

THE MODERATING ROLE OF CAUSALITY ORIENTATIONS IN THE RELATIONSHIP BETWEEN PERSONALITY TRAITS AND CANNABIS CONSUMPTION

¹DIJANA JERKOVIĆ, ²MARTINA LOTAR RIHTARIĆ, ²VALENTINA KRANŽELIĆ

¹University Psychiatric Hospital Vrapče, Zagreb, Croatia. Contact: dijana.jerkovic@bolnica-vrapce.hr

²Faculty of Education and Rehabilitation Sciences, University of Zagreb, Croatia

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Abstract: According to Self-Determination Theory, causality orientations represent relatively enduring aspects of people that characterise the source of initiation and regulation of their behaviour. Individuals with a high-autonomy orientation organise their behaviours according to their own interests and goals, whereas controlled behaviour is initiated and regulated by pressure from internal or external forces (Deci & Ryan, 1985).

This research tested a model that incorporated causality orientations, personality traits and cannabis consumption. The sample consisted of 438 participants (37.9% males and 62.1% females; mean age $M=19.62$, $SD=0.826$) comprising first- and second-year students at the University of Zagreb that lived in student dormitories. An adapted version of the autonomy and control scales of the General Causality Orientations Scale (Deci & Ryan, 1985) as well as the extraversion, conscientiousness and neuroticism scales of the International Personality Item Pool (IPIP50) were applied. Cannabis consumption was operationalised as the number of days a person consumed cannabis in his or her lifetime. A hierarchical regression analysis was conducted with the number of days a person consumed cannabis in his or her lifetime as a criterion; personality traits and autonomy causality orientation were predictors in the first step, and their interactions were included in the second step. The same procedure was conducted with control causality orientation.

The results showed that moderation effects of autonomy causality orientation and personality traits on cannabis consumption were not significant. There were significant interaction effects of control causality orientation and extraversion, as well as significant effects of this motivational orientation and conscientiousness on the frequency of cannabis consumption. Among participants that were average and high in control causality orientation, higher results on the extraversion scale correlated with more frequent cannabis consumption, and the effect was stronger among students with a higher control causality orientation. In addition, among average- and high-control oriented participants, higher results on the conscientiousness scale correlated with less frequent cannabis consumption. These effects of personality traits on cannabis consumption were not present among students who scored low on control orientation.

Key words: autonomy orientation, control orientation, personality traits, cannabis consumption

INTRODUCTION

Young people in transition from secondary school to higher education are in late adolescence (Smetana et al., 2006), a developmental phase that is characterised by increased integration of different identities and roles. Enrolling in college and moving from one's parental home to an environment surrounded by peers constitute important development tasks for students: establishing a new social network of friends, achieving academic success, and integrating different identities. At the

same time, these processes are often followed by an increased chance of numerous risk behaviours (Upcraft, 2002).

Research has revealed that cannabis is the most commonly used illicit substance in Croatia. For instance, a survey on substance use among the general population in Croatia (probabilistic multistage stratified sample, $N=4992$, 15-64 years) showed that lifetime prevalence among persons aged between 15 and 24 years ($n=863$) was 31.1%, and 12.2% of respondents reported current use (Glavak

Tkalić et al., 2016). The recent European School Survey Project on Alcohol and Drugs (Kraus et al., 2016) has shown that 21% of sixteen-year-olds in Croatia (random stratified sample, N=2558) have tried cannabis at least once, and 8% did so during the previous 30 days. Moreover, 19% of 15-year-old pupils admitted to using marijuana in their lifetime (Pavić Šimetin et al., 2016). Research conducted on a random stratified sample of 2384 regular first-year students at the Universities of Zagreb and Rijeka showed that lifetime prevalence of cannabis consumption was between 30% and 35% among males, and between 23% and 24% among females. Prevalence of consumption over the preceding month was lower: 7.7%-9% in males and 3.4%-4.6% in females (Kuzman et al. 2011). Other studies have reported even higher lifetime prevalences between 40% and 45%, and previous-month prevalences between 13% and 15%; however, these studies were conducted on convenience samples of students and so the results may not be generalisable (Glavak Tkalić, 2009, students of the University of Zagreb, N=800; Kovčo Vukadin, 2014, online survey among regular students in Croatia, N=1880). These data indicate that cannabis use in Croatia is not negligible, especially among young people and students.

