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The Influence of Alcohol Warning Labels on Consumers' Choices of Wine and Beer

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Abstract. This study aims to analyse the influence of alternative formats of health warnings on French and Italian Millennial consumers' choices of beer and wine. Two Discrete Choice Experiments were built for wine and beer and two Latent Class choice models were applied in order to verify the existence of different consumer profiles. Results show that young consumers' choices for wine and beer are influenced by framing, design and visibility of warnings. In both countries, the acceptance of warnings is higher for beer than for wine and in both cases consumers show higher utility for a logo on the front label: on the neck with a neutral message in the case of beer; on the front, without a message for wine. Latent Class choice models highlight the existence of different consumers' groups with different levels of warning influencing their choices. In order to apply policies conducting to health benefits, our results suggest the need to focus on young individuals to communicate the risks of alcohol abuse through targeted messages and, more generally, to make them aware of the potential negative effects of excessive consumption of both wine and beer.

Keywords: alcohol warning labels, wine, beer, Discrete Choice Experiment, Latent Class.

1. INTRODUCTION

Considering that the harmful use of alcohol is the third leading cause of mortality and morbidity of population globally (WHO, 2018), many public health and consumer associations are urging the implementation of mandatory health warning labels on alcoholic beverages. Several studies have highlighted that a large share of drinkers worldwide have an inac-

curate knowledge of the potential risks associated with alcohol consumption (Stockwell et al., 2016). The World Health Organization suggests that the presence of warning labels on alcohol containers could be considered an important first step in raising awareness and it could have a longer-term utility in helping to establish a social understanding of the harmful use of alcohol (WHO Europe, 2017; Eurocare, 2016). Indeed, labelling information is widely recognized as a means to constantly deliver a clear message to consumers at the point of purchase, or at the time of use, by promoting awareness, comprehension, and subsequent behavioural changes in line with the message content (Jarvis and Pettigrew, 2013).

However, alcohol warning labels (AWL) are currently used in 31 countries. They are often limited to the dangers of drinking when pregnant or drinking and driving, but the potential harm of excessive alcohol consumption could be extended to include other health conditions (WHO, 2010). Although Europe is the region with the highest per capita consumption of alcoholic beverages in the world, warning labels are still not required in the majority of Member States, and there are significant differences in national legislation among the countries that have introduced mandatory warnings (WHO Europe, 2017).

Much research has shown that support for health warnings on alcoholic beverages among consumers is high (Annunziata et al., 2019; Annunziata et al., 2016; Blackwell et al., 2018; Thomson et al., 2012; Greenfield et al., 2007), while other scholars have questioned the efficacy of alcohol warning labels in influencing drinking behaviour and concluded that evidence of their influence on changing behaviour is limited (e.g. Brennan et al., 2016; Coomber et al., 2015; 2018).

Instead of analysing the effectiveness of AWL in reducing abusive consumption behaviours, this paper aims to analyse the influence of alternative formats of AWL on Millennial consumers' choices of alcoholic beverages (wine and beer) by extending the results of a previous research carried out in Italy and France (Annunziata et al., 2019).

Specifically, this paper aims to verify 1) the influence of alternative formats of AWL on Millennial consumers stated choices of wine and beer; 2) the existence of different segments of consumers with different level of influence of AWL when choosing wine and beer.

To this purpose a Discrete Choice Experiment (DCE) and Latent Class choice models (LCM) were realized in Italy and France. The choice to analyse these two countries lies in their different regulations about AWL. Starting from 2007, mandatory warnings are imposed in

Table 1. Consumption of alcoholic beverages in France and Italy, million litres, 2010-2019.

	France		Italy	
	2010	2019	2010	2019
Wine	2,466	2,157	2,550	2,395
Beer	1,909	2,151	1,634	1,706
Spirits	395	367	158	138

Source: Euromonitor International (2020).

France to inform consumers about the dangers associated with the consumption of alcoholic beverages during pregnancy, with a statement or a specific pictogram. In Italy a voluntary and unregulated approach exists, with the market offering bottles of alcoholic beverages with and without warnings and with a heterogeneity of warnings.

The decision to analyse Millennial generation consumers stems from the awareness that they are recognised as a particularly risky population segment, especially considering that heavy episodic drinking is constantly increasing among these individuals worldwide (Calafat et al., 2011). Furthermore, this generation represent a segment of growing interest for marketing researchers both in the wine and beer markets (Agnoli et al., 2011; de Magistris et al. 2011; Rivaroli et al. 2019). Compared with previous research, the originality of the current paper lies in the application of the choice experiment to two alcoholic beverages and the comparison of the outcomes.

Wine and beer were chosen as the objects of investigation of this study as: i) they are the most consumed alcoholic beverages in France and Italy (Table 1); ii) they are the most frequently consumed alcoholic beverages by Millennials in the two analysed countries (Euromonitor International, 2020; Agnoli et al., 2011); iii) wine is associated to tradition in both countries, while beer is more linked to Northern European consumption patterns (Agnoli et al., 2018), and this can give rise to differences in the acceptability of AWLs in these two alcoholic beverages, with relevant implications.

The paper is organised as follows: a brief overview of existing literature is presented in the first section; subsequently, a detailed description of the methodology and stimuli applied in the DCE is provided; then results from the DCE and Latent Class Analysis are presented and a discussion of the core implications is offered.

2. LITERATURE BACKGROUND

The current study builds on the growing research prompted by insights of behavioural economics and

the dual process theory (see, among others, Camerer and Loewenstein, 2004; Evans, 2008; Kahneman, 2011). Indeed, disentangling the relationship between conscious and unconscious elements in behaviour and decision-making, scholars have proved that consumers' choices are influenced by several contextual factors as social and environmental elements as well as cognitive shortcuts, emotions, and habits. Therefore, researchers have proposed to modify the choice architecture to alter individuals' behaviour for the good, i.e.: nudging people to do the right thing (Thaler and Sunstein, 2008). In particular, nudges are "any aspects of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives" (Thaler and Sunstein, 2008, p. 6). Based on this premises several policy makers have favourably embraced the use of gentle prompts and suggestions to increase healthier behaviours; also relying on high citizen support compared to other interventions - as taxes (Reisch et al., 2017). Recent evidences provided by cigarettes warnings suggests that labels that present health-aligned information may nudge behaviour that are in line with individuals' health goals, reducing consumption (e.g. Noar et al., 2016). Questions remains, however, around the possibility that similar label-based nudges can be effective also on alcoholic beverages.

Several studies suggest that AWLs may improve knowledge and attitudes regarding the harmful consequences of alcohol consumption among adults (Annunziata et al., 2017; Wigg and Stafford, 2016; Vallance et al., 2017), while little impact on changing drinking behaviour was found (Glock et al., 2013; Brown et al., 2016).

