincial Court of Madrid, hereinafter SPC, dated April 28, 2015). This mitigating circumstance is not applicable in cases of trafficking of large amounts of drugs (SSC dated April 29, 2015).

The mere possession of drugs alone is not a crime. As regards drug trafficking, it is important to detect the figure of “drug trafficker for self-consumption”. It is common for some drug addicts to sell drugs on a very minor scale, not for purposes of self-enrichment, but rather to obtain enough money to cover one's consumption-related expenses due to lack of resources. Article 21.2 of the Criminal Code is included here, as per our interpretation.

Amendments to the Criminal Code (Organic Law 5/2010 dated June 22 and Organic Law 1/2015 dated March 30) have lightened sentences when a small amount of drugs are seized.

The Supreme Court (SC) uses reports drafted by the National Toxicology Institute, dated October 18, 2001 and December 22, 2003, to define the minimum psychoactive doses, as well as the average daily dose, which continue to be upheld by its jurisprudence (SSC dated May 14, 1990, December 15, 1995 and November 21, 2003). The National Toxicology Institute considers a frequent user to acquire, for self-consumption, the quantity required for 5 days. Some sentences consider that a drug is destined for trafficking when its quantity exceeds the amount stored by a user for consumption over 5 days. This 5-day storage period, according to the report of the National Toxicology Institute, is broken down by substances: 3 grams of heroin, 7.5 grams of cocaine, 100 grams of marihuana, 25 grams of hashish,

3 milligrams of LSD, 900 milligrams of amphetamines, and 1440 milligrams of MDMA (ecstasy).

To the contrary, the Supreme Court considers the following cases as indicative of drug trafficking: a) the quantity and variety of the drugs seized of the offender greatly exceed the common storage of a habitual user (SSC dated December 15, 2004 and March 31, 2006) and the arrival of a person to Spain with drugs and without employment, place of residence or contact person through which to obtain means for self-support (Ruling dated April 24, 2007); b) the performance of surveillance tasks at the place of purchase-sale (Ruling dated May 31, 2007); c) the lack of proof of being a drug addict user, instead being simply a sporadic user with a possession exceeding 5 months of personal use (Ruling dated June 7, 2007); and d) the amount of money seized.

Article 368 of the Criminal Code has notably stiffened sentences for drug trafficking that cause serious health problems and has upheld the mitigating circumstance of notorious importance in article 369.3. In accordance with the agreement of the plenary session of the Supreme Court dated October 19, 2001, the amount defined as of "notorious importance" refers to the unit of measure for daily drug use set forth by the National Toxicology Institute (report dated October 18, 2001) for the purposes of applying the mitigating circumstance of article 369 of the Criminal Code. These amounts are given in Tables 1 and 2.

As regards drugs that cause serious health problems (mitigating circumstance), jurisprudence is sufficiently consolidated, including opiates, cocaine, LSD, amphetamines, ecstasy and other designer drugs in this group. To the contrary, hashish and other derivatives of cannabis, as well as psychoactive drugs, are excluded from this section (SSC dated March 8, 2002 and February 18, 2015).

For other drugs, the Courts inevitably require expert assessments (article 456 of the Criminal Procedure Act), which must refer to the composition, richness of active products, tolerance and dependency as to its purposes and, finally, toxicity or health risk for humans. These reports, given their foreseeable complexity in many cases, must be requested of fully solvent entities and bodies in terms of scientific validity, such as the National Toxicology Institute, the School of Legal Medicine or the General Sub-Directorate of Pharmacies.

Exemptions and mitigating circumstances. “*Actio libera in causa*”

The Criminal Code includes different situations for the drug addict-offender. Therefore, courts may apply the exemptions of article 20.2 (complete intoxication or abstinence syndrome) or the mitigating circumstances of article 21.1 (incomplete intoxication and abstinence) and 21.2 (serious addiction to the substance), among others.

Given the attitude of tolerance toward drug addicts during the 80s, the Supreme Court has gradually incorporated

Table 1. Drug doses considered of notorious importance

Heroin	300 grams of heroin or horse (600 milligrams per day by 500 days)
Morphine	1000 grams (estimated daily dose of about 2000 milligrams per day by 500 days)
Methadone or Metasedin®	120 grams (estimated daily dose of 240 milligrams per day by 500 days)
Buprenorphine or Buprenex®	1.2 grams (estimated daily dose of 2.4 milligrams per day by 500 days)
Dihydrocodeine or Contugesic®	180 grams (estimated daily dose of 360 milligrams per day by 500 days)
Tramadol (Adolonta®, Tioner®, Tradonal®, Tralgiol®, Tramadol®)	200 grams (estimated daily dose of 400 milligrams per day by 500 days)
Marijuana	10 kilograms of marihuana (estimated daily dose of between 15-20 grams per day by 500 days)
Cocaine	750 grams of cocaine (estimated daily dose of 1.5 milligrams per day by 500 days)
Hashish	2.5 kilograms (estimated daily dose of 5 grams per day by 500 days)
Hash oil	2.5 kilograms of hashish (estimated daily dose of 5 grams per day by 500 days)
LSD	300 milligrams (500 doses)
Amphetamines	90 grams of amphetamine sulphate
MDA (<i>love drug</i>), MDMA (<i>Ecstasis</i>) or MDEA (<i>Eva</i>).	240 grams
Methamphetamine (<i>Speed</i>)	30 grams

