

1 Article

2 Analysis of the relationship between emotional 3 intelligence, resilience and family functioning in 4 adolescent sustainable use of alcohol and tobacco

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12 **Abstract:** The use of alcohol and tobacco is related to several variables which act as risk or protective
13 factors, depending on the circumstances. The objectives of this study were to analyze the
14 relationship between emotional intelligence, resilience and family functioning in adolescent use of
15 alcohol and tobacco and to find emotional profiles for their use considering self-concept. The sample
16 was made up of 317 high school students aged 13 to 18 who filled out the Brief Emotional
17 Intelligence Inventory, the Resilience Scale for Adolescents, the APGAR Scale, the Alcohol
18 Expectancy Questionnaire - Adolescents and the Five-Factor Self-Concept Questionnaire. The
19 results revealed that emotional intelligence and resilience, specifically, stress management and
20 family cohesion were significant in the group of nonusers. Family functioning acts as a predictor
21 factor for onset of use of tobacco and alcohol. Positive expectancies about drinking alcohol were
22 found to be a risk factor and the intrapersonal factor to be protective. Both stress management and
23 family cohesion were protective factors against smoking. Furthermore, cluster analysis revealed
24 emotional profiles for users of both substances based on self-concept. Finally, the importance of the
25 direction of the relationship between the variables studied for intervention in this problem should
26 be mentioned. Responsible use by improving adolescent decision-making is one of the results
27 expected from this type of intervention.

28 **Keywords:** substance use; emotional intelligence; resilience; family functioning; adolescents

30 1. Introduction

31 Adolescence is one of the most vulnerable stages of development, the beginning of
32 experimentation in different areas, sensation-seeking and social influence [1] versus family [2,3] and
33 peer-group pressure [4], along with other changes adolescents must cope with. This period is
34 therefore associated with health problems, such as use of alcohol and tobacco [5,6,7]. According to
35 recent surveys carried out on the use of legal and illegal drugs in secondary education (ESTUDES
36 2016-2017) in Spain, the substances most used by order of importance are alcohol, tobacco and
37 cannabis, followed by hypnotosedatives, psychoactive substances, cocaine, ecstasy, and other
38 substances [8]. There is also a relationship between the use of tobacco and alcohol among adolescents,
39 in which the probability of smoking is ten times higher than drinking alcohol [9]. Many studies have
40 been done over the years on the relationship between these two substances, as well as their
41 repercussions in adolescence [10,11]. Among these consequences are decreased academic
42 performance [12], increased impulsivity [13], and both physical and verbal [14,15] violent behavior
43 [16] in the school [17].

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46 1.1. Risk and protection factors of using alcohol and tobacco

47 The effects of smoking and alcohol cause long-term physical and psychological harm to the
48 organism [18,19]. These consequences are linked to a series of risk or protection factors. Age and
49 gender and some personality traits are factors influencing the onset of alcohol and tobacco use [20].
50 The study by Granja et al. [10], for example, found that use of alcohol was higher in men than in
51 women. This risk behavior is also linked to adolescent emotional skills. Thus, youths who have low
52 emotional intelligence are prone to use tobacco and alcohol more [21], and on the contrary,
53 adolescents with high emotional intelligence levels show less inclination toward their use [22] and
54 good psychosocial adjustment. According to Fainsilber, Stettler, & Gurtovenko [23], stress
55 management helps individuals control their emotions, which act as mediators to stressful situations.
56 At the same time, not only adolescents' emotional regulation is associated with the use of alcohol and
57 tobacco, but also their resilience, which may be defined as their capacity to achieve adaptive results
58 in spite of having been exposed to adverse situations [24]. Some studies have found emotional
59 intelligence and resilience to have a positive relationship, which is more significant in the emotional
60 repair factor. Individuals who have good emotional control will therefore have higher levels of
61 resilience [25,26]. There is also a positive relationship between resilience and self-efficacy in students
62 [27].

63 Resilience is negatively associated with substance use, and specifically, with the attitude toward
64 use of alcohol and tobacco [28]. In a study with university students, Rudzinski, McDonough, Partner,
65 & Strike [29] showed the influence of resilience on alcohol, tobacco and other drug use behavior, in
66 which low scores on using these substances were associated with high levels of resilience. In this line,
67 a study done with adolescents, showed that nonusers of alcohol or those who did so infrequently had
68 high levels of resilience [30]. Therefore, one of the factors that predicts low resilience is frequency of
69 use [31].

70 With regard to frequency of use of alcohol and tobacco by adolescents, both use by the peer
71 group [32] and family members [33] are predictive factors in their onset, when expectancies of use
72 are fundamental [34]. Use of alcohol is also linked to group pressure and to perceived social support
73 from the family [35]. Acquisition of risk conduct is therefore influenced by both individual [36] and
74 family factors [37]. The latter, according to Trujillo-Guerrero, Vázquez-Cruz, & Córdova-Soriano [38],
75 did not find any association between perception of parents' family functioning and use of alcohol by
76 their adolescent children. However, Ohannessian, Flannery, Simpson, & Russell [39], did find a
77 significant negative link between alcohol use and family functioning. That is, youths who perceive
78 little affectivity from their family, or belong to a dysfunctional family in which conflicts prevail,
79 usually show more substance use. Thus, the influence of family functioning has been confirmed as a
80 predictive factor in starting to consume substances such as alcohol [39,40]. Adolescents with medium-
81 to-high dependence on smoking show severe and moderate family dysfunction compared to
82 nonsmokers, and among these, family functioning is significantly higher [41].

