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Brand name effects on alcohol counter-advertising behaviour

Efectos del nombre de la marca sobre el comportamiento: el caso de la contrapublicidad del alcohol

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Abstract
Major investments in alcohol advertising have been reported globally. By contrast, campaigns to reduce alcohol consumption among the young are rare. In this regard, the role of different types of brand names as cues to preventing alcohol consumption through public service announcements or counter-advertising has been neglected. This study is framed around the quality of cues from the signalling theory and incentive sensitisation theory. Hence, it seeks to understand the effects of three different brand names (a community action group, a fictitious alcohol brand, and a government agency) on drinking behaviour. A between-subjects experiment was carried out in two stages: 1) 106 college students listened to a loss-frame counter-alcohol audio spot endorsed by each brand; 2) actual drink consumption was measured within the 24 hours following listening to the audio spot. The findings did not confirm the signalling theory for counter-advertising: distinct brand names have no influence on preventing alcohol consumption behaviour. In this regard, the results revealed different behaviour according to gender (men drink more than women). However, the incentive sensitisation theory was supported, as differences were identified according to drinking habits. The article concludes with a discussion of the results and points to the central role of creativity in counter-advertising messages as a future line of research.

Keywords
Advertising; alcohol; brands; counter-advertising; signalling theory

Resumen
La inversión mundial en publicidad de bebidas alcohólicas es elevada. En cambio, son escasas las campañas para reducir el consumo de alcohol entre los jóvenes. En este contexto, se ha decidido explorar el papel de distintos tipos de marcas, entendidas como señales, para prevenir el consumo de alcohol en anuncios de servicio público o contrapublicidad. Este estudio se ha enmarcardo en dos teorías: la teoría de la señalización y la teoría de la sensibilización a los incentivos. Su objetivo fue conocer los efectos de tres marcas diferentes sobre el comportamiento real en el consumo de alcohol entre jóvenes. Las marcas correspondieron a: un grupo de acción comunitaria, una cerveza ficticia y una agencia gubernamental. Se llevó a cabo un experimento en dos etapas: 1) 106 universitarios escucharon un anuncio sonoro respaldado por cada marca, cuyo objetivo era prevenir el consumo de alcohol alertando sobre sus consecuencias negativas y; 2) se observó el consumo real de alcohol en las 24 horas siguientes a la audición del anuncio. En su conjunto, los resultados no confirmaron la teoría de la señalización de la contrapublicidad, aunque mostraron un comportamiento diferente según el sexo (los hombres beben más que las mujeres). Sin embargo, se avaló la teoría de la sensibilización a los incentivos, ya que se hallaron diferencias en función de los hábitos de consumo. El artículo concluye con la discusión de los resultados y apunta como una futura línea de investigación el papel central de la creatividad en los mensajes de contrapublicidad.

Palabras clave
Alcohol; contrapublicidad; marcas; publicidad; teoría de la señalización

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1. Introduction

Every year, 3 million people die from alcohol related causes, which represents 5.3% of worldwide deaths. On a global scale, alcohol consumption figures indicate that 26.5% of young people between the age of 15 and 19 are regular drinkers (World Health Organization [WHO], 2018). In Spain the prevalence rate throughout the life of an adolescent (15-16 years old) is 78%, two points below the average in Europe, but far above the 47% registered in the United States (ESPAD Group, 2016).

The World Health Organization (2018) has recommended on numerous occasions the restriction of marketing and advertising of alcoholic drinks as one of the best strategies to reduce consumption and mitigate the effects. However, millions are invested in advertising in this sector. In Spain data shows a sustained growth. Investment in the whole of the alcoholic drinks sector increased from 84 million euros in 2015 (Statista, 2017), to 101, four years later (Infoadex, 2021). These figures contrast with the 0.6 million euros that the Spanish government invested in 2021 on campaigns to reduce alcohol consumption among the young (Comisión de Publicidad, 2021). The following year, the investment increased to a million, but with a campaign directed at the population as a whole (Comisión de Publicidad, 2022).