Table 2. Doses of benzodiazepines (anxiolytics) considered of notorious importance

Alprazolam (Alprazolam®, Efarmes®, Géminis®, Merck®, Trankimazin®)	5 grams (estimated daily dose of 10 milligrams/day)
Triazolam (Halcion®)	1.5 grams (estimated daily dose of 3 milligrams/day)
Flunitrazepam (Rohypnol®)	5 grams. (estimated daily dose of 10 milligrams/day)
Lorazepam (Donix®, Idalprem®, Lorazepam Médical®, Orfidal Wyeth®, Placinarol®, Sedizepam®)	7.5 grams (estimated daily dose of 15 milligrams/day)
75 grams of Clorazepate Dipotassium (Nansius®, Tranxilium®)	75 grams (estimated daily dose of 150 milligrams/day)

demands for mitigation of the sentence for these patients (Esbec, 2005): (a) objectification of the drug addiction using an expert's report (SSC dated December 12, 1990); (b) proof of the current drug addiction and its relation to the criminal act (SSC dated November 21, 1988, November 22, 1989, April 27, 1990 and December 12, 1990); (c) proof of seriousness and chronicity, compared with mere consumption (SSC dated December 1, 1990, April 27, 1990 and December 10, 1990); (d) objectification of the seriousness of the abstinence syndrome (SSC dated November 22, 1989, January 30, 1990 and April 27, 1990); (e) description of the physical and/or psychiatric symptoms of the offender (SSC dated January 27, 1990); (f) study of the type of substance object of the addiction (SSC dated December 3, 1988); and g) study of the personality of the drug addict-offender (SSC dated January 3, 1988).

Likewise, the SSC dated July 26, 2006, November 4, 2009 and March 8, 2010 and the SPC of Madrid dated April 28, 2015 set forth the following requirements for sentencing:

1. Bio-pathological requirements. In other words, a certain duration of the drug addict's addiction, entailing serious intoxication or abstinence, as only a serious addiction may cause the circumstance that modifies criminal responsibility.
2. Psychological requirement. That the offender's mental faculties are affected. Being an addict is not sufficient for mitigation if the drug has not affected the person's intellect and volition.
3. Chronological, time-based requirement. That drug use and its psychological impact take place at the moment of committing the criminal act, or that the offender acts under the effects of the abstinence syndrome. This analysis also contemplates crimes committed when the offender has a serious drug addiction.
4. Regulatory requirement. The intensity or influence of the drug addiction on the offender's mental mechanisms, resulting in the consideration of a complete or incomplete exemption, or merely as a mitigating circumstance as regards criminal responsibility.

The sole condition of drug addict, without explicit effects on faculties of cognition and/or volition (exceptional cases), does not affect criminal responsibility (SSC dated March 1, 1995, September 26, 1996 and December 2, 1997, among others).

As to the abusive consumption of alcoholic beverages, the SSC dated November 6, 2014 includes different possibilities:

- a. Complete exemption (article 20.2). Applicable when intoxication is complete and coincidental, given the profound alteration it causes on the offender's cognition and volition, preventing the comprehension of the illegality of the act or of acting in accordance with that comprehension. This is equivalent to a temporary mental disorder, as long as it was not pursued for purposes of committing the criminal act and that said act

was neither planned nor foreseeable (negligent intoxication).

- b. Incomplete exemption (article 21.1). Applicable when intoxication is coincidental but incomplete, as long as the offender's cognition and volition are seriously impaired when committing the act. These circumstances do not prevent, but rather significantly hinder the comprehension of the illegality of the act or of acting in accordance with that comprehension. This mitigating circumstance is not applied in cases of negligent intoxication.
- c. Mitigating circumstance (article 21.2). Applicable when intoxication, though not habitual nor sought for the purpose of committing delinquency, affects the offender's cognition and volition without fulfilling all of the requirements of the abovementioned cases, and which may even be classified as a mitigating circumstance if its effects were particularly intense (SSC dated February 4, 2005 and March 2, 2006).
- d. Analogous mitigating circumstance (article 21.6). Applicable when the impairment of volition and of the capacity for comprehension has been slight, regardless of the alcohol-related motivating circumstances. This way, the voluntary or even negligent intoxication, never for the purpose of committing delinquency, causes either a significant obtundation in the offender's capacity for understanding the scope of the acts committed or a likewise significant relaxation of the inhibitory brakes, in other words, of the capacity for directing one's behaviour in accordance with standards norms of socialization (SSC dated December 5, 2005, November 19, 2008 and July 6, 2011).