83 In another vein, smoking and drinking by youths is also related to high levels of social self-
84 concept [42]. Use of alcoholic beverages has been found to influence academic, emotional and family
85 self-concept, but not physical self-concept [43]. However, these authors did mention the influence of
86 smoking on the physical, family and academic dimensions. Meanwhile, Mezquita et al. [44] indicated
87 a positive relationship between physical and social self-concept and alcohol use, acting as
88 potentiators of their intake.

89 Keeping in mind some of the above variables, in the study by Chacón et al. [45], tobacco and
90 alcohol use profiles were found in which smoking was linked to improper use of alcohol and illegal
91 drugs. Use of alcohol has also been associated with friends who drink and smoke. Pérez-Fuentes,
92 Molero, Barragán, & Gázquez [46] identified profiles of violence and use of alcohol and tobacco in
93 relation to impulsivity.

94 These risk behaviors by the adolescent population lead to social problems which demand
95 intervention directed at developing prosocial behavior. Responsible use by improving adolescent
96 decision-making is one of the results expected from this type of intervention. Thus, social self-concept
97 is a determining factor in the intensity of response.

98 The actions necessary for coping with social problems such as use of alcohol and tobacco can be
99 carried out in the educational environment [47]. Durkheim [48], from the focus of Sociology of
100 Education, emphasized the presence of a set of common beliefs which lead to developing collective
101 action, where individuals should act according to the norms established by society.

102 Therefore, for each phenomenon studied here, there must be adequate decision-making
103 management by the individual [49], which promote the sustainable development of personal
104 responsibility and resources. This approach to these social phenomena would facilitate social balance
105 and adequate development of sustainable life styles [50].

106 At the present time, there are few studies analyzing the relationship between alcohol and
107 tobacco use, emotional intelligence, resilience, family functioning and self-concept together in high
108 school students.

109 1.2. Study Objectives

110 The objective of this study was to analyze the relationship between emotional intelligence,
111 resilience and family functioning in adolescent use of alcohol and tobacco, and to establish emotional
112 profiles for users of both substances considering self-concept.

113 In view of previous empirical evidence, the following hypotheses were posed: (1) There are
114 significant differences in emotional intelligence, resilience and family functioning between alcohol
115 and tobacco user and nonuser groups; (2) Adolescents with higher positive expectancies about the
116 effects of alcohol have a higher risk of being users; (3) adolescents with high levels of stress
117 management and family cohesion show lower risk of becoming smokers; and (4) there are significant
118 differences in self-concept between user groups with high and low means in emotional intelligence.

119 To summarize, it is intended to acquire information on the individual characteristics of a
120 population in which problems emerge, which share common educational spaces where the basis for
121 this social perspective can be laid down.
122

123 2. Materials and Methods

124 2.1. Participants

125 The sample was comprised of 317 students from high schools in the province of Almería (Spain)
126 aged 13 to 18 with a mean age of 14.93 ($SD=1.065$). Of these, 50.8% ($n=161$) were boys and 49.2%
127 ($n=156$) were girls. The mean age of boys was 14.85 ($SD= 1.008$) and of girls 15.01 years ($SD = 1.119$).
128 Of the total sample, 61.5% ($n=195$) were in third year of high school and 38.5% ($n=122$) were in their
129 fourth year.

130 2.2. Instruments

131 *Brief Emotional Intelligence Inventory for Senior Citizens (EQ-I-M20)*. The Brief Emotional
132 Intelligence Inventory for Senior Citizens (EQ-i-20M), adapted from the Emotional Intelligence
133 Inventory: Young Version (EQ-i:YV) by Bar-On and Parker [51], validated and scaled for an adult
134 Spanish population [52], was used. It consists of 20 items with four answer choices on a Likert-type
135 scale (1=never happens to me, and 4=always happens to me) and five factors: Intrapersonal,
136 Interpersonal, Stress Management, Adaptability and Mood. Internal consistency of the instrument is
137 adequate with .89 [51]. Reliability of the five-factor Spanish version, varies from .63 to .80 [53]. In the
138 brief version, the Cronbach's Alpha was .57 for the Intrapersonal factor, .80 for the Interpersonal
139 factor, .68 for Stress Management, .81 for Adaptability and .83 for the Mood factor. In this sample the
140 instrument showed reliability of .77 for the Intrapersonal scale, .67 for the Interpersonal scale, .76 for
141 Stress Management, .46 for Adaptability and for Mood .83. Internal consistency of the instrument
142 was .78.

143 *Resilience Scale for Adolescents (READ)*. The Spanish adaptation and validation for a Mexican
144 population [54] of the original scale by Hjemdal et al. [55] was used. The scale has five factors:
145 Personal Competence, Social Competence, Family Cohesion, Social Resources and Orientation
146 toward Goals, distributed in 22 items. The Cronbach's alpha was .85 in Family Cohesion, .69 in

147 Personal Competence, .80 in social competence, .85 in social resources, and .76 in Orientation toward
148 Goals. The internal consistency of the instrument was .90.