Informative actions aimed to prevent the consumption of alcohol among the young are mainly present in four areas: health, education, family and the media. In the media, is where counter-advertising is encased. In the context of health communication, as Agostinelli and Grube (2002) state, counter-advertising of alcohol can be defined as messages that aim to counter the effects of advertising in the consumption of alcohol and the problems that stem from it. As stressed by McDermott, Stead and Hastings (2005), counter-advertising has acquired an instrumental role in promoting voluntary change in individual behaviour. In relation to alcohol consumption, it can have even more relevance, if two factors are taken into account: weaknesses in regulations to limit consumption and the absence of conclusive evidence regarding the benefits of restricting advertising of alcoholic drinks (Siegfried et al, 2014). However, the cases of counter-advertising are minimal and must compete with the influence exerted by commercial advertising on the consumption habits of the young (see recent reviews: Berey et al., 2017; Gupta et al., 2016; Jernigan et al., 2017; Noel, Sammartino and Rosenthal, 2020; Sargent and Babor, 2020; Scott et al., 2017; Stautz et al., 2016).

The ultimate goal of counter-advertising is to reduce the influence of brands on alcohol consumption. In this respect, this article responds to the call that academic literature has made to investigate three aspects: a) how health messages by brands influence the behaviour of specific age groups (Evans et al., 2008: 721); b) how to determine the most effective message content in counter-advertising (Berey et al., 2017); c) how certain signals can modify alcohol consumption intention (Kersbergen y Field, 2017). Until now, the results of the investigation indicate that the effects of counter-advertising are minimal in relation to reducing alcohol consumption (Alcohol and Public Policy Group [APPG], 2010). One study showed that counter-advertising led to an increase in consumption (Moss et al., 2015), while two others found no variation whatsoever in behaviour. Regarding the latter cases, one noted that counter-advertising did not lessen the negative perception towards alcohol (Brown et al., 2016), and the other presented positive opinions of brands and products, instead of reducing consumption levels (Babor et al., 2018).

However, it has also been found that television advertisements that warn of the negative consequences of alcohol consumption contribute to a significant reduction in the desire for young people to drink, when compared to advertisements that promote consumption (Stautz y Marteau, 2016). Despite this and considering the importance of the problem that alcohol consumption represents with the young, it is essential to delve into the study of counter-advertising as a communication strategy for promoting healthier consumption habits.

This article responds to the calls of previous investigations on the use of brands in messages regarding health to help increase effectiveness (Evans et al., 2008, 2009, 2015). No articles have been found that relate brands as promotors of healthy behaviour through counter-advertising of alcohol. As a result, this research aims to fill this gap using an experimental methodology. The objective is to determine the effectiveness of brands when backing messages that promote healthy habits among the young, regarding alcohol consumption.

2. Theoretical Framework

Brands are the most important extrinsic signals of a product, an attribute that is unrelated to any physical or functional aspect (Huang et al., 2006: 43). It has been demonstrated that brands have an impact on the consumer (Bai, 2015). Furthermore, signalling theory provides a conceptual framework to analyse how consumers evaluate messages from the information received concerning the quality of the brands (Spence, 2002; Kirmani y Rao, 2000), taking into account that consumers and organisations have asymmetric access to this information (Connelly et al., 2011).

In order to balance out this asymmetry, organisations emphasise different unobservable qualities of the brand, that is to say, providing implicit information that can influence consumer decision making (Keller, 1998). In this research, quality refers to the underlying and unobservable characteristics of a signal to anticipate healthy behaviour having perceived such a signal. Thus, a common strategy to correct the asymmetry of the information, is the use of brand names as potential signals of quality.

In social marketing, where the strategy is focussed on modifying behaviour to improve individual and social well-being (Kotler, Roberto y Lee, 2002), brands help people to identify with a specific behaviour (Kirby, 2001), to establish emotional connections that make awareness-raising campaigns more visible (McDivitt, 2003), which can accelerate the process of change (Lefebvre, 2013). In this way, as Evans et al. (2008) state, public health brands act as healthy behaviour or life-style signals. Evans et al. (2008, 2015) found proof of the effectiveness of behaviour change using *ad hoc* created brands for actual campaigns in areas, such as nutrition, HIV (Aids) and tobacco control (for example, QUITPLAN®, Truth® y VERB™). Despite establishing the success of adopting healthy life-style habits based on brands, no analysis nor development of counter-advertising brands of alcohol have been found in the actual market. Furthermore, no previous study has compared the effect of different brands when highlighting unobservable qualities to the consumer with the aim of reducing alcohol consumption through counter-advertising.

