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Craving Mediates the Relation between Impulsivity and Alcohol Consumption Among University Students

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Background and Objectives: The relationship between impulsivity and craving in severe alcohol use disorders is well established, but the presence and characteristics of this link in University students are still to be established. The present study aims to better understand the relationship between impulsivity and craving in university students and to determine the influence of these variables on alcohol consumption characteristics.
Methods: A large sample of university students ($N = 1055$, mean age: 20.9 years; 713 women) completed an online questionnaire to evaluate alcohol use, impulsivity, and craving.
Results: Linear regression analysis demonstrated that the compulsive dimensions of craving ($P < .001$), sensation seeking ($P < .001$), and lack of premeditation ($P < .001$) constitute strong predictors of current consumption. A receiver operating characteristic (ROC) curve analysis determined the threshold level above which craving intensity can identify specific high-risk populations. A mediation analysis showed that craving has a partial mediator effect on the impact of impulsivity on alcohol consumption for this population (37,8%, $P < .001$).
Discussion and Conclusions: The sensation seeking and lack of premeditation dimensions of impulsivity, coupled with compulsive craving, are efficient predictors of excessive alcohol consumption for university students. The partial mediator effect of craving is important in terms of characterizing the relationship between impulsivity and alcohol consumption.
Scientific Significance: Our study centrally shows that the interaction between elevated levels of impulsivity and craving constitute a crucial risk factor for alcohol consumption in university students, and should thus constitute a target for primary prevention programs (Am J Addict 2019;00:00–00).

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INTRODUCTION

While long considered as a crucial process in addictive disorders, craving has only been recently included as a diagnosis criterion for severe alcohol-use disorders in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5).[1] Although its definition and characteristics are still a matter of debate,[2,3] craving refers to an intense desire and urge to consume and constitutes a primary subjective motivational state encouraging compulsive and uncontrollable alcohol consumption.[4] Some theoretical perspectives consider craving to be a unidimensional concept related to the strong consumption desire,[5,6] whereas others view it as a multidimensional phenomenon encompassing cognitive (eg, ruminative thoughts), physiological (eg, overactivation of the stress network), and emotional (eg, negative affective states) subcomponents.[7–9] Beyond these theoretical controversies, craving is now considered a key factor in the maintenance of addictive disorders, also leading to direct negative physical and psychological consequences (eg, asthenia, anxiety, insomnia, aggressive behavior, and depression).[10] However, while the role of craving is well established in installed addictive states such as severe alcohol-use disorders,[11] its presence in subclinical populations, as well as its role in the emergence of addictive behaviors, has yet to be thoroughly investigated. In other words, there is an urgent requirement to determine how, beyond its established role in individuals with severe alcohol use disorders, craving emerges during the earlier stages of excessive alcohol consumption and is involved in the transition between controlled alcohol consumption and severe alcohol use disorders, in relation with other established risk factors as impulsivity.

Relationship Between Craving and Impulsivity

Another critical question yet to be addressed among subclinical excessive drinkers is the relationship between