Etiological factors of cannabis consumption are complex, and literature shows that personality traits can be considered risk or protective factors for this behaviour. Earlier research could not conclusively identify unique patterns of personality traits that cannabis users share. This is due in part to the fact that some studies examined personality and substance use in general, although cannabis was included; while other studies focused specifically on personality and cannabis use. Inconsistent findings in the field also reflect the use of various instruments, small samples, and socio-cultural differences (Terracciano et al., 2008). Sullivan (1998, taken from Stewart & Devine, 2000) has suggested that extraversion, neuroticism, and conscientiousness reflect characteristics that are more central to the self, while openness and agreeableness reflect qualities of the individual in response to the environment. The more central personality domains may have greater motivational significance in determining people's reasons for cannabis

consumption. In line with this, the present paper's focus will be on studies that explored extraversion, conscientiousness and neuroticism in the framework of Big Five or Five Factor models. There is evidence that substance users, and especially cannabis users, score higher on extraversion than controls (Charvát, 2009; Dubey et al., 2010). Data on neuroticism are not consistent regarding substance users and cannabis users. For instance, Dubey and colleagues (2010) found that substance abusers (alcohol, cannabis, heroin and multiple drugs) had significantly higher scores than controls on neuroticism. This might indicate an increased inclination for addictive behaviours in general, and not specifically for cannabis use (Antičević et al., 2011). Clearer information is available on conscientiousness. Across studies, lower conscientiousness was identified among substance users in general, as well as among cannabis users (Bogg & Roberts, 2004; Charvát, 2009; Dubey et al., 2010; Fridberg et al., 2011; Terracciano et al., 2008).

Although human behaviour is multi-dimensional, risk factors at the intrapersonal level might be important determinants in explaining cannabis use. In that context, the Self-Determination Theory is a macro-theory that can be useful as a framework for exploring human motivation and personality (Deci & Ryan, 1991; Deci & Ryan, 2008; Ryan & Deci, 2002). One of the mini-theories within the Self-Determination Theory is the Causality Orientations Theory. Causality orientations represent relatively enduring aspects of people that characterise the source of initiation and regulation of behaviour. Orientations are, in fact, individual differences in people's understanding of how their experience and behaviour are caused (Deci & Ryan, 1985; Deci & Ryan, 1987). The autonomy orientation involves a high degree of perceived choice: for someone who is high on autonomy orientation, individual acts are based on the person's own interests, needs, values and integrated goals. Autonomous behaviours are characterised by integration and an absence of conflict and pressure, and are related to self-chosen goals, as well as to relationship-maintaining behaviours (Knee et al., 2002; Koestner et al., 1992; Ryan & Deci, 2006; Sheldon & Kasser, 1995). More autonomous behaviours are considered to be more self-determined, i.e. more

authentic and integrated to the person's self. On the other hand, a control orientation involves a high degree of perceived control. Controlled behaviours are guided by pressures (e.g. rewards, punishment, guilt), and tend to be followed by feelings of tension (Ryan, 1982). People with high control orientation show inconsistency in their attitudes, traits, and behaviours (Koestner et al., 1992), and they have a tendency to engage in personal striving for extrinsic reasons (Sheldon & Kasser, 1995).

It is assumed that all people have each of these orientations¹ to some degree: a person can be autonomy-oriented to a certain extent and controlled to a certain extent (Deci & Ryan, 1985). This means that a high score on one orientation does not necessarily mean a low score on the other (Wong, 2000). In addition, causality orientations could be understood as characteristic adaptations conceptually distinct from personality traits. As such, they can play a role in the relationship between personality traits and other variables (Olesen et al., 2010).