According to Al-Hamdani (2015) and Coomber et al. (2015), the limited impact of AWLs in changing behaviour is connected to the weak content of warnings and their poor visibility. In this regard, Agostinelli and Grube (2002) suggest that in order to improve the potential of warning labels in influencing behaviour, the key elements are label design and how well the information and messages on labels are targeted at their intended audience.

Indeed, several studies suggest that warning message framing, label design, format and visibility are crucial elements in determining health warning effectiveness and encouraging healthier behaviours (Blackwell et al., 2018; Al-Hamdani and Smith, 2017a; Knai et al., 2015; Krischler and Glock, 2015; Jarvis and Pettigrew, 2013).

Many studies found that pictorial health warnings are more effective than text-based warnings and enhance warning recognition (Hassan and Shiu, 2018; Kersbergen

and Field, 2017; Wigg and Stafford, 2016). Al-Hamdani and Smith (2017a) suggest that combined text and image warnings have a stronger effect on alcohol consumers than the use of text only. Considering warning visibility, Kersbergen and Field (2017) reveal that increasing the visual salience by using graphic warnings as well as front-of-pack labelling might be more effective in attracting and maintaining consumers' attention. Al-Hamdani and Smith (2017b) found that plain packaging warning increases the likelihood for correct recognition.

In relation to the message framing, specific rather than general health warnings were rated as more effective, and led to greater risk perceptions (Miller et al., 2016; Pettigrew et al., 2014; Creyer et al., 2002). Jarvis and Pettigrew (2013) found that negatively framed messages had the highest utility whereas a positive message (about drinking and driving) could generate a boomerang effect. In addition, Blackwell and colleagues (2018) reported that participants of their study are more motivated to drink less after viewing negatively framed messages. Pettigrew et al. (2014) compared warnings with the wording 'increases risk' versus 'can cause' and found that the 'increases risk' wording was more convincing and more believable than the 'can cause' wording. Furthermore, Pettigrew et al. (2014) have examined the use of quantitative information in alcohol warnings and showed that quantitative messages performed poorly in terms of believability. Krischler and Glock (2015) showed that warning statements formulated as questions are more effective, especially among young adults, while Branco and Kaskutas (2001) found that warning labels that employ scare tactics can be perceived as overstating the risks and are not believable.

Annunziata et al. (2019) found that the level of visibility of the warnings currently carried by wine bottles in Italy and France is low and that consumers tend to prefer the "no warning option" attaching more utility to neutrally framed messages, even if some differences between Italian and French consumers exist.

Other researches highlighted that the extent to which the warning is read and elaborated by individuals is linked to the personal relevance of the message and individual motivation to actively respond, suggesting that tailored and targeted warning labels may be better received compared to generic ones (Hassan and Shiu 2018; Wogalter, 2006; Argo and Main, 2004).

In this regards other evidences revealed that targeted messages should be particularly useful among populations where there is great heterogeneity. The use of customised messages seems to be more effective than generic ones, especially considering individual alcohol-related beliefs, gender or age (Robertson et al. 2017;

Miller et al. 2016; Jarvis and Pettigrew, 2013; Creyer et al., 2002; Wright et al., 2008). With reference to the latter, Argo and Main (2004) argue that age correlates negatively with warning perception, in particular young adults tend to perceive themselves as invulnerable to the negative consequences of risky behaviours. Jarvis and Pettigrew (2013) found that the messages with the greatest utility differed across gender. Furthermore, concerning the drinking behaviour, Cryer et al. (2002) reported that drinking frequencies (i.e. binge or non-binge drinking) strongly affect the perception of different warnings on alcoholic beverages among students.

Jarvis and Pettigrew (2013) found that for those who report higher consumption of alcohol, negative health messages had the highest utility. Further, Miller and colleagues (2016) found that high-risk drinkers perceived the warning labels to be less effective in altering drinking behaviours than light-to-moderate drinkers.

Robertson and colleagues (2017) found that heavy drinkers are more sensitive to alcohol warnings related to concerns for self (e.g. liver damage) while lighter drinkers to warning related to potential risk for others (as violence).

Previous research has also found that the effectiveness of alcohol warning messages is influenced by different type of drink (e.g. wine, beer, vodka) (Thomson et al., 2012). In particular, messages matched with the type of drink were more relevant and acceptable to consumers, suggesting the need to further assess the interaction between the type of drink and the warning message but also to be cautious in generalising their results to other types of alcoholic beverages (Hassan and Shiu, 2018; Wright et al., 2008).

3. MATERIAL AND METHOD

3.1 Questionnaire and measurements

A consumer survey was conducted in order to reach the research objectives. Beyond the collecting data on socio-demographic characteristics, the questionnaire included information about alcohol consumption habits, selected from the Alcohol Usage Questionnaire (AUQ) developed by Mehrebian and Russell (1978) (Table 2). After assessing the level of attention paid to health warnings, the questionnaire asked about what effects health warnings have on respondents and their attitude towards alcohol, drawing from the readiness to change questionnaire developed by Kersbergen and Field (2017). Respondents were then asked to express their level of concern for some short and long-term side effects from alcohol consumption (Vecchio et al., 2017; Coomber et al., 2017).

3.2 Discrete Choice Experiments design

Respondents were also subject to two Discrete Choice Experiments (DCEs) (Louviere and Woodworth, 1983), depicting the hypothetical choice of a bottle of wine and beer. In order to avoid to sensitise respondents to warning contents, the DCEs were introduced to respondents before the section asking for the effects of health warnings.

The two DCEs include the same alternatives and attributes, selected considering the literature on health warnings and designed to test if consumer preference for wine and beer are influenced by the framing, design and visibility of different warnings (Table 3). Two non-mandatory warnings about a short- and a long-term effect of alcohol on health have been selected as alternatives of the designs, plus a no-warning alternative. The choice to select the risk of brain damage as the long-term effect and the risk from drinking and driving as the short-term effect was suggested by the literature (Jarvis and Pettigrew, 2013; Kaskutas and Greenfield, 1992; Coomber et al., 2017). These warnings have been graphically depicted on the label, and they could assume big size or small size and be placed on the neck or on the front label for beer, and on the front or the back label for wine, as in previous research (Al-Hamdani, and Smith, 2017b; Al-Hamdani, and Smith, 2015; Wigg and Stafford, 2016). Alcohol by volume is another attribute emerged as important in the literature (Jarvis and Pettigrew, 2013) and low, medium and high levels have been selected for beer according to general standards and for wine according to the specific grape variety involved in the hypothetical choice, Cabernet Sauvignon. The choice of this grape variety is given by the fact that it is the most widespread grape variety in Europe (Eurostat, 2017).

