

# PERSONALITY AND SUBSTANCE USE

**Dimofte Lavinia\***

Department of Psychology, West University of Timisoara, Timisoara, Romania  
\*laviniadimofte9@gmail.com

## **Abstract**

The purpose of this study is, first and foremost, to investigate whether there is a link between a personality trait (impulsivity) and substance use and, also to investigate whether there are significant differences between impulsivity levels and substance use levels. Participants completed online a google form that included demographic questions, a questionnaire that measures the level of substance use and one that measures the level of impulsivity. The results showed that the level of impulsivity correlated positively with the level of tobacco consumption, but also with the level of alcohol consumption. In addition, significant differences were found in impulsivity between the 3 levels of cannabis use (low consumption, moderate consumption, high consumption). The results suggest that there is an association between certain facets of impulsivity and tobacco, alcohol and cannabis use.

**Key words:** impulsivity, consumption, substance, tobacco, alcohol, cannabis.

## **Introduction**

In this paper a 'substance' will be defined as any psychoactive compound that has the potential to cause health and social problems, including addiction (McLellan, 2017). These substances may be legal (alcohol and tobacco); illegal (cocaine, heroin, etc.); or used by authorized doctors for medical purposes, such as oxycodone or diazepam (Valium) (McLellan, 2017). According to A. Thomas McLellan (2017), substances can be organized into seven classes based on pharmacological and behavioral effects: nicotine (cigarettes, cigar, vape etc.), alcohol (all forms of beer, wine, distilled alcohol), cannabinoids (marijuana, hashish, etc.), opioids (heroin, methadone, etc.), sedatives (benzodiazepines), stimulants (cocaine, amphetamines, etc.), and hallucinogens (LSD, ecstasy). The use of any of these substances in large doses or in inappropriate situations can cause short-term or long-term health and social problems (McLellan, 2017). We should not forget about more recent types of addiction, not included however in the current study, like internet addiction or smartphone addiction which are strongly increasing in recent years (Tudorel & al, 2018, Vintila & al, 2018). Suicide is one of the inherent risks the consumers are exposed to especially when genetic or socio-economic factors add to the risk (Voracek et al, 2008; Voracek & al, 2002).

According to the same author, the majority of health and social problems occur among those who are not addicted. People with severe substance use disorders (addictions) have a much higher rate of these problems, but these people represent a small proportion compared to the majority consuming population (McLellan, 2017). A healthy life-style could help prevent complications in consumers, but, unfortunately, in many aspects a healthy life-style is not a priority for Romanian population, mainly of some disadvantaged groups (Eglite & al, 2009). Literature shows, for example, that there is a significant association between the family environment and the use of technology, an uncertain family environment being associated with the excessive use of the internet and mobile phones (O. I. Tudorel & Vintila, 2020). Social cohesion and a deeper implication of social services could improve the outcome of addicted patients, but it is proven that traditional preventive measures or health promotion did not show efficacy (Gavrila, 2008, Vintila & al., 2009). An informal professional language is often used by social workers when referring to assistance/intervention of people in a state of dependency (Goian, 2012). This often illustrates the attitude of professionals related to concepts which have emotional consistence from the perspective of augmenting addictions (Goian, 2010) Family involvement, even early counseling by parents could be an easy, constructive and healthy way to prevent children getting in the trap of addiction (Gavrila-Ardelean, 2018, Goian, 2019). Family and Social support can be view as a factor that could reduce the effect of stressful life events (Gavrila-Ardelean, 2008, Tudorel & Vintilă, 2018).

According to a national report concerning the situation of legal drugs in Romania, made in 2017 by the National Anti-drug Agency, alcohol takes the first place with the prevalence rate of 74.9%, followed by tobacco which has a prevalence rate of 62.1%, for those who smoked at least once in their life and 39.7% among those who smoke daily. For non-prescription drugs (tranquilizers, sedatives and antidepressants) there is a rate of 3.9%. Regarding illicit drugs, according to the same report, the situation presents as follows: the prevalence rate for any type of illegal drug is 7.6%, the most used drug being cannabis - 5.8%, followed by the new psychoactive substances (NSP) – 2.5%, cocaine / crack and LSD - 0.7%, ecstasy - 0.5%, hallucinogenic mushrooms - 0.4%, amphetamines, ketamine and heroin - 0.3%.