149 *Family Functioning Scale* (APGAR) [56]. This instrument is a Spanish adaptation of the original
150 scale [57], consisting of five components for evaluating family functioning: adaptation,
151 association/society, growth, affection and resolution. Items are answered 0 “hardly ever, 1 “some of
152 the time” or 2 “most of the time”. There are also three categories of functionality, severe dysfunction
153 (0 to 3), moderate dysfunction (4 to 6) and family functioning (6 or more). The Cronbach’s alpha is
154 0.75.

155 *Alcohol Expectancy Questionnaire-Adolescent, Brief* (AEQ-AB) [58] Spanish adaptation by Gázquez
156 et al. [34], evaluates the expectancies of use in an adolescent population quickly and simply, given
157 the brief extension of the questionnaire and the adequacy of the model of expectancies on which it is
158 based. It is comprised of seven items rated on a five-point Likert-type scale (from 1 “strongly agree”
159 to 5 “strongly disagree”). The questionnaire is made up of two factors, one measuring positive effects
160 (four items) and the other negative effects (three items). The Cronbach’s Alpha on the positive factor
161 was .65 and on the negative factor .16. The internal consistency of the instrument was .56.

162 *Five-Factor Self-concept Questionnaire* (AF5) [59]. This questionnaire has 30 items distributed in
163 five dimensions: Academic/Work, Social, Emotional, Family and Physical. Answered on a five-point
164 Likert scale where 1 is “completely disagree” and 5 “completely agree”. The authors of the
165 questionnaire found a Cronbach’s alpha of .81. The validity of this construct has been verified by
166 several different studies [60]. In the one by Morales [61], for example, the alpha for Academic/Work
167 was .84, for Social .84, for Emotional .46, for Family .74 and for Physical .75. In this study, the alpha
168 for consistency of the total instrument was .78. For the Academic/Work dimension the Cronbach’s
169 alpha was .85, for Social it was .22, for Emotional .65, for Family .17 and for Physical .79.

170 2.3. Procedure

171 To carry out the study, the high school principals and participants were informed of its
172 objectives, methods and data usage. The students were also told that their participation was
173 voluntary and given the instructions necessary to complete the questionnaire. They were also
174 informed of the anonymity of their answers and confidentiality in handling the data. Each of the
175 participants had the opportunity to give his informed consent to comply with research ethics.

176 2.4. Data analysis

177 First, the data on frequency of use of alcohol and tobacco were analyzed for sociodemographic
178 variables by frequency analysis. Then to explore the relationship of the variables, a correlation
179 analysis was performed for continuous quantitative variables, and a Student’s *t* test and ANOVA for
180 categorical variables.

181 After that, a binary regression analysis was done using the Enter method. For this, the dependent
182 variables were use of alcohol and tobacco, with a dichotomous answer (yes/no). The predictor
183 variables included were emotional intelligence (intrapersonal, interpersonal, stress management,
184 adaptability and mood), resilience (family cohesion, personal competence, social competence, social
185 resources and orientation toward goals), and family functioning.

186 Finally, taking the group of users in the sample, a two-step cluster analysis was done to
187 determine the different profiles by emotional intelligence dimensions. Once the groups or clusters
188 had been identified, a comparative analysis of means determined the existence of significant
189 differences between the groups with respect to the components of self-concept using the Student’s *t*
190 for independent samples and Cohen’s *d* (1988) to test for the effect size of the differences found. The
191 SPSS version 23.0 statistical package for Windows was used for data processing and analysis.

192

193 3. Results

194 3.1. Use of alcohol and tobacco

195 37.5% ($n=119$) of the sample answered affirmatively when they were asked if they drank alcohol,
 196 and 12.3% ($n=39$) of the sample said they smoked. By sex, of those who drank alcohol, 49.6% ($n=59$)
 197 were boys and 50.4% ($n=60$) were girls. In the group of smokers, 41% ($n=16$) were boys and 59% ($n=23$)
 198 were girls.
 199

200 3.2. Emotional intelligence, resilience and family functioning: relationship with alcohol and tobacco use

201 The means for each of the dimensions of emotional intelligence in the user/nonuser groups were
 202 compared. As observed in the table, nonusers of alcohol ($M=2.68$; $SD=.78$) scored significantly higher
 203 in Stress Management ($t_{(315)}=2.33$; $p<.05$; $d=.27$) than the user group ($M=2.45$; $SD=.95$). Comparing the
 204 users ($M=2.22$; $SD=.72$) and nonusers of tobacco, the latter also scored higher ($M=2.64$; $SD=.86$) in the
 205 Stress Management dimension ($t_{(315)}=2.92$; $p<.01$; $d=.34$).

206 Concerning the components of resilience in the user/nonuser groups of alcohol/tobacco, those
 207 who did not drink ($M=3.98$; $SD=.78$) had significantly higher scores in family cohesion ($t_{(315)}=2.00$;
 208 $p<.05$; $d=.23$) than drinkers ($M=3.79$; $SD=.87$). The differences between smokers ($M=2.22$; $DT=.72$) and
 209 non-smokers ($M=2.64$; $SD=.86$) were also observed in family cohesion ($t_{(315)}=2.37$; $p<.05$; $d=.28$), where
 210 non-smokers scored higher.