In the field of commercial marketing, the consumer can assess the quality of the product through different attributes: price, guarantees, brands, etc. However, in the context of social marketing and, more specifically, in health counter-advertising, the advertised product is the adoption of a healthy behaviour (Evans et al., 2015; Evans y McCormack, 2008). Hence, when the brand acts as a signal, it transfers its quality to the message of healthy behaviour (the product). This process of signalling needs to occur before the consumer experiences related problems from unhealthy behaviour (for example, a car accident after drinking alcohol). Consumers can buy a commercial product and check the quality of the signal (Darby and Karni, 1973), but they cannot check the result of a behaviour for various reasons: radical implications on health (death from drinking), effects that take a long time to appear (non-contagious diseases, such as cancer of the liver) or the absence of self-experience (suffer alcohol poisoning). In this way, thanks to the signals of counter-advertising, consumers, being the least informed, can increase the amount of received information regarding the physical and psychosocial cost (Evans and McCormack, 2008), with less processing effort (Maheswaran, Mackie and Chaiken, 1992), thereby, reduce, maintain or modify specific risk-taking behaviour.

As a result, different brands produce different degrees of healthy behaviour. Brands considered to be high quality signal sufficient quality to reduce any uncertainty by the consumer of a message (favourable brands) and modify probable novice behaviour, while brands considered to be low quality do not prevent such behaviour. In light of the above, the first research question was reached:

RQ1: In a counter-advertising message for alcohol, which brand signals higher quality in promoting healthy behaviour?

As already mentioned, messages that promote healthy behaviour have to compete with alcohol brands which have been seen to have an effect on purchasing intentions (Helm y Evans, 2016; Idoko et al., 2013) and with consumption in the young (Ross et al., 2014a, 2014b, 2015). Durcikova y Gray (2009) state that these brands can be considered dishonest signallers as they deliberately hide negative information about the product in their advertising campaigns; purely highlighting the positive (such as the enjoyment). Furthermore, the assertions that the initiatives of Corporate Social Responsibility (CSR) in the industry reduce harmful consumption of alcohol appear to have no foundations in scientific based evidence (Esser et al., 2016; Evans et al., 2009; Mialon and McCambridge, 2018; Robaina et al., 2018), and are based on ambiguous and ineffective messages on responsible consumption (Jones, Wyatt and Daube, 2016). Despite academic criticism with regard to positive actions taken by the industry (Babor et al., 2018), and of findings that claim that messages by non-profit making organisations are more effective than those sponsored by the industry (Kim and Park, 2018; Szykman, Bloom and Blazing, 2004), companies could use their ethical responsibility to prevent alcohol consumption (Pantani et al., 2017). In this way, it is demonstrated that if the consumer perceives a social cause in a brand, the response to the message will be more positive (Bigné, Currás and Sánchez, 2009). Based on the above, a second research question is posed:

RQ2: To what degree can an alcohol brand, as an ethical strategy of CSR, indicate higher quality in the promotion of healthy behaviour in a counter-advertising message?

The incentive sensitisation theory can explain different behaviour in relation to the level of alcohol consumption. The theory explains the inability to change a harmful consumption behaviour, such as with alcohol. The motivation and reward systems are affected by a process of "incentive sensitisation", where the neural system activates the attribution of incentive salience when a drug or associated stimulus is

present (Robinson y Berridge, 2001). This activation can occur without the subject being aware. In this way, alcohol signals, as present in counter-advertising (meaning, words and images related to alcohol), can stimulate desire in heavy drinkers (Stautz y Marteau, 2016: 2). Neuroimaging studies suggest that adult alcoholics, not social drinkers, when exposed to alcohol signals (images) experience a greater brain activity in the areas which cause desire (Myrick et al., 2004), the same occurs with adolescents with alcohol consumption disorders (Tapert et al., 2003). Based on these tests, the following hypothesis is posited:

H1: The greater the drinking habit – the greater the incentive -, reducing the effectiveness of a counter-advertising focussed advertisement.