A textual message for the two selected warnings has also been included as an attribute of the DCEs, neutrally or negatively framed as in previous studies on the subject (Jarvis and Pettigrew, 2013; Krischler and Glock, 2015; Miller et al., 2016) or not included in the label (Table 4).

These alternatives, attributes and levels have been statistically combined in order to compose the experiment designs for this study. A full factorial design including each possible combination of the elements composing the design would have given rise to an enormous number of hypothetical choice situations. In order to show respondents with only a subset of possible choices, efficient fractional factorial designs were built with the software package Ngene (Rose and Bliemer, 2009; ChoiceMetrics, 2018). This class of designs aims to give rise to results generating parameter estimates with

Table 2. Collected data and measurement.

Topic	Variable	Measure	References
Socio-demographics	Gender	1 if male, 0 if female	
	Age	Continuous (from 18 to 40)	
	Years of education	Total years of education	
Alcohol consumption habits	Consumption frequency	from 1 (never) to 5 (every day)	Alcohol Usage Questionnaire (AUQ) (Mehrebian and Russell, 1978)
	Inebriation frequency in the last six months	from 1 (never) to 5 (more than 5 times)	
	Alcoholic beverages consumption in %	% of beer consumption % of still wine consumption % of sparkling wine consumption % of spirits consumption % of ready to drink consumption	
Attention towards labels and AW	Front label Back label Health warning	Scale from 1 to 5	Degree of attention towards information currently reported on front and back label (Mueller et al., 2010; Annunziata et al., 2016)
Discrete choice experiments for wine and beer			
Effects of health warnings	Decreased consumption Thought about decreasing consumption Discussed with friends on risks Thought about the risks No effect	Multiple choice question, single answer 1 if is the case, 0 otherwise	
Attitudes towards alcohol	Do not think to drink in excess Like to drink and sometimes drink too much Trying to drink less Think that friends drink too much	Likert scale from 1 to 5	Readiness to change questionnaire (Kersbergen and Field 2017)
Concerns about the consequences of alcohol abuse	Lack of coordination and slower reflexes Reduced concentration Motor vehicle, bicycle and pedestrian accidents Injuries associated with falls, accidents, violence Alcohol poisoning Harm to unborn babies Obesity Brain damage Liver/Stomach problems Heart and blood disease	Likert scale from 1 to 5	Concerns for long and short-term effects of alcohol intake (Vecchio et al., 2017; Coomber et al., 2017)

Table 3. Alternatives, attributes and levels of the DCEs.

Design components		Levels	
		Beer	Wine
Alternatives	Logo	1. Long-term health warning (Risk of brain damage)	
		2. Short-term health warning (Risk from drinking and driving)	
		3. No logo	
Attributes	I. Logo position	1. Neck 2. Bottle	1. Back label 2. Front label
	II. Logo size	1. Big 2. Small	
Attributes	III. Alcohol by Volume	1. Low (3%vol.)	1. Low (11.5%vol.)
		2. Medium (5%vol.)	2. Medium (12.5%vol.)
		3. High (7%vol.)	3. High (13.5%vol.)
Attributes	IV. Message	1. Neutrally framed	
		2. Negatively framed	
		3. No warning message	

Table 4. Frame of the text messages associated with the warnings.

Message	Risk of brain damage	Risk from drinking and driving
Neutrally framed	Keep your brain healthy. Lower your alcohol intake	To be safe, do not drink and drive
Negatively framed	Every drink of alcohol harms your brain	Drunk driving kills

as small as possible standard errors. In order to reach this goal, they need to be fuelled by prior information on these parameters. ‘Priors’ to build two efficient designs were drawn from a pilot study involving 50 consumers from France and Italy and analysing their hypothetical choices of wine and beer. The efficient designs adopted in this study drove the allocation of alternatives, attributes and levels in the hypothetical choice scenarios of respondents and they were selected because they mini-



Figure 1. An example of choice task for wine and beer.

mised the expected D-errors¹ (Ferrini and Scarpa, 2007; Scarpa and Rose, 2008; Sándor and Wedel, 2001). The final designs included 12 choice scenarios composed of three bottles each. In order to rationalise the response time to the questionnaire, three blocks of four choice scenarios were created adopting the blocking procedure. In this way, each respondent faced the choice of the preferred bottle of beer among four groups of three bottles and the choice of the preferred bottle of wine among four groups of three bottles each.

The choice scenarios were graphically represented to facilitate choice, adopting fictitious brands to avoid the conflicting impacts of knowledge and perceptions over real brands (Delmas and Lessem, 2017). For the beer choice task we applied only images of the front label (Fig. 1a), while for the wine choice task we used both

¹ The D-error is an aggregate measure drawn from the asymptotic variance-covariance (AVC) matrix of the variables in the design. It is estimated according to the following equation: $D-error = [\text{Det}(\Omega(\beta, xt_j))]^{1/K}$ where Ω is the AVC matrix of the variables in the design (xt_j), β is the vector of estimated coefficients, j is the alternative, t is the choice task and K is the number of estimated coefficients.

front and back labels (Fig.1b). In line with the habits of Millennials, the hypothesised consumption situation is a dinner with friends (Mueller and Charters, 2011).

3.3 Modelling approach

Data collected through the discrete choice experiment were analysed applying Multinomial Logit (MNL) models (McFadden, 1974) and Latent Class (LC) Choice Models (Greene and Hensher, 2003). MNL models assume that all respondents behave in the same way and present the same preferences, with a choice probability described as follows:

$$\Pr_{nit} = \frac{e^{V_{nit}}}{\sum_{j=1}^J e^{V_{njt}}} = \frac{e^{\beta'x_{nit}}}{\sum_{j=1}^J e^{\beta'x_{njt}}} \quad (1)$$

where n is the individual, who assesses for t times j alternatives and chooses alternative i . Following the random utility theory (Thurstone, 1927) V_{nit} is the part of the utility observed by the researcher, as discrete choice models assume that utility is a stochastic function, composed of a deterministic part, the function of the attributes of the good, and a stochastic part.

As reported in equation (1), the deterministic part of the utility can be written as:

$$V_{nit} = \beta'x_{nit} \quad (2)$$

where β is a vector of estimated coefficients and x_{nit} are the attributes of alternative i of the t choice which compose the utility of individual n (Train, 2009).