Currently, the legal-criminal treatment of drug addiction encompasses: a) criminal responsibility at the moment the act takes place; b) suspension of the custodial sentence after the conviction; and c) special treatment during imprisonment for purposes of detoxication.

However, when a drug addict commits a criminal act directly related with drug use, the legal viability of the so-called "*actio libera in causa*" may be proposed. This means that if the addict knows, time and time again, that the abstinence-related symptoms reoccur and that, despite this, the addict continues with substance abuse instead of seeking therapeutic assistance, then that person is responsible for his or her criminal behaviour. The addict may not hide behind the shield of release from criminal responsibility from a condition that he or she has deliberately pursued. In these cases, the culpability derives of the situation prior to the commission of the criminal act, when the offender, in full use of mental decision-making capacities and abilities, decides to continue with the chain of drug use and criminal acts (SSC dated July 16, 1982). In other words, the patient opts for criminal action instead of seeking assistance.

In other cases, it is important to prove prior attempts as regards detoxication, adherence to treatments and compliance with established guidelines. Quitting the treatment from the start is not the same as experiencing a temporary imbalance or relapse when a patient is currently undergoing rehabilitation (Martínez-González et al., 2014).

Expert evidence in issues related with possession, drug use and drug addiction. Biopsychosocial model

The purpose of different expert evidence on matters related with drug addiction is to obtain specificity as to the possible application of cases for modifying criminal responsibility. It is quite common for an expert's opinion on the offender's drug addiction, differentiating between occasional or erratic use and a possible intoxication (including induced psychosis) or abstinence syndrome during the time the act was committed, as well as indicating whether the drug trafficker acted out of fear or necessity. All of this for the purpose of seeking exemption or mitigation of responsibility when the diverse criminal acts were committed.

Assessment of the duration and seriousness of the drug addiction

The Supreme Court requires a "certain duration" of the drug addiction (SSC dated March 8, 2010). In this regard, it is crucial to complete a thorough examination for the presence of stigmas of habitual drug use, such as venipunctures, scars from abscesses, positive results for hepatitis C or HIV, nasal septum perforations, etc. A complete medical history must be documented, including all types of antecedents as proof of this chronicity.

For criminal purposes, a more or less occasional drug use, or referred to *a posteriori* as a procedural strategy (even with positive drug test results from use during imprisonment), is not the same as a real drug addiction. Supplementary documentation is required to differentiate between both figures: criminal history, prior expert's reports, reports from Drug Addiction Treatment Centres, hospitalizations, family history, etc.

That the Supreme Court requests the experts to establish the "seriousness of the addiction" (SSC dated March 8, 2010) and that these patients tend to exaggerate their references must not be overlooked.

Toxicological analyses and simulation. Need for differentiation from occasional use

Tests (blood, urine, hair) frequently requested during preventive retention or when released while awaiting trial, in general, have no expert value as the expertise must date to the time of the commission of the acts and not to a later drug use and, furthermore, the expert is interested in diagnosing a drug addiction and not mere drug use. Likewise, it is also a well-known fact for experts that some offenders

who are not drug addicts use drugs in prison with the goal of seeking some type of mitigation of the sentence *a posteriori*.

Nevertheless, a drug analysis using hair can define a chronological profile of consumption and reveal whether drug use is occasional or ongoing. It may also provide guidance as to the amounts ingested and the type of drug used.

The report must include the usual dose consumed, particularly relevant in criminal offenses against public health, as in these cases the usual allegation is that the seized drug was intended for personal consumption. On other occasions, the Court or the parties consult as to the usual dose taken by a drug addict of a substance to dilucidate as to the quantity of "notorious importance".

Abstinence syndrome and anticipatory anxiety

Though the instrumental offense committed while under the full effects of an abstinence syndrome is considered an exemption as per article 20.2 of the Criminal Code, part of the doctrine and some sentences extend this syndrome to include the so-called "anticipatory anxiety", "craving" or "abstinence syndrome thresholds", the psychopathological symptoms of anxiety-depression, with a high level of irritability, that significantly impair a person's capacity of volition. This has also been referred to as the "incomplete abstinence syndrome".

It must be highlighted that, in these cases, the criminal act clearly has been planned, with awareness of its illegality, though under conditions of affected volition.

According to the Supreme Court (SSC dated January 3, 1988) this anxiety "reflects the pre-onset or prodromal desire or craving for the drug... It is a type of hyperactivity that quickly degenerates into aggression and that motivates certain types of delinquency, such as violent theft..." .

The clinical expression of abstinence varies, depending on the substance and the dose, but also on individual responses and even on the stress generated by the difficulty faced by the addict in finding the substance or a substitute. The intensity of the abstinence syndrome is classified into four levels (slight, moderate, serious and severe). Another, lower level may also be added, more similar to craving than to abstinence in its symptoms. In other words, the need for the drug, characterized by anxiety, nervousness and disorientation (Serrat, 2003).