craving and another key variable of alcohol-related disorders, namely impulsivity. Many clinical, neurobiological, and neuropsychological studies[12] argue that alcohol-related craving has symptomatic similarities with obsessive-compulsive disorder, suggesting a link between craving and obsessive thoughts about alcohol, as well as between craving and compulsive behaviors.[13] These results suggest that craving reflects (i) repetitive and uncontrolled aspects of drinking compulsion; and (ii) processes related to the ability to actively resist impulsion. Regarding this last point, impulsivity could be defined as a tendency to initiate fast reactions to internal or external stimuli, without taking into account the negative consequences.[14] Previous research has repeatedly shown increased impulsivity in individuals with severe alcohol use disorders, and its involvement in relapse after detoxification is established.[15] It has also been largely demonstrated that subclinical excessive drinkers (eg, heavy or binge drinkers) present increased impulsivity levels (see Stautz and Cooper[16]; Adan et al[17] for reviews). Higher impulsivity levels have also been repeatedly reported in young people, and more particularly in university students, which thus constitute an at-risk population.[18] Considering its relationship with craving, impulsivity is positively linked with craving in cocaine-dependent people,[19] methamphetamine-dependent individuals,[20] alcohol-dependent men,[21] patients admitted for alcohol-related problems in emergency departments,[22] and regular smokers.[23–25] Overall, these results indicate that people with increased impulsivity experience higher levels of craving in various addictive states, but this link has only been recently explored in subclinical alcohol drinkers, and these studies focused on a unidimensional evaluation of impulsivity. However, the UPPS Impulsive Behavior Scale,[26] currently the most influential impulsivity model in addictive disorders, proposes to go beyond the unidimensional exploration of impulsivity by offering a multidimensional, four-factor impulsivity model, including (a) *urgency*: the inability to inhibit a dominant or automatic response, particularly in intense positive or negative emotional situations; (b) *lack of perseverance*: the inability to stay focused on a task without being distracted or disturbed by thoughts or intrusive memories; (c) *lack of premeditation*: the inability to take into account the positive or negative consequences of an action based on previous emotional experiences in similar situations; and (d) *sensation seeking*: that is, the tendency to constantly seek for new and exciting experiences, regardless of the risks involved. The relationship between these factors and alcohol consumption is well established. For example, high levels of *urgency*[27] and *sensation seeking* are specifically related to alcohol dependence.[28,29] Some authors have proposed that *urgency* predicts the quantity of alcohol consumed and problems associated with alcohol consumption, whereas *sensation seeking* predicts consumption frequency.[30] A recent meta-analysis[31] demonstrated that the amount of alcohol consumed by adult populations is centrally correlated with the *lack of perseverance*. These first insights are a clear indication that impulsivity should no longer be considered a unidimensional concept but rather regroups several subcomponents, differentially related to alcohol consumption. These subcomponents may also present distinct links with craving in subclinical drinkers, but such links have yet to be explored. Recent results in patients with severe alcohol use disorders have illustrated that trait impulsiveness is implicated in the modulation of craving on this population.[32] More precisely, they observed that, in natural settings (ie, real-life alcohol drinking contexts such as in a bar), the cue-elicited craving is more important when impulsivity is higher, suggesting, in view of their interactions, that craving and impulsivity should be considered simultaneously rather than separately.

Relationship Between Craving and Impulsivity in Social Drinkers and University Students

To improve understanding regarding how craving is involved in the subclinical stages of alcohol consumption as well as how it ties in with impulsivity subcomponents, university students are an interesting population because they present high alcohol consumption (not only in the United States[33] but also in France[34]) and are highly vulnerable to alcohol misuse and binge drinking,[35] both of which are known to increase the risk of future severe alcohol use disorders.[36] Moreover, impulsivity is related to alcohol consumption in students,[37] particularly for its *sensation seeking* subcomponent.[38] More precisely Cyders et al.[39] showed that the *urgency* subdimension was linked to the quantity of alcohol consumed, whereas *sensation seeking* is associated with consumption frequency. These results could be explained by the beliefs about alcohol for students. Stamates and Lau-Barraco[40] illustrated that impulsivity and risk-taking contributed to approximately 12% of the variance of alcohol consumption among students. Labrie et al.[41] explored subcomponents of impulsivity on college students and observed that sensation seeking and negative urgency interact with beliefs about alcohol's role and drinking in general. All these studies highlighted the importance of understanding the relationship between impulsivity and other processes with respect to alcohol consumption for young people. In particular, a recent study[42] has shown that increased impulsivity predicted significantly higher craving. Some other analyses explored specifically the subdimensions of impulsivity on craving among university students populations. Papachristou et al.[43] observed that ineffective response inhibition (associated with urgency) enhanced cue-induced craving among heavy drinkers, a result which was not found among light drinkers. This effect was also shown when perceived availability of alcohol was manipulated among heavy drinkers.[44] To our knowledge, and despite the large interest for impulsivity and craving on this population, there are no other studies exploring specifically the relationship between these two important dimensions of addictive state on university student. Moreover, these two studies did not use the UPPS scale to measure impulsivity,

thus hampering exploration of the specific link between craving and impulsivity subcomponents. Further their sample size was quite low ($N = 75$ for Papachristou et al.[44] and $N = 40$ for Papachristou et al.[43]), and they focused on a short-term cue-elicited craving rather than on an evaluation of more stable craving intensity such as the Obsessive-Compulsive Drinking Scale (OCDS). This study aims to answer these two points.

Purpose

Our study proposes to explore the relationship between subdimensions of impulsivity and craving dimensions, as well as of their interaction, on alcohol consumption pattern presented by the university students. Beyond the mere correlations between these dimensions, we aim at (a) determining the mediation effect that craving (ie, contextual dimensions related to alcohol consumption) has regarding the impact of impulsivity (ie, dispositional dimension related to alcohol consumption) on alcohol consumption patterns; and (b) establishing through ROC analyses, a craving score, which would efficiently suggest the dangerousness of alcohol consumption in this population.

