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**Alcohol warnings stimuli: a methodological framework for the analysis of changes in attitude and behaviour compliance towards alcoholic beverages**

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**Abstract**

**Purpose:** This paper proposes a methodological framework, which aims to reach three main goals. First, the method will identify what communication medium is more appropriate to generate a positive change in consumers' attitudes and behavioural compliance towards alcohol. Secondly, the framework will test whether wine could be considered different from other alcoholic beverages in terms of the attitudes associated with it. Finally, this method could be easily applicable in different countries, thus being able to enhance international collaborations.

**Design/methodology/approach:** The paper critically reviews the most relevant and updated literature on the ways in which counter advertising leads to a positive attitude change towards alcoholic beverages consumption. In particular, the paper evaluates how warning labels, posters, print and broadcast advertising have been able to effectively modify attitudes and behaviour compliance toward alcohol.

**Findings:** The methodological framework is divided in three phases. First, it will be observed what counter-advertising medium is able to generate the most positive change in consumers' attitudes toward alcoholic beverages. Once the most efficient stimulus has been identified, the study analyses what combination of characteristics (colours, images, size of the warning message, etc.) is able to convey the most positive attitude toward moderate alcohol consumption. Finally, the last part of the project will observe longer term effects of warning messages in changing consumers' attitudes, through the analysis of general and cardholders transactions before and after the exposure to the selected warning stimulus at set times.

**Key words:** health, counter-advertising, communication, alcohol, cross-national

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## 1. INTRODUCTION

The study of the impact of alcohol on human health is becoming increasingly central in the agenda of both public and private stakeholders. In the last few years several articles have been published on this topic, often generating vibrant debates on the goodness and applicability of the results achieved. Just to name one of the latest publications, Nutt et al. (2010) concluded that heroin, crack and methamphetamine are the most dangerous drugs to individuals, but alcohol is considered the most harmful drug to the society. This study was fiercely criticised from both a methodological and empirical perspective, especially due to the fact that only the negative aspects of drugs were taken into account. Nevertheless, the impact of studies like this should not be underestimated, as governmental bodies are sensitive to this topic and try to find a way to reduce the harmful use of alcohol. The latest documents published by the World Health Organisation (WHO) stated that the objectives of the new global strategy are to increase awareness and knowledge of the risks associated with alcohol abuse, raise technical support to member states to enhance preventive measures to alcohol excess consumption, strengthen the collaboration between stakeholders and improve systems to monitor the effectiveness of these measures over time by observing the changes in consumers' behaviours (WHO, 2010).

It is important to help governments to find the most appropriate way to inform consumers about the facts and risks of alcohol and foster moderate alcohol consumption without adopting prohibitionist behaviours, which have already proven to be unsuccessful (Thornton, 1991). However, instead of focusing on the type and characteristics of warning messages able to simulate a positive attitude change toward a moderate consumption of alcohol, most researchers directed their attention on the effects of alcohol in terms of human health (Marlatt and Witkiewitz, 2002; Room et al. 2005; Stockley and Hoj, 2005), social impacts (Banister and Piacentini, 2006; Ritchie, 2009; Russell-Bennet et al., 2010) and awareness and knowledge of health warning messages (De Carlo, 1997; Slater et al., 1998; Barrie et al., 2010).

