

## Risk of Addiction: Its Prevalence in Adolescence and its Relationship with Security of Attachment and Self-concept

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### ABSTRACT

That study aims to analyze the prevalence of risk of addiction to psychoactive substances during adolescence, study the relationship between this risk and the representations of attachment and self-concept and analyze the relationship between attachment and self-concept. The Youth Inventory 4 (YI-4) test was administered to assess risk of addiction in 668 participants between 13 and 19 years old. Representations of the attachment were evaluated with *Cartes, Modèles Individuelles de Relation*, reduced version (CaMir-R), and self-concept dimensions, with *Autoconcepto Forma 5* (AF5). The results indicate a high risk of substance addiction in adolescence, 19.5%, both for boys and girls, CI between 15.4 and 24.3, with age being a risk factor. The prevalence of addiction risk decreases with high scores on security, which correlates  $-.22$  with such a risk and positive academic self-concept, correlating  $-.20$ .

### El riesgo de adicción: su prevalencia en la adolescencia y su relación con la seguridad del apego y el autoconcepto

### RESUMEN

Este estudio tiene como objetivo analizar la prevalencia del riesgo de adicción a sustancias psicoactivas durante la adolescencia, estudiar la relación entre este riesgo y las representaciones de apego y autoconcepto y analizar la relación entre el apego y el autoconcepto. Se realizó la prueba de inventario juvenil 4 (YI-4) para evaluar el riesgo de adicción en 668 participantes de entre 13 y 19 años de edad. Las representaciones de apego se evaluaron con la versión reducida del *Cartes*, cuestionario de evaluación del apego, versión reducida (CaMir-R) y dimensiones autoconceptuales, con *Autoconcepto Forma 5* (AF5). Los resultados indican un elevado riesgo de adicción a las sustancias en la adolescencia, 19.5%, tanto para niños como para niñas, CI entre 15.4 y 24.3, siendo la edad un factor de riesgo. La prevalencia del riesgo de adicción disminuye con altas puntuaciones en seguridad, que correlaciona con dicho riesgo  $-.22$  y el autoconcepto académico positivo, que correlaciona  $-.20$ .

According to the [World Health Organization \(2017\)](#), the abusive consumption of alcohol and illegal drugs among adolescents is a major concern in many countries. This consumption is related to risk behaviours, among which the WHO emphasizes reckless driving, sexual risk behaviours, and violent behaviours. The consumption of psychoactive substances during adolescence is predictive of a possible addiction or other problems related to consumption in adulthood ([Ledoux, Sizaret, Hassler, & Choquet, 2000](#)). Among psychoactive substances, alcohol requires a special mention, since socially there is a difference between high alcohol consumption among adolescents (which is assumed to be typical of age) and a disorder due to severe alcohol dependence ([Lindgren, Neighbors, Gasser, Ramirez, & Cvencek, 2017](#)). Alcohol consumption has been found to

be widespread among adolescents, beginning at a very early age and becoming a serious problem for society ([Pérez de Albéniz-Garrote, Rubio-Rubio, & Medina-Gómez, 2018](#)). In an American sample, the prevalence of alcohol drinking was of 21% for boys and 15% for girls between 12 and 18, and of 13% and 10% for boys and girls respectively when using illegal drugs ([Gadow & Sprafkin, 1999](#)). The adolescent age is a particularly risky one due to the increase of impulsive behaviour, which relates to the low development of executive functions of that moment of life which, a time of high experimentation, risk-taking, and learning associations ([Crews & Boettiger, 2009](#)).

Addictions are considered brain disorders based on the drug use and seeking regardless of harmful consequences ([Leonardi, Velluci, Mammucari, & Fanelli, 2015](#)). They are complex disorders that fit

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within a multifactorial model including genetic, temperamental, and environmental factors (Ibáñez, 2008; Tarter, Kirisci, & Mezzich, 2003). Among the risk and protection factors in addiction, relationship with the family environment and with peers stand out (Mielgo, Lobrigados, Calleja, & Cachero, 2012). These relationships affect emotional modulation: a low capacity to regulate them implies an increased risk of abuse of alcohol and other substances (Ceyhan, Boysan, & Kadak, 2019; Schreiber, Grant, & Odlaug, 2012).