Previous research on counter-advertising of alcohol and heavy drinkers has suggested the proposed hypothesis: heavy drinkers display greater attention to signals related to alcohol, which may explain why counter-advertising reduces implied negative behaviour towards alcohol, suggesting a boomerang or reactance effect (Brown et al., 2016).

In the same line, one study proved that advertisements which warned of the dangers of alcohol among university students did not lead to more negative consumption behaviour than the controlled advertisement (Goodall y Slater, 2010); while in another study, the warning message compared to the control message also had no influence on decisions to choose alcohol with a deferred consumption coupon (Brown et al., 2016).

In the presented study, the documented neutral, boomerang and reactance effects, are tested in a real-life setting of almost immediate consumption (within 24 hours), as, to the best of our knowledge, this type of experiment has never been carried out before.

3. Methodology

3.1. Stimulus design and development

An audio only stimulus was created, suitable for digital platform distribution, as young Spaniards mainly consume audiovisual content online (Perona, Barbeito y Fajula, 2014). For the creation, an exhaustive review was carried out of alcohol counter-advertising by public institutions, and a *loss-framed* message by the Dirección General de Tráfico (DGT) was chosen, a message focussed on the cost and consequences of not adopting the recommended behaviour (Rothman et al., 2006). These messages may seem to be aimed at drivers, but a qualitative exploration prior to the experimental design, carried out with university students, confirmed that this type of advertisement concerns them, regardless of if they are a driver or not. Such behaviour is explained by the heuristic model of persuasion, which suggests that the processing of certain information is practically automatic, especially when related to the rules of learnt decision-making and daily routines (Chaiken and Ledgerwood, 2012).

In the selected advertising spot, a male voice gives the following message: "The last time that you go to a party. The last time that you think a couple of drinks doesn't matter. The last time that you laugh. The last time that you think nothing's going to happen to me. If you drink and drive, say goodbye to everything." The advertisement ends informing that it is a warning from the DGT. Together with the voice, and throughout the whole advertisement, background music is played to provide audio continuity.

Working with the spot, where only the original reference to the DGT is eliminated, four versions were created. In three of them, at the end of the advertisement a brand was included as an independent variable with the following wording: "This is a message by [brand name]". In the final part there was no other audio (music or sound effects), so that the silence highlighted, even more, the name of the brand and drew the attention of the experimental subject. As using the original voice of the advertisement was impossible, a voiceover artist was acquired to guarantee maximum quality in the three versions. To maintain the initial creativity and quality of the spot, the three fragments with the names of each brand were recorded in the professional sound studio of the university of the authors of this article. The fourth version, the control version, made no reference to a brand.

With the aim of responding to RQ1, it was decided to use three brands with very different profiles but all familiar among the young. Those selected were: 1) DGT, as an institutional authority; 2) Alcoholics Anonymous, a community services group known for its sole interest in helping those who wish to become sober; 3) Barna Beers, a commercial brand of a fictitious beer, created *ad hoc*. Combining 'Barna', commonly used among the young to refer to the capital of Catalunya, and the Anglicism *beers*, to give the brand a modern touch (Salciuviene et al., 2010). This fictitious brand was invented to instil in the participants the unmistakeable idea of an alcoholic drink, but without associating it with their experience as consumers of a specific brand. As stated, the fourth version of the advertisement, the control version, did not include the name of a brand. In the exploratory phase prior to the experimental design, 120 university students of the same age group as the participants in the study, associated each

brand to the corresponding category: DGT (94.2%), Alcoholics Anonymous (96.7%) and Barna Beers (94.2%).

3.2. Sample selection

A convenience (non-probability) sample of university students was chosen. 166 participated in the test. 106 completed the two phases of the experimental design and 60 were eliminated due to incompletion. The data shows that 103 of the 106 experiment subjects displayed active alcohol consumption behaviour in the 30 days prior to the test. Hence, the 3 that were considered non-drinkers were eliminated. The final group consisted of 65 women (63.1%) and 38 men (36.9%), with an average age of 18.7 (SD = 1.92).