There is evidence that general causality orientations are related to outcomes of motivation for various health-related behaviours (Ng et al., 2012), including marijuana treatment outcomes (Blevins et al., 2016). They have also been applied to the prediction of a number of health-related behaviours, with autonomous forms of motivation generally more effective in predicting health behaviour than controlled forms (Hagger et al., 2015). However, few studies have dealt with the relationship between causality orientations and consumption of psychoactive substances. For instance, Knee and Neighbors (2002) found that the control causality orientation is a moderator in the relationship between peer pressure and alcohol consumption among male college students. Furthermore, Neighbors et al. (2003) showed that less autonomous individuals and more controlled male individuals report greater alcohol consumption and alcohol-related negative consequences. Another study (Neighbors et al., 2004) showed that contingent self-esteem partly mediated the relationship between control orientation and drinking motives, especially in the case of drinking as a means of regulating emotion, and to a lesser extent in the case of drinking to gain social approval.

Except for the case of alcohol, general causality orientations have largely been neglected in the context of predicting consumption of psychoactive substances. Therefore, Smith (2011) emphasises that there is a need to conduct research on motivational factors in this field, in order to consider their role in creating preventive strategies. In line with the aforementioned, the present study extends past findings by examining the relationships among individual differences in autonomy and control orientations, some personality traits and frequency of cannabis consumption.

OBJECTIVE AND HYPOTHESES

The aim of this research was to examine the moderating role of autonomy and control orientations in the relationship between personality traits and frequency of cannabis consumption. In respect to the mentioned problem, we proposed two hypotheses. Firstly, we assumed that among low-autonomy oriented students, there would be a positive correlation between frequency of cannabis consumption and extraversion and neuroticism, while the frequency of cannabis consumption would be negatively correlated with conscientiousness. Among high-autonomy students there would be no statistically significant correlation between personality traits and frequency of cannabis consumption. Secondly, we hypothesized that among high-control oriented students, there would be a positive correlation between frequency of cannabis consumption and extraversion and neuroticism, but a negative correlation between frequency of cannabis consumption and conscientiousness. Among low-control oriented students there would be no statistically significant correlation between personality traits and frequency of cannabis consumption.

METHOD

Participants

The research was conducted in 2015 on a quota sample (regarding gender and the field of the study) of 438 (37.9% males and 62.1% females) first- and second-year students at the University of Zagreb that were living in student dormitories. The average age

¹ Because the present study examines only the autonomy and control orientations, the impersonal orientation will not be discussed in this paper.

was $M=19.62$ ($SD=0.826$) years. The number of days a person consumed cannabis in his or her lifetime did not differ significantly between first- (66.7%) and second year-students (33.3%) ($U_{(434)}=20208.50$; $Z=-.70$; $p>.05$); therefore, the participants were considered to belong to the same population.

Procedure

Before and after lectures, a pen and paper self-report was conducted in the form of group measurement. At each faculty, students were asked to voluntarily participate in the research. Oral informed consent was obtained from participants after they had received oral and written information about the measurement procedure, general purpose of the research, the anonymity of the research, and the restriction that data would be used only for research purposes. Following the application of the instruments, which took about 15 minutes on average, participants were thanked for their participation. At some faculties the lectures were not mandatory, and in two (of six) science faculties, the groups were too small. In these cases, an alternative procedure for individual measurement was designed. During breaks between lectures, the students were asked to take part in the research voluntarily. They were given the same oral and written instructions as the participants in the group measurement. The only difference was how anonymity and confidentiality were ensured. The participants received a questionnaire, written instructions, and an empty envelope in which they placed their questionnaire upon filling it out, sealed the envelope, and mixed it with other envelopes. Another 22 questionnaires were collected through this process of individual measurement. Ethical approval for the research was obtained from the Faculty of Education and Rehabilitation Sciences, University of Zagreb.

