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

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

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

1. Introduction

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

The effects of smoking and alcohol cause long-term physical and psychological harm to the organism [18,19]. These consequences are linked to a series of risk or protection factors. Age and gender and some personality traits are factors influencing the onset of alcohol and tobacco use [20]. The study by Granja et al. [10], for example, found that use of alcohol was higher in men than in women. This risk behavior is also linked to adolescent emotional skills. Thus, youths who have low emotional intelligence are prone to use tobacco and alcohol more [21], and on the contrary, adolescents with high emotional intelligence levels show less inclination toward their use [22] and good psychosocial adjustment. According to Fainsilber, Stettler, & Gurtovenko [23], stress management helps individuals control their emotions, which act as mediators to stressful situations.

At the same time, not only adolescents’ emotional regulation is associated with the use of alcohol and tobacco, but also their resilience, which may be defined as their capacity to achieve adaptive results in spite of having been exposed to adverse situations [24]. Some studies have found emotional intelligence and resilience to have a positive relationship, which is more significant in the emotional repair factor. Individuals who have good emotional control will therefore have higher levels of resilience [25,26]. There is also a positive relationship between resilience and self-efficacy in students [27].

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

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

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

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

These risk behaviors by the adolescent population lead to social problems which demand intervention directed at developing prosocial behavior. Responsible use by improving adolescent decision-making is one of the results expected from this type of intervention. Thus, social self-concept is a determining factor in the intensity of response.
The actions necessary for coping with social problems such as use of alcohol and tobacco can be carried out in the educational environment [47]. Durkheim [48], from the focus of Sociology of Education, emphasized the presence of a set of common beliefs which lead to developing collective action, where individuals should act according to the norms established by society.

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

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

1.2. Study Objectives

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

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

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

2. Materials and Methods

2.1. Participants

The sample was comprised of 317 students from high schools in the province of Almería (Spain) 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% (n=156) were girls. The mean age of boys was 14.85 (SD= 1.008) and of girls 15.01 years (SD = 1.119). Of the total sample, 61.5% (n=195) were in third year of high school and 38.5% (n=122) were in their fourth year.

2.2. Instruments

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

Resilience Scale for Adolescents (READ). The Spanish adaptation and validation for a Mexican population [54] of the original scale by Hjendal et al. [55] was used. The scale has five factors: Personal Competence, Social Competence, Family Cohesion, Social Resources and Orientation toward Goals, distributed in 22 items. The Cronbach’s alpha was .85 in Family Cohesion, .69 in
4. Personal Competence, .80 in social competence, .85 in social resources, and .76 in Orientation toward Goals. The internal consistency of the instrument was .90.

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

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

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

2.3. Procedure

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

2.4. Data analysis

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

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

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

3.1. Use of alcohol and tobacco

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

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

The means for each of the dimensions of emotional intelligence in the user/nonuser groups were compared. As observed in the table, nonusers of alcohol \((M=2.68; SD=.78)\) scored significantly higher in Stress Management \((t_{(315)}=2.23; p<.05; d=.27)\) than the user group \((M=2.45; SD=.95)\). Comparing the users \((M=2.22; SD=.72)\) and nonusers of tobacco, the latter also scored higher \((M=2.64; SD=.86)\) in the Stress Management dimension \((t_{(315)}=2.92; p<.01; d=.34)\).

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

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

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

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

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

3.3. Logistic regression model: alcohol

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

The predictor variables entered in the equation were emotional intelligence (Intrapersonal, Interpersonal, Stress Management, Adaptability, Mood), resilience (Family Cohesion, Personal Competence, Social Competence, Social Resources and Orientation toward Goals), family functioning and expectancies (positive and negative) about using alcohol. Table 9 presents these variables, the regression coefficients, standard error of estimation Wald statistic, with degrees of freedom and the associated probability, the partial correlation coefficient and odds ratio.
The odds ratio found for each variable showed that: a) the risk of drinking alcohol is higher in adolescents with positive expectancies about the effects of its use; and b) the intrapersonal factor acts as a protective factor insofar as the probability of drinking is concerned. Therefore, subjects who have a higher mean score in this construct are at less risk of drinking alcohol.