211 Finally, the results of the analysis of mean scores on family functioning were compared in
 212 user/nonuser groups of alcohol and tobacco. In this case, there were no significant differences
 213 between users/nonusers of alcohol ($t_{(315)}=1.38$; $p=.16$). Results for tobacco showed significant
 214 differences in family functioning ($t_{(315)}=2.77$; $p<.01$; $d=.32$), between smokers ($M=6.48$; $DT=.2.67$) and
 215 non-smokers ($M=7.57$; $DT=.2.24$), who had the highest scores.

216 Frequency of use of alcohol did not correlate with any of the emotional intelligence factors
 217 (Intrapersonal: $r= .07$; $p=.39$; Interpersonal: $r= .06$; $p=.45$; Stress Management: $r= -.14$; $p=.10$;
 218 Adaptability: $r= .00$; $p=.92$; Mood: $r= .08$; $p=.32$), Resilience (Family cohesion: $r= -.13$; $p=.11$; Personal
 219 competence: $r= -.34$; $p<.001$; Social Competence: $r= -.34$; $p=.06$; Social Resources: $r= .01$; $p=.77$;
 220 Orientation toward Goals: $r= -.05$; $p=.53$), and Family Functioning ($r= -.03$; $p=.71$).

221 Similarly, frequency in use of tobacco did not show any correlation with the emotional
 222 intelligence factors (Intrapersonal: $r= .17$; $p=.20$; Interpersonal: $r= .20$; $p=.13$; Stress management: $r= .00$;
 223 $p=.99$; Adaptability: $r= -.01$; $p=.93$; Mood: $r= .18$; $p=.18$), Resilience (Family Cohesion: $r= -.09$; $p=.50$;
 224 Personal Competence: $r= .17$; $p=.20$; Social Competence: $r= .25$; $p=.06$; Social Resources: $r= .09$; $p=.50$;
 225 Orientation toward Goals: $r= -.06$; $p=.64$), and Family Functioning ($r= .19$; $p=.17$).

226 In view of the absence of correlations between the study variables and frequency of use of
 227 alcohol/tobacco, explanatory models were constructed taking use of either of the substances (yes/no)
 228 as the criterion variable instead of frequency. The binary logistic regression models for use of alcohol
 229 and tobacco are presented below.
 230

231 3.3. Logistic regression model: alcohol

232 For the logistic regression analysis, use of alcohol was the dependent variable, for which it was
 233 first dichotomized into two categories, users, representing 37.5% ($n= 119$) and nonusers, with 62.5%
 234 ($n= 198$).

235 The predictor variables entered in the equation were emotional intelligence (Intrapersonal,
 236 Interpersonal, Stress Management, Adaptability, Mood), resilience (Family Cohesion, Personal
 237 Competence, Social Competence, Social Resources and Orientation toward Goals), family functioning
 238 and expectancies (positive and negative) about using alcohol. Table ^a presents these variables, the
 239 regression coefficients, standard error of estimation Wald statistic, with degrees of freedom and the
 240 associated probability, the partial correlation coefficient and odds ratio.

241 The odds ratio found for each variable showed that: a) the risk of drinking alcohol is higher in
 242 adolescents with positive expectancies about the effects of its use; and b) the intrapersonal factor acts
 243 as a protective factor insofar as the probability of drinking is concerned. Therefore, subjects who have
 244 a higher mean score in this construct are at less risk of drinking alcohol.

245 **Table 1.** Results derived from the logistic regression for the probability of drinking alcohol

Variables	β	S.E.	Wald	df	Sig.	Exp(β)	CI 95%
Intrapersonal	-.45	.19	5.20	1	.02	1.57	1.06-2.32
Interpersonal	-.32	.25	.01	1	.90	.96	.58-1.60
Stress Management	-.18	.16	1.26	1	.26	.83	.60-1.14
Adaptability	.19	.18	1.17	1	.27	1.22	.85-1.75
Mood	-.04	.20	.03	1	.84	.96	.64-1.44
Family Cohesion	-.35	.23	2.27	1	.13	.70	.44-1.11
Family Competence	-.11	.23	.23	1	.62	.89	.56-1.40
Social Competence	.29	.19	2.28	1	.13	1.34	.91-1.96
Social Resources	.18	.22	.64	1	.42	1.20	.76-1.88
Orientation toward Goals	-.20	.21	.91	1	.33	.81	.53-1.24
Family Functioning	-.01	.07	.05	1	.82	.98	.85-1.13
Positive Expectancies	.79	.18	19.16	1	.00	2.21	1.55-3.16
Negative Expectancies	.29	.17	2.71	1	.09	1.34	.94-1.91
Constant	-3.27	1.25	6.8	1	.00	.03	

246 Overall goodness of fit of the model ($\chi^2= 55.39$; $df= 13$; $p<.001$) was confirmed by the Hosmer-
 247 Lemeshow test ($\chi^2= 8.75$; $df= 8$; $p= .36$). The Nagelkerke R^2 coefficient showed that 21.8% of the
 248 variability in the response variable was explained by the logistic regression model. Based on the
 249 classification table, the estimated probability of the logistic function being correct was 67.8% with a
 250 false positive rate of .15 and of false negatives .39.

252 3.4. Logistic regression model: tobacco

254 To take smoking as the dependent variable for the logistic regression, it was dichotomized in
 255 two categories: smokers, representing 12.3% ($n= 39$) and nonsmokers, with 87.7% ($n= 278$).