Due to the prevalence of substance use among young adults and the negative implications associated with it, it is essential to identify the mechanisms behind the increased risk of substance use (Ham & Hope, 2003). By identifying the personality traits that are related to consumption, researchers can better understand the reasons and the risk factors and develop targeted intervention programs to prevent substance use among these risk groups (Steanson & Vernon, 2016). In addition, the knowledge gained about the personality traits associated with substance use can be added to environmental and genetic factors in order to address the people that are at high risk (Steanson & Vernon, 2016).

Impulsivity, known as a risk factor for addiction (Perry & Carroll, 2008; de Wit, 2009) includes several clinically relevant components, such as a decrease in the ability to inhibit inappropriate behaviors, the tendency to act without a preconception and a relative insensitivity to behavioral consequences (Moeller, Barratt, Dougherty, Schmitz & Swann, 2001; Evenden, 1999). Research describes impulsivity as a stable personality trait or as a behavioral marker for actions and decision making (Herman & Duka, 2018).

Impulsivity is considered both a decisive factor for drug use and a consequence of compulsive drug use (de Wit, 2009). As a determinant, impulsivity is a risk factor for drug experimentation, problematic substance use and inability to abstain from drugs (McGue & Bouchard, 1984, Tarter et al., 2007). Unfortunately, impulsivity research has a limited history due

to the lack of consistency in defining and evaluating the construct (de Wit, 2009). The term 'impulsivity' has been used to refer to a wide range of seemingly unrelated behavioral disorders, including, for example, inability to wait, difficulty memorizing responses, and insensitivity to negative or delayed consequences (de Wit, 2009). After a long series of analyzes (Barratt, 1965, 1972; Barratt & Patton, 1983), Barratt suggested that impulsivity has three facets: attentional impulsivity, motor impulsivity, and non-planning impulsivity. Attentional impulsivity (which includes 2 factors: attention and cognitive instability) is defined as the inability to pay attention or maintain concentration, motor impulsivity (which includes 2 factors: motor and perseverance) implies acting without thinking, and non-planning impulsivity (which includes 2 factors: self-control and cognitive complexity) implies a carelessness on making a decision regarding the future (Barratt, 1985).

Much of the evidence referring to impulsivity and problematic substance use is from cross-sectional studies conducted on consumers and non-consumers (Charles, Nora, et al., 2016). For example, individuals with substance use disorders are more impulsive (Bjork et al., 2004; Coffey et al., 2003; Dom, D'haene, Hulstijn, & Sabbe, 2006; Li, Milivojevic, Kemp, Hong, & Sinha, 2006; Moeller et al., 2001, 2002) than individuals who do not have a history of substance use disorder. However, the studies provide only differential evidence between consumers and who are also part of a clinical sample. They cannot provide a clear perspective on the existence of a high level of impulsivity prior to substance use and the conclusions cannot be generalized to non-clinical consuming populations (Charles, Nora E., et al., 2016).

Research shows that personality traits associated with impulsivity affects tobacco use and nicotine dependence (Bickel, Odum, & Madden, 1999; Doran, Cook, McChargue, & Spring, 2009; Mitchell, 2004; Perkins et al., 2008). The five traits are: negative emotions (the tendency to act hasty in response to the negative mood), positive emotions (the tendency to act quickly as a response to an intense positive mood), the search for sensations (the tendency to seek new and thrilling experiences), lack of perseverance (inability to stay focused on a task) and lack of planning (tendency to act without thinking) (Spillane, Smith & Kahler, 2010). The five specific traits differ from each other and predict different components of risky behaviors (Cyders & Smith, 2007, 2008c; Smith et al., 2007; Whiteside & Lynam, 2001, 2003). The present study will focus on lack of perseverance and lack of planning.