MATERIALS AND METHODS

Participants and Procedure

An e-mail containing a description of the study and a link to the online survey (conducted via SurveyMonkey) was sent to French university students (University Clermont Auvergne—approximately 14 500 students). One thousand and fifty-five students completed the entire survey and were included in a lottery draw to win a €50 voucher. Participants' anonymity was guaranteed and their informed consent was obtained prior to the study. The survey was conducted in December 2014 and was approved by the Committee for the protection of individuals.

Measures

The online questionnaire gathered demographic information (age and sex) as well as data on alcohol consumption (Alcohol Use Disorders Identification Test [AUDIT]), impulsivity (UPPS), and craving (OCDS).

AUDIT

The level of alcohol consumption was assessed by the AUDIT,[45] a self-report scale used to identify individuals at risk of chronic alcohol consumption/misuse and assessing three dimensions of alcohol consumption, namely frequency and amount consumed, dependence, and problems caused by alcohol consumption. It comprised 10 items, ranging from 0 to 4. A score of 8 or more in men and 7 or more in women is assumed to indicate misuse of alcohol; scores > 14 (men) or > 12 (women) are suggestive of alcohol dependence.[46] All further references to alcohol consumption levels in this paper will thus be referring to the AUDIT score.

Craving

We used the validated French translation of the 14 items of the *OCDS*[47,48] to assess obsessive and compulsive dimensions of alcohol behavior craving. Higher scores indicated higher levels of craving. This questionnaire has a high internal consistency (Cronbach's α of .89 for the validation study and .86 for the present one).

Impulsivity

We used the validated French version of the Impulsive Behavior Scale,[26,49] a self-report scale that assessed the four dimensions of impulsivity using 45 items (*urgency* [12 items]; *lack of premeditation* [11 items]; *lack of perseverance* [10 items]; *sensation seeking* [12 items]). Responses were given on a four-point Likert scale ranging from 1 (totally disagree) to 4 (totally agree). Higher scores indicated higher impulsivity. The Cronbach's α for this study was between .83-.87 and .77-.83 for the French validation.

Data Analysis

First, to explore the link between variables, we conducted Pearson's correlations between craving (OCDS obsession and compulsion subscales) and alcohol consumption (AUDIT scores). Then, to determine the role of craving, we conducted a linear regression with AUDIT score as outcome variable, and age, sex, age at first-time consumption,[50] and OCDS score as predictors. Then, a linear regression was conducted with OCDS obsessive and compulsive scores as outcome variable, and age, sex, age at first-time consumption and subdimensions of UPPS scale as predictors to explore the relationship with impulsivity. A similar analysis was performed for impulsivity and its subdimensions. Then, we conducted a linear regression with AUDIT score as outcome variable and all previously studied variables as predictors, to assess which variable is the best predictor of alcohol consumption. To better describe the link between impulsivity and craving, we conducted a mediation analysis using Medmo 1.0.0 package for Jamovi v. 0.9.0.3 software to explore the direct link between impulsivity (dispositional factor) and alcohol consumption, and the mediator role of craving (situational factor). A bootstrap estimation method with 5000 samples was used.

We also carried out further analyses: (a) Based on the AUDIT score, the student sample was divided into two groups, one presenting low-risk alcohol consumption (AUDIT score ≤ 8) and the other high-risk consumption (AUDIT score > 8). Group comparisons were conducted for all variables using t tests or χ^2. (b) A ROC curve was computed to determine the optimal craving score that detected dependence among our population. AUDIT scores above 12 constituted our variable of interest characteristic of dependence.[46]

The significance level was set at 0.05 and confidence intervals were reported when required. All analyses (excepted

mediation) were performed using SPSS v.19 software (IBM, Armonk, NY).

RESULTS

Descriptive Statistics

One thousand and fifty-five students completed the entire survey (mean age: 20.90 years; standard deviation [SD] = 3.46; 713 women, 66% of the sample). The average age of first alcohol consumption was 14.71 years (SD = 2.52).

Table 1 presents Pearson's correlations between craving, impulsivity, and alcohol consumption. Correlations ranged from 0.17 to 0.67 and were all significant. More specifically, higher alcohol consumption level was positively associated with higher craving dimensions and higher impulsivity subdimensions, as expected. It should be noted that, while we considered a score of 8 at the AUDIT as the cut-off, a small proportion of students (ie, 0.9%) presented an AUDIT score higher than 19, considered as representing potential severe alcohol-use disorders.