Instruments

Causality orientations

Autonomy and control orientation subscales from the revised General Causality Orientations Scale (GCOS; Deci & Ryan, 1985; <http://www.self-determinationtheory.org/general-causality-orientations-scale/>) were used. The original GCOS consists of 12 vignettes. Each vignette is followed by an

autonomous, controlled and impersonal response for which the participants respond on a seven-point scale (1=very unlikely; 7=very likely). In the original instrument, scores for each subscale are calculated by summing up the 12 responses. Based on the results of factor analysis on a sample of Croatian students (Jerković, 2015), a revised version with 8 vignettes was applied in the present study. Each vignette was followed by an autonomous and controlled response. For example, one of the vignettes was "You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be: 'I wonder how it is I did so poorly, and feel disappointed' (which measures the autonomy orientation) or 'That stupid test doesn't show anything, and feel angry' (which measures the control orientation). Each item was rated and scores were calculated as for the original GCOS. In this research, Cronbach alpha was $\alpha=.58$ for autonomy causality orientation and $\alpha=.63$ for control orientation. These Cronbach alpha values can be compared to alpha values in other studies only partially because the present study applied shortened, modified versions of the original scales. Cronbach alpha values in the study by Deci and Ryan (1985) were $\alpha=.74$ for causality orientation and $\alpha=.69$ for autonomy causality orientation. Wong (2000) reported internal consistency of $\alpha=.75$ for autonomy causality orientation and $\alpha=.59$ for control orientation. It is possible to conclude that the internal consistency of the GCOS with 12 vignettes was around .70 for autonomy causality orientation and even lower for control orientation, so the somewhat lower Cronbach alpha values for the modified version with only 8 vignettes is not surprising. When we take into consideration that this instrument consists of 8 hypothetical situations directed to different aspects of life, we consider the internal consistency obtained in this study acceptable. Consistent with previous research, subscales in the present study were uncorrelated ($r=-0.04$; $p>.05$).

International Personality Item Pool - IPIP50

Extraversion, conscientiousness and neuroticism were measured using three scales of the IPIP50 version 2001 (http://ipip.ori.org/New_IPIP-50-item-scale.htm). Each scale has 10 short statements. On a five-point scale (1=very inaccurate; 5=very

accurate), participants rate the extent to which each statement accurately reflects how they are. An example of an extraversion item is "Am the life of the party"; a conscientiousness item, "Follow a schedule"; and a neuroticism item: "Worry about things". Items that are formulated such that higher score indicates lower personality expression are recoded before calculating the total result. The total result is calculated by summing up responses of all items on each scale. The range for each scale is 10-50. In this research, Cronbach alpha was $\alpha=.87$ for the extraversion scale, $\alpha=.77$ for the conscientiousness scale, and $\alpha=.84$ for the neuroticism scale.

In addition to completing all the mentioned instruments, students were asked to estimate their lifetime frequency of cannabis consumption and to write down the number of days they consumed cannabis during their life. In case they did not know the precise number, they were asked to try to estimate it.

RESULTS AND DISCUSSION

The descriptive analysis in this study has revealed that among first- and second-year students at the University of Zagreb living in student dormitories, 27.5% have consumed cannabis during their life. The majority of these students consumed cannabis only one day in their life (27.1%); about 12.9% of those who ever tried cannabis consumed it for 2

or 3 days in their life, and another 12.6% of those who ever tried cannabis consumed cannabis for at least 50 days in their life. These results are similar to those reported by Kuzman and colleagues (2011), and slightly lower than the prevalence reported among young people (15-24 years) in the last survey of the general population in Croatia (Glavak Tkalić et al., 2016). A lower prevalence among students might indicate that there are some protective factors among this population that are not present among youth in general, e.g. academic competence.

Descriptive statistics for causality orientations and personality traits are presented in Table 1. Since causality orientations were measured in the present study using shortened versions of the autonomy and control subscales of the GCOS, the results cannot be directly compared with those of other research. If we divide means for autonomy and control orientation by the number of items in each subscale ($M_a=5.59$, $M_c=3.76$) and compare it with means from other research conducted on student samples (Deci & Ryan, 1985) that have also been divided by the number of original subscale items ($M_a=5.88$, $M_c=4.1$), it is possible to conclude that the results are similar. Furthermore, the results for personality traits are consistent with previous research conducted among students in Croatia (Sabol, 2005).