There is also a large number of research that shows a positive association between impulsivity and alcohol consumption, including alcohol use in a social setting (Adams et al., 2013; Bø et al., 2016; Caswell et al., 2015b; Cyders et al., 2014; Johnson et al., 2013; Karyadi and King, 2011; King et al., 2011; Kiselica and Borders, 2013; Lannoy et al., 2017; Sanchez-Roige et al., 2014a ) as well as harmful and problematic use (Adams et al., 2012; Coskunpinar et al., 2013; Fox et al., 2010; Stautz and Cooper, 2013). Some people may be more prone to impulsive behaviors when they are experiencing negative emotions, while others when are experiencing positive feelings (Herman & Duka, 2018). For example, a recent study conducted on a sample of college students showed that individuals who displayed high levels of negative emotions may consume alcohol to alleviate their emotional distress due to their strong desire to increase the number of positive experiences and decrease the number of negative ones (Anthenien et al., 2017). Cumulative stress has been shown to be related to the dangerous increase in alcohol consumption among individuals who report high levels of impulsivity as a trait (Fox et al., 2010).

The purpose of this study is to investigate whether there is a link between impulsivity and substance use and, to investigate whether there are significant differences between impulsivity levels and levels of cannabis use. Therefore, the hypotheses of the study are the following:

H1: There is a positive relationship between the level of impulsivity and the level of tobacco use.

H2: There is a positive relationship between the level of impulsivity and the level of alcohol use.

H3: There is a difference in impulsivity between those with low, moderate and high cannabis use.

## Method

The present study has a non-experimental correlational and comparative design comparing the level of impulsivity with the 3 levels of cannabis use. These 3 levels are divided into risk ranges as follows: group 1 (level 1) represents the low risk category that includes scores between 0 and 3, group 2 (level 2) represents the moderate risk category, with scores between 4 and 26 and the group 3 (level 3) represents the high risk category, with scores equal to or greater than 27.

### Participants

The participants in this study are 566 persons between the ages of 18 and 40 ( $M = 21.6$  years;  $SD = 3.87$ ). 72.4% ( $N = 410$ ) of the participants are female and 27.4% ( $N = 155$ ) are male. 82% ( $N = 464$ ) are from urban areas and 18% ( $N = 102$ ) are from rural areas. Initially the sample had a total of 575 participants but 9 were eliminated from the analysis due to extreme scores that affected the results. The information collected for each substance is presented in Table 1.

*Table 1. The prevalence of substances*

Substance	% of participants used this substance
Alcohol	88%
Tobacco	62.4%
Cannabis	30.6%

### Instruments

The level of substance use was measured using the ASSIST scale (The alcohol, smoking and substance involvement screening test) (Humenuik, Rachel, et al., 2006). ASSIST has been developed by the World Health Organization and a global consortium of substance abuse researchers as a screening tool for substance use and addiction, applicable to patients in need of primary care in various populations (Humenuik, 2008). It is used for both clinical screening and research (McNeely et al., 2014). ASSIST provides substance-specific risk stratification that can guide clinical interventions. Usually, monitoring and prevention for low risk, short interventions for moderate risks and treatment or recommending treatment for high risk consumption (McNeely et al., 2014). In this paper is used ASSIST V3.0. This is a brief structured interview that includes nine substances (tobacco, alcohol, cannabis, cocaine, stimulants, inhalants, sedatives, hallucinogens and opioids) and which assesses lifetime consumption, current use, consequences

of use, and failure to abstain or reduce substance use. (McNeely et al., 2014). The first item in ASSIST analyzes the lifetime consumption of each substance and is evaluated by answers with yes or no. ASSIST item 2 assesses current consumption (in the last 3 months), while items 4-7 evaluate different substance use problems and item 8 refers to any current or lifetime drug use by injection. Items 2-5 are evaluated over a period of time (never, once or twice, monthly, weekly, almost daily/daily) and items 6-8 are evaluated by affirmative or negative answers (no, never; yes, in the last 3 months; yes, but not in the last 3 months).

