Drinking wine to "get high": The influence of awareness of the negative effects among young adults

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ABSTRACT

Introduction: In a group of university students, the current study investigated the relationship between drinking wine to get high and the awareness about its characteristics, composition, positive and negative effects on health.
Methods: Through a web-based survey, 1685 students at the University of Siena completed a self-report questionnaire to assess consumption behaviours, knowledge about wine and the awareness about its effects.
Results: Seventy-three percent reported drinking wine. Males were more frequently wine consumers ($p = 0.037$). Among the students who reported drinking, 69.3% engaged this habit during the weekend. Almost 12% reported drinking wine to get high. Drinking wine to get high correlated with the consideration of its consumption: using this beverage to get high was strongly associated with considering wine like other spirits ($p = 0.033$).
Conclusions: Older age, female gender, and considering wine as a part of the diet were found to be protective factors against wine drinking-to get high. In contrast with some literature, awareness of the negative effects correlated with higher propensity to use wine to get high. Potential interpretations and limitations are addressed.

1. Introduction

Consumption of alcohol is widely spread among young people. Drinking alcohol is a socially and culturally accepted behaviour, although it is one of the most dangerous drugs and it has a strong ability to induce physical dependence (Nutt, King, Saulsbury, & Blackmore, 2007). The number of young people drinking alcohol has increased constantly over the last few years. In 2016 in Italy, almost the half of the young adults aged 18–34 years old consumed alcohol out of the meals, and during 2015 2.5 every 1000 young individuals aged 20–34 died for abuse of alcohol (Italian Council of Statistics, 2018).

Most of the research about alcohol use among young people focused on a series of individual and ecological factors related to interpersonal relationships and the social environment (Pons & Buelga, 2011; Vantamay, 2009). Psychosocial models assumed that the causes of abuse of alcohol should not only be sought in the individual characteristics of the abusers but also in the social framework they belong to and in the relational models they follow (Francalanci, Chiassai, Ferrara, Ferretti, & Mattei, 2011; Mallett, Bachrach, & Turrisi, 2009).

This evidence is consistent also for wine use and abuse, although drinking wine represents a sort of cultural lifestyle. Literature highlighted the positive effects of this beverage on health (Artero, Artero, Tarín, & Cano, 2015) and the diffuse perception that drinking wine is healthier than other alcoholic drinks (Chang, Thach, & Olsen, 2016; Saliba & Moran, 2010; Vecchio et al., 2017; Yoo, Saliba, MacDonald, Pranzler, & Ryan, 2013).

Some scholars explored the changes in young people's behaviours related to alcohol and wine consumption (Atkin & Thach, 2012). These behaviours are characterized by a high consumption of beer, spirits, and wine aimed at a rapid achievement of drunkenness (Atkin & Thach, 2012; Marinelli et al., 2014; Valentine, Holloway, & Jayne, 2010). A generation of youngsters identifies alcohol and wine as a mean to get high, especially during the weekend (Chiassai, Ferrara, Francalanci, Ferretti, & Mattei, 2010; Maggs, Williams, & Lee, 2011), deleting each benefit correlated to a moderate consumption of wine.

Conversely, few studies examined the association between alcohol use and the awareness of the users about what they are drinking and its effects. Beck and Summons (1986) explored the relationship between alcohol consumption and sources of information among high school students; findings highlighted that users consistently reported that their

own experience was their best source of information. A group of college students was recruited by Park (2004) to assess the motivations for their choices on the consumption of alcohol, reporting that young people experienced more positive than negative consequences and that such experiences influenced their future decisions about drinking alcohol. Similar findings were reported in the study of Park and Grant (2005). More recent research underlined that the so-called "Millennials" do not rely their decisions about consumption on the quality of the product, but on the label imagery and alcohol content (Atkin & Thach, 2012).