Cases of "necessity" and "insuperable fear"

In general, doctrine sets forth that the anxiety for drugs does not fit in with cases of "necessity" of article 20.5 of the Criminal Code. On another hand, drug traffickers, informally known as *drug pushers* and who usually use their own body as the means for transporting the drug ("*drug mules*") tell stories of economic hardship or threats received for owing money, usually unverifiable. In these cases, expert opinions of physicians or psychiatrists-psychologists hardly contribute any value (Esbec & Delgado, 1990).

"Insuperable fear", in the legal-criminal sense, entails the well-founded fear of serious, imminent harm, clouding one's intelligence and overcoming one's volition, thereby motivating the execution of an act that, without that psychic distress, would be considered criminal. Justification of this mitigating circumstance (article 20.6) requires that the fear (arising from threats to one's own life or that of one's

children, for example) is the sole motivation for the action charged as a crime (SSC dated June 12, 1991). The insuperable nature of this fear makes it impossible for the person's volition to overcome or neutralize it, and it must be invincible, in other words, cannot be dominated by most persons (SSC dated May 9, 1991) (Table 3).

Table 3. *Most relevant articles of the Criminal Code and the Criminal Procedure Act for drug addicts*

Article		Possible consequence	Associated psychopathology
CRIMINAL CODE ARTICLE 20.2	When at the time of committing the criminal act, one is fully intoxicated due to the consumption of alcoholic beverages, toxic drugs, narcotics, psychotropics, or others that cause similar effects, as long as it was not sought for the purpose of committing the act, or its occurrence was neither foreseen nor could have been foreseen, or when one is under the influence of an abstinence syndrome as a result of the dependency on these substances, which prevents the comprehension of the illegality of the act or of acting in accordance with that comprehension.	COMPLETE EXEMPTION	Complete intoxication Drug-induced psychosis. Serious abstinence syndrome
CRIMINAL CODE ARTICLE 21.1	The causes defined in the previous article, when all of the necessary requirements for exemption from responsibility do not concur in the corresponding cases.	INCOMPLETE EXEMPTION MITIGATING CIRCUMSTANCE	Incomplete intoxication Non-serious abstinence
CRIMINAL CODE ARTICLE 21.2	When the offender acts as a result of a serious addiction to the substances mentioned in point 2 of the preceding article.	INCOMPLETE EXEMPTION OR MITIGATING CIRCUMSTANCE	Small-scale drug trafficking, "drug trafficker for self-consumption"
CRIMINAL CODE ARTICLE 20.1	When at the time of committing the criminal act, as a result of any psychic anomaly or alteration, the offender lacks comprehension of the illegality of the act or of acting in accordance with that comprehension.	COMPLETE EXEMPTION	Dual diagnosis. Personality disorders. Other serious mental illness
CRIMINAL CODE ARTICLE 20.1	The temporary mental disorder will not be grounds for exemption from the sentence when it has been induced by the offender for purposes of committing the criminal act or the offender had foreseen or should have foreseen committing the criminal act.	COMPLETE EXEMPTION	Accidental intoxication with psychotropics
CRIMINAL CODE ARTICLE 20.5	When, given a situation of necessity, to avoid harm to oneself or to another person, inflicts damage on another person's legal asset or fails to fulfil an obligation, in concurrence with the following requirements: First. That the damage caused is not greater than the damage intended to be avoided. Second. That the offender has not purposely provoked the situation of necessity. Third. That the person in need is not, due to one's profession or position, obligated to self-sacrifice.	COMPLETE EXEMPTION	Urgent need for drugs Serious economic problem
CRIMINAL CODE ARTICLE 21.7	Any other circumstance sufficiently analogous to the above.	ANALOGOUS MITIGATING CIRCUMSTANCE	Variable pathology
CRIMINAL CODE ARTICLE 80.5	Even when conditions 1 and 2 set forth in article 81 fail to concur, the judge or court, in a hearing with the parties present, may agree to suspend the custodial sentence of up to 5 years of the convicts that committed the criminal act due to their dependency on the substances included in point 2 of article 20, as long as there exists sufficient certification by a duly accredited or approved public or private centre or service that the convict has completed or is undergoing a detoxification treatment at the time of decision-making as to the suspension. The judge or court will request the necessary verifications and will review the corresponding reports.	SUSPENSION OF THE CUSTODIAL SENTENCE OF UP TO 5 YEARS	Mid-scale drug trafficking by the drug addict
CRIMINAL CODE ARTICLE 87	Upon expiry of the established suspension period with the omission of any criminal acts by the offender... and having sufficiently complied with conduct-related rules... Certification of the drug addict offender's successful detoxification or continuity of treatment.	REMISSION OF THE SENTENCE	Addiction to drugs
CRIMINAL PROCEDURE ACT. ARTICLE 381	In the event that the judge observes signs of mental illness, the offender will immediately be subject to the observation of forensic physicians at the prison if imprisoned, or at another public centre if more suitable or if the offender is not imprisoned.	INCOMPETENT TO DECLARE	Serious intoxications. Drug-induced psychosis. Serious abstinence syndrome

Assessment of criminal responsibility as per mixed criteria

The requirement in jurisprudence of establishing a mixed criteria for assessing criminal liability cannot be overlooked. To this end, it does not suffice to comply with the biopathological criteria of addiction, intoxication or abstinence, but it is absolutely necessary to prove the psychological effect (absence of the capacity for comprehending the illegality of the act or of acting in accordance with that comprehension).