The wine sector is not immune from the new WHO global alcohol strategy, as the organisation considers wine to be like other alcoholic beverages. This represent a serious threat for the wine industry, especially in a country like Australia where seven per cent of the population has an alcohol use disorder and one individual out of two has a mental health problem sometime in his life (Swan, 2010). This situation has severe adverse social consequences impacting on families, communities and workplaces (AMA, 2009). An estimated 450,000 Australian children live in a household with at least one adult who regularly binge drinks (Dawe et al., 2007). During the 2007-08 holiday period, more than 2.2 million Australians experienced physical and/or verbal abuse from someone under the influence of alcohol, with more than 30% of teenagers fearing for the safety of their family and friends as a consequence of excess drinking, and 45% of people 14-17 years of age claiming they knew someone who was injured or harmed as a result of drinking excessively (Alcohol Education and Rehabilitation Foundation, 2008). Despite this, it was already observed that wine offer greater protection to health than other alcoholic beverages (Burns et al., 2001). Also, wine drinking was more positively associated with social, cognitive and personality development factors compared to beer (Mortensen et al., 2001) and leads to healthier food choices (Johansen et al., 2006). It is, therefore, vital for the sustainability of the wine sector to investigate further whether wine could be considered different from other alcoholic beverages, and if so, find the best way to communicate the risks associated with the abuse of wine and promote moderate wine consumption.

Thirdly, the WHO stated that the enhancement of public health advocacy could be realised by promoting international collaboration, ensuring consistency, scientific soundness and clarity of the key messages and facilitating networking and exchange of experiences between member states (WHO, 2008; 2010). As a consequence, it is important that new research projects adopt an international perspective by finding a common framework, which will allow cross-country evaluations and comparisons.

In the light of these considerations, a research framework is needed to a) identify what communication medium is able to generate the most positive change in consumers' attitudes towards alcohol; b) test whether wine could be considered different from other alcoholic beverages; and c) promote international collaboration.

The work is structured as follow. After this introduction a literature review on the use and impact of several stimuli as a means of communication about the facts and risks of alcohol and enhancing moderate consumption will be presented. Then the research framework will be explained and some conclusions will be drawn.

### **1.1. Alcohol Warning Stimuli**

Researchers studied several means of communication with the aim of finding one able to most efficiently induce a moderate consumption of alcohol. In particular, counter-advertising can take the form of product warning labels, posters at point of purchase or consumption, print or broadcast advertisements, all of whose effectiveness depends on a range of different factors (Agostinelli and Grube, 2002).

### **1.2. Labels**

One of the first articles published on the impact of alcohol warning labels (Engs, 1989) showed that noticeability is a key preliminary factor for a warning label to become effective, but they recognised that it is difficult and challenging to change people's behaviours. The main reasons for this are explained by the *Health Belief Model* according to which a change in behaviour can only be possible if a person (a) feels susceptible to a health problem; (b) feels that the problem can cause a serious harm; and (c) knows what actions should be taken to avoid the harm. The author (Engs, 1989) ended the article by asking how effective a warning label could be to generate a change in consumers' behaviour, but this question was not answered in the following years. Thus, some researchers focused on the noticeability and awareness of warning labels. For example, Scammon et al. (1991) evaluated the impact of US federal requirements on warnings appearing on alcoholic beverage containers through six waves of data collection before and after the introduction of the new law. Their results showed that the new labels were noticed, but there was no evidence that health risk perceptions or behaviours were altered in any way. This result was confirmed by Mazis et al. (1991) and Kaskutas (1993), who added that awareness levels were higher among younger adults and heavy alcohol drinkers. In particular, the latter reported that respondents believe warning labels may generate a change in behaviours, but this was not tested in the study. Loughery et al. (1993) and Mackinnon et al. (1994) looked at the warning features, which help improve noticeability. Loughery et al. (1993) found that a conspicuous and prominent letter height is not sufficient for a warning to be noticed. Pictorial elements, icons and colours may improve noticeability (Strahan et al., 2002; Argo and Main, 2004; Jones and Gregory, 2010), but borders do not have a significant impact. Mackinnon et al. (1994) found that the specific risks communicated through the label were considered to be more important than the