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>β</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(β)</th>
<th>CI 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal</td>
<td>-.45</td>
<td>.19</td>
<td>5.20</td>
<td>1</td>
<td>.02</td>
<td>1.57</td>
<td>1.06-2.32</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>-.32</td>
<td>.25</td>
<td>1.62</td>
<td>1</td>
<td>.26</td>
<td>.83</td>
<td>.60-1.14</td>
</tr>
<tr>
<td>Stress Management</td>
<td>-.18</td>
<td>.16</td>
<td>1.26</td>
<td>1</td>
<td>.26</td>
<td>.83</td>
<td>.60-1.14</td>
</tr>
<tr>
<td>Adaptability</td>
<td>.19</td>
<td>.18</td>
<td>1.17</td>
<td>1</td>
<td>.27</td>
<td>1.22</td>
<td>.85-1.75</td>
</tr>
<tr>
<td>Mood</td>
<td>-.04</td>
<td>.20</td>
<td>.03</td>
<td>1</td>
<td>.84</td>
<td>.96</td>
<td>.64-1.44</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>-.35</td>
<td>.23</td>
<td>2.27</td>
<td>1</td>
<td>.13</td>
<td>.70</td>
<td>.40-1.11</td>
</tr>
<tr>
<td>Family Competence</td>
<td>-.11</td>
<td>.23</td>
<td>.23</td>
<td>1</td>
<td>.62</td>
<td>.89</td>
<td>.56-1.40</td>
</tr>
<tr>
<td>Social Competence</td>
<td>.29</td>
<td>.19</td>
<td>2.28</td>
<td>1</td>
<td>.13</td>
<td>1.34</td>
<td>.91-1.96</td>
</tr>
<tr>
<td>Social Resources</td>
<td>.18</td>
<td>.22</td>
<td>.64</td>
<td>1</td>
<td>.42</td>
<td>1.20</td>
<td>.76-1.88</td>
</tr>
<tr>
<td>Orientation toward Goals</td>
<td>-.20</td>
<td>.21</td>
<td>.91</td>
<td>1</td>
<td>.33</td>
<td>.81</td>
<td>.53-1.24</td>
</tr>
<tr>
<td>Family Functioning</td>
<td>-.01</td>
<td>.07</td>
<td>.05</td>
<td>1</td>
<td>.82</td>
<td>.98</td>
<td>.85-1.13</td>
</tr>
<tr>
<td>Positive Expectancies</td>
<td>.79</td>
<td>.18</td>
<td>19.16</td>
<td>1</td>
<td>.00</td>
<td>2.21</td>
<td>1.55-3.16</td>
</tr>
<tr>
<td>Negative Expectancies</td>
<td>.29</td>
<td>.17</td>
<td>2.71</td>
<td>1</td>
<td>.09</td>
<td>1.34</td>
<td>.94-1.91</td>
</tr>
<tr>
<td>Constant</td>
<td>-.27</td>
<td>1.25</td>
<td>6.8</td>
<td>1</td>
<td>.00</td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

Overall goodness of fit of the model ($\chi^2= 55.39; \text{df}= 13; p<.001$) was confirmed by the Hosmer-Lemeshow test ($\chi^2= 8.75; \text{df}= 8; p=.36$). The Nagelkerke $R^2$ coefficient showed that 21.8% 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 67.8% with a false positive rate of .15 and of false negatives .39.

**3.4. Logistic regression model: tobacco**

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

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

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

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

<table>
<thead>
<tr>
<th>Variables</th>
<th>β</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(β)</th>
<th>CI 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal</td>
<td>.21</td>
<td>.25</td>
<td>.69</td>
<td>1</td>
<td>.40</td>
<td>1.24</td>
<td>.74-2.05</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>.35</td>
<td>.35</td>
<td>.99</td>
<td>1</td>
<td>.32</td>
<td>1.42</td>
<td>.70-2.86</td>
</tr>
<tr>
<td>Stress Management</td>
<td>-.71</td>
<td>.24</td>
<td>8.51</td>
<td>1</td>
<td>.00</td>
<td>.48</td>
<td>.30-7.99</td>
</tr>
<tr>
<td>Adaptability</td>
<td>-.00</td>
<td>.28</td>
<td>.00</td>
<td>1</td>
<td>.98</td>
<td>.99</td>
<td>.56-1.74</td>
</tr>
<tr>
<td>Mood</td>
<td>-.18</td>
<td>.27</td>
<td>.47</td>
<td>1</td>
<td>.49</td>
<td>.82</td>
<td>.48-1.42</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>-.71</td>
<td>.29</td>
<td>5.92</td>
<td>1</td>
<td>.01</td>
<td>.48</td>
<td>.27-8.78</td>
</tr>
<tr>
<td>Family Competence</td>
<td>.19</td>
<td>.31</td>
<td>.39</td>
<td>1</td>
<td>.52</td>
<td>1.21</td>
<td>.66-2.23</td>
</tr>
<tr>
<td>Social Competence</td>
<td>.05</td>
<td>.27</td>
<td>.04</td>
<td>1</td>
<td>.83</td>
<td>1.05</td>
<td>.61-1.81</td>
</tr>
<tr>
<td>Social Resources</td>
<td>.51</td>
<td>.31</td>
<td>2.60</td>
<td>1</td>
<td>.10</td>
<td>1.66</td>
<td>.89-3.10</td>
</tr>
</tbody>
</table>
Overall goodness of fit ($\chi^2= 27.41; \text{df}= 11; p<.01$) was confirmed by the Hosmer-Lemeshow test ($\chi^2= 4.51; \text{df}= 8; p=.80$). 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.