Assessing the drug addict for suspension of the custodial sentence and for remission of the sentence

Amendments to the Criminal Code, implemented through Organic Law 1/2015 dated March 30, also includes a review for regulating the suspension of the execution of the sentence, for purposes of endowing it with greater flexibility.

One possible option for offenders who commit a criminal act imposed a sentence of up to 5 years, as a result of a serious drug addiction, is the suspension of the execution of the sentence (article 80.5). The amendment grants judges the freedom to implement the necessary verifications to certify compliance with legal requirements. In these cases, the suspension of the execution of the sentence obligates the drug addict to commit to completing the detoxification treatment. A novelty of this amendment is that relapses during treatment are not considered abandonment of the same if they do not entail a definitive withdrawal from treatment.

In turn, remission of the sentence (article 87), upon expiry of the established suspension period, mandates the omission of any criminal acts, compliance with conduct-related rules established by the judge, and certification that the offenders has completed the detoxification treatment.

Conclusions

A close relationship exists between delinquency and drug use, though the relationship is not linear and implies many mediating factors. Abusive drug use is not the sole underlying problem of the phenomenon of criminal activity. The offender's environment, personality, mental disorders and personality, as well as social support network and family, modulate the probability of this use and the likelihood of committing criminal acts (Delgado et al., 2013).

At times, delinquency and drug use are more or less directly related with lifestyles, behaviour patterns and vulnerability-related factors of the offender during critical moments of human development, such as adolescence and young adulthood. Likewise, the effects of drugs differ across individuals, depending on a great number of psychological, biological and situational factors (Walters, 2014).

The biopsychosocial expert's report must differentiate between occasional drug use and ongoing abusive use in-

herent to addiction, as well as define the drugs upon which the addict is dependent, the seriousness and duration of the addiction, the doses and method of administration, and highlight the possible existence of comorbidity with other mental disorders.

The extent to which the offender's psychological faculties are affected must be clearly defined (*null, moderate, serious and severe*) as regards the commission of the criminal act, bearing in mind comorbidity and contextual aspects. In exceptional situations (coincidental or accidental occurrences, such as when someone unknowingly ingests hallucinogenic mushrooms or drinks a spiked alcoholic beverage), a temporary mental disorder may be alleged in defence as a mitigating circumstance of criminal responsibility (article 20.1 of the Criminal Code). All of this acquires special relevance for the various legal figures contemplated in the Criminal Code, as have been applied in some relevant sentences of the Supreme Court and of some Provincial Courts (Esbec & Echeburúa, 2014).

Upon the judge's requirement, the expert's opinion may evaluate the possible suspension of the custodial sentence of up to 5 years, as long as the criminal act occurred as a result of the offender's drug addiction, and upon certification of an approved centre that the offender is currently undergoing or has successfully completed a detoxification treatment. The offender may not abandon the treatment prior to its completion, though relapses during treatment are not considered abandonment of the same if they do not entail a definitive withdrawal from treatment (article 80.5 of the Criminal Code). Remission of the sentence may be granted upon certification of the offender's successful detoxification or continuity of treatment (article 87.2 of the Criminal Code).

Experts are also consulted as to the most suitable security measures when criminal responsibility has been annulled or attenuated. Therefore, depending on the seriousness of the acts committed, of the motivation for participating in detoxification, of dual diagnosis, of the social support network and of other variables, a custodial sentence may be proposed in which the offender must undergo rehabilitation in a detoxification centre or through an outpatient program with periodical drug use controls, as well as be prohibited visiting certain places or of driving motor vehicles, among other measures, within a broad spectrum of possibilities included within "probation" included in article 106 of the Criminal Code after its amendment by Organic Law 5/2010, dated June 22.

Finally, when the offender is held criminally responsible and is imprisoned, Penitentiary Regulations (article 116) contemplate the possibility for imprisoned drug addicts to participate in detoxification programs on-site and, exceptionally, off-site (article 182).

Conflict of interests

The authors declare the inexistence of conflicts of interest.

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Ante la preparación de un artículo de cara a su publicación se deben revisar y aplicar las normas extensas, que pueden ser consultadas en www.adicciones.es

Adicciones está editada por Socidrogalcohol, Sociedad Científica Española de Estudios sobre el Alcohol, el Alcoholismo y otras Toxicomanías. Adicciones publica artículos originales sobre el tratamiento, la prevención, estudios básicos y descriptivos en el campo de las adicciones de cualquier tipo, procedentes de distintas disciplinas (medicina, psicología, investigación básica, investigación social, etc.). Todos los artículos son seleccionados después de pasar un proceso de revisión anónimo hecho por expertos en cada tema. Adicciones publica 4 números al año. Adicciones tiene las secciones de editorial, artículos originales, informes breves, artículos de revisión y cartas al director. La revista se publica en español, aunque admite artículos en inglés. Cuando publica un artículo en inglés, puede exigir su traducción también al español, pero no es la norma.