The impulsivity level is measured using the BIS-11 (The Barratt Impulsiveness Scale) (Patton, Stanford, & Barratt, 1995). This is a 30-item self-report instrument designed to assess the personality/constructive behavior of impulsivity (Stanford, Matthew et al., 2009). It is one of the most commonly administered self-report measurements in both research and clinical field. The 30 items are divided as follows: 8 for the attentional impulsivity subscale, 5 for attention and 3 for cognitive instability, ('I do not pay attention to things. '); 11 for the subscale of motor impulsivity, 7 for the motor part and 4 for perseverance, ('I am careless. ') And 11 for the non-planning impulsivity subscale, 6 for self-control and 5 for cognitive complexity, ('I say things without thinking. '). It is measured by a likert scale from 1 (Rarely / Never) to 4 (Almost always / Always). Regarding the validation of the article, the scale has an internal consistency of .83 and in this case Alpha Cronbach is .82.

## **Procedure**

The participants were recruited online, specifically on social media. A questionnaire was created using google forms, in which all 2 scales were introduced along with some demographic questions such as age, gender, education, living area and marital status, and then shared online. Participants were asked to be over 18 years old. After they had given their consent, they answered the questions in the form, the overall time being about 10-15 minutes.

## **Results**

### **Preliminary descriptive analyzes**

The data collected following the application of the questionnaires were analyzed using the statistical software SPSS for Windows, v.20.0. A descriptive analysis of the dependent variable was performed, and the following values of the central tendency measures were obtained: BIS-11  $M = 2.05$ ,  $S.D. = 0.36$ .

The first two hypotheses were analyzed using the Spearman correlation coefficient because the independent variables analyzed have an asymmetric distribution. The last hypothesis was analyzed using the technique of analysis of variance for independent groups, simple ANOVA. For the post-hoc analyzes, the Hochberg GT2 test was used because the number of subjects in each group is deeply uneven and the homogeneity of the dispersion is equal.

### Hypothesis 1

The first hypothesis claims that there is a positive relationship between the level of impulsivity and the level of tobacco consumption.

We used the Spearman correlation to verify the relationship between the level of impulsivity and the level of tobacco use. We observed a positive and statistically significant relationship between the two variables  $r_s(564)=.244$ ,  $p=.000$ , therefore the hypothesis was supported.

### Hypothesis 2

The second hypothesis states that there is a positive relationship between the level of impulsivity and the level of alcohol consumption.

We used the Spearman correlation to verify the relationship between the level of impulsivity and the level of alcohol consumption. The results showed a positive and statistically significant relationship between the two variables  $r_s(564)=.221$ ,  $p=.000$ , therefore this hypothesis was also supported.

Table 2. Correlation between impulsivity and tobacco/alcohol use

	Correlation
	Level of impulsivity
Level of tobacco use	.244**
Level of alcohol use	.221**

\*\*  $p < .001$  (unidirectional);  $N=566$

### Hypothesis 3

This hypothesis claims that there is a difference in impulsivity between those with low, moderate and high cannabis use.

We used a simple ANOVA to test whether the level of impulsivity differs for the 3 levels of cannabis use. The results support the hypothesis, being a significant difference between the 3 categories of participants (those with low consumption, moderate consumption and high consumption) in terms of impulsivity ( $F(2,564) = 13.31$ ,  $p < .01$ ). Post-hoc comparisons show that the level of impulsivity is lower for people who have a low level of cannabis use ( $M = 2.01$ ) compared to those who have a moderate level of cannabis use ( $M = 2.19$ ) and those who have an increased level ( $M = 2.31$ ). Significant differences exist between those with low consumption and those with moderate consumption ( $p = .00$ ); between those with low consumption and high consumption ( $p = .024$ ), and between those with moderate consumption and those with high consumption there were no statistically significant differences ( $p = .66$ ). Between group 1 and group 2 was found a moderate effect size,  $d_{cohen} = 0.505$ . Between group 1 and group 3 was found a large effect size  $d_{cohen} = 0.837$ .

Table 3. ANOVA results for hypothesis 3

	Sum of square	df	Mean squares	F
Intergroup	3.404	2	1.702	13.32**
Intragroup	71.938	563	0.128	
Total	75.341	565		

\*\*  $p < .001$

Table 4. Post-hoc analysis for hypothesis 3

Comparisons	Mean differences for impulsivity	Standard error	p
Group 1 vs. Group 2	-0.18	0.039	.000**
Group 2 vs. Group 3	-0.12	0.118	.666
Group 1 vs. Group 3	-0.30	0.114	.024*

\*  $p < .05$ ; \*\*  $p < .001$

## Discussion

### Interpretation of the results

The purpose of this study was to examine the relationship between impulsivity level and tobacco use/alcohol use, along with analyzing the differences in impulsivity level between those with low, moderate and high cannabis use.