LC models create C latent classes grouping respondents with similar underlying preferences. Respondents are therefore assigned to a class up to a probability and given membership of a given class c , the probability of respondent n 's sequence of choices y_n over the T choice occasions, is:

$$Pr(y_n|c, x_{nit}) = \prod_{t=1}^{T_n} \frac{e^{\beta'_c x_{nit}}}{e^{\beta'_c x_{njt}}} \text{ where } y_n = (i_{n1}; i_{n2}, \dots, i_{nT_n}) \quad (3)$$

MNL models are applied in this study to analyse the influence of alternative formats of AWL on Millennial consumers stated choices of wine and beer. LC models were applied to identify different segments of consumers with different level of influence of AWL when choosing wine and beer.

Following the theory of Lancaster (1966), according to which the utility of a good is given by the attributes

composing the good itself, in our models for the choice of wine and beer the utility of consumer n belonging to the latent class c can be explained as follows:

$$U_{njt|c} = \beta_{1|c} \logo_{nit} + \beta_{2|c} size_{nit} + \beta_{3|c} position_{nit} + \beta_{4|c} message_{nit} + \beta_{5|c} ABV_{nit} \quad (4)$$

where \logo is a nominal variable composed by three levels/logos (risk of brain damage, from drinking and driving and no logo); $size$ is a binary variable assuming value 1 if the logo is big, 0 if it is small; $position$ is a binary variable assuming value 1 if the logo is on the front label and 0 if it is on the back label/neck of the bottle; $message$ is a binary variable assuming value 1 if the warning message is neutrally framed on the label, 0 if it is negatively framed and ABV is a continuous variable representing the three levels of alcohol by volume (low, medium and high) of the experimental design.

The emerged latent classes were characterised introducing socio-demographic and behavioural characteristics of respondents as covariates in the model. Data analysis was conducted using the software LatentGOLD (Vermunt and Magidson, 2013).

3.4 Data Collection

In line with other studies analysing wine and beer consumption and involving young respondents, the questionnaire was submitted online to a convenience sample of Millennials from France and Italy in 2018 (Vecchio, 2013; Szolnoki and Hoffmann, 2013). Respondents were recruited through social networks, blogs, forum and the word of mouth.

There is no common agreement among scholars defining the boundaries of Millennial generation. Some Authors consider this generation as born between 1981 and 1999 (Brosdahl and Carpenter, 2011; Bolton et al., 2013), others between 1980 and 2000 (Macky et al., 2008) or between 1978 and 2000 (Lancaster and Stillman, 2002; Thach and Olsen, 2006). In the present study individuals were screened to be born between 1978 and 2000 and to be of the legal age limit to drink alcoholic beverages at the time of the survey administration.

The final sample is composed of 659 individuals, 394 from Italy and 265 from France (Table 5). The sample is well balanced between male and female and is mostly composed of the younger segment of Generation Y. Half of the Italian part of the sample comes from the South, while half of the French sample comes from the Centre of France. As the French and the Italian education systems are different, a continuous variable was drawn explaining the years of education for each respondent

Table 5. Socio-demographic characteristics of the sample.

	Sample (N=659)		Italy (n=394)		France (n=265)	
	n	%	n	%	n	%
Gender						
Male	286	43.4	168	42.6	118	44.5
Female	369	56.0	226	57.4	143	54.0
Age class						
18-24 years old	397	60.2	195	49.5	202	76.2
25-31 years old	197	29.9	141	35.8	56	21.1
32-40 years old	65	9.9	58	14.7	7	2.6
Area of residence						
North	208	31.6	154	39.1	54	20.4
Centre	152	23.1	20	5.1	132	49.8
South	245	37.2	219	55.6	26	9.8
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Years of education	14.8	1.6	14.3	1.8	15.6	1.0

and highlighting a similar education level for the two segments.

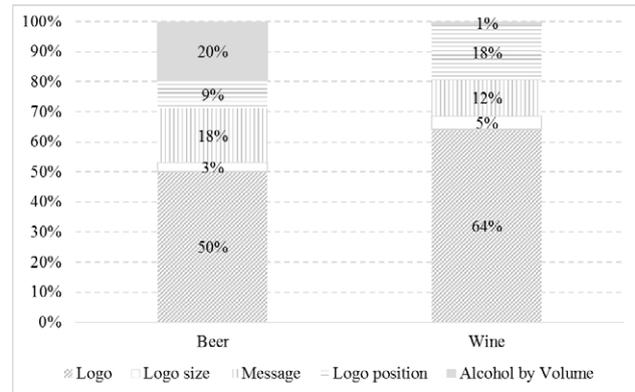
4. RESULTS

4.1 Preferences for warning labels on wine and beer

Two MNL models were applied to understand different influences of AWL in the choice of wine and beer by Millennial respondents. Figure 2 shows that the most important elements driving consumer's choices for beer are a warning logo, alcohol by volume and warning message explaining the consequences of alcohol intake. Concerning wine, the presence and typology of warning logo is still the most important element, with a higher degree of importance than beer, and it is followed by the position of the logo and by the warning message. These results are in line with the study by Al-Hamdani (2014), highlighting the strong influence of pictorial health warnings on consumers.

For beer, positive utility is associated with the logo warning about the risks of drinking and driving, which is actually common on the bottles of beer both in Italy and France, depicting a focus on the short-term side effect of alcohol intake. A lower but still positive utility is registered if no logo is depicted on the label. Concerning wine, people associate positive utility to a bottle with no logo, and the logo about the consequences of alcohol on brain decreases consumer utility, as it does with beer (Table 6).

Unlike other studies (Pham et al., 2018; Al-Hamdani and Smith, 2017b), a clear preference does not emerge in

**Figure 2.** Attribute importance for beverages, full sample.

consideration of the logo size for both alcoholic beverages. Concerning the position, consumers prefer a logo on the neck of the bottle for beer and on the front label for wine.

When it comes to choosing a bottle of beer, people prefer to be informed about the possible negative consequences of consumption, but with a neutrally framed message. When it comes to choosing wine, they prefer no warning message. In both cases a negatively framed message decreases consumers' utility, in line with studies by Al-Hamdani and Smith (2017a, 2017b).

The alcohol by volume indication results in a significant impact on consumers only for beer, and with a positive sign.

Two Latent Class choice models were run to analyse the hypothetical choices for both the alcoholic beverages and better explain these differences and understand consumers' preferences. The identification of latent classes aims to highlight differences in preferences and influences of health warning labels among young consumers. Despite being considered as a unique cohort, this generation is composed by a heterogeneous group of consumers, also in the light of the large age group that characterise it (Bucic et al., 2012; Agnoli et al., 2018). It becomes therefore important to identify these heterogeneities and characterise them according to their drinking behaviours and perceptions towards AWLs.