Papel. La revista Adicciones está impresa en papel estucado fabricado con pastas libres de cloro (TCF).

Conflictos de intereses. La política de la revista es que en todos los artículos y editoriales conste expresamente la existencia o no de conflicto de intereses en el apartado correspondiente. Todos los conflictos de interés son importantes, pero especial cuidado hay que poner en el caso de haber recibido para el estudio financiación de la industria farmacéutica, alcoholera, tabacalera, etc. La revista Adicciones sigue en este tema las recomendaciones de ISAJE (International Society of Addiction Journals Editors). Tener conflicto de intereses no significa no poder publicar el artículo. En caso de duda sobre esta cuestión se debe contactar con el editor.

Autoría. Es muy importante que únicamente se consideren autores aquellos que han hecho sustanciales contribuciones: 1) a la concepción y diseño, adquisición de datos, o el análisis e interpretación de datos; 2) a la redacción del artículo o a su revisión crítica; y 3) que ha dado su aprobación de la versión que se publicará. Los autores deben asegurarse de que partes significativas del material aportado no ha sido publicado con anterioridad. En caso de que puedan tener dudas sobre el cumplimiento de esta norma, deberán presentar copias de lo publicado o de lo presentado para publicación a otras revistas antes de poder ser considerado el artículo para su revisión. En caso de dudas sobre alguno de los aspectos anteriores los autores deben consultar el acuerdo de Farmington al que está adherida la revista Adicciones (Anexo 1), las normas de "Sponsorship, authorship, and accountability" del International Committee of Medical Journal Editors (www.icmje.org/sponsor.htm) o las normas de publicación de la American Psychological Association, 6^a edición (2010) (www.apastyle.org). El editor de la revista puede dirigirse a los autores del artículo para que especifiquen cual ha sido la contribución de cada uno de ellos.

Preparación de manuscritos. Los autores deben seguir exclusivamente para la presentación de sus manuscritos las Normas de Publicación de la American Psychological Association (6^a edición, 2010; <http://www.apastyle.org>). Las excepciones a esta regla son mínimas y dependen sólo de las diferencias que puede haber en el uso del español y del inglés. Por ejemplo, los ingleses utilizan en la bibliografía el signo '&' antes del último autor, mientras que en español dicho signo se corresponde exactamente con la 'y' (por tanto los artículos en español utilizarán solo la 'y'); otra diferencia puede ser en los títulos de los artículos, puesto que en inglés se pone en mayúscula la primera letra de muchas de las palabras, mientras que en español sólo ponemos la primera...).

NO existe un límite exacto de palabras para los trabajos que se presenten. Pero deberá cuidarse mucho que toda la información que se incluya sea estrictamente la necesaria.

Es importante que los artículos sean interesantes para la comunidad científica del campo de las adicciones. Se evitarán trabajos que se refieran a realidades muy concretas –a menos que precisamente en ello resida su interés–, o que sean básicamente descriptivos –a menos, nuevamente, que se trate de algo novedoso.

Artículos originales. Serán preferentemente trabajos de investigación clínicos o experimentales sobre el campo de las drogodependencias o las adicciones. Pero también pueden ser aceptados trabajos teóricos o de otro tipo.

Informes breves. En esta sección se considerarán los trabajos de investigación que por sus características especiales (series con número reducido de observaciones, casos clínicos, trabajos de investigación con objetivos y resultados muy concretos, estudios epidemiológicos descriptivos, primeros resultados de un estudio amplio, etc.) pueden ser publicados de forma abreviada y rápida.

Artículos de revisión. Presentarán la actualización de un tema de forma rigurosa y exhaustiva. Deberán regirse normalmente por metodologías sistematizadas. El contenido del artículo podrá llevar los apartados necesarios para la mejor comprensión de los lectores. En su parte final debe aparecer un apartado de discusión o conclusiones. La extensión preferiblemente no debería superar las 5.000 palabras, pero siempre que esté justificado, se admitirían revisiones más largas.