Table 2 shows pairwise correlations among causality orientations, personality traits and cannabis consumption. Among included variables, only

Table 1. Descriptive analysis of causality orientations and personality traits ($N=438$)

Variable		M	SD	Minimum	Maximum
Causality orientations	Autonomy orientation	44.75	5.156	27	56
	Control orientation	29.82	6.962	10	56
Personality traits	Extraversion	33.38	7.593	10	50
	Conscientiousness	36.77	6.176	10	50
	Neuroticism	28.72	7.224	10	50

Table 2. Pairwise correlations among causality orientations, personality traits and cannabis consumption ($N=438$)

Variable	1	2	3	4	5	6
1. Autonomy orientation	1					
2. Control orientation	-.05	1				
3. Extraversion	.20**	.15**	1			
4. Conscientiousness	.16**	.03	.11*	1		
5. Neuroticism	-.04	.12*	-.17**	-.22**	1	
6. Cannabis consumption	-.06	.07	.14**	-.16**	.03	1

* $p<.05$; ** $p<.01$; italic letters – transformed variable

extraversion and conscientiousness were correlated with cannabis consumption, and these correlations were quite low.

In order to determine whether causality orientations are significant moderators of the relationship between personality traits and cannabis consumption, a series of hierarchical regression analyses were conducted. First, the moderation effect of autonomy causality orientation was tested (Table 3).

Results have shown that there was no significant interaction effect of personality traits and autonomy orientation on lifetime cannabis consumption, so the first hypothesis of this study was rejected. In our study, high extraversion and low conscientiousness were significant predictors of more frequent cannabis consumption, regardless of autonomy orientation. These two variables explained 3.1% of variance in cannabis consumption. The result that highly extraverted students consumed cannabis more frequently is consistent with previous research on personality traits and cannabis consumption (Charvát, 2009; Dubey et al., 2010). It is possible that cannabis users exhibit greater "excitement-seeking" and "activity" than non-users, and these facets of extraversion might contribute to cannabis use (Terracciano et al., 2008). Furthermore, cannabis is usually consumed in company with other people, and extraverted persons might have more opportunities to socialise, which might also influence cannabis consumption. In addition, our

result that individuals scoring lower on conscientiousness consumed cannabis more frequently confirms previous findings (Bogg & Roberts, 2004; Charvát, 2009; Dubey et al., 2010; Fridberg et al., 2011; Terracciano et al., 2008). Conscientiousness is a personality dimension that reflects self-discipline and organisation. It is expected that persons who consume cannabis more frequently are less self-disciplined and organised than non-users. In contrast to conscientiousness, neuroticism was not a significant predictor of cannabis consumption, which is consistent with previous findings that this trait might be a significant predictor of addictive behaviours in general, but not specifically of cannabis use (Antičević et al., 2011; Fridberg et al., 2011; Terracciano et al., 2008).

The results of hierarchical regression analysis for testing interaction effects of the control causality orientation and personality traits on cannabis consumption have shown that there were significant moderation effects of control causality orientation on the relationship between tested personality traits and cannabis consumption (Table 4). When the tested interaction effects were included in the second step, an additional 5.8% of variance in cannabis consumption ($\Delta R^2=.058$; $p<.01$) was explained. Taking into account the change in multiple determination coefficient, we can conclude that these interaction effects are small. Also, it is important to highlight that only two out of three

Table 3. Results of hierarchical regression analysis for testing interactions of autonomy causality orientation and personality traits on cannabis consumption (N=438)

	Model 1			Model 2		
	b	Std. Error	t	b	Std. Error	t
Constant	6.453	1.770	3.65**	6.459	1.834	3.52**
Extraversion	0.552	0.243	2.27*	0.570	0.250	2.29*
Conscientiousness	-0.604	0.298	-2.02*	-0.624	0.300	-2.08*
Neuroticism	-0.267	0.253	-1.06	-0.272	0.255	-1.07
<i>Autonomy</i>	-4.711	2.448	-1.92	-5.137	2.481	-2.07*
<i>Extraversion × Autonomy</i>				0.009	0.291	-0.03
<i>Conscientiousness × Autonomy</i>				-0.036	0.394	-0.09
<i>Neuroticism × Autonomy</i>				0.399	0.349	-1.14
Model Summary						
R	.176			.184		
Adj R ²	.022			.018		
ΔR^2	.031*			.003		

* $p<.05$; ** $p<.01$; *italic letters* – transformed variables

tested interaction effects were significant: the interaction of control causality orientation and extraversion, and the interaction of control causality orientation and conscientiousness. There was no interaction of control causality orientation and neuroticism on cannabis consumption.