256 The predictor variables entered in the equation were emotional intelligence (Intrapersonal,
 257 Interpersonal, Stress Management, Adaptability, Mood), resilience (Family Cohesion, Personal
 258 Competence, Social Competence, Social Resources, Orientation toward Goals), and family
 259 functioning. Table 2 shows these variables, the regression coefficients, the standard error of
 260 estimation, the Wald statistic, with degrees of freedom and the associated probability, the partial
 261 correlation coefficient and the odds ratio.

262 The odds ratio found for each variable showed that: a) Adolescents with higher scores in family
 263 cohesion have a lower risk of being a smoker, or in other words, family cohesion would be acting as
 264 a protective factor against probability of being a smoker; and b) in emotional intelligence, Stress
 265 Management was the significant (protective) factor in the logistic equation.

266 **Table 2.** Results derived from the logistic regression for probability of being a smoker

Variables	β	S.E.	Wald	df	Sig.	Exp(β)	CI 95%
Intrapersonal	.21	.25	.69	1	.40	1.24	.74-2.05
Interpersonal	.35	.35	.99	1	.32	1.42	.70-2.86
Stress Management	-.71	.24	8.51	1	.00	.48	.30-.79
Adaptability	-.00	.28	.00	1	.98	.99	.56-1.74
Mood	-.18	.27	.47	1	.49	.82	.48-1.42
Family Cohesion	-.71	.29	5.92	1	.01	.48	.27-.87
Family Competence	.19	.31	.39	1	.52	1.21	.66-2.23
Social Competence	.05	.27	.04	1	.83	1.05	.61-1.81
Social Resources	.51	.31	2.60	1	.10	1.66	.89-3.10

Orientation toward Goals	-.33	.29	1.26	1	.26	.71	.40-1.27
Family Functioning	-.07	.09	.54	1	.46	.93	.76-1.12
Constant	.23	1.47	.02	1	.87	1.26	

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Overall goodness of fit ($\chi^2= 27.41$; $df= 11$; $p<.01$) was confirmed by the Hosmer-Lemeshow test ($\chi^2= 4.51$; $df= 8$; $p= .80$). The Nagelkerke R^2 coefficient indicated that 15.8% of the variability in the response variable was explained by the logistic regression model. Based on the classification table, the estimated probability of the logistic function being correct was 88%, with a false positive rate of .007 and of false negatives .076.

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3.4. Emotional profiles of drinkers and differences in self-concept

To form the groups, a two-step cluster analysis was performed with the emotional intelligence dimensions. Two user groups resulted from inclusion of these variables (Figure 1), with the following distribution: 37.8% ($n=45$) of the subjects were in Cluster 1, and 62.2% ($n=74$) in Cluster 2. Table 3 summarizes the mean scores on the variables analyze, both for the total sample of drinkers and for each of the clusters.

Table 3. Mean scores for the total sample of drinkers and clusters

	Total sample of drinkers ($N=119$)	Clúster	
		1 ($n=45$)	2 ($n=74$)
Intrapersonal	$M=2.25$ ($SD=.76$)	$M=2.96$ ($SD=.50$)	$M=1.82$ ($SD=.54$)
Interpersonal	$M=2.98$ ($SD=.62$)	$M=3.30$ ($SD=.42$)	$M=2.79$ ($SD=.64$)
Stress management	$M=2.45$ ($SD=.95$)	$M=2.40$ ($SD=1.30$)	$M=2.47$ ($SD=.67$)
Adaptability	$M=2.86$ ($SD=.62$)	$M=3.10$ ($SD=.55$)	$M=2.71$ ($SD=.61$)
Mood	$M=2.99$ ($SD=.78$)	$M=3.45$ ($SD=.51$)	$M=2.71$ ($SD=.79$)