Some research investigated the role of alcohol expectancies across demographic and cultural variables, including gender and age (Montes et al., 2017). Some studies reported gender-related differences in alcohol expectancies showing greater positive reinforcement expectancies in women (e.g., Lundahl, Davis, Adesso, & Lukas, 1997), whereas other studies show men to report greater positive reinforcement expectancies (Brown, Goldman, Inn, & Anderson, 1980). Findings have been similarly mixed for negative reinforcement expectancies: some studies have found men to report greater tension reduction expectancies (e.g., Rohsenow, 1983), whereas other studies have failed to demonstrate such a relationship (O'Hare, 1990). Some authors investigated alcohol expectancies in different age groups, hypothesizing that, since expectancies about the effects of alcohol may change as drinking experience is accumulated, it could be that the association between alcohol expectancies and drinking differ with age (Leigh & Stacy, 2004). It has been reported that positive expectancies predicted drinking better than negative expectancies only among younger respondents (aged under 35), while negative expectancies were a better predictor of drinking in most older respondents (aged over 35 years) (Leigh & Stacy, 2004).

Little is known about the influence of information on wine drinking behaviours, not even on the awareness that alcohol users have about the effects and the characteristics of the drink they are assuming. The term "awareness" was used instead of "information", because the former implies a higher level of consciousness that should be able to drive the consumers' choices.

Starting from these points, the aim of this study was to investigate in a group of university students the relationship between drinking wine to get high and the level of awareness about the characteristics of this beverage, its composition, its positive and negative effects on health.

2. Materials and methods

2.1. Study design and participants

During July 2016, a sample of 1685 students registered at the University of Siena (Italy) was enrolled in a research project named "*Wine: a glass for your health*". The sample was collected through a web-based self-report survey, which used the online platform of the University (LimeSurvey). At the end of the survey, a group composed by 15,625 students registered within 7th August 2016 (10.8% of the population) responded to the web-survey. The resulting sample was representative of the population according to gender and age. Seventy-seven respondents were excluded because of the age: young adults were the target population of the study; therefore, respondents aged 35 years old or over were excluded. The final database included 1608 participants.

2.2. Measures

The original research questionnaire contained 35 questions, concerning consumption behaviours, knowledge about wine and the level of awareness about its effects. Age and gender were assessed as demographic characteristics, wine consumption habits (HAB: "Spreaded throughout the week days" or "Gathered in the weekend") and consideration (CONS: "It's like other alcoholic drinks", "A part of the diet", "A pleasure to take occasionally" or "Other"), age at the first time of

consumption of wine and, finally, an array of questions concerning knowledge related to the beverage. Self-reported use of alcoholic drinks and/or wine with the aim at getting high was investigated through a question with binary response choice. The respondents had to indicate whether they drank to get high or not.

This last set of questions provided the measure of awareness about the characteristics of this drink, by identifying whether or not the respondent gave right answers related to the topic described. An array of 19 multiple-choice questions, divided into four groups, was used. The first group of questions (9 questions) asked information about the knowledge of wine composition (COMP), while the second group (5 questions) was dedicated to exploring the knowledge about metabolism of wine consumption (METAB). The third and the fourth groups covered the opinions of participants related to positive and negative effects of wine (respectively POS and NEG, 3 and 2 questions).

The measure of awareness was estimated through the number of correct answers provided by the students compared to the possible options. A total score of awareness (AWA) was obtained by the sum of correct answers (min = 0, max = 34), and four sub-scores were calculated, each one for every group of questions (COMP: min = 0, max = 9; METAB: min = 0, max = 12; POS: min = 0, max = 6; NEG: min = 0, max = 7).

2.3. Statistical analyses

Descriptive statistics were performed on the whole sample and on the subgroups of drinkers and non-drinkers, to examine the main characteristics of the participants. Participants were classified as "drinkers" if they reported drinking wine. Fisher exact test was used to assess the association between qualitative variables (for example: gender vs group, or comorbidities vs group). After having verified the violation of normality, Mann-Whitney U test was applied to compare the groups of participants on quantitative variables (age and awareness scores).