4.2 Latent class choice model for beer

The five-class solution was selected as the optimal to explain consumers' choices of beer, in line with the data fit criteria (Ferrini and Scarpa, 2007) (Table 7). After estimating the latent class model, socio-demographics and behavioural characteristics collected through the survey questionnaire have been included in the estima-

Table 6. Multinomial Logit estimation for choice of wine and beer, full sample.

	Beer					Wine				
	Coeff.		S.E.	Wald	<i>p</i> -value	Coeff.	S.E.	Wald	<i>p</i> -value	
Logo										
Brain damage	-0.544	***	0.036	246.598	0.000	-0.693	***	0.039	339.748	0.000
No driving	0.318	***	0.030			0.050		0.033		
No logo	0.226	***	0.037			0.644	***	0.041		
Logo size										
Big vs Small	-0.054		0.054	0.996	0.320	-0.094		0.061	2.339	0.130
Message										
Negatively framed	-0.163	***	0.045	15.728	0.000	-0.141	***	0.046	10.376	0.006
Neutrally framed	0.144	***	0.043			0.031		0.048		
No message	0.019		0.041			0.109	***	0.046		
Logo position										
Label vs Neck	-0.159	***	0.054	8.622	0.003					
Front vs Back label						0.383	***	0.061	39.050	0.000
Alcohol by volume	0.085	***	0.013	45.827	0.000	-0.011		0.025	0.200	0.650
Goodness of fit										
Observations	2636					2636				
Cases	659					659				
Log likelihood	-2,689.476					-2,611.704				
R ²	0.073					0.1019				

* $p < .10$; ** $p < .05$; *** $p < .01$.

Table 7. Data fit criteria for alternative Latent Class Models for beer choice.

	Log Likelihood	BIC	AIC	CAIC	N. Parameters	R ²
Multinomial Logit	-2689.4759	5424.387	5392.952	5431.387	7	0.073
2-Class	-2380.1775	4857.716	4790.355	4872.716	15	0.367
3-Class	-2311.849	4772.985	4669.698	4795.985	23	0.445
4-Class	-2266.5442	4734.301	4595.088	4765.301	31	0.517
5-Class	-2227.7592	4708.657	4533.518	4747.657	39	0.604
6-Class	-2206.0983	4717.261	4506.197	4764.261	47	0.642

tion as covariates (Table 8). This allowed the study to characterise classes also in the light of their alcohol consumption habits, effects of health warnings, attitudes towards alcohol and concerns about the consequences of alcohol abuse. This last aspect was included in the model as a single variable composed by the sum of the different items depicting individual's concerns about the consequences of alcohol abuse.

Latent class 1 (LC1) is composed of 28% of respondents and bases its choice on alcohol content, whose importance accounts for one third of the total utility. In particular, the utility of this LC increases with the increase of the alcohol by volume. The warning logo is the

second most important attribute driving choice and consumers belonging to this class prefer a bottle of beer with no logo. Anyway, a bottle with a logo informing about the negative consequences of drinking and driving is positively perceived, differently from a logo informing about the negative effects of alcohol on brain. When a logo is present, they prefer it small and on the neck of the bottle. They prefer a bottle of beer with no warning message and negatively framed messages impact negatively on utility. This class particularly includes French male respondents, who do not consume alcoholic beverages very frequently, who declare that warnings about the negative consequences of alcohol on health have no impact on

Table 8. Estimates of Latent Class choice model for beer and class characterisation (n=659).

Latent class	LC1	LC2	LC3	LC4	LC5	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE	
Latent class size	28%	24%	22%	19%	7%													
R ²	38%	7%	8%	14%	68%													
	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	SE
Logo	27%		51%		51%													2%
Brain damage		-0.919	***	0.124	-1.072	***	0.640	***	0.138	-3.980	***	1.346	-0.176	0.257				
No driving		0.268	***	0.111	1.544	***	0.495	***	0.117	-1.779	***	1.197	0.149	0.228				
No logo		0.651	***	0.119	-0.471	**	-1.135	***	0.169	5.759	***	2.299	0.027	0.326				
Logo size	10%		11%		1%													14%
Big vs Small		-0.620	***	0.187	0.578	**	-0.035	0.116	2.314	1.677	2.171	1.652						
Logo position	6%		10%		15%													13%
Label vs Neck		-0.372	**	0.186	0.502	**	-0.528	***	0.139	-3.065	*	1.719	-2.072	1.655				
Message	24%		19%		20%													9%
Negatively framed		-0.793	***	0.169	0.422	*	-0.047	0.125	0.678	1.763	***	0.355						
Neutrally framed		0.166	0.124	0.126	0.166	0.379	***	0.122	-3.323	3.423	0.431	0.330						
No message		0.628	***	0.135	-0.547	***	-0.331	***	0.111	2.645	1.845	0.502	0.343					
Alcohol by volume	33%		9%		12%													62%
Alcohol by volume		0.484	***	0.056	0.118	**	0.108	*	0.056	-0.950	0.746	-2.423	1.442					
Socio-demographics																		
Italian		-0.816	***	0.190	0.271	0.199	0.836	***	0.256	-0.534	***	0.186	0.244	0.295				
Male		0.742	***	0.179	-0.122	0.190	-0.175	0.215	0.068	0.183	-0.514	0.302						
Age		-0.031	0.023	0.012	0.012	0.022	0.050	***	0.022	-0.006	0.022	-0.026	0.034					
Alcohol consumption habits																		
Consumption frequency		-0.268	***	0.129	0.351	***	0.225	*	0.117	-0.164	0.114	-0.144	0.196					
Drunk frequency in the last 6 months		-0.128	0.081	0.555	***	0.089	-0.090	0.078	0.201	***	0.073	-0.538	0.168					
Beer consumption vs other alcoholics		-0.004	0.005	0.014	***	0.006	0.004	0.005	-0.004	0.004	0.004	-0.010	0.007					
Effects of health warnings																		
Discussed with friends on risks		-0.082	0.429	0.087	0.087	0.387	-0.210	0.421	0.827	**	0.398	-0.622	0.788					
Decreased consumption		-0.690	*	0.397	-0.059	0.341	0.534	*	0.292	-0.582	0.455	0.797	0.409					
No effect		0.921	***	0.170	-0.132	0.202	0.316	*	0.180	-0.733	***	0.308	-0.372	0.334				
Thought about the risks		-0.234	0.230	0.320	*	0.192	-0.472	**	0.240	0.325	0.215	0.061	0.325					
Thought about decreasing consumption		0.085	0.318	-0.216	0.335	-0.168	0.333	0.333	0.163	0.353	0.137	0.469						
Attitudes towards alcohol																		
Do not think to drink in excess		-0.257	***	0.082	-0.148	0.093	-0.115	0.084	-0.008	0.084	0.527	***	0.167					
Like to drink and sometimes drink too much		0.373	***	0.081	-0.318	***	-0.057	0.087	0.138	*	0.078	-0.137	0.129					
Trying to drink less		-0.070	0.080	-0.091	0.088	-0.070	-0.070	0.081	-0.159	*	0.082	0.390	0.102					
Think that friends drink too much		-0.087	0.082	0.005	0.087	0.014	0.014	0.079	0.052	0.080	0.016	0.119						
Concern about the consequences of alcohol abuse ^a		-0.030	***	0.011	0.043	***	0.013	0.010	-0.014	0.010	0.001	0.018						

Note: LC=Latent Class; AI=Attribute Importance; SE=standard error; * p<.10; **p<.05; ***p<.01; a this variable is given by the sum of the items composing the topic.

their behaviour as they are not concerned about the consequences. Despite not consuming alcoholic beverages frequently, they admit to drinking too much sometimes.