Cartas al Director. Tendrán normalmente un máximo de 800 palabras, 10 referencias y una tabla o figura. Pueden consistir en una presentación breve sobre algo novedoso, una investigación original, o la contestación o matización a un artículo publicado en la revista. Cuando sea éste el caso la carta tendrá que recibirse dentro de las 6 semanas subsiguientes a la publicación del artículo en el número de la revista

PRESENTACIÓN DE LOS TRABAJOS

Envío electrónico. La forma más rápida y preferente de enviar artículos para su revisión editorial es a través de www.adicciones.es. Allí encontrará todas las instrucciones a seguir y la forma de adjuntar el original. Todo el seguimiento del proceso de revisión y editorial se realizará a través de la web (a través de la plataforma de RECYT). Ésta es la única forma prevista para envío de artículos (pero si tiene alguna duda puede comunicarse con secretaria@adicciones.es). Será muy útil para facilitar el proceso de revisión que en el momento del envío del artículo proporcione a través de la misma plataforma información sobre por lo menos dos posibles revisores para su artículo (nombre, institución y correo electrónico). Estos revisores deberán ser expertos en el tema y no estar ligados a la investigación que se desarrolla en el trabajo presentado. Tampoco podrán pertenecer al actual Comité de Redacción o Editorial. La revista se reserva la decisión de utilizar o no dichos revisores propuestos. El editor señalara además normalmente otros revisores. Recordar que el proceso de revisión es anónimo para los autores. Caso de que no fuese posible por alguna razón o tuviese algún problema con el envío del artículo a través de la web, le agradeceremos que se ponga en contacto con secretaria@adicciones.es o al teléfono (+34) 971727434 o a Editor de Adicciones. Rambla, 15, 2^a, 3^a. 07003 Palma de Mallorca.

ESTRUCTURA DE LOS TRABAJOS ENVIAVOS A LA REVISTA

Todas las hojas deberán ir numeradas correlativamente en la parte superior derecha. Cada parte del manuscrito empezará una página en el siguiente orden:

1. En la *primera página* del artículo se indicarán, en el orden que aquí se cita, los siguientes datos:

- Título del artículo, en minúsculas (en castellano e inglés) excepto la letra inicial.
- Nombre de los autores completo (no sólo iniciales), y uno o dos apellidos del/los autor/es (p. ej.: Miguel García o Miguel García Rodríguez o bien Miguel García-Rodríguez, teniendo en cuenta que la forma que hayan utilizado los autores es la que se enviará a las bases de datos) en minúsculas, excepto la letra inicial. Los distintos autores vendrán separados por punto y coma. Detrás del apellido de cada autor, sin espacio intermedio y en superíndice, deberá ir un asterisco de llamada (1 asterisco para el primero, 2 para el segundo, etc.). Estos asteriscos son necesarios para indicar en el siguiente punto la institución donde se ha realizado el trabajo.
- Precedidos por un asterisco o los que fuesen necesarios –según el punto anterior– se indicarán el nombre/s del centro/s donde se ha realizado el trabajo o donde trabajan los autores.

Al final de la primera página (no como 'nota al pie') se colocará este texto: "Enviar correspondencia a: ...", indicando el nombre, la dirección postal, correo electrónico u otra información mediante la cual el autor elegido podrá ser contactado. Este será

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el autor al cual la secretaría se dirigirá durante el proceso de revisión, a menos que se acuerde mutuamente otra solución.

2. La *segunda hoja* del artículo incluirá un resumen del trabajo presentado, tanto en español como en inglés. Dicho resumen tendrá alrededor de 250 palabras. Siguiendo las normas de publicación internacional ya citadas, el resumen debe especificar los objetivos del estudio o investigación; la metodología fundamental utilizada; los principales resultados; y las conclusiones más importantes y/o novedosas. El resumen debe redactarse en uno o varios párrafos siguiendo las normas de publicación de la APA, sin atender a las divisiones de antecedentes, método, etc.

Después del resumen se incluirá un listado de alrededor de 5 Palabras clave en español y luego en inglés (*Key words*) en minúsculas y separadas por comas que, a ser posible, se adapten a las normalmente utilizadas en los índices al uso (ej., Index Medicus, Psychological Abstracts, Índice Médico Español).

3. La *tercera hoja* dará inicio al texto del artículo. Se recomienda la redacción del texto en impersonal. Conviene dividir claramente los trabajos en apartados, siguiendo, siempre que sea posible por las características del estudio, el esquema general siguiente: Introducción (no obstante la palabra introducción no se pondrá, pues se da por supuesta), Método, Resultados, Discusión, Reconocimientos, Conflicto de intereses y Referencias.

Introducción. Será breve y deberá proporcionar sólo la explicación necesaria para que el lector pueda comprender el texto que sigue a continuación. No debe contener tablas ni figuras, a menos que sean imprescindibles para la comprensión del texto. Debe incluir un último párrafo en el que se exponga de forma clara el o los objetivos del trabajo. Siempre que se pretenda publicar una observación muy infrecuente, debe precisarse en el texto el método de pesquisa bibliográfica, las palabras claves empleadas, los años de cobertura y la fecha de actualización.