The sub-set of data related to the participants who reported drinking wine was used to fit a set of models, which aimed at explaining the dependent variable (DGH, self-reported declaration related to the attitude among wine consumers: normal drinkers vs drinkers to get high) through a series of independent variables, including the awareness scores and self-reported wine consumption, controlling for gender and age as factor and covariate, respectively. A series of General Linear Models with a binary response variable was fitted, where Gender and Age were control variables, while CONS and AWA, COMP, METAB, POS and NEG, used in different models, were predictors:

Model 1: $DGH = \beta_0 + \beta_1\ Gender + \beta_2\ Age + \beta_3\ CONS + \beta_4\ AWA + E$

Model 2: $DGH = \beta_0 + \beta_1\ Gender + \beta_2\ Age + \beta_3\ CONS + \beta_4\ COMP + E$

Model 3: $DGH = \beta_0 + \beta_1\ Gender + \beta_2\ Age + \beta_3\ CONS + \beta_4\ METAB + E$

Model 4: $DGH = \beta_0 + \beta_1\ Gender + \beta_2\ Age + \beta_3\ CONS + \beta_4\ POS + E$

Model 5: $DGH = \beta_0 + \beta_1\ Gender + \beta_2\ Age + \beta_3\ CONS + \beta_4\ NEG + E$

Each model was checked for basic assumptions (linearity, normality of residuals and homoscedasticity). Multicollinearity was assessed comparing Type I and Type III Sum of Squares estimations of effects. Models with interactions (even "shotgun models") were also evaluated, but without appreciable findings compared to the model with main effects only. The significance of the Omnibus test was checked to assess the predictive power of the models. The statistical analyses were performed through the SPSS-IBM version 21 software, and the level of significance was set at $p < 0.05$.

Table 1
Sample characteristics.

	Wine consumers (n = 1181)	Not consumers of wine and/or others alcoholic drinks (n = 427)
Gender (%)		
Females	772 (65.4)	300 (70.3)
Males	409 (34.6)	127 (29.7)
Age (mean ± SD)	23.45 ± 2.92	22.93 ± 2.97
Habits of wine consumption (%)		
Engaged during the week days	363 (30.7)	
Concentrated during the weekend	818 (69.3)	
Age of the first time consuming wine (%)		
< 14 years old	290 (24.6)	
14–17 years old	701 (59.4)	
18 years old and more	190 (16.1)	
Considering wine as … (%)		
It's like other alcoholic drinks	133 (11.3)	
A part of the diet	175 (14.8)	
A pleasure to take occasionally	828 (70.1)	
Other	45 (3.8)	
Use of alcoholic drinks to "get high" (%)	139 (11.8)	
Use of wine to "get high" (%)	73 (6.2)	

## 3. Results

3.1. Sample characteristics

The majority of the sample (73.4%) was represented by students who reported drinking wine. This group was called as "Wine consumers" throughout the manuscript (Table 1). Mean age of this group was higher than the other group of those who did not report drinking wine ($p = 0.002$), who were called as "Not consumers of wine" throughout the manuscript. Males were more frequently wine consumers: 34.6% male wine consumers against 29.7% male not consumers of wine ($p = 0.037$).

Among the group of wine consumers, a large number (69.3%) engaged this habit during the weekends. The age of the first time consuming wine ranged between 14 and 17 years old for a large number of students (59.4%). Almost 12% of the students reported drinking alcoholic drinks to get high, while those who used wine for the same purpose represented the 6.2%. The consumption of wine was widely considered as a pleasure to be enjoyed occasionally (70.1%).

There was no relationship between the age of first time consuming wine and the consumption of this drink to get high, but this behaviour was strongly associated with the habits of consumption: those who drank wine to get high, concentrate their drinking during the weekend ($p = 0.031$).

Findings highlighted the significance of the association between the consumption of alcohol and wine to get high: 93.2% of those who drink wine to get high were alcohol abusers for the same purpose ($p = 0.000$). Drinking wine to get high was correlated with the consideration of its consumption: using this beverage to get high was strongly associated with considering wine like other spirits ($p = 0.033$).