According to Ledoux et al. (2000), although the peer group carries considerable weight for adolescents when taking psychoactive substances, this affiliation is influenced by the relationship with parents; peer group selection depends on the quality of family relationships (Jiménez, Musitu, & Murgui, 2006). During adolescence parents remain the main point of reference (Pérez de Albéniz-Garrote et al., 2018).

Self-concept is the perception that individuals have of themselves from a physical, social, and spiritual perspective (García & Musitu, 1999). A weak self-esteem, along with low recognition and appreciation of one's own emotions, will act as a vulnerability factor (Gutiérrez-Carmona & Expósito-López, 2015). This study is based on the multidimensional model of self-concept, a model that enables to differentiate the effect of self-concept on various areas of life, such as academic, social, emotional, family, and physis areas (Fuentes, García, Gracia, & Lila, 2011), each dimension of that model gives a different perspective of the effect of self-concept on the risk of addiction, so the multidimensional model offers the most concrete and adjusted measurements (Jiménez et al., 2006). According to several studies (Cava, Murgui, & Musitu, 2008; Fuentes et al., 2011; Musitu, Jiménez, & Murgui, 2007), factors such as family and academic self-concept have a protective role in substance consumption. However, as Fuentes et al. (2011) stated, the role of social self-concept is unclear, and could act as a risk factor: although social self-concept is associated with the acquisition of norms and values and with the formation of affective bonds (Fernández-Zabala, Goñi-Palacios, Rodríguez-Fernández, & Goñi-Grandmontagne, 2017), the fact that it is also related to peer group acceptance may influence its role as a risk factor. Some studies indicate that although peer relationships are related to the beginning of consumption, the quality of family relationships is related to continued consumption during adulthood (Barnow, Schuckit, Lucht, & John, 2002; Davis, Dumas, Wagner, & Merrin, 2016; Iraurgi Castillo, Sanz Vázquez, & Martínez-Pampliega, 2004). As autonomy is gained throughout adolescence, the influence of peer group grows and that of parents decreases (Oliva, Parra, & Sánchez, 2002). Even so, friends rarely become new attachment figures capable of providing security, although they do have a strong function of affiliation and as a group of influence (Markiewicz, Lawford, & Doyle, 2006). Family and peer group support brings with it better adaptive responses to the environment (Ramos-Díaz, Rodríguez-Fernández, Fernández-Zabala, Revuelta, & Zuazagoitia, 2016). Quality relationships with peers lead to good self-esteem and a lower risk of behavioural and emotional problems. However, an insecure type of attachment would lead the occasional consumption of substances to become a regular and lasting consumption (Miljkovitch, 2013; Pierrehumbert et al. 2002).

The aims of this paper are: a) to determine the prevalence of risk of addiction to psychoactive substances among adolescents aged between 13 and 19; b) to explore the relationship between this risk and the representations of attachment and with self-concept dimensions in this population; and c) to analyse the relationship between attachment and self-concept.

## Method

### Participants

To obtain the sample for this study, the total population of secondary school students in the Alt Empordà region of Girona,

Catalonia, Spain, was taken into account. It was considered pertinent to sample a fifth of that population (20%).

**Table 1.** Sociodemographic Characteristics of the Sample

Variables	<i>n</i>	%
Sex		
Male	303	45.4
Female	365	54.6
Age		
13	23	3.4
14	141	21.1
15	163	24.4
16	180	26.9
17	124	18.6
18	31	4.6
19	6	0.9
School year		
3rd ESO	193	28.9
4th ESO	175	26.2
1st year upper secondary	157	23.5
2nd year upper secondary	113	16.9
Vocational training	30	4.5

Using the multi-stage cluster random sampling technique, in which the conglomerate is the classroom, an initial sample of 740 students of lower (ESO, compulsory secondary education) and upper secondary (comprising two streams: *Bachillerato* – the academic pathway – and Vocational training – the vocational training pathway) was selected from the total universe of 5,427. Of that sample, 668 students (90.3%) showed up at the time the questionnaires were administered. The average age was 14.45 (*SD* = 1.88), with 303 (45.4%) boys and 365 (54.6%) girls (see Table 1).