The first hypothesis of the study states that the level of impulsivity increases directly in proportion to the level of tobacco consumption. This was confirmed by the statistical analysis performed, which showed a significant result. The hypothesis is supported by other studies that concluded that smokers are typically more impulsive than non-smokers, and that impulsivity is associated with smoking initiation, maintain smoking and nicotine dependence (Mitchell, 1999; Reynolds et al., 2007; Doran Et al., 2009; Perkins et al., 2008; Kale et al., 2018). It has also been suggested that impulsive smokers are less likely to quit smoking because they perceive more benefits from smoking and experience more severe withdrawal symptoms (Doran et al., 2007).

The second hypothesis of the study states that the level of impulsivity increases directly in proportion to the level of alcohol consumption. This hypothesis was also confirmed by the statistical analysis carried out, which showed a significant result. This finding is consistent with the literature, which finds a significant link between alcohol consumption and motor and non-planning impulsivity (Adams et al., 2012, Grant & Chamberlain, 2014). From a behavioral point of view, people with a very high level of alcohol consumption are more likely to have difficulties inhibiting their response in the presence of an immediate reward, than those who do not have an equally high level of consumption, thus indicating a higher level of motor impulsivity among consumers with a high level of alcohol consumption (Lyvers et al., 2009). One study found that

non-planning impulsivity was associated with the number of drinks per month among students (Caswell et al., 2016). Other studies have failed to find a link between attentional impulsivity and alcohol consumption (Handley et al., 2011), however, the importance of taking into account multiple features in examining the associations between impulsivity and alcohol consumption has been emphasized.

Hypothesis 3 claims that there is a difference in impulsivity between those with low, moderate and high cannabis use. The expected effect was that the level of impulsivity will increase in proportion to the level of cannabis use. Following the analyzes, it was found that the levels of impulsivity increase at the same time with the levels of cannabis use, but differences at the statistical level only existed between the people who had low and moderate consumption (group 1 and group 2) and low and high consumption (group 1 and group 3). These findings are consistent with other previous studies that refer to substance use (Balodis et al., 2010; García-Montes et al., 2009). In a comparative study between consumers and non-consumers, conducted in 2012, Moreno et al., concluded that recreational cannabis use and alcohol consumption were associated with increased impulsivity, more specifically sensation seeking and impulsive decision making. In addition, the group that used cannabis had deficiencies in terms of inhibitory control. Much of the evidence regarding impulsivity and problematic substance use is from cross-sectional studies on consumers and non-consumers (Charles, Nora, et al., 2016).

### **Limitations of the study and future suggestions for approach**

A first limitation of this study was the way that the information was obtained, through self-report questionnaires, because it appears the possibility of receiving socially desirable answers. Because certain substances are illegal, participants may hesitate to report substance use honestly. For future studies it is recommended to enter a questionnaire for social desirability or simply to renounce this type of questionnaire.

Another limitation is that the confidence interval for the effect size, in the case of statistically significant results, is much too large because the number of participants distributed in the 3 groups is deeply uneven. For future studies it is recommended to monitor the number of participants for each condition in the group.

In the case of this study, the age and gender of the subjects represent limits because 70.5% of the participants were between the ages of 18 and 21, and 72.4% of the subjects were female, so everything that was concluded after the statistical analyzes cannot be generalized throughout the population. For future studies, it is recommended to monitor the number of participants, taking into account their age and gender, and dividing them approximately equally into groups.

### **Conclusions**

The present study investigated the links between personality traits and substance use. It was concluded that there is an association between certain facets of impulsivity and the consumption of tobacco, alcohol and cannabis. The observed effects have practical implications, for example in psychotherapy, regarding the relation of personality to the consumption of different substances. Future studies should investigate the long-term consequences of these patterns of consumption on substance dependence and on the types of impulsive behaviors, including in the statistical analysis a wider range of substances used.



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