Relationship Between Craving and Consumption Level

Linear regression analysis ($R^2 = 0.380$, $F(4954) = 146.229$, $P < .001$) demonstrated that higher OCDS score ($t(954) = 22.719$, $P < .001$), higher age of first consumption ($t(954) = 2.383$, $P = .017$) and being a man ($t(954) = 3.608$, $P < .001$) were significant predictors of increased alcohol consumption level. More precisely, when OCDS subdimensions were used ($R^2 = 0.471$, $F(5953) = 169.599$, $P < .001$), only higher level of compulsive subscale ($t(953) = 24.035$, $P < .001$) and being a man ($t(953) = -3.16$, $P = .002$) were significant predictors.

Relationship Between Impulsivity and Consumption Level

Linear regression analysis ($R^2 = 0.176$, $F(4947) = 50.562$, $P < .001$) showed that higher UPPS score ($t(947) = 12.121$, $P < .001$), higher age of first consumption ($t(947) = 2.594$, $P = .01$) and being a man ($t(947) = 6.374$, $P < .001$) significantly predicted increased alcohol consumption level. More precisely, when UPPS subdimensions were used ($R^2 = 0.182$, $F(7944) = 29.925$, $P < .001$), we observed that higher score at urgency ($t(944) = 3.684$; $P < .001$), lack of premeditation ($t(944) = 5.428$; $P < .001$), lack of perseverance—with a trend effect—($t(944) = 1.913$; $P = .056$) and sensation seeking ($t(944) = 5.56$; $P < .001$), as well as age at first consumption ($t(944) = -2.632$; $P = .009$) and being a man ($t(944) = -5.757$; $P < .001$) significantly predicted higher alcohol consumption level.

TABLE 1. Pearson correlations between craving as measured by the OCDS, Impulsivity (UPPS), and alcohol consumption (AUDIT)

	AUDIT (r Pearson)	*P* value
Total UPPS	0.362	<.001
UPPS Urgencies	0.173	<.001
UPPS Premeditation	0.295	<.001
UPPS Perseverance	0.192	<.001
UPPS Sensation	0.274	<.001
Total OCDS	0.595	<.001
OCDS Compulsion	0.670	<.001
OCDS Obsessive	0.333	<.001

AUDIT = Alcohol Use Disorders Identification Test.

Craving and Impulsivity as Joint Alcohol Consumption Predictors

Our last linear regression analysis ($R^2 = 0.510$, $F(9923) = 106.782$, $P < .001$) demonstrated that when craving and impulsivity subdimensions were simultaneously tested, only the compulsive dimension of craving ($t(923) = 21.906$, $P < .001$), lack of premeditation ($t(923) = 4.897$, $P < .001$) and sensation seeking ($t(923) = 4.866$, $P < .001$) predicted alcohol consumption, together with sex ($t(923) = -3.178$; $P = .002$). Considering that all subdimensions of impulsivity and of craving had a significant effect on consumption level, we used the total score of impulsivity to explore the mediator effect of craving (see Fig. 1). This analysis revealed a significant direct effect (impulsivity on consumption level, $c = 0.0643$, $P < .001$) but also an indirect effect of craving on the relation between impulsivity and consumption level ($ab = 0.039$, $P < .001$) and explained 37.8% of the partial mediation (see Fig. 1 for path estimates).

Complementary Analysis: Comparisons Between Low and High Alcohol Consumption Groups

On the basis of AUDIT scores, 689 students (average age = 20.95 years; 509 women –74%) were included in the "low risk" group (AUDIT score ≤ 8) and 366 students (average age = 20.51 years; 204 women) were included in the "high risk" group (AUDIT score > 8). These two groups did not differ in terms of age but were significantly different for all other variables, as expected (see Table 2).

A ROC curve analysis was conducted, and a threshold score (TS) of 12 on the craving scale (see Fig. 2) was selected, where both sensitivity (0.710) and specificity (0.783) are optimized to detect alcohol use disorders (score > 12 on the AUDIT score). The area under the curve is 0.808, and the asymptotic significance less than 0.001 [95% CI = 0.780, 0.836].