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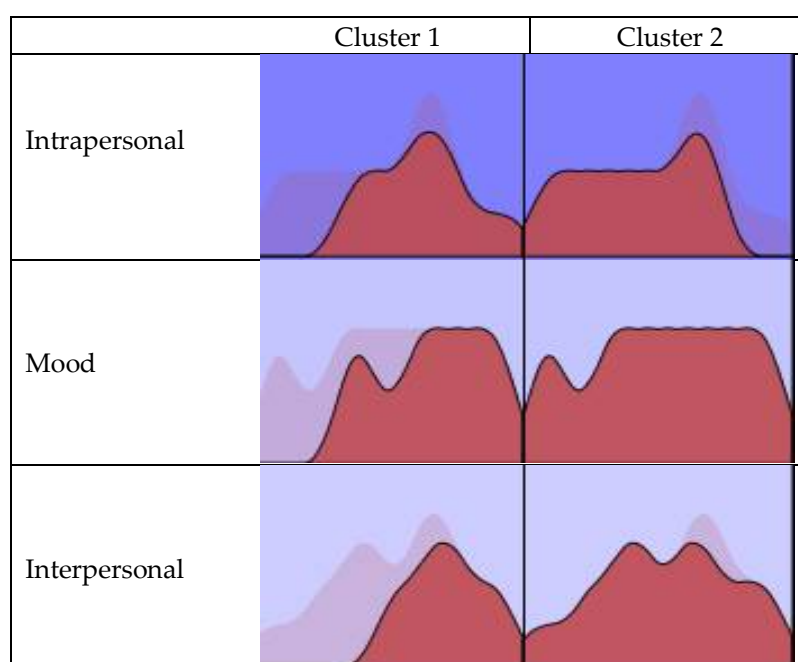
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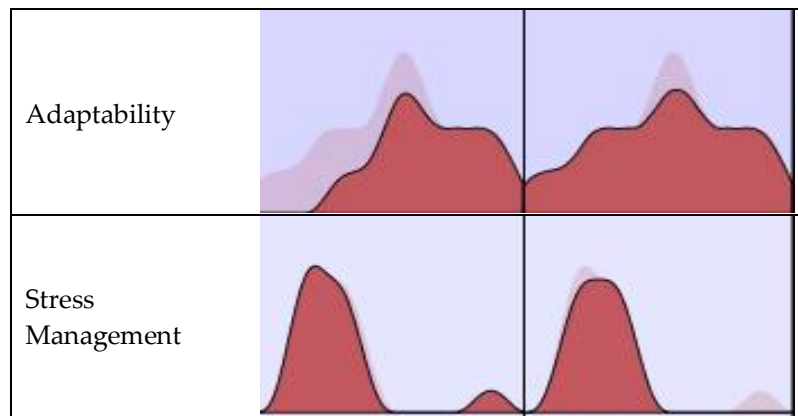
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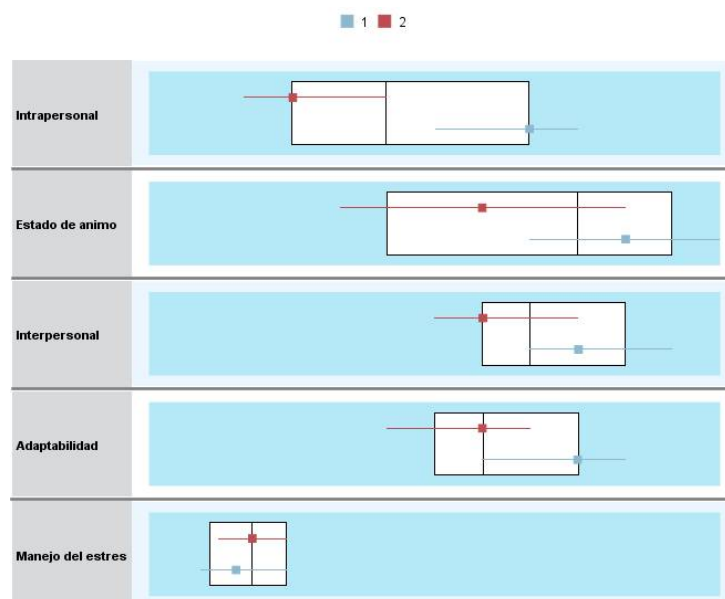
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The first group resulting from the cluster analysis (Cluster 1), was characterized by showing mean scores above the total sample in all the emotional intelligence dimensions, while the second cluster had mean scores below the total sample of drinkers for all the variables entered, except in stress management, where mean scores were similar (Figures 1 and 2).





289 **Figure 1.** Cluster composition (drinkers). Note. Factors in order of importance of input.
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291 **Figure 2.** Cluster comparison (drinkers)
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294 After classifying the groups based on the two-cluster solution, a Student's *t* test for independent
295 samples was carried out to find out whether there were any differences between the clusters with
296 respect to each of the self-concept dimensions.
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298 **Table 4.** Self-concept. Descriptive statistics and *t* test by drinker emotional profile

	Cluster 1			Cluster 2			<i>t</i>	<i>p</i>
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>		
Academic Self-Concept	45	3.48	.75	74	3.06	.78	2.88**	.005
Social Self-Concept	45	3.77	.44	74	3.36	.48	4.66***	.000
Emotional Self-Concept	45	3.41	.71	74	3.09	.66	2.46*	.015
Family Self-Concept	45	3.87	.83	74	3.39	.53	3.82***	.000
Physical Self-Concept	45	3.57	.83	74	3.27	.87	1.84	.067

299 **p*<.05; ***p*<.01; ****p*<.001
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301 As shown in Table 4, there were significant differences between the Clusters in academic self-
302 concept ($t_{(118)}=2.88$; $p<.01$; $d=.55$), social self-concept ($t_{(118)}=4.66$; $p<.001$; $d=.89$), emotional self-concept
303 ($t_{(118)}=2.46$; $p<.05$; $d=.47$), and family self-concept ($t_{(118)}=3.82$; $p<.001$; $d=.73$). In all cases where
304 differences were detected between clusters, Cluster 1, with emotional intelligence scores above the
305 mean for drinkers, had higher scores in almost all the self-concept dimensions. There were no
306 differences between clusters for physical self-concept.

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308 3.4. Emotional profiles of smokers and differences in self-concept

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310 A two-step cluster analysis was done with the emotional intelligence dimensions to form the

311 groups. Two groups of smokers resulted from the inclusion of these variables (Figure 3), with the

312 following distribution: 30.8% ($n=12$) of the subjects were in Cluster 1, and 69.2% ($n=27$) in Cluster 2.