label length. Moreover, the use of qualifier words, in particular “poison”, “cancer” and “health problems”, were the most powerful in stimulating an avoidance response and results were more effective on whisky bottles than beer bottles. Finally, the use of alternative warnings stimulates avoidance more than existing warning labels. In line with this last study, De Carlo (1997) found that, when warning messages are highly credible and use intensive words, they are more effective than when the same highly credible sources use less intensive worded warnings and certainly more than when using low credibility sources or not intense words. As alternative messages seem to perform better than standard ones, it is clear that a rotation of the warning messages may generate an increase in the knowledge of alcohol facts and hazards (Wogalter et al., 1994). In particular, a rotation of ten messages performs better than a five message rotation or single government warning. A solution similar to that reported by Strahan et al. (2002), who suggested that a change of advertising and commercials by showing different themes or using different spoke-persons reduce the risks of overexposure towards a warning message, which inevitably reduces its effectiveness. In addition, the more a person is exposed to a warning message, the higher is the knowledge associated with the content. Finally, warning messages play a role in influencing other important marketing factors. Andrews et al. (1993) found that when warning messages are explicitly shown on labels, consumers tend to show higher levels of: recall, attitude toward the ad, attitude toward the brand, purchase intention and responsible advertising.

### 1.3. Posters

A second way to communicate the dangerous effects of alcohol and stimulate a positive attitude towards alcohol consumption is represented by posters. Basing their study on the 1989 US federal introduction of alcohol warning bans, Kalsher et al. (1993) studied the effects of posters in eight university fraternities. Posters were placed in different areas of fraternity houses and questionnaires assessing the knowledge of the five categories of hazard associated with alcohol consumption were distributed to the members. The results showed that respondents knew about the facts and risks of alcohol consumption and this knowledge increases with time exposure to the signs. However, posters appear to be ineffective in communicating the risks associated with alcohol consumption as (a) they are not designed to reach the underage population; (b) they are small and contain limited information; and (c) information is not communicated if the beverages are not served in its original container (e.g. by the glass). The lack of posters’ effectiveness was also evidenced by Mackinnon et al. (1999), who analysed the outcomes of a law passed in Arizona (USA) in 1992, which established that all on-premise and off-premise venues must display posters informing about the risks of drinking alcohol while pregnant. The authors conducted two studies among college and high school students. In the first experiment, Mackinnon et al. (1999) measured the knowledge of the posters’ contents, risks associated with alcohol consumption and tolerance toward alcohol while pregnant, in five waves of data collection (before the introduction of the law, three months after, nine months after, twelve months after and eighteen months after). The results showed that students reporting a higher exposure to the poster could recognise the content and showed higher awareness of the risks associated with drinking alcohol. However, there was no significant sign of avoiding drinking alcohol while pregnant. Similar results were shown among high school students, who answered the same questionnaire before the introduction of the law, eighteen months after and 42 months after: the positive effects of the warning posters levelled off over time. In terms of awareness of the warning content of posters, these results are consistent with a study conducted on alcohol health warning signs in Florida (Cleary, 1996), which showed that knowledge on alcohol-related birth defects doubled after the introduction of the law. More recently, Barrie et al.

(2010) surveyed 152 respondents to test the effectiveness of campaign launched in Dandenong (Australia) in 2009 using stencils, posters and stickers. The results reported that 65% of the sample saw at least four different warning messages, 97% could identify the campaign's main message and 25% stopped or intended to stop drinking in public places. Different to previous studies, however, there was no follow up to establish the long term effects of this campaign.

#### **1.4. Print Advertising**

A third way to convey moderation in alcohol consumption is represented by print advertising, where specific warning messages are displayed in print magazine pages promoting an alcoholic beverage. One of the first studies on this communication medium tested the levels of recall of content based on: warning conspicuousness (size and contrast) and shape (plain rectangle, rectangle with sign icon and circle/arrow) were able to stimulate (Barlow and Wogalter, 1991). The study found that warnings are better remembered when the message is more prominent and print advertisement can effectively communicate the hazards of alcohol consumption. More recently, Torres et al. (2007) got to similar conclusions by applying a content analysis to a series of print advertisements. Validating the social contract theory, according to which consumers may give higher value to brands that clearly display warning information, the authors showed that respondents reported higher recall, attitude toward the ad and the brand, purchase intention and responsible advertising when warnings are shown in a print ad. Another interesting way to study the effects of print advertising is represented by the use of an eye-tracking tool. Disconfirming the positive results shown before, both Fox et al. (1998) and Thomsen and Fulton (2007) found that voluntary warning messages shown in print ads fail to capture consumers' attention. In particular, Thomsen and Fulton (2007) observed that beverage bottles, product logos and cartoon illustrations were more frequently viewed than warning elements, and only a small percentage of those who viewed the message were able to recall the general concept or restate verbatim the content.