DISCUSSION

Our principal aim was to explore how impulsivity and craving dimensions relates to alcohol consumption characteristics in students, and to better understand the relationship between these two concepts, considering the importance of craving as a symptom of alcohol use disorder in the new DSM-5. We observed that impulsivity, and in

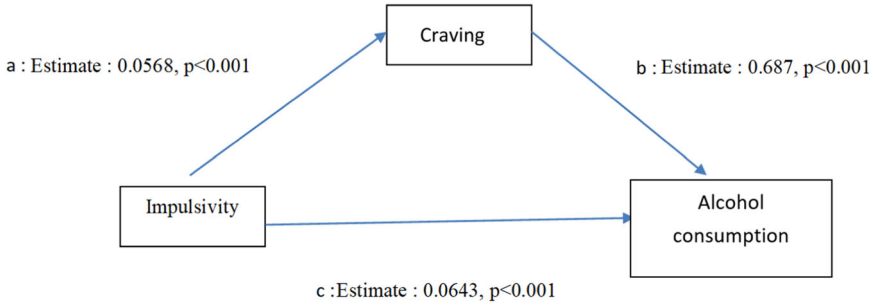

FIGURE 1. Partial mediation effect craving (OCDS) on the effect of impulsivity (UPPS) on the level of alcohol consumption (AUDIT). AUDIT = Alcohol Use Disorders Identification Test; OCDS = Obsessive-Compulsive Drinking Scale.

particular its *lack of premeditation* and *sensation-seeking* subcomponents, is the most efficient predictor of alcohol consumption. This result is in line with the study conducted by Adams et al.,[51] which showed the importance of *urgency*, *lack of premeditation*, and *sensation seeking* in alcohol-related disorders. We also observed that the impact of the *urgency* dimension on findings obtained by Adams et al.[51] seem to indicate that the *urgency* dimension is linked to this concept and warrants further exploration. We also explored the intensity of obsessive and compulsive craving for alcohol in a student population, when taking impulsivity into account. We observed that students with a high risk of alcohol-related disorders (AUDIT score > 8) had strong craving scores, their mean score being in fact higher (mean = 14.89, SD = 4.04) than those scores observed for French patients with severe alcohol use disorders (mean = 11.30, SD = 7.60).[52] This result illustrates that craving is not only a symptom related to severe alcohol use disorders, but also a risk factor for the emergence of alcohol-related problems. Our results showed that craving levels are a reliable predictor of alcohol consumption in nondependent students. However, this finding should be taken carefully, notably because preserved metacognitive abilities regarding student's alcohol consumption may explain this result. More importantly, we observed that craving (situational aspect) explains 37.8% of the effect of impulsivity (dispositional aspect) on alcohol consumption, underlining the requirement to simultaneously explore these two dimensions. To make better use of the OCDS as a predictor of risky consumption, we calculated a TS for this scale with respect to our student population. The TS identified (ie, a score of 12 at the OCDS) is consistent with the value observed by the French validation of this scale,[52] which distinguishes between dependent and nondependent patients. The OCDS could therefore be an interesting tool among students to identify, through current craving evaluation, the risk of developing a severe alcohol use disorder.

Implications for Preventing Alcohol Abuse

Our study clearly demonstrates the importance of reducing craving, particularly with respect to its compulsive dimension, in order to reduce the risk of alcohol-related disorders among students. Some training focusing on such reduction has obtained encouraging results in other psychopathological states (eg, anorexia nervosa),[53] and may be adapted for alcohol consumption among students, notably via online training, which seems to be an encouraging prevention approach for students (see, eg, Caudwell et al[54] and Flaudias et al[55]). Garland et al.[56] also observed the effectiveness of mindfulness training on some components of craving. In the same line, Murphy and MacKillop[57] showed in a recent study that mindfulness training could reduce impulsivity among students, leading to reduced drinking behaviors. Nevertheless, a recent study on university students drinkers demonstrated that desire thinking (perseverative thinking that involves the elaboration of a desired target) is a confounder in the relationship between mindfulness and craving.[58] This result indicates that mindfulness alone may not be sufficient in managing distressing experiences and that it may need to be potentiated by the purposive interruption of perseverative thinking patterns (such as desire thinking). This type of intervention could thus be potentiated (or even replaced) by techniques that directly target perseverative thinking, such as the attention training technique, detached mindfulness, and the postponement of desire thinking.[59–61] Regarding impulsivity, several specific programs have demonstrated their effectiveness on impulsivity subdimensions, and should be proposed to the university students (see, eg, Stamates et al[41]; Caselli and Spada[62]; Conrod et al[63]). To conclude, our results also highlighted the requirement to step up existing prevention programs for students that encourage them to anticipate the consequences of drinking behaviors (premeditation) and to seek alternative ways to experience positive sensations in order to replace alcohol consumption.