313 Table 4 summarizes the mean scores on the variables analyzed for the total sample of smokers and

314

315

Table 5. Mean scores for the total sample of smokers and clusters

	Total sample of smokers ($N=39$)	Cluster	
		1 ($n=12$)	2 ($n=27$)
Intrapersonal	$M=2.23$ ($SD=.82$)	$M=2.67$ ($SD=.92$)	$M=2.04$ ($SD=.71$)
Interpersonal	$M=3.07$ ($SD=.67$)	$M=3.67$ ($SD=.30$)	$M=2.80$ ($SD=.62$)
Stress Management	$M=2.22$ ($SD=.72$)	$M=1.67$ ($SD=.63$)	$M=2.46$ ($SD=.62$)
Adaptability	$M=2.80$ ($SD=.78$)	$M=3.17$ ($SD=.70$)	$M=2.64$ ($SD=.77$)
Mood	$M=2.85$ ($SD=.89$)	$M=3.71$ ($SD=.35$)	$M=2.46$ ($SD=.79$)

316

317 Cluster 1 is characterized by showing mean scores above those of the total sample in the

318 Intrapersonal, Interpersonal, Adaptability and Mood Dimensions and a Stress Management score

319 below the complete sample of smokers. In Cluster 2, mean scores were lower than the total sample of

320 smokers for all the variables entered, except Stress Management where the mean score was higher

321

322

(Figures 3 and 4).

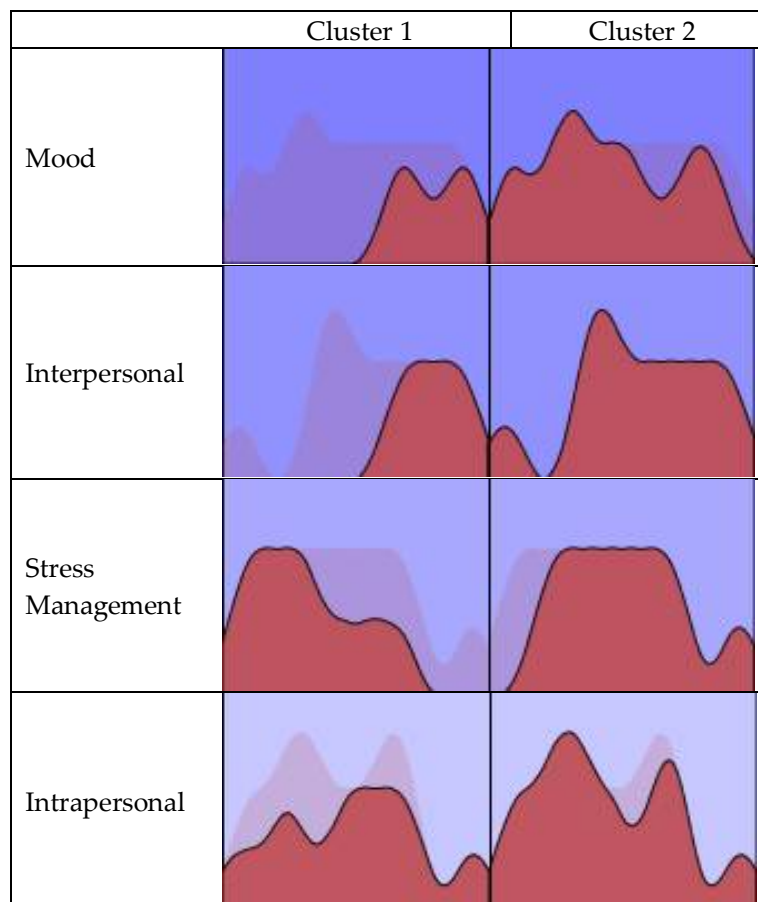




Figure 3. Cluster composition (smokers). Note. Factors in order of importance of input.

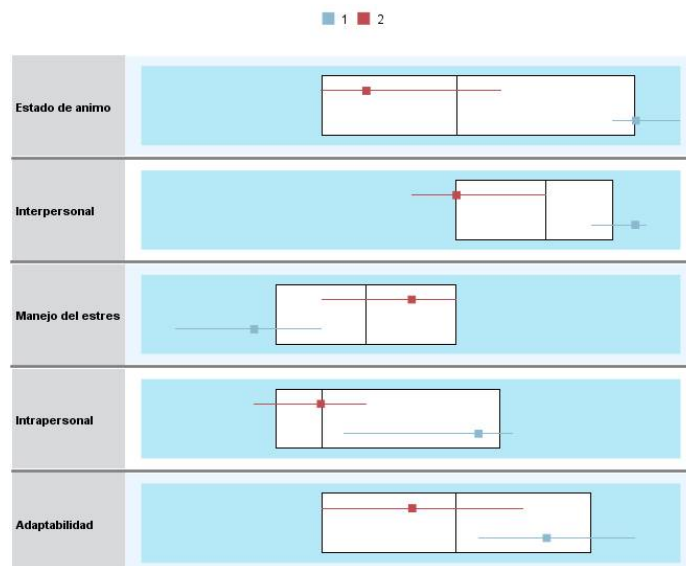


Figure 4. Cluster comparison (smokers)

After the groups had been classified based on the two-cluster solution, a Student's *t* test for independent samples was carried out to find out whether there were any differences between the clusters with respect to the self-concept dimensions. As shown in Table 6, there were significant differences between clusters in Academic Self-Concept ($t_{(38)}=2.75$; $p<.01$; $d=.98$), Social Self-Concept ($t_{(38)}=3.00$; $p<.01$; $d=1.07$), Family Self-Concept ($t_{(38)}=2.20$; $p<.05$; $d=.78$), and Physical Self-Concept ($t_{(38)}=3.22$; $p<.01$; $d=1.15$). In all cases where differences were detected, Cluster 1 had higher scores in most of the self-concept dimensions. There were no differences between clusters in emotional self-concept.