#### **1.5. Video Advertising**

Warning messages through videos represent a last and still not much explored form of communication of the facts and risks associated with alcohol consumption. Despite several studies, which analysed the elements of commercial videos used to capture the attention of the population, especially children and the younger generation with the aim of suggesting what should be forbidden in these videos (Casswell and Zhang, 1998; Gentile et al., 2001; Austin and Hust, 2005, Austin et al., 2006; Fielder et al., 2009; Chung et al., 2010; Ouschan et al., 2010), only a few studies focused attention on the effects of warning messages in videos. Slater et al. (1999) observed knowledge levels and likeability of a warning ad before, during and after a television beer commercial. The results evidenced that when the warning message is shown before the ad, knowledge scores and likeability was higher. Conversely, when the message is projected during or after the commercial, respondents knew less about the warning and gave more negative comments about the ad. An evolution of this study brought Slater et al. (2002) to observe the effects of threatening background visuals and voice-over differences in televised alcohol warnings shown during sports programming. In particular, backgrounds were tested with a threatening visual, a non threatening visual, a plain background and a no warning control, combined with a male or female announcer and a warm or imperative warning content. The results showed that all warnings increased the knowledge of alcohol risks, in particular when a threatening visual is shown in the background. In addition, the

latter increased positive thought elaborations about the warning message content and presentation, but they did not impact perceived risk of beer use. Conversely, the announcer gender and vocal quality do not contribute much to knowledge levels or perceived risks.

To sum up, the importance of warning messages as a way to discourage alcohol abuse and promote responsible alcohol consumption has been recognised in the literature. Several researchers studied the effects of different ways to communicate these health warnings, finding that most of them positively influence awareness, knowledge, and likeability of the message. However, there are not many studies that comparatively evaluate what kind of stimuli is able to generate the most effective change in consumers' attitudes and behaviour compliance. Moreover, we do not have information on what combination of elements is able to lead to moderate alcohol consumption. Finally, we do not have information on how the most effective stimulus, designed in a way able to enhance moderate alcohol consumption will change consumers' behaviours over time. In order to give answers to these questions, a description of a research framework will be now presented.

## 2. RESEARCH FRAMEWORK

The research framework is divided in three phases.

In the first part of the study, the researchers will define a list of elements that consumers associate with a moderate and responsible consumption of alcohol. The most recent and relevant literature review about the use and misuse of alcohol consumption will be taken into account, in order to define the list of attributes. The elements will be displayed in a series of choice sets, according to a balanced incomplete block design (BIBD). For each of the choice set, the respondent ticks the element, which he/she thinks is the most and least important to stimulate consumers towards a moderate consumption of alcohol. Once the respondent finishes the Best:Worst (BW) experiment, he/she will be asked to sit in front of a screen where one of the following health warning stimuli will be shown: (a) alcoholic beverages labels; (b) posters; (c) printed advertisements; (d) video advertisements. In order to control for time exposure, each stimulus will be shown for thirty seconds. After this, the respondent will be asked to answer the same BW experiment seen before the stimulus. The results of the two BW tasks will then be compared through a latent variable discrete choice model (Rungie et al., 2010), a recent development in the family of discrete choice models. The two most relevant advantages compared to other discrete choice models are the possibility to estimate interaction and correlation effects between attributes and levels. This will let the researchers understand what attributes tend to jointly determine consumers' choices, thus helping define a more effective communicative strategy (Rungie, 2007; Corsi and Rungie, 2010). Secondly, this methodology allows the measurement of how heterogeneity in consumers' responses evolves over time, thus giving an estimation of the change in respondents' choices before and after the exposure to different stimuli (Rungie et al., 2010).