3.3. Procedure

The experiment design was divided into two phases. In the first, the participants were randomly assigned to one of the four test conditions: DGT (n = 30), Alcoholics Anonymous (n = 21), Barna Beers (n = 26), unbranded control (n = 26). The participants were informed that the reason for their collaboration in the research was to find out their opinion of an audio advertisement to reduce alcohol consumption. However, the actual objective of the experiment, which was to observe their behaviour regarding their decision about alcohol consumption, was not disclosed.

Next, they responded to two sections of three of an anonymous questionnaire with sociodemographic questions and habit related questions regarding: driving, alcohol consumption and media consumption. Regarding driving habits, they were asked if they held a driving license. Alcohol consumption habits were determined through three questions as per the Composite Drinking Scale, CDS, which measures unit consumption (glasses, drinks) (Huang et al., 2006): a) number of times consumed within the last 30 days; b) average weekly alcohol consumption; c) average alcohol consumption when out. Various questions regarding specific consumption (a) and approximate consumption (b and c) enabled a distinction between: non-drinkers, occasional drinkers and heavy drinkers. The questions related to average consumption were included as distractions, to prevent those regarding alcohol consumption creating suspicion with the participants, thereby influencing the second part of the experiment.

After, the hearing of the advertisement was carried out. The participants heard the listening twice, consecutively. Then, they completed the third part of the questionnaire, where they were asked to rate, on an ordinal scale of 1 (low) to 9 (high), the following unidimensional construct related to the advertisement: authority, credibility, originality, likeability, threat and persuasion.

In the second phase of the experiment, the influence of brands on alcohol consumption was tested. The novel objective of this phase was to discover the actual consumption of the students after listening to the advertisement. In order to do so, at the end of the questionnaire each participant was handed a voucher for their assistance in the experiment. The voucher had three options: water, soft drink or beer. This procedure contravened no ethical aspect as Spanish laws allows the sale of alcohol on university campuses and the Ethics Committee of the university gave their approval for the experiment. The voucher was valid for 24 hours in the faculty cafeteria. This time frame was decided to prevent the numbing effect. Each voucher was marked with a code associated with the completed questionnaire to enable the subsequent identification of each participant and drink.

As stated, it was essential to distract the students from the experiment objective: to assess the influence of the advertisement on their actual alcohol consumption decision. However, as Hauser, Ellsworth and González (2018) indicate, using verification methodology can give clues to the experiment participants as to the research hypothesis. Consequently, these authors propose not to check on the manipulation until after applying the dependent variable has been measured, although they also warn that the participants may have already forgotten the stimuli they were exposed to. For this reason, a subjective manipulation check was chosen (Kane y Barabas, 2019). To do so, the participants were asked their opinion of the advertisement. This question forced them to pay attention to the stimulus with the independent variable and provide a manipulation check.

4. Results

The random assignment of the experimental subjects for each experimental condition displayed a clear imbalance regarding the sex variable. The male group was divided in the following way: 34.1% Alcoholics Anonymous; 7.89% Barna Beers (BB); 21.05% DGT and 36.48% control. In contrast, the female group: 12.31% Alcoholics Anonymous; 35.38% BB; 33.85% DGT and 18.46% control. As a result, the analysis was carried out using the GAMLj model (generalized linear models with a logistic classification variable) and the free statistical software Jamovi 1.2.

The results of alcohol consumption behaviour are herewith presented in two sections: effects of the brand controlling the sex variable (model 1) to respond to the two posited research questions (RQ1 and

RQ2); and the effects of the brand controlling both the variable of sex and previous consumption habits (model 2) to establish the validity or invalidity of the posed hypothesis (H1). Each section describes the results of the models with alcohol consumption behaviour as a categoric result variable (consumer / non-consumer).