Table 6. Self-concept. Descriptive statistics and *t* test by smoker emotional profile

	Clúster 1			Clúster 2			<i>t</i>	<i>p</i>
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>		
Academic Self-Concept	12	3.39	.78	27	2.70	.69	2.75**	.009
Social Self-Concept	12	3.83	.40	27	3.34	.50	3.00**	.005
Emotional Self-Concept	12	3.64	.67	27	3.09	.84	1.98	.054
Family Self-Concept	12	3.79	.56	27	3.31	.66	2.20*	.034
Physical Self-Concept	12	3.76	.72	27	2.89	.80	3.22**	.003

* $p<.05$; ** $p<.01$

4. Discussion

Adolescence is one of the stages with highest risk of starting and using substances, as many factors intervene in and influence their maintenance [20]. Concerning sex, the percentage of girls who drink and smoke was higher than boys, while in other studies it has been the boys who did more than girls [10].

345 In the relationship between emotional intelligence dimensions and alcohol/tobacco user/nonuser
346 groups, the group of nonusers of alcohol and tobacco had significantly higher scores in stress
347 management than the group of consumers. These data are related to results of other studies, such as
348 the one by Fainsilber, Stettler, & Gurtovenko [23], in which good stress management was found to
349 contribute to better emotional control, where emotions act as mediators in stressful situations.

350 Resilience results showed the group of nonusers of alcohol and tobacco to have higher scores in
351 family cohesion compared to users. This finding, is in line with the study by Moreno et al. [30], in
352 which students who were nonusers of alcohol showed high levels of resilience.

353 There were no differences in family functioning between groups of users and nonusers of
354 alcohol. However, higher scores were observed in the group of nonsmokers, and this difference was
355 statistically significant with respect to the smokers. Zurita & Álvaro [41] mentioned that family
356 functioning scores were higher in youths who did not smoke. In this sense, family functioning would
357 act as a predictor factor in the onset of substance use [39].

358 However, no relationship was found between frequency of use of alcohol or tobacco and any of
359 the emotional intelligence, resilience or family functioning factors, so an explanatory model was
360 necessary which took into account use and nonuse of both substances instead of frequency. We found
361 that the intrapersonal variable was acting as a protective factor against the probability of drinking
362 and positive expectancies intervened as risk factor. Both stress management and family cohesion
363 were protective factors against the probability of smoking.

364 Moreover, this study determined emotional profiles [46] of drinkers and smokers and their
365 relationship with the dimensions of self-concept. The results of the cluster analysis led to two groups
366 of drinkers. In the first group, the means in all the emotional intelligence dimensions were above the
367 total sample, and in the second group, it was the opposite, the means were lower than the general
368 sample, except for stress management. There were also significant differences between the two
369 groups. the first group with higher scores, in all the dimensions of self-concept, except physical self-
370 concept. These results are in consonance with those found by Álvaro et al. [43], who did not find any
371 association between drinking alcohol and physical self-concept either. Two groups were also formed
372 for the smoker profiles. The first was characterized by having mean scores above the total sample in
373 all the dimensions except stress management, where they were below the overall mean, and in the
374 second profile, the means on all the dimensions were below it, except stress management, which were
375 slightly above the total sample. Similarly, there were differences between the groups in favor of the
376 first in all the dimensions of self-concept, except emotional self-concept. Álvaro et al. [43] also
377 mentioned the influence of physical, family and academic self-concept on smokers. However, other
378 studies have found lower social and physical self-concept were related to high level of use [44].

379 5. Conclusions

380 Based on these results, we can say that use of alcohol and tobacco depend on emotional
381 intelligence, resilience and family functioning, each of which act as a protective or risk factor
382 depending on the circumstances. As there are so few studies which analyze the relationships of all
383 these variables together in the adolescent population, we were limited in our ability to compare with
384 others. Therefore, in future studies it would be of interest to increase the size of the sample to test the
385 associations existing, and whether all the factors of the variables act the same way. In brief, this study
386 demonstrated the importance of developing programs for emotional skills and the need to study
387 emotional intelligence in depth and its influence on adolescent alcohol and tobacco use.

388 Similarly, programs must be planned that promote decision-making for sustainable
389 development of responsibility in adolescents, thereby fostering the prevalence of prosocial
390 competencies on intervention in risk behavior.

391 A series of priority actions is also posed by Sociology of Education: (a) Achieve coherent
392 organization of social development strategies, education of society and its current problems, and (b)
393 promote participation of social sectors in approaching those problems.

394

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 396 of the review. J.J.G.L. applied the search strategy. All authors applied the selection criteria. All authors completed
 397 the assessment of bias risk. All authors analyzed and interpreted the data. M.d.M.M.J., M.d.C.P.F., and A.B.B.M.
 398 wrote this manuscript. M.d.C.P.F. and J.J.G.L. edited this manuscript. M.d.M.M.J. is responsible for the overall
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