The comparison among the awareness scores between the normal consumers of wine and those who abused of this drink to get high (Fig. 1) revealed that consumers to get high had a total score of awareness (AWA) higher than normal consumers of wine with a low effect size ($p = 0.042$, Cohen's d = 0.12). The same significant difference was related to the awareness about metabolism score with a low
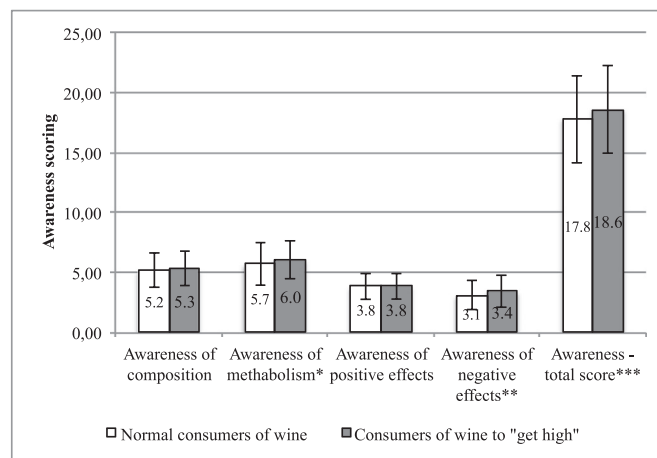
Fig. 1. Comparisons of the awareness scores between normal consumers and wine consumers to "get high".
Mann-Whitney *U* test: *$*p = 0.037$, **$*p = 0.026$, ***$*p = 0.042$.

effect size (METAB: $p = 0.037$, Cohen's d = 0.12) and awareness about negative effects score with a low effect size (NEG: $p = 0.026$, Cohen's d = 0.13).

Only the findings of the Model 1 and the Model 5 are shown. Model 2, 3 and 4 had good predictive power (Omnibus test: Model 2, $p = 0.001$; Model 3 and 4, $p = 0.000$), a significance main effect of the control variables age and gender, but these models showed the redundancy of the two predictors CONS and COMP/METAB/POS, according to the different models. The contribution of the control variables to the dependent one was the same than that highlighted by the results of Models 1 and 5.

3.2. Model 1: awareness total score

As mentioned before, Model 1 explained the categories of wine drinkers (drinkers to get high versus normal consumers) through age and gender as control variables and the opinion about drinking wine (CONS) together with the awareness total score (AWA) as predictors. The estimation of the main effects model provided a good predictive power (Omnibus test: $p = 0.000$). As shown in Table 2, the absence of multicollinearity was detected by consistency of Type I and Type III sum of squares statistics. Controlling for age and gender, which had significant main effects, the two predictors CONS an AWA had borderline, but non-significant, p-values.

Looking at the parameters' estimates (Table 3), older students (age had the greatest explanatory power among the model variables) were less likely to use wine to get high ($\beta = -0.16$, $p = 0.002$); being female and considering wine as a part of the diet were equally protective variables against wine drinking-to get high (respectively: $\beta = -0.55$, $p = 0.026$ and $\beta = -1.29$, $p = 0.044$).

Table 2
test for the effects of the Model 1 variables according to Type I and Type III Sum of Squares statistics.

	Df	Type I SS		Type III SS	
		Wald's Chi-square	p	Wald's Chi-square	p
Intercept	1	417.041	0.000	0.001	0.982
Gender	1	4.512	0.034	4.978	0.026
Age	1	10.457	0.001	9.546	0.002
CONS	3	7.15	0.067	7.815	0.050
AWA	1	3.538	0.060	3.538	0.060

Note. CONS = Consideration, AWA = Total scores of awareness.

Table 3
Parameter estimates of the Model 1.

Parameter	B	Standard error	Wald's Chi-square	Df	p
Intercept	0.733	1.398	0,275	1	0.600
Gender - Female	−0.558	0.250	4.978	1	0.026
Gender - Male	0.000	–	–	–	–
Age	−0.162	0.052	9.546	1	0.002
CONS - It's like other alcoholic drinks	−0.030	0.561	0.003	1	0.957
CONS - A part of the diet	−1.290	0.640	4.056	1	0.044
CONS - A pleasure to take occasionally	−0.617	0.507	1.482	1	0.224
CONS - Other	0.000	–	–	–	–
AWA	0.064	0.034	3.538	1	0.060

Note. CONS = Consideration, AWA = Total scores of awareness.

3.3. Model 5: negative effects score

Model 5 had the same general characteristics than Model 1 but it included the awareness score related to negative effects (NEG) as a predictor instead of the total score of awareness. As for the previous model, Omnibus test was significant ($p = 0.000$) and the consistency of Type I and Type III sum of squares statistics confirmed the absence of multicollinearity.