LC2's utility is strongly driven by the warning logo. They prefer the warning logo related to risks of drinking and driving in big size on the front label of a bottle of beer. However, their utility is also positively driven by the alcohol content of a beer. No clear socio-demographic characterisation emerges for this class. They consume alcoholic beverages frequently, and beer is their favourite drink. In the last six months they have frequently felt drunk, but they do not think that they drink too much. They are concerned about the negative effects of alcohol abuse on health.

LC3, comprising 22% of respondents, is also strongly driven by the warning logo when choosing a bottle of beer and its utility is higher when there is a warning logo on the label. Respondents in this class prefer the warning about the negative effects of alcohol on brain and in a second instance on the negative consequences of drinking and driving. Their utility is positively influenced by a logo on the neck label and a neutrally framed warning message. This class is more likely to be composed of Italian respondents and respondents belonging to the higher age segment of the generation. This class particularly includes individuals that do not think about the risks when faced with a health warning.

Differently from LC2 and LC3, the utility of individuals associated to LC4 (19% of respondents) decreases when any kind of logo is included on the beer label, and when a logo is present, it is preferred on the neck label. This class more likely includes French people who state that they have had frequent episodes of drunkenness in the last six months. Warning labels have an effect on the behaviour of this class, including discussing with friends the risks of alcohol intake.

LC5 (7% of the sample) is strongly driven by the alcohol content and it prefers low-alcohol beers. The warning logo has little influence on its choice, and respondents from this class do not want to have a warning message negatively framed on the label. This class includes more women, people who do not tend to be involved in risky

consumption behaviours and who tend to decrease consumption when they see a health warning label.

4.3 Latent class choice model for wine

A Latent Class analysis was applied also to analyse the wine choice of respondents and a four-class solution was selected as optimal according to the data fit criteria (Table 9).

LC.I (35% of the sample) is strongly driven by the logo when choosing wine and in particular any logo included on a wine label decreases their utility (Table 10). The logo about brain damage depresses the utility of individuals from this class more than the 'drinking and driving' one. Their utility is positively correlated with the alcohol content of a bottle of wine. French and male respondents are more likely to belong to this latent class. They do not consume alcoholic beverages frequently but when they drink, they tend to drink too much so that they feel drunk. This segment more probably includes respondents who declare to reduce consumption when they see the health warnings, but also some respondents for who these warnings have no effect or do not think about the risks. They are not concerned about the negative effects of alcohol on health.

LC.II (33% of the sample) is driven both by the logo and the warning message when choosing a bottle of wine. Individuals from this class prefer to see no logo, but if a logo is present they prefer the 'no driving' one as the logo on brain damage depresses their utility. They prefer a small logo, posted on the front label of the bottle. They prefer to have no warning message accompanying the logo on the label and a negatively framed message depresses their utility. The alcohol by volume of a bottle positively drives their choice. This class is more likely composed of female from the younger segment of the generation, who frequently consume alcoholic beverages even if they do not think to drink too much, and who declare that alcohol warnings have no effect on their behaviour as they are not concerned about the risks of alcohol abuse.

Table 9. Data fit criteria for alternative Latent Class Models for wine choice.

	Log Likelihood	BIC	AIC	CAIC	N. Parameters	R ²
Multinomial Logit	-2611.704	5268.844	5237.409	5275.844	7	0.102
2-Class	-2230.962	4559.286	4491.925	4574.286	15	0.434
3-Class	-2150.245	4449.777	4346.490	4472.777	23	0.532
4-Class	-2109.622	4420.456	4281.243	4451.456	31	0.584
5-Class	-2088.329	4429.797	4254.658	4468.797	39	0.616

Table 10. Estimates of Latent Class choice model for wine and class characterisation.

Latent class	LC.I		LC.II		LC.III		LC.IV		
	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	
Latent class size	35%		19%		13%				
R ²	88%		64%		32%				
	AI	Coef.	SE	AI	Coef.	SE	AI	Coef.	
Logo	50%		35%		49%		40%		
Brain damage		-3.058	***	0.983	-0.889	***	0.148	-0.248	0.217
No driving		-1.192	*	0.612	0.302	***	0.094	2.156	***
No logo		4.249	***	1.465	0.587	***	0.127	-1.908	***
Logo size	9%		11%		5%		7%		
Big vs Small		1.277		0.834	-0.465	***	0.180	0.448	-0.302
Logo position	1%		20%		3%		11%		
Label vs Neck		-0.082		0.573	0.867	***	0.180	0.209	0.220
Message	35%		25%		18%		19%		
Negatively framed		2.369		1.783	-0.568	***	0.135	0.211	0.227
Neutrally framed		0.379		1.748	0.103		0.100	0.650	***
No message		-2.749		3.408	0.465	***	0.123	-0.861	***
Alcohol by volume	5%		8%		25%		23%		
Alcohol by volume		0.372	*	0.220	0.161	**	0.008	-1.043	***
Socio-demographics									
Italian		-0.578	***	0.206	0.061		0.246	0.238	0.279
Male		0.347	**	0.172	-0.362	*	0.214	0.018	0.218
Age		-0.016		0.019	-0.044	*	0.023	0.005	***
Alcohol consumption habits									
Consumption frequency		-0.241	**	0.115	0.230	*	0.138	0.334	***
Drunk frequency in the last 6 months		0.222	***	0.081	0.142		0.101	-0.127	0.140
Beer consumption vs other alcoholics		0.005		0.004	0.006		0.004	-0.003	0.104
Effects of health warnings									0.006
Discussed with friends on risks		-0.373		0.332	-0.344		0.433	0.023	0.384
Decreased consumption		0.629	***	0.282	-0.225		0.575	-0.398	0.693
No effect		0.435	***	0.192	0.690	***	0.241	-0.197	-0.006
Thought about the risks		-0.450	***	0.198	0.050		0.232	0.200	-0.928
Thought about decreasing consumption		-0.241		0.289	-0.172		0.371	0.372	0.200
Attitudes towards alcohol									0.307
Do not think to drink in excess		0.104		0.068	0.142	*	0.082	-0.076	0.081
Like to drink and sometimes drink too much		0.007		0.083	0.014		0.097	-0.114	-0.170
Trying to drink less		0.085		0.068	0.032		0.086	-0.153	0.093
Think that friends drink too much		-0.025		0.069	-0.018		0.083	0.006	0.099
Concern about the consequences of alcohol abuse		-0.032	***	0.010	-0.034	***	0.012	0.005	0.091
									0.013
									0.060
									0.237
									0.239
									0.241
									0.233
									0.257
									0.230
									0.275
									0.187
									0.161
									0.405
									0.283
									0.027
									0.207
									0.162
									0.007
									0.469
									0.546
									0.445
									0.239
									0.396
									0.101
									0.161
									0.098
									0.109
									0.017