4.1. Effects of the brand controlling the sex variable

To respond to the two research questions, it is necessary to determine which of the three analysed brands (AA, BB or DGT), signal the required quality to lead to a healthy behaviour (to not drink alcohol) in a *loss-framed* message. The first model (see model 1, table 1) controlled the sex variable (R^2= 0.196; Akaike Information Criterion (AIC)= 123.512). In this aspect, the plausibility test showed different behaviour according to the sex (χ^2= 9.15, df=1, p=0.002) and the advertisement brand (χ^2= 8.92, df=3, p=0.030) (see table 2).

Table 1: Estimated marginal means

	Model 1				Model 2			
			95% confidence interval				95% confidence interval	
Brand[a]	**M[b]**	**SD[c]**	**Lower**	**Higher**	**M[b]**	**SD[c]**	**Lower**	**Higher**
AA	0,699	0,1073	0,461	0,864	0,820	0,0872	0,589	0,935
BB	0,333	0,1015	0,409	0,788	0,514	0,1514	0,244	0,776
Control	0,616	0,1123	0,157	0,574	0,572	0,1212	0,336	0,779
DGT	0,319	0,0952	0,166	0,525	0,292	0,1090	0,128	0,537
Sex								
Men	0,667	0,0855	0,485	0,810	0,734	0,0873	0,534	0,869
Women	0,318	0,640	0,208	0,454	0,371	0,0801	0,232	0,537
Alcohol consumption habit:								
Occassional	--	--	--	--	0,264	0,0686	0,152	0,417
Habitual	--	--	--	--	0,820	0,0684	0,648	0,919
Model data	R^2 0,196	AIC 123,512	Deviance 113,512	Residual DF= 98	R^2 0,352	AIC 103,397	Deviance 91,397	Residual DF= 98

Source: own creation

a: AA (Alcoholics Anonymous), BB (Barna Beers), DGT (Dirección General de Tráfico).

b: M (Mean), the estimated means are calculated in line with other variables independent of the model mean (reduction of error rate), "--" indicates that the variable was not controlled in model 1.

c: SD (Standard Deviation)

The estimated marginal means of the sex variable show that men consumer more alcohol than women (66.7% compared with 31.8%) (see column M in table 1). The estimations of the parameters of fixed effects reveal a different behaviour between men and women (p=0.003): men drink four times the number of women (OR=4.29) (see table 2).

The estimated marginal means (see column M in table 1) show that non-alcoholic drink consumption behaviour (soft drinks or water) was observed when the advertisement was backed by the DGT (only 31.9% chose alcohol), followed by BB (33.3%) and the control group (61.6%). Curiously, Alcoholics Anonymous led to a less healthy behaviour (69.9% of the subjects preferred alcohol). From this data it appears that the government organisation brand and the alcohol brand are more successful than the others when controlling only the sex variable. The results show that some differences related to the advertisements seem to be significant (with the p value unadjusted): with the AA advertisement alcohol consumption is four times higher than BB (AA-BB, p=0.032, OR=4.6), and the DGT (AA-DGT, p=0.017,

OR=4.9). Furthermore, with the control advertisement, alcohol consumption tripled that of the DGT (control-DGT, p=0.044, OR=3.4) (see table 2). However, on carrying out *post hoc* comparisons for each advertisement, using the conservative Bonferroni adjustment (see table 2), no differences were found between the groups. Taking into account the noted adjustment, and for the experimental conditions presented in this study, the response to the posited research questions are as follows: RQ1, none of the three brands indicate a higher standard in promoting healthy behaviour; RQ2, the commercial brand does not indicate a higher standard than the others.

Table 2: P*ost hoc comparisons*: between advertising spots (brands) and controlled by sex

Between brands[a]	Exp (B)[b]	SD[c]	Z	$p_{Bonferroni}$	p_{Tukey}	$p_{without\ adjustment}$
AA-BB	4,653	3,332	2,1468	0,191	0,145	0,032*
AA-DGT	4,966	3,336	2,3858	0,102	0,086	0,017*
BB-DGT	0,937	0,613	-0,0997	1,000	0,999	0,921
Control- BB	3,207	2,111	1,7710	0,459	0,312	0,077
Control - AA	1,451	0,967	0,5582	1,000	0,944	0,577
Control -DGT	3,423	2,093	2,0130	0,265	0,190	0,044*
Sex						
Men-Women	4,29	2,10	2,98	0,003*	-	0,003*

Source: own creation

a: AA (Alcoholics Anonymous), BB (Barna Beers), DGT (Dirección General de Tráfico).

b: Exp (B) indicates the *odds ratio*), meaning, the probability of an event occurring in respect to another.