Age had, once again, the greatest effect on drinking wine to get high, but in this model, controlling for age and gender, the awareness of negative effects (NEG) had a significant impact, more important than gender, on the decision to drink wine for this purpose (Table 4).

Parameters' estimates for Model 5 are presented in Table 5. Age, gender and considering wine as a part of the diet showed the same contribution as the previous model: they all were protective situations against wine drinking-to get high. Much more interesting were the findings related to the awareness of negative effects on using wine to get high. The parameter of this predictor was positive and significant ($\beta = 0.25$, $p = 0.011$): higher awareness of negative effects correlated with higher propensity to use wine to get high.

4. Discussion

Several studies investigated alcohol drinking among young people. Most of them were conducted on a target population of college and university students (Ham & Hope, 2003; Jones, Chryssanthakis, & Groom, 2014; Park, 2004; Smarandescu, Walker, & Wansink, 2014), but little is known about patterns of drinking wine, specifically drinking-to get high.

Although the consumption of wine, particularly its accessibility to young people, is a phenomenon traditionally existing in Europe and in the Mediterranean cultures, in the recent years the consumers' behaviours have changed and the use of wine has replaced that of spirits and beer (Nutt et al., 2007). The findings described in this study suggested that consumers to get high reported significantly greater knowledge about metabolism of wine consumption and greater awareness about its

Table 4
Test for the effects of the Model 5 variables according to Type I and Type III Sum of Squares statistics.

Source	Df	Type I SS		Type III SS	
		Wald's Chi-square	p	Wald's Chi-square	p
Intercept	1	407.473	0.000	0.206	0.650
Gender	1	4.71	0.030	6.078	0.014
Age	1	10.868	0.001	10.483	0.001
CONS	3	7.315	0.063	7.707	0.052
NEG	1	6.448	0.011	6.448	0.011

Note. CONS = Consideration, NEG = Opinions related to negative effects.

Table 5
Parameter estimates of the Model 5.

Parameter	B	Standard error	Wald's Chi-square	Df	p
Intercept	1.368	1.297	1.113	1	0.291
Gender - Female	−0.615	0.249	6.078	1	0.014
Gender - Male	0.000	–	–	–	–
Age	−0.172	0.053	10.483	1	0.001
CONS - It's like other alcoholic drinks	−0.076	0.562	0.018	1	0.893
CONS - A part of the diet	−1.300	0.640	4.125	1	0.042
CONS - A pleasure to take occasionally	−0.656	0.508	1.666	1	0.197
CONS - Other	0.000	–	–	–	–
NEG	0.252	0.099	6.448	1	0.011

Note. CONS = Consideration, NEG = Opinions related to negative effects.

negative effects than normal consumers of wine. However, it should be noted that, although this difference was statistically significant, it was based on a raw score difference of 0.3 on both the measures of these aspects. This difference corresponded to 2.5 and 4.3 increases in the knowledge about metabolism of wine consumption and in the awareness about its negative effects, respectively. It could be hypothesized that this significant difference is related to the large sample size. However, it should be considered that to detect individuals who drink to get high in a community sample, then to avoid type I error, it was necessary to recruit a very large sample size. Thus, future research could overcome this limitation by investigating the differences on awareness between drinkers to get high and not drinkers to get high by using a case-control design with smaller groups of drinkers to get high and not drinkers to get high, that are matched on age and gender.

The current results showed that wine is frequently used by young people to get high, almost like other alcoholic drinks. The pattern of wine consumption appeared similar to that of alcohol young abusers: students tended to consider its consumption like that of other spirits and concentrate its use during a short time.

According to the findings of this study, influence of gender and age affected wine drinking behaviours but influence of awareness on wine drinking-to get high was not mediated by these individual characteristics. Being female and older were protective factors against using wine to get high and this evidence was consistent with the literature. For example, Schulte, Ramo, and Brown (2009) focused their review on factors influencing alcohol use and drinking progression among adolescents; findings indicated that, during adolescence, psychosocial factors appear to impact boys and girls similarly. In contrast, the transition into adulthood causes a series of psychological and social changes, that affect differently boys and girls, exposing the former at a higher risk of disruptive drinking. It seems that the results of this study have photographed the situation just described. Moreover, in a population that is no longer adolescent, as used in this study (mean age was 23.45 years), social assertiveness and sexual enhancement are no longer the main predictors of alcohol use, giving way to expectancies related to the tension reduction and impairment, and therefore to a problematic use of alcohol (Nicolai, Moshagen, & Demmel, 2012).