Additional analyses were conducted in order to test whether the regression line differed from zero at different levels of control causality orientation. Table 5 shows conditional effects of extraversion and conscientiousness on cannabis consumption at three different values of control causality orientation.

When it comes to extraversion, among students with below-average control causality orientation, there was no significant relationship between extraversion and cannabis consumption. However, among students with average and above-average

control causality orientation, higher results on the extraversion scale were correlated with more frequent cannabis consumption. This effect was more conspicuous among students with high control causality orientation (Figure 1). We can conclude that the part of our second hypothesis dealing with different relationships between extraversion and cannabis consumption at different levels of control causality orientation was confirmed.

If we take a closer look at b coefficients in Table 5, we can see that a 1-point increase on the extraversion scale translated to an increase of 0.518 day in lifetime cannabis consumption. This increase was even higher (1.442 days) among students with high control causality orientation.

This result might indicate that high control orientation combined with high extraversion could be a risk factor for cannabis use among students that live

Table 4. Results of hierarchical regression analysis for testing interactions of control causality orientation and personality traits on cannabis consumption ($N=438$)

	Model 1			Model 2		
	b	Std. Error	t	b	Std. Error	t
Constant	6.508	1.786	3.64**	5.025	1.790	2.81**
Extraversion	0.384	0.244	1.57	0.518	0.239	2.17*
Conscientiousness	-0.711	0.297	-2.39*	-0.760	0.291	-2.61*
Neuroticism	-0.354	0.258	-1.37	-0.327	0.252	-1.30
Control	0.358	0.264	-1.36	0.376	0.260	1.45
Extraversion × Control				0.145	0.031	-4.62**
Conscientiousness × Control				-0.082	0.040	-2.08*
Neuroticism × Control				0.020	0.035	0.56
Model Summary						
R	.164			.291		
Adj R ²	.018			.069		
ΔR ²	.027*			.058**		

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

Table 5. Conditional effects of extraversion and conscientiousness on cannabis consumption at different values of control causality orientation

Control causality orientation	Independent variable	b	Std. Error	t
Below-average (-1 σ)	Extraversion	-0.434	0.300	-1.44
	Conscientiousness	0.038	0.416	0.09
Average (M)	Extraversion	0.518	0.239	2.17*
	Conscientiousness	-0.760	0.291	-2.61*
Above-average (+1 σ)	Extraversion	1.442	0.332	4.34**
	Conscientiousness	-1.115	0.392	-2.85**

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

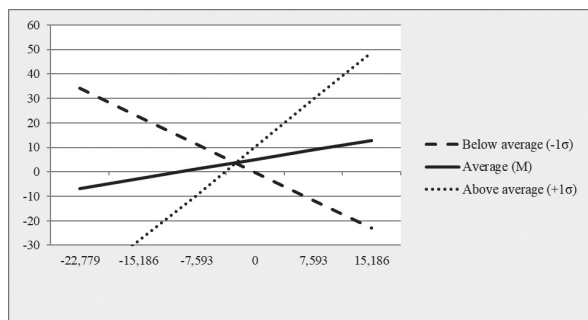


Figure 1. Moderation effect of control causality orientation on the relationship between extraversion and cannabis consumption