**Table 2.** Risk of Substance Addiction based on Sex, Age, and School Year

Variables	<i>n</i>	%	95% CI	$\chi^2$	<i>p</i>
Sex					
Male	59	19.5	[15.4, 24.3]		
Female	71	19.5	[15.7, 23.8]	0.000	.995
Age					
13 to 14	13	7.9	[4.6, 13.0]		
15	25	15.3	[10.6, 21.6]		
16	43	23.9	[18.2, 30.6]		
17	35	28.2	[21.0, 36.7]		
18 to 19	14	37.8	[24.0, 53.9]	31.99	<.001
School year					
3rd ESO	18	9.3	[5.9, 14.3]		
4th ESO	31	17.7	[12.8, 24.0]		
1st year upper secondary	39	24.8	[18.7, 32.1]		
2nd year upper secondary	28	24.8	[17.7, 33.5]		
Vocational training	14	46.7	[30.2, 63.9]	32.09	<.001

### Instruments

**Cartes, Modèles Individuelles de Relation, Reduced version** (CaMir-R) (Balluerka, Lacasa, Gorostiaga, Muela, & Pierrehumbert, 2011). A short version of Pierrehumbert's CaMir test, which consists of 32 items answered on a 5-point Likert scale (1 = *totally disagree*, 5 = *totally agree*). CaMir evaluates seven dimensions related to attachment. According to its authors, this instrument has good psychometric properties. The internal consistency of each of its seven dimensions for this study, measured by means of Cronbach's alpha, were .87 for "security, availability, and support of attachment figures", .90 for "family

**Table 3.** Pearson's Correlation Indexes between Risk of Substance Addiction and the 7 Dimensions in the CaMir-R Test

Dimensions in the CaMir-R test	Risk of substance addiction
Security: availability of and support from attachment figures	-.22**
Family concern	-.07
Parental interference	.01
Parental authority value	-.19**
Parental overtolerance	.08*
Self-sufficiency and resentment towards parents	.07
Childhood trauma	.17**

Note. CaMir-R = Cartes, Modèles Individuelles de Relation, reduced version.

\* $p < .05$ , \*\*  $p < .01$ .

concern", .82 for "parental interference", .86 for "parental authority value", .69 for "parental overtolerance", .79 for "self-sufficiency and resentment towards parents", and .85 for "child trauma".

The "security" dimension is associated with a secure attachment, "family concern" and "parental interference" dimensions refer to an anxious insecure attachment, "self-sufficiency" to an insecure avoidant attachment, and "child trauma" to a disorganized attachment. "Parental authority value" and "parental overtolerance" refer to representations of family structure (Balluerka et al., 2011).

**Autoconcepto Forma 5 (AF5)** (García & Musitu, 1999; Catalan version by Malo et al., 2014). This test allows self-concept to be assessed from a multidimensional point of view. It has five dimensions with an eleven-point Likert-scale assessment (0 = *never*, 10 = *always*). The internal consistency for its dimensions, measured by Cronbach's alpha were .91 for "academic self-concept", .76 for "social self-concept", .75 for "emotional self-concept", .80 for "family self-concept", and .77 for "physical self-concept".

**Youth's Inventory-4 (YI-4)** (Gadow & Sprafkin, 1999). This self-report type test, which has 120 items answered on a four-point Likert scale (0 = *never*, 3 = *very often*), identifies behavioural and emotional disorders taking the classification of symptoms from the American Psychiatric Association's Manual of Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV; APA, 1994) as a reference. For the present study, only the 6 items related to substance consumption in category O were considered. Those items are related to the frequency of consumption of various substances and to behaviours that may accompany that consumption. The internal consistency of these items for this study was  $\alpha = .78$ .

## Procedure

Due authorizations were requested from the Department of Education of Catalonia Government and from principals of the schools whose students took part in the sample; they were informed of research aims, assuring them of participants' anonymity and data confidentiality. Parents and legal tutors were informed of the study through the schools, and gave their informed consent to the same school.

Of the eighteen schools contacted, six agreed to participate in the study: five state schools and one private.

The questionnaires were administered in groups in classrooms during school time. Participants received specific and homogeneous instructions to ensure the questionnaires were answered correctly. Researchers were present in the classroom while students completed the questionnaires to offer help or clarifications if necessary.