Note: LC=Latent Class; AI=Attribute Importance; SE=standard error; * p<.10; **p<.05; ***p<.01 a this variable is given by the sum of the items composing the topic.

LC.III (19% of the sample) is driven by the logo and the alcohol content when choosing a bottle of wine. Differently from the previous two classes, individuals from this class prefer to see a warning logo on the wine label, and in particular the one connected to the risks of drinking and driving. Their utility increases also when a warning message accompanies the logo, when the message is neutrally framed. They choose wine based on low alcohol content. These individuals are more likely to belong to the older age segment of Millennials and be frequent consumers of alcoholic beverages.

LC.IV (13% of the sample) includes respondents who want to be warned about the negative consequences of alcohol on the brain when choosing a bottle of wine. They want the logo on the front label and low alcohol content for wine. The older segment of Millennials is more likely to belong to this latent class, who think about the risks when faced with a warning label and who are worried about the consequences of alcohol on health.

5. DISCUSSION

The introduction of health warnings on the label of alcoholic beverages is a topic of renewed interest in the field of consumer studies, due to the current debate on its mandatory or voluntary nature. Alcohol labelling issues are highly controversial due to the clash between different interests. On one side, there is the industry goal to increase sales volumes (and not costs) and on the other side, there is public interest in protecting consumers' health and right to be informed. Alcohol industry actors lobby for voluntary or self-regulatory initiatives and frame alcohol consumption issues as a part of their corporate social responsibility practices (McCambridge et al., 2018; Mialon and McCambridge, 2018). In this regards, it is useful to recall the fierce debate occurred among EU policy makers and the wine industry for the introduction of mandatory labelling of potentially allergenic substances in wine, including sulphites². As well as the ongoing discussion related to the ingredients and nutritional labelling for alcoholic drinks for which the spirits and beer sectors signed in 2019 a Memorandum of Understanding³.

² Regulation (EU) No. 579/2012 required mandatory labelling of a variety of allergenic substances in wine.

³ Following the submission of the industry self-regulatory proposal on the provision of nutrition and ingredients listing from the European alcoholic beverages sectors, during the 2019 a series of bilateral dialogues with the sectors' representatives took place to encourage their commitment. As a consequence, representatives of the spirits and brewery industries signed the Memorandum of Understanding in which they

With reference to health warnings, according to several research, current experience of voluntary alcohol warning in England (Petticrew et al., 2016), Australia (Coomber et al., 2018; O'Brien, 2019) and New Zealand (Tinawi et al., 2018) failed to inform individuals of health implications of alcohol consumption. If a self-regulatory approach prevails on mandatory standardised labelling, best practices for warning labels should be developed taking into account the results of the numerous studies that have analysed the impact of design and placement of health messages on alcohol labels; together with sector specific aspects.

In this scenario, the present study contributes to the literature by deepening the analysis of the influence of alternative formats of health warnings on French and Italian Millennial consumers' choices of beer and wine.

Overall, our results confirm that AWL effects on consumer choices of wine and beer are influenced by the alcoholic beverages considered suggesting the need to consider the interaction between the type of drink and the warning message (Thomson et al., 2012; Wright et al., 2008). Indeed, for beer a positive utility is associated with the option of logo warning on the risks of drinking and driving, while for wine consumers attach more utility to the 'no-warning option', confirming the results of previous study conducted in Italy and France (Annunziata et al., 2019).

This difference could be due to the fact that wine is still considered as a traditional product in both countries and it is not considered as transgressive, or linked to harmful and risky behaviours (Agnoli et al., 2018); on the contrary, wine is often touted for its potential health benefits (Higgins and Llanos, 2015). In this regard, several studies in Mediterranean countries reveal that wine consumption among Millennial consumers is decreasing for the shift in the preferences towards other products such as beer and spirits (Marinelli et al., 2014; De Magistris et al., 2011). In addition, specifically for wine, a range of studies has investigated the use of different information sources and indicated that in-store or in-restaurant sources are most valued (Atkin, Nowak, and Garcia, 2007; Atkin and Thach, 2012).

Considering the warning content, consumers attached a negative utility to the brain damage logo, for both beer and wine. This could be due to the fact that as shown by previous research young consumers are not very interested in potential long-term effects of alcohol (Annunziata et al., 2017; Annunziata et al., 2019; Jones and Parri, 2010; Jones and Parri, 2009). Indeed, these

commit over the coming years, to voluntarily provide nutritional information and the list of ingredients for spirits and beer (even if in different manners).

consumers perceive themselves as not personally vulnerable to the long-term consequences of alcohol consumption at this point in their lives, attaching more importance to the short-term consequences of their decisions (Coomber et al., 2017).

Furthermore, the current study points out that the preference for the drinking and driving logo on beer could be linked to a strong public awareness of the problem of alcohol-related car accidents, but also to the fact that the beer industry is already involved in various public campaigns against drinking and driving⁴.

The present results also confirm that framing, design and visibility of AWL affects consumers' choices of wine and beer and the impact varies in relation to alcoholic beverages considered. In particular, with reference to the warning visibility, consumers prefer to have a logo on the neck of the beer bottle; while for wine it should be on the front label. In relation to beer, our result is interesting considering that, according to recent research, most beer bottles already carry warning labels on the back (GfK, 2014). While, concerning wine, when warnings are available, they are usually located on the back label. Considering that Pabst et al. (2019) in a recent study reveal that the back label plays a minor role in the wine buying decision, according to our results, moving the logo on the front label could increase the warning visibility and effectiveness.