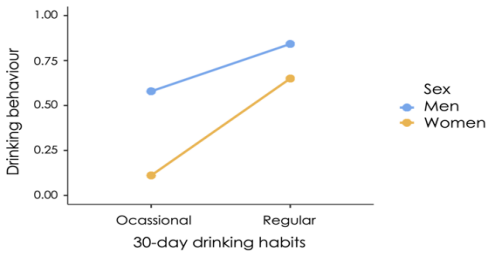
c: Standard deviation.

4.2. Effects of the brand controlling both the sex variable and the alcohol consumption habit variable.

The hypothesis of the study established that the greater the alcohol consumption habit, the less effective the advertisement. For the analysis the sample (103 subjects) were grouped into two categories: a) regular drinkers (62.1%, consume 20 or more drinks per month) and b) occasional drinkers (37.9%) consume less than 20 drinks per month).

When drinking habits are added to the second model, the explained effect (alcohol consumption) increases (from R^2=0.196 to R^2= 0.352) (see model 2 in table 1 and figure 1). The more than 10-point AIC difference between the models (123.512 in the first versus 103.397 in the second) show that the model with the lower AIC is better. The plausibility test showed different behaviour depending on the advertisement brand (χ^2= 9.99, df=3, p=0.019), sex (χ^2= 7.74, df=1, p=0.005) and the previous consumption habits (χ^2= 22.11, df=1, p<0.001). The estimated marginal mean showed that the DGT brand promotes a healthy behaviour (only 29.2% of the subjects preferred alcohol). Furthermore, the regular drinkers had less healthy behaviour (82% chose alcohol), while only 26.4% of the occasional drinkers opted for this choice. Additionally, as is seen in the first model, men drink more than women: 73.4% compared with 37.1%.

Figure 1: Alcohol consumption habits by sex



Source: Own creation

The estimations of the fixed effect parameters show a different behaviour between men and women (p=0.0007), and between regular drinkers and occasional drinkers (p<0.001) (see table 3). Regular drinkers chose alcohol 12.7 times more than occasional drinkers. However, with respect to the advertising spot, only the reactions of the consumers regarding the DGT message appeared to be better than to the AA (p<0.003). When *post hoc* comparisons were carried out, using the Tukey test (p=0.022, OR=11.50) and the conservative Bonferroni adjustment (p=0.021, OR= 11.50), it was observed that the subjects of the DGT drank 11.5 times less than those of the AA (see table 3).

Table 3: P*ost hoc comparisons*: between advertising spots (brands), sex and consumption habits

Between brands[a]	**Exp (B)**[b]	**SD**[c]	**Z**	**$p_{Bonferroni}$**	**p_{Tukey}**	**$p_{without\ adjustment}$**
AA-BB	4,30	3,447	1,822	0,410	0,269	0,068
AA-DGT	11,50	9,083	2,924	0,021*	0,022*	0,003*
BB-DGT	2,57	2,080	1,165	1,000	0,650	0,224
Control- BB	1,26	0,993	0,298	1,000	0,998	0,766
Control - AA	3,41	2,650	1,575	0,692	0,397	0,115
Control -DGT	3,25	2,333	1,638	0,609	0,362	0,101
Sex						
Men-Women	4,65	2,64	2,71	0,007*	-	0,007*
Alcohol consumption habits						
Regular-Occasional	12,72[d]	0,0477	-4,19	<,001*	-	<,001*

Source: Own creation

a: AA (Alcoholics Anonymous), BB (Barna Beers), DGT (Dirección General de Tráfico).

b: Exp (B) indicates the Odds R*atio*, meaning the probability of an event occurring in respect to another.

c: Standard Deviation.

d: Odds Ratio converted to units (1/0.0786=12.72).