When the influence of awareness on wine drinking-to get high was assessed controlling for individual characteristics, findings showed the poor adhesiveness of the awareness to the patterns of alcohol consumption. Although for some aspects of awareness a significant difference was found between the subgroups of students (normal consumers of wine and those who report drinking to get high), a specific knowledge about wine seemed to be irrelevant on consumption decisions, except for awareness of negative effects: having a greater knowledge of its negative consequences was associated with a higher likelihood of using wine to get high. This evidence appeared in contrast with several models and studies conducted on the role of expectancies and knowledge about the positive effects of alcohol, which were found to be the

strongest predictors of alcohol consumption as a coping strategy (Brown, Goldman, & Christiansen, 1985; Jones, Corbin, & Fromme, 2001).

At a first glance, this result may appear surprising, but its interpretation lay in some processes well described in the literature. Analysing positive and negative consequences of alcohol consumption in a group of college students, Park (2004) stated that youngsters experience positive and negative consequences related to alcohol abuse, experiences that contribute to acquiring individual knowledge about the substance. But they reported their encounters with positive consequences as being more extreme and more frequent than their encounters with negative consequences, and that these experiences influenced their future decisions about drinking. In summary, we may presume that young adults are informed about the consequences of wine abuse, but the urgency of receiving positive feelings from wine represent a priority if compared to the negative consequences that abusing behaviours may result in the future. No significant difference was found between those individuals who drink to get high and those who do not on the knowledge about the positive effects of alcohol. Despite this result appeared inconsistent with some literature (e.g., Jones et al., 2001), according to other the literature (Leeman, Patock-Peckham, & Potenza, 2012), an explanation why only negative effects, but not positive effects, were related to drinking to get high could be that, when individuals develop a habit of drinking to get high, they can recognise this habit as a negative outcome of drinking, which they feel uncontrollable although they recognise it as a negative behaviour. Moreover, the cross-sectional nature of the study design does not allow drawing causal interpretations on the link between these variables; thus, an alternative explanation could be that those individuals who drink to get high, may develop later a stronger knowledge about its negative effects.

It could be that the duration of the wine consumption habit moderates the effect of the negative outcomes awareness: those individuals who use alcohol to get high since a longer time could have a stronger knowledge about its negative effects and do not longer focus on its positive outcomes. Alternatively, drinking wine to get high could be conceptualised as a type of self-injurious behaviour, engaged by the individual intentionally, such as other disruptive behaviours like self-cutting or skin self-damaging (Hooley & St Germain, 2014).

This evidence needs a better explanation, investigating if this mechanism is ruled, or mediated, by other psychological factors. Psychological factors like impulsivity, craving, copying styles, personality traits and self-esteem, for example, were used to investigate the relationship between youngsters and alcohol-related problems (DeHart, Tennen, Armeli, Todd, & Mohr, 2009; Ham & Hope, 2003; Jones et al., 2014; Lindgren, Neighbors, Wiers, Gasser, & Teachman, 2015). More research is needed to understand if this kind of individual variables, not included in the current study, may interact with the awareness about the negative effects in its relationship with abuse behaviours.

5. Conclusions

Finally, some limitations should be pointed out. First, the lack of a clinical group prevented to draw secure conclusions about these findings on clinically relevant abuse of wine. In addition, the cross-sectional nature of the design limited the possibility to infer causal relations between the considered variables and drinking patterns. Future studies using prospective cohort designs should better clarify this point. The use of a self-report measure did not account for the behavioural patterns of drinking. Further research could use other indicators, including observational and clinician-administered interviews to investigate the diagnosis of abuse.

In conclusion, the current study expanded the existing literature about the role of the awareness of the effects of wine in drinking to get high in a population of university students. The findings demonstrated the association between a stronger awareness about the negative effects

of wine and drinking-to get high, while female gender and older age were identified as protective factors.

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