## Data Analysis

For the first objective, frequency distribution was calculated and the two groups, in or out of risk, were compared according to sociodemographic variables. The chi-square test was used to this end. Next, correlations between the dimensions of the CaMir-R and the AF5, and the dimensional evaluation of the YI-4 were calculated.

Given the few participants aged 13 and 19 in the study, and in order to have more homogeneous age groups, 13 and 14 year-olds and 18 and 19 year-olds were put together in single groups.

All participants who met the risk criteria established in YI-4 (Gadow & Sprafkin, 1999) were considered a case of substance addiction risk.

Finally, a hierarchical logistic regression was used to build a model with factors that best predicted risk of substance addiction. The level of statistical significance required in all tests was  $p < .05$ .

Statistical analysis of the data was carried out using version 22.0 of SPSS statistical package.

## Results

### Risk Analysis of Dependence in the Sample Studied

Of the studied sample, 19.5% presented risk of substance addiction according to YI-4 criteria, with no gender differences observed (see Table 2). There was an increase in risk according to age, from 7.9% in participants aged 13 to 14 to 37.8% in the group aged 18 to 19. The risk also increased depending on the school year, rising from 9.3% for students in the 3rd year of ESO to 24.8% for students in the final year of upper secondary, and 46.7% for students in vocational training.

**Table 4.** Pearson's Correlation Indexes between Risk of Substance Addiction and the 5 Dimensions in the AF5 Test

Dimensions in the AF5 test	Risk of substance addiction
Academic Self-concept	-.20 **
Social Self-concept	-.11**
Emotional Self-concept	-.03
Family Self-concept	-.02
Physical Self-concept	-.05

Note. AF5 = self-concept AF5.

\* $p < .05$ , \*\*  $p < .01$ .

### Study of the Relationship between Risk of Substance Addiction and Dimensions in CaMir-R and AF5

A negative, significant correlation of the risk of substance addiction was observed with CaMir-R test's "security, availability of and support from attachment figures" and "parental authority value" dimensions (see Table 3). The correlation was positive and significant for "parental overtolerance" and "child trauma" dimensions.

In relation to self-concept, academic and family dimensions correlated negatively and significantly with the risk of substance addiction (see Table 4).

### Risk of Substance Addiction: Predictive Variables

A hierarchical logistic regression was performed, sociodemographic variables (age and sex) were introduced in the first block, AF5

**Table 5.** Results of Logistic Regression

Block	Variable	B	SE B	Wald $\chi^2$	df	p	Exp(B)	R <sup>2</sup> Nagelkerke
1	Age	0.47	0.10	21.88	1	< .001	1.60	.083
2	AF5 Academic	-0.31	0.71	18.34	1	.001	0.74	.147
3	Security (CaMir-R)	-0.57	0.17	11.48	1	.001	1.77	.184
	Constant	-7.50	1.79	17.56	1	< .001	0.001	

Note. CaMir-R = Cartes, Modèles Individuelles de Relation, short version; AF5 = self-concept AF5.

dimensions were introduced in the second, and in the third, the ones of CaMir-R. The model correctly classifies 80.3% of the participants. Nagelkerke's  $R^2$  was .184. The variables that entered the regression were age in the first block, academic self-concept in the second block, and security in the third block. Table 5 shows coefficients for variables that entered each block.

### Correlation between Dimensions of CaMir-R and AF5 Tests

Although many of the correlations between the dimensions of CaMir-R and AF5 are significant, most of them are of a small magnitude. Nevertheless, the correlation coefficient between "family self-concept" (AF5) and some of the dimensions of CaMir-R, such as "security, availability of and support from attachment figures", "child trauma" and "self-sufficiency and resentment towards the parents" are of a medium or big size. Table 6 shows all the correlation indexes.

### Discussion

The first objective of this study was to determine the prevalence of risk of addiction to psychoactive substances among adolescents aged between 13 and 19. The results confirm previous studies which conclude that there is a higher consumption of alcohol and other substances during adolescence and early youth from ages 12 to 25 (Davis et al., 2016). Alcohol consumption stands out for its prevalence compared to illegal drugs in this study. It is also the substance that adolescents acknowledge earlier consumption, results that agree with Pérez de Albéniz-Garrote et al.'s (2018).

As already noted by Ledoux et al. (2000), the difference in consumption between boys and girls tended to decrease over recent decades. The results of our study indicate that this factor does not affect prevalence of consumption risk in the sample studied.