Once the stimulus able to create the biggest change in respondents' choices has been identified, the second part of the project will start. In this phase the specific characteristics the stimulus should have (colours, presence of images, size of the warning message, number of standard drinks, etc.) to better convey positive attitudes toward moderate alcohol consumption will be determined. The different attributes and levels will be combined and displayed in a defined number of choice sets, asking the respondent to indicate the alternative they are more likely to purchase. The results will be analysed through a scale extended latent choice model (Vermunt and Magidson, 2008; Mueller et al., 2009), which is able to better estimate actual preference heterogeneity and more accurately segment the population.

The third part of the project will be dedicated to longer term effects of warning messages in changing consumers' attitudes. Again, the stimulus adopted in the second part of the project will be utilised to run a communicational campaign in selected areas. An alcoholic beverage chain will be chosen in every participating country/location. The selected warning stimulus, designed according to the results of the DCE, will be displayed in a selected number of commercial outlets. In this way the results can be evaluated against other alcoholic beverages stores, which will represent our control group. Retailers will be asked to provide *general transactions* and *cardholders' transactions* about alcoholic beverages before and after the exposure to the health warning stimulus at set times (one month, three months, six months, one year). While the first set of data will measure the impact of the selected health warning stimulus on the behaviours of the universe of purchasers (Bollinger et al., 2010), the second type of data will provide information on a group of consumers, which tend to have higher purchase intensities than non-members (Meyer-Waarden, 2008). Although this segment may not be representative of the entire population is absolutely critical for the purpose of the study. As these consumers are heavier alcohol buyers, it is fundamental to understand how their alcohol purchase frequency and rate evolve after health warning exposure, as well as the shifts from one beverage to another, or the choice of different stores, where the health warning stimulus is not displayed (Bollinger et al., 2010). At the same time, both store shoppers and cardholders will be asked to participate in a series surveys about their attitudes and behaviours towards alcoholic beverages and health warning messages. Questionnaires will run parallel to transaction collection, thus offering a way to measure the evolution of purchases with consumers' attitudes.

### 3. CONCLUSIONS

This paper has proposed a research framework able to give answers to the objectives set by the WHO in the latest alcohol reduction strategy. Through a three phase approach we will be able to find what communication medium is the most effective in inducing positive changes in consumers' behaviours towards alcoholic beverages. Secondly, this research will clarify what combination of graphic and written elements leads to the highest awareness and recognisability of the warning message. Finally, the short and long term impact of this communication medium on consumers' behaviours will be observed.

It is important to note, however, that the approach proposed in this paper is not able to effectively lead to a reduction in alcohol consumption. As indicated by the Global Strategy of the WHO (WHO, 2010) and by several academic papers (Jones and Gregory, 2010; Meier, 2011) it is important that alcohol related research implements strategies able to tackle alcohol related problems from different angles (community actions, reducing availability, pricing policies, monitoring and surveillance, youth education, etc.), as this represent the only successful way in which changes in alcohol consumption can be significantly measured over time.

Secondly, although the framework does not exclusively look at wine as the object of the study, the sector will benefit from it. Through a comparison of the results obtained from different alcoholic beverages, the researchers will not only obtain an absolute estimation of consumers' responses toward different health warning stimuli, but also a comparative evaluation between different alcoholic beverages. This aspect is critical for the wine industry, as WHO is currently inclined to treat wine as all other alcoholic beverages. This study could shed further light on the role played by wine in people's lives, and potentially help the sector in claiming a difference from other alcoholic beverages, which other studies have already proven to exist.

Thirdly, the structure of the project will make it easily applicable in different countries and contexts, thus favouring networking and exchange of experiences between member states, which is considered a key point of WHO alcohol global strategy.



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