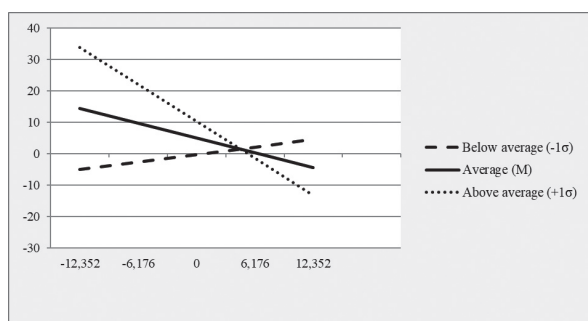


Figure 2. Moderation effect of control causality orientation on the relationship between conscientiousness and cannabis consumption

among their peers and are at the beginning of their studies. It is possible that controlled students who are extraverted tend to consume cannabis more frequently due to normative misperceptions, i.e. distorted beliefs that cannabis consumption is a common behaviour among students and that kind of behaviour is expected of them. If this is the case, normative misperceptions might put pressure on high-controlled, more sociable individuals. It is also possible that some other forms of peer pressure influence this relationship. For instance, Knee and Neighbors (2002) reported that control causality orientation moderates the relationship between peer pressure and alcohol consumption among male college students: men who feel controlled tend to drink more as peer pressure increases. There is a possibility that peer pressure is even more important in the context of cannabis consumption, since the drug is illegal and rebelliousness is typical of (late) adolescence.

Results of testing for conditional effects of conscientiousness on cannabis consumption at

different values of control causality orientation have shown that among students with low control causality orientation, there was no significant relationship between conscientiousness and cannabis consumption.

Furthermore, among students with average control, higher results on the extraversion scale were correlated with less frequent cannabis consumption. Coefficients in Table 5 indicate that a 1-point increase on the conscientiousness scale translated to a decrease of 0.76 day in lifetime cannabis use. This decrease was even greater (1.115 days) among students with high control. To demonstrate these effects better, the interaction was illustrated in Figure 2. In this way, our results have confirmed the part of the second hypothesis referring to the moderation effect of control orientation on the relationship between conscientiousness and cannabis consumption.

This finding showed that interaction of high control orientation and high conscientiousness together might be considered as a protective factor for cannabis use. Conscientiousness is a trait that consists of facets that indicate a person’s self-efficacy, orderliness, dutifulness, achievement-striving, self-discipline, and cautiousness (Goldberg, 1999). Among control oriented individuals that perceive pressures to be a decent part of a society, conscientiousness might navigate a person towards socially acceptable behaviours. The fact that cannabis is an illicit psychoactive substance might make its consumption unacceptable for highly-controlled, conscientious students.

Taking into account the complex relationships among personality traits, control causality orientation and cannabis consumption, it is possible to conclude that high control orientation is neither a good nor bad characteristic, but that its effect on cannabis consumption hinges on a student’s other personality traits.

This research is not without limitations. First, our measure of cannabis consumption was based on self-report. It would be helpful if we had used alternative measures, such as reports from a close friend or roommate. Second, operationalisation of the outcome might not have been the best way to measure the frequency of cannabis consumption, since lifetime experience might limit our ability to

differentiate individuals and it is not a particularly reliable method to measure cannabis consumption. Furthermore, causality orientations present general motivation, and more specific motives for cannabis consumption may explain more of the variance in this behaviour. Also, lower reliability (Cronbach alpha) of the autonomy and control orientation subscales could have influenced the results. It is important to keep in mind that personality traits and the moderation effects of personality traits and control causality orientation explained only a small percentage of cannabis consumption.

In addition, only three personality traits were included. Sullivan (1998; taken from Stewart & Devine, 2000) claimed that agreeableness and openness reflect qualities of the individual in response to the environment. It is possible that we would have obtained a more comprehensive picture if we had included those traits as well, especially if we consider that causality orientations develop in the interaction of individual characteristics and the environmental conditions.

Despite these limitations, this study sheds significant light on research into the effects of causality orientation and addictive behaviour, and the findings presented in the paper have several implications on science and prevention practice. According to the authors' knowledge, this is the first study that examines moderation effect of causal orientation on the relationship between personality traits and cannabis consumption and that tries to clarify this complex relationship. The results of this study contribute to existing knowledge on causality orientations, and their role in explaining cannabis consumption. Furthermore, findings of this research show that individual differences among cannabis users might be important to take into account when planning prevention programmes and other interventions, although

conclusions on interventions require special caution due to the small effects that were observed here. Before any practical recommendations are given, further investigation of interaction between causal orientation and personality traits on cannabis consumption is needed. Further studies should test the proposed model among different populations and with other methods of operationalising cannabis consumption.