Consequently, the hypothesis is confirmed if we analyse the brands as a whole, that is to say, for regular drinkers, none of the brands appear to influence a reduction in their consumption behaviour. Nonetheless, if the effect of the advertisements on actual consumption behaviour is compared, it appears to prove that the DGT advertisement favours the adoption of healthier behaviour than the one of the AA.

5. Discussion and conclusion

As far as we are aware, this is the first attempt to study different types of brands in alcohol counter-advertising. As per the perspective of the signalling theory (Spence, 2002), a brand can be a signal of success (Kirmani and Rao, 2000). The study carried out aimed to evaluate if three brands signalled sufficient quality to influence behaviour of actual alcohol consumption. The results showed that overall, none of the three led to a healthier behaviour compared with the control group, except for the DGT which reduced alcohol consumption with respect to AA.

Unfortunately, the working dynamic of brands in commercial advertising does not apply to counter-advertising, that is to say, no brand signalled sufficient quality to change behaviour significantly. The influence of previous consumption habits seems to be too powerful to be "counter-advertising". Although, it has been seen that the development of brands designed to modify certain behaviour related with health problems have been effective (Evans et al., 2008, 2015), the results of this research suggest that neither the authority of a governmental organisation brand nor a commercial brand signals sufficient quality to persuade the consumer to change their alcohol consumption habits. This is consistent with thirteen reviewed studies that indicate that there is little evidence of a reduction in alcohol consumption with campaigns that use mass media (Young et al., 2018) However, the advertisement backed by Alcoholics Anonymous was less effective than the governmental organisation brand (DGT). This finding

contradicts previous research that showed that NGOs could reduce alcohol consumption (Kim and Park, 2018), or have a different impact to that of corporate sponsored messages against alcohol consumption (Szykman, Bloom and Blazing, 2004). It cannot be ignored the fact that including the term 'alcohol' in the brand (Alcoholics Anonymous) causes a boomerang effect, thereby increasing consumption (Brown et al., 2016).

On the other hand, this research findings confirm the incentive sensibilisation theory (Robinson and Berridge, 2001), and suggest, as demonstrated in the hypothesis, that an audio message of *loss-framed* counter-advertising has no influence on regular drinkers, especially, if they are men. This also coincides with previous findings which show that the more ingrained the drinking habit, the harder it is for advertising to modify such behaviour (Brown et al., 2016; Stautz and Marteau, 2016).

Consequently, are campaigns to reduce alcohol consumption worth the economic investment? Considering the results of this study, it seems appropriate to suggest certain practical recommendations to public administration. To designate a portion of investment to counter-advertising to evaluate effectiveness, and to consider other simultaneous communication strategies that are complementary to this type of campaign (Shin et al., 2018), such as direct actions in bars, retail outlets, etc.

It is necessary to point out some limitations to this research. Firstly, the fact of having developed an experiment on actual consumption and not intention to consume has not enabled an exhaustive control of all the contextual factors that could have influenced the voucher use of the experimental subjects. Secondly, a broader sample would have helped detect other possible brand effects. Finally, the methodological necessity to delimit the experiment variables led to verifying one specific message type (*loss-framed*).

In light of the obtained results, in order to promote healthy behaviour in relation to alcohol consumption from an advertising perspective it is imperative to research further which aspects of marketing and advertising could persuade regular drinkers to change their habits. Along these lines, in the promotion of healthy behaviour, different types of creative planning with a proven success in the commercial sector should be studied (Goldenberg, Mazursky and Solomon, 1999). If creative advertising leads to more favourable attitudes towards consumption (see a meta-analysis in Rosengren et al., 2020), could this counteract the effect of sex and previous behaviour towards alcohol? It seems to be a difficult task, but an unexplored area needs to be given a chance: creative advertising designing messages against alcohol consumption.

6. Contributions

Contributions	Authors
Study concept and design	Author1, author 2, author 3
Document research	Author 1, author 2, author 3
Data collection	Author 1, author 2, author 3
Critical data analysis and interpretation	Author 1, author 2, author 3
Revision and version approval	Author 1, author 2, author 3

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9. Declaration of conflict of interest

The authors declare that there is no conflict of interest.

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