Age, on the other hand, does act as an important factor in prevalence regarding the risk of substance addiction. It is worth noting a very high prevalence, close to 50%, among students in vocational training; however, the population of students in vocational training

in our study represents only 4.5% of the total, a limiting factor when it comes to drawing conclusions. Taking into account the conclusions of studies by Iraurgi et al. (2004) and Davis et al. (2016), according to which peer group is related to the beginning of consumption, but the type of family relationships is related to the continuity of this consumption, it is worth considering the importance of reference figures continuing to provide security throughout adolescence. Referring again to students in vocational training in our sample, they live in a region where there is a known prevalence of dysfunctional families.

Regarding the second objective of this study, a lower prevalence of risk of addiction to substances is observed with high scores in security in attachment. Pierrehumbert et al. (2002) concluded that difficulties in regulating emotions linked to an insecure or disorganized attachment make it difficult for individuals to reduce their anxiety, which can then lead them to seek out new emotions or "self-medicate" and return to their dependence on substances.

The risk of addiction has a significant and negative correlation with both academic and social self-concept; so, unlike Fuentes et al., 2011, we do find this social effect, even if it is a low effect. The positive or negative influence of the social group depends on the choice of friends and on the ideology the group about consumption of substances (Cava, Murgui, & Musitu, 2008). The choice of friends is also mediated by the relationship with the family and the values and self-esteem obtained at home (Ramos-Díaz et al., 2016).

Age appears to be an important risk factor, contributing more to the explained percentage of the model than any other variable; adolescence is a time for experimentation and, as years go by, there is more time for active learning associations which would lead to a more intense consumption. Also, after alcohol initiation, intensive drinking can lead to brain damage in the frontal areas, which, at its time, would result in a progressive loss of control over substance use (Crews & Boettiger, 2009). As the adolescent grows, parental and scholar control lowers, which can also explain an increase in experimentation and in risk of addiction.

The influence of academic self-concept also stands out, since it minimizes the risk of addiction (Fuentes et al., 2011).

A secure relationship with respect to one's parents, which entails

**Table 6.** Correlation between the Dimensions in the CaMir-R and AF5 Tests

CaMir-R Dimensions	AF5 Dimensions				
	Academic self-concept	Social self-concept	Emotional self-concept	Family self-concept	Physical self-concept
Security; availability of and support from attachment figures	.19**	.18**	.03	.58**	.27**
Family concern	.06	.08	-.31**	.18**	.07
Parental interference	-.16**	.03	-.21**	-.26**	-.12**
Parental authority value	.17**	.10**	-.09**	.29**	.11**
Parental overtolerance	-.15**	.03	-.02	-.11	.01
Self-sufficiency and resentment towards parents	-.15**	-.06	-.12**	-.35**	-.13**
Childhood trauma	-.21**	-.07	-.14**	-.41**	-.16**

Note. CaMir-R = Cartes, Modèles Individuelles de Relation, short version; AF5 = self-concept AF5.

\* $p < .05$ , \*\* $p < .01$ .



respect for their authority, a feeling of pertinence to the family group, and, in summary, a good family functioning, also lowers the risk of substance addiction (Iraurgi et al., 2004).

Finally, and with respect to the third objective of this study, a remarkable correlation is observed between “family self-concept” (AF5) and some of the dimensions of the CaMir-R, this correlation being big and positive with security in attachment, but negative and of medium size for child trauma, related to a disorganized attachment and self-sufficiency, related to an avoidant insecure attachment, so a relationship seems to exist between how attachment is represented and family self-concept. “Emotional self-concept” has a medium size, negative correlation with the dimensions that represent anxious insecure attachment, “family concern” and “parental interference”, which matches Pierrehumbert's (2002) idea that a disorganized attachment links with a poor emotional regulation, making it especially difficult to reduce anxiety.

Applying collectively the tests of this study represents a limitation in itself. The fact that there were few participants aged between 18 and 19 and that most of them were doing vocational training is also a limitation. The use of cohort studies, of an experimental or quasi experimental design, or statistic technics based on risk and odds ratio would give the results a deeper dimension.

### Conflict of Interest

The authors of this article declare no conflict of interest.

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