CONCLUSION

The results have shown that there is no significant interaction effect of personality traits and autonomy orientation on lifetime cannabis consumption. Students that scored higher on extraversion and lower on conscientiousness consumed cannabis more frequently, regardless of their autonomy orientation. On the other hand, a significant moderation effect of the control causality orientation on the relationship between tested personality traits and cannabis consumption occurred. Although the interaction effects were small, two out of three tested interaction effects were significant: the interaction of control causality orientation and extraversion, and the interaction of control causality orientation and conscientiousness. Among average and high-control students, a higher score on the extraversion scale was correlated with more frequent cannabis consumption, and this effect was more observable among highly control-oriented students. This effect was not present among low-control students, which is in line with expectations. Furthermore, among students with average and high control, higher score on the conscientiousness scale was correlated with less frequent cannabis consumption, and this effect was not present among students that scored low on control orientation.

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MODERATORSKA ULOGA UZROČNIH ORIJENTACIJA U ODNOSU IZMEĐU OSOBINA LIČNOSTI I KONZUMIRANJA KANABISA

Sažetak: *Prema teoriji samoodređenja, uzročne orijentacije predstavljaju relativno stabilne aspekte osobnosti koje karakteriziraju izvor iniciranja i reguliranja ponašanja. Osobe s visokom autonomnom orijentacijom organiziraju svoje ponašanje temeljem vlastitih interesa i ciljeva, dok se kontrolirana ponašanja iniciraju i reguliraju temeljem unutarnjih ili vanjskih pritisaka (Deci i Ryan, 1985).*

U ovom istraživanju testiran je model koji uključuje uzročne orijentacije, osobine ličnosti i konzumiranje kanabisa. Uzorak čini 438 sudionika (39.9% muškog i 62.1% ženskog spola; prosječna dob $M=19.62$, $SD=0.826$) prve i druge godine studija Sveučilišta u Zagrebu koji žive u studentskim naseljima. Primijenjene su modificirana verzija Skale općenitih uzročnih orijentacija (Deci i Ryan, 1985) - skale autonomne i kontrolirane uzročne orijentacije te IPIP 50 skale za ispitivanje osobina ličnosti - skale ekstraverzije, savjesnosti i neuroticizma. Konzumiranje kanabisa je operacionalizirano kao broj dana u životu u kojima je osoba konzumirala kanabis. Provedena je hijerarhijska regresijska analiza u kojoj je kriterij bio broj dana u životu u kojima je osoba konzumirala kanabis, dok su prediktori u prvom koraku bile autonomna uzročna orijentacija i osobina, a njihova interakcija u drugom. Isti postupak proveden je s kontroliranim uzročnom orijentacijom.

Rezultati su pokazali da moderatorski efekti autonomne uzročne orijentacije i osobina ličnosti na konzumiranje kanabisa nisu bili značajni. Utvrđeni su značajni interakcijski efekti kontrolirane uzročne orijentacije i ekstraverzije, kao i interakcijski efekti ove orijentacije i savjesnosti na učestalost konzumiranja kanabisa. Među sudionicima koji su prosječno i visoko kontrolirano orijentirani, veći rezultat na skali ekstraverzije povezan je s učestalijim konzumiranjem kanabisa i taj je efekt bio snažniji među visoko-kontroliranim studentima. Nadalje, među prosječno i visoko-kontroliranim sudionicima veći rezultat na skali savjesnosti bio je povezan s manje učestalim konzumiranjem kanabisa. Efekti osobina ličnosti na učestalost konzumiranja kanabisa nisu bili prisutni među nisko kontrolirano orijentiranim studentima.

Ključne riječi: *autonomna orijentacija, kontrolirana orijentacija, osobine ličnosti, konzumiranje kanabisa*