Métodos. Se describirá claramente la metodología empleada (selección de la muestra, como se recogieron los datos, instrumentos de recogida de datos o de evaluación, temporalización,...). Se deben identificar los métodos, instrumentos de evaluación, tratamientos, fármacos utilizados, aparatos, sistema de evaluación, pruebas estadísticas si son novedosas, métodos nuevos, etc. Debe especificarse el tipo de estudio (descriptivo, epidemiológico, experimental, ensayo clínico, etc.), sistema de asignación de los sujetos a grupos, aleatorización, etc. Cuando haya un protocolo debe citarse. Cuando los experimentos son realizados con animales o el ensayo es experimental en humanos debe especificarse explícitamente que se han seguido las normas éticas deontológicas, de investigación y que se han cumplido los convenios internacionales de experimentación animal o humana. Debe especificarse el tipo de análisis estadístico que se va a utilizar, describirlo cuando éste sea nuevo o poco conocido, e indicar el paquete estadístico que se va a utilizar. Se valorará positivamente si se ha conseguido la aprobación del estudio por algún comité ético o se podrá exigir cuando el estudio realizado lo requiera.

Resultados. Los resultados deben presentarse en una secuencia lógica en el texto, tablas y figuras. Utilice sólo aquellas tablas y figuras estrictamente necesarias, que expresen claramente los resultados del estudio. No duplique los datos en tablas y figuras. No repita en el texto todos los datos de las tablas y figuras, sólo los más importantes. Enfatice y resuma sólo las observaciones más importantes. Adicciones adopta el sistema convencional del 5% como valor para la significación estadística y no acepta tener en cuenta las tendencias para valores menores.

Los ensayos clínicos aleatorizados deben adecuarse a las guías CONSORT (www.consort-statement.org) y los estudios con diseños no experimentales a las guías TREND (www.trend-statement.org/asp/trend.asp) para la mayor claridad de los lectores y revisores del trabajo. Igualmente, se presentarán los estadísticos del tamaño del efecto.

Discusión. Enfatizará los aspectos nuevos e importantes del estudio y las conclusiones que se derivan del mismo. No repita en detalle los resultados que ha presentado en la sección anterior ni en la introducción. Destaque lo más importante y controvertido y relacionelo con otros estudios relevantes sobre el tema. No haga suposiciones si no se ven apoyadas por los datos. Cuando sea apropiado pueden incluirse recomendaciones. Indique las implicaciones de sus hallazgos y sus

limitaciones (estas preferiblemente formarán un párrafo al final del artículo).

Reconocimientos. Este apartado se situará al final del texto del artículo y justo antes del apartado de Referencias. Cuando se considere necesario se citará a las personas, centros o entidades que hayan colaborado o apoyado la realización del trabajo. Pueden incluirse todas aquellas personas que hayan ayudado en la preparación del artículo, pero no con la intensidad requerida para ser considerados autores. Si el trabajo ha sido financiado se indicará la entidad financiadora.

Conflictos de intereses. Todos los artículos, editoriales, comentarios, opiniones, reseñas de libros y cartas que se publican en la revista estarán acompañados por una declaración sobre los posibles o reales conflictos de interés o una declaración de que los autores no tienen conflictos de intereses que declarar.

Referencias. Seguirán de forma estricta las normas de la American Psychological Association [American Psychological Association (2010). Publication Manual of the American Psychological Association (6th ed.). Washington, DC. <http://www.apastyle.org>]

Tablas y figuras. Irán al final del texto, numeradas, y cada una en una página distinta, siguiendo el diseño propio de la APA.

EL PROCESO DE REVISIÓN DEL MANUSCRITO

Los artículos son enviados a la revista a través de la www.adicciones.es. Los autores reciben al enviar el artículo unas claves para poder entrar en la web y revisar la situación de su artículo. No obstante el editor de la revista enviará un mensaje cuando tenga una decisión tomada o quiera preguntar alguna cuestión. Una vez recibido el manuscrito en la Redacción de la Revista Adicciones empezará el proceso de revisión.

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Los manuscritos serán enviados por el Editor o los Editores Asociados a dos o más expertos en el tema (revisores), que harán los comentarios pertinentes sobre el mismo y que requerirán aquellos cambios que estimen necesarios; también pueden dar su opinión sobre la aceptación o rechazo del artículo. La última decisión, basada en el informe de los revisores, o del editor asociado que se hubiese responsabilizado de la revisión, será tomada por el Editor de la revista, que podrá consultar además a los Editores asociados. En todo el proceso de revisión se mantendrá el principio de confidencialidad por parte de los revisores hacia el trabajo que revisan, así como la confidencialidad de los nombres de los revisores entre ellos o ante los autores del manuscrito.

El resultado de la revisión del manuscrito será enviado al autor de correspondencia que viene en el artículo indicándole su aceptación, rechazo o la necesidad de someterse a una nueva revisión una vez tenidos en cuenta los comentarios de los revisores o del editor. El autor, si es el caso, deberá hacer los cambios señalados –cuando esté de acuerdo con ellos–, enviando:

- Una copia del manuscrito revisado.
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Una vez aceptado el artículo, se enviará a los autores las pruebas de impresión para que las corrijan. Los autores son totalmente responsables de la versión final que se publique. Los autores pueden hacer el uso que crean pertinente para la difusión del artículo, siempre que quede clara toda la información necesaria acerca de la revista donde ha sido publicado.

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