Limitations

The cross-sectional design of our study did not enable us to explore the causal links between impulsivity, craving, and alcohol consumption. We used self-reported questionnaires that, despite their validity, could not encompass all aspects of the measured concepts. For example, Belin et al.[64] demonstrated that there are two dimensions of craving (implicit and explicit), working in parallel. The exploration

TABLE 2. Comparison of subsamples defined by low risk or high risk of dependence with respect to investigated variables, showing the effect sizes and values of Cronbach's α for various scales

	α	Low risk (AUDIT ≤ 8) mean and SD (or %)	High risk (AUDIT > 8) mean and SD (or %)	t Test (*or* χ^2)	P value	95% CI
Sex		509 women (74%)	204 women (56%)	$\chi^2(2) = 35.89$	<.001	
Age		20.95 (3.43)	20.81 (3.52)	0.65	.51	
AUDIT		3.98 (1.95)	11.53 (4.05)	–40.82	<.001	[–7.91 to –7.19]
Age at first consumption		14.93 (2.57)	14.29 (2.38)	3.91	<.001	[0.32 to 0.96]
UPPS urgency	0.87	28.82 (6.69)	30.22 (6.83)	–3.09	.002	[–2.30 to –0.51]
UPPS lack of premeditation	0.85	21.16 (4.79)	23.26 (4.98)	–6.44	<.001	[–2.74 to –1.46]
UPPS lack of perseverance	0.83	19.91 (4.51)	21.36 (4.79)	–4.65	<.001	[–2.06 to –0.84]
UPPS sensation seeking	0.84	32.54 (6.95)	35.52 (6.57)	–6.49	<.001	[–3.89 to –2.08]
UPPS total	0.88	102.43 (14.54)	110.37 (14.48)	–8.10	<.001	[–9.87 to –6.02]
OCDS obsessive	0.83	5.34 (1.27)	6.12 (1.98)	–7.46	<.001	[–0.98 to –0.57]
OCDS Compulsive	0.79	6.45 (1.40)	8.77 (2.52)	–18.45	<.001	[–2.56 to –2.07]
OCDS total	0.86	11.79 (2.26)	14.89 (4.04)	–15.37	<.001	[–3.49 to –2.70]

AUDIT = Alcohol Use Disorders Identification Test; CI = confidence interval; OCDS = Obsessive-Compulsive Drinking Scale; SD = standard deviation.

VAS Score	Sensitivity %	Specificity %
11	.850	.603
12	**.710**	**.783**
13	.545	.863

FIGURE 2. Receiver operating characteristic curve for students' Obsessive-Compulsive Drinking Scale (OCDS) scores. *Optimal threshold scores for detecting craving, according to the Alcohol Use Disorders Identification Test (AUDIT).

of these two dimensions with physiological or computer tests could be of interest. We further decided to characterize students with a higher score at AUDIT (>8) as population at risk of dependence as it is recommended in the country where the study is conducted and by a recent international recommendation,[46] but we could not exclude that some of the persons included in the sample may already present severe alcohol use disorders or that some results obtained here could not be generalizable to other countries or with other thresholds. Moreover, we chose to explore only one aspect of craving, an approach which is probably insufficient for analyzing the diversity and complexity of this symptom (see the recent metacognitive hub model of craving[3]).

Conclusion and Perspectives

Despite the aforementioned limitations, we have shown the important role played by craving-impulsivity interactions in students' alcohol consumption. Our study also demonstrated that craving is already present among university students (according to the AUDIT definition). These results provide further insight regarding the concept of craving and its role in subclinical alcohol consumption. These findings are also relevant for student prevention programs. Considering the importance of impulsivity levels in this population, future studies must explore how the relationship between craving and impulsivity evolved in adulthood, by measuring this relationship in an older sample

of excessive subclinical drinkers. Such a study would offer further insights regarding the evolution of craving/impulsivity interactions across the successive stages of alcohol-related disorders. However, while our study focused on alcohol consumption, craving is a transdiagnostic concept, and future studies are required to explore the generalizability of our results in other addictive states, such as nicotine dependence. The use of various measurement tools to better understand the multidimensional aspects of craving and impulsivity will be necessary to better understand their relationship in the future.

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Declaration of Interest

All authors have no conflicts of interest to disclose.

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