The size of the logo, according to current results, does not seem to be an influential attribute, contrarily to findings of other researchers (Pham et al., 2018; Al-Hamdani and Smith, 2017b). Concerning the message framing, results show that in the case of beer, consumers tend to choose a bottle with a neutrally framed message, while for wine they prefer the option without a message. However, negatively framed messages reduce consumers' utility for both alcoholic beverages, confirming that this type of message could have a stronger emotional impact on consumers choices (Al-Hamdani and Smith, 2017a; Al-Hamdani and Smith, 2017b). In this regard, Sillero-Rejon et al. (2018) found for beer that very stringent health warnings were judged to be more effective, leading to a greater motivation to reduce alcohol consumption, as well as greater avoidance and reactance.

Results from the LC models confirm the existence of different groups of young consumers whose choices are differently influenced by different AWL. According to previous research, our results show that these groups are characterised by different drinking behaviours and awareness of social and health risks related to alcohol consumption (Annunziata et al., 2017; Scholes-Balog et al., 2012).

Overall, the results reveal once more that consumer preferences diverge among beer and wine. Taking into account beer, two classes of consumers show a higher utility for the bottle with warning labels (LC2 and LC3, 46% of total sample), but at the same time these consumers hold significant differences in consumption patterns. While, LC2 included heavy beer drinkers, worried about the consequences of alcohol abuse and preferring the presence of warning on drinking and driving, LC3 included consumers with moderate consumption habits, who assign a positive utility to both warning logos but prefer the 'brain damage' warning. Considering socio-demographic variables, a higher number of older Millennials are included in this group. Conversely, LC1 and LC4 (47% of sample) are characterised by a higher concentration of consumers that do not want any warning logo on beer. In particular, LC1 (the most numerous) consumers are not worried about the consequences of alcohol abuse and strongly believe that health warnings have no effect. Men are the majority in this group.

Considering wine, a clear preference emerges towards a label without any warning. Specifically, the biggest groups LC.I and LC.II (which together represent 68% of sample) include consumers who are not worried of the consequences of alcohol abuse and consider health warnings ineffective.

Conversely, consumers in the other two classes (32% of respondents) that attach a positive utility to warnings on the label, are worried about the negative effects of alcohol, and consider health warnings as effective. Both groups have a high presence of older Millennials.

In brief, our results extend previous findings, highlighting that the older segment of Millennials with a moderate consumption behaviour tend to be influenced by the presence of AWL in their choices of alcoholic beverages, while this influence is weaker among younger Millennials (Creyer et al., 2002; Wright et al., 2008). Overall, Millennials are little concerned about the consequences of alcohol abuse and the only two groups that claim to be worried fall among those who prefer the bottle with the warning. Therefore, in line with other research (Comber et al., 2015), our results suggest that warnings can be a useful tool to spread more knowledge and awareness of the short- and long-term negative health and social effects of alcohol abuse.

5. CONCLUSION

This study analyses the influence of alternative formats of AWL on Millennials' beer and wine choices, in order to provide further insights to the current debate

⁴ For a review of main educational campaign promoted by Worldwide Brewing Alliance see http://ec.europa.eu/health/ph_determinants/life_style/alcohol/Forum/docs/alcohol_lib6_en.pdf

on the introduction of health warnings on alcoholic beverages' labels. Despite it does not focus on the analysis of the effectiveness of health warnings policy in reducing abusive consumption behaviours, current results should be valuable for producers, providing practical indications on the influence of alternative formats of labels on young consumer choices.

In brief, findings highlight that the influence of AWL on the choice of wine and beer by Millennial consumers are driven by the type of alcoholic beverage and are affected by framing, design and visibility of warnings. In the two Mediterranean countries considered – Italy and France – the acceptance of warnings is higher for beer than for wine and in both cases consumers show a higher utility for a logo on the front label: on the neck with a neutral message in the case of beer; on the front, without a message for wine.

From a consumer behaviour point of view, the results confirm the existence of different segments of individuals in relation to their choices of alcoholic beverages with AWL, also characterised by different drinking behaviours and awareness of the social and health risks related to alcohol consumption. In particular, the older segment of Millennials with moderate consumption behaviour, a group which is to some extent worried about the negative effects of alcohol, chooses the bottle of beer with warning labels. The same is true, but with a lesser extent, when they chose a bottle of wine. The awareness of alcohol related health risks and the preference for bottles carrying warning labels is weaker among younger Millennials. Thus, in order to apply policies fostering health benefits, our results suggest the need to focus on young Millennials, effectively communicating the risks of alcohol abuse through targeted messages. In addition, and more generally, policies should increase young adults' awareness of the potential negative effects of excessive consumption of both wine and beer.

Some segments of Millennials declared that they are not affected at all by health warnings on the labels of wine and beer. This could be also a consequence of the excess of labelling information, in particular for wine, where labels are already very detailed, often including sensory descriptions and food pairings suggestions. In order to avoid overloading consumers with too many stimuli on the label, a valid alternative could be represented by providing detailed health related information online, using for example QR codes or specific links to websites that provide useful information about alcohol and drinking combining on-label and on-line information. Furthermore, companies should be stimulated to insert the website link in their general advertisements.

Moreover, considering that current results underline that Millennials, regardless of age, are not very concerned about the long-term consequences of alcohol abuse, more extensive education and information campaigns are needed aiming to inform young individuals about the potential negative consequences of alcohol intake, which go beyond the effects on driving and on pregnant women. This type of interventions can be more effective if combined with the use of warnings on the label, specifically rotating negative framed messages. Finally, considering that the awareness of alcohol-related health risks is weaker among younger Millennials and that they mainly drink alcoholic beverages during weekends in out-of-home contexts (Bazzani et al., 2020), new tools should be developed to provide information in this contexts, as posters in bars and stores, and advertisements; together with tools designed to explain how responsible drinking messages translates into actual drinks (such as the pocket-sized unit calculator introduced by UK drink-aware campaign).

The results of our analysis cannot be generalised as they are hardened by several limitations. First, the use of self-reported measurements is prone to generate social desirability bias; second the use of a convenience sample does not allow inferences on the populations of the two countries; third, the study analyses stated choices of respondents, which can be in line or not with actual choices when called to buy a bottle of wine (or beer) in everyday life. Lastly, the choice of the two countries (i.e.: Italy and France), where wine has an historical tradition of daily consumption, may limit the generalisation of results to other countries with different cultural backgrounds.

Based on these considerations, our analysis should be extended to other contexts with different drinking patterns and culture, like North European countries, and to other types of alcoholic beverages with a higher alcohol content, even more harmful and currently up surging among younger individuals. A laboratory experiment analysing actual choices of wine and beer with different AWL stimuli and monetary incentives for participants could partially bridge the lack of realism of discrete choice analysis.

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