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>
<thead>
<tr>
<th>Table 3. Mean scores for the total sample of drinkers and clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample of drinkers (N=119)</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
</tr>
<tr>
<td>M=2.25 (SD=.76)</td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
</tr>
<tr>
<td>M=2.98 (SD=.62)</td>
</tr>
<tr>
<td><strong>Stress management</strong></td>
</tr>
<tr>
<td>M=2.45 (SD=.95)</td>
</tr>
<tr>
<td><strong>Adaptability</strong></td>
</tr>
<tr>
<td>M=2.86 (SD=.62)</td>
</tr>
<tr>
<td><strong>Mood</strong></td>
</tr>
<tr>
<td>M=2.99 (SD=.78)</td>
</tr>
</tbody>
</table>

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).
Figure 1. Cluster composition (drinkers). Note. Factors in order of importance of input.

Figure 2. Cluster comparison (drinkers)

After classifying the groups 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 each of the self-concept dimensions.

Table 4. Self-concept. Descriptive statistics and $t$ test by drinker emotional profile

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1</th>
<th></th>
<th>Cluster 2</th>
<th></th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>Mean</td>
<td>$SD$</td>
<td>$N$</td>
<td>Mean</td>
<td>$SD$</td>
</tr>
<tr>
<td>Academic Self-Concept</td>
<td>45</td>
<td>3.48</td>
<td>.75</td>
<td>74</td>
<td>3.06</td>
<td>.78</td>
</tr>
<tr>
<td>Social Self-Concept</td>
<td>45</td>
<td>3.77</td>
<td>.44</td>
<td>74</td>
<td>3.36</td>
<td>.48</td>
</tr>
<tr>
<td>Emotional Self-Concept</td>
<td>45</td>
<td>3.41</td>
<td>.71</td>
<td>74</td>
<td>3.09</td>
<td>.66</td>
</tr>
<tr>
<td>Family Self-Concept</td>
<td>45</td>
<td>3.87</td>
<td>.83</td>
<td>74</td>
<td>3.39</td>
<td>.53</td>
</tr>
<tr>
<td>Physical Self-Concept</td>
<td>45</td>
<td>3.57</td>
<td>.83</td>
<td>74</td>
<td>3.27</td>
<td>.87</td>
</tr>
</tbody>
</table>

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

A two-step cluster analysis was done with the emotional intelligence dimensions to form the groups. Two groups of smokers resulted from the inclusion of these variables (Figure 3), with the following distribution: 30.8% (n=12) of the subjects were in Cluster 1, and 69.2% (n=27) in Cluster 2. Table 4 summarizes the mean scores on the variables analyzed for the total sample of smokers and each of the clusters.

<table>
<thead>
<tr>
<th>Table 5. Mean scores for the total sample of smokers and clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total sample of smokers</strong> (N=39)</td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
</tr>
<tr>
<td><strong>Stress Management</strong></td>
</tr>
<tr>
<td><strong>Adaptability</strong></td>
</tr>
<tr>
<td><strong>Mood</strong></td>
</tr>
</tbody>
</table>

Cluster 1 is characterized by showing mean scores above those of the total sample in the Intrapersonal, Interpersonal, Adaptability and Mood Dimensions and a Stress Management score below the complete sample of smokers. In Cluster 2, mean scores were lower than the total sample of smokers for all the variables entered, except Stress Management where the mean score was higher (Figures 3 and 4).
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

<table>
<thead>
<tr>
<th></th>
<th>Clúster 1</th>
<th>Clúster 2</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Self-Concept</strong></td>
<td>$N=12$</td>
<td>$Mean=3.39$</td>
<td>$SD=.78$</td>
<td>$N=27$</td>
</tr>
<tr>
<td><strong>Social Self-Concept</strong></td>
<td>$N=12$</td>
<td>$Mean=3.83$</td>
<td>$SD=.40$</td>
<td>$N=27$</td>
</tr>
<tr>
<td><strong>Emotional Self-Concept</strong></td>
<td>$N=12$</td>
<td>$Mean=3.64$</td>
<td>$SD=.67$</td>
<td>$N=27$</td>
</tr>
<tr>
<td><strong>Family Self-Concept</strong></td>
<td>$N=12$</td>
<td>$Mean=3.79$</td>
<td>$SD=.56$</td>
<td>$N=27$</td>
</tr>
<tr>
<td><strong>Physical Self-Concept</strong></td>
<td>$N=12$</td>
<td>$Mean=3.76$</td>
<td>$SD=.72$</td>
<td>$N=27$</td>
</tr>
</tbody>
</table>

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

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

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

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

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

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

5. Conclusions

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

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

A series of priority actions is also posed by Sociology of Education: (a) Achieve coherent organization of social development strategies, education of society and its current problems, and (b) promote participation of social sectors in approaching those problems.
Author Contributions: M.d.M.M.J., M.d.C.P.F., R.M.P.S., and A.B.B.M. contributed to the conception and design of the review. J.J.G.L. applied the search strategy. All authors applied the selection criteria. All authors completed 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. 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 project.

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Conflicts of Interest: The authors declare no conflict of interest.

References


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