"Social marketing through social media: the effects of user-generated content"

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Abstract

- Purpose: To investigate the effect that interactions between social media user-generated images (UGIs) involving alcohol use, and social media safe-drinking advertising, have on young people's intention to consume alcohol.

- Design/methodology/approach: Two empirical studies were conducted adopting experimental design. Study 1 collected questionnaire data from 495 young adults who participated in a 2 x 3 between-subjects experimental design, while Study 2 collected eye-tracking data and self-reports from 36 university students who participated in a 2 x 2 between-subjects experimental design.

- Findings: Intention to consume alcohol is positively associated with seeing UGIs of young people socialising with alcohol, and negatively associated with seeing a safe-drinking advertisement that has been judged to be effective. The presence of a safe-drinking advertisement moderates the effect of UGIs involving alcohol. The visual attention paid to the safe-drinking advertisement is negatively correlated with the intention to drink when alcohol-related UGIs are also present.

- Research limitations/implications: Gathering eye-tracking data can enrich a conventional survey-based approach when studying a phenomenon with high visual content, such as social media and advertising.

- Practical implications: The interaction between user-generated content and advertising content must be considered when planning social marketing campaigns conducted through social media.

- Originality/value (mandatory): User-generated content is an important influence on risky consumption behaviour. Social marketing communications to deter risky behaviour act as a moderator in the relationship between user-generated content and risky consumption behaviour. This helps to understand how priming works in a social media context.

Keywords: priming; social marketing; experimental design; alcohol abuse; young people; social media; Facebook; eye-tracking; safe drinking advertisements

Article classification: Research paper

Introduction

Alcohol abuse is a major social problem in many developed countries, with the UK towards the forefront of this unfortunate trend (Public Health England, 2016). Both short- and long-term health and social problems can be exacerbated by alcohol abuse. While few young people die directly of alcohol poisoning, accidental death, notably in car accidents, among young people is often associated with alcohol consumption (Department for Transport, 2016). Long-term alcohol abuse leads to a wide range of health problems including liver disease and various forms of cancer (Anderson et al., 2009; Public Health England, 2016). Alcohol abuse is also associated with adverse consequences such as suicide attempts, unintended pregnancy, sexually transmitted diseases, academic failure, and violence (Kuntsche et al., 2005).

The rise of alcohol-related content online has been the subject of attention recently, and the lack of mechanisms in place to safeguard young people from such exposure has been highlighted (Leyshon, 2011; Nicholls, 2012). Young people most frequently encounter alcohol marketing online on social networking sites (Hartigan and Coe, 2012). The volume of paid media promoting alcohol use, combined with the peer-influence of Facebook friends' images showing alcohol consumption, means young people often encounter messages that normalise or promote alcohol consumption when they use social media.

Not surprisingly, the prevention of alcohol abuse is a global and a national public policy health priority which, like all major health-related issues, requires a multi-faceted policy approach (Beaglehole and Bonita, 2009; Public Health England, 2016). Social marketing is an important component of this approach. Social marketing campaigns making extensive use of social media have proved to be an effective approach to tackling tobacco consumption among young people and promote physical activity and healthy eating (Hastings et al., 2008; Maher et al., 2014) so it is suggested that a similar approach may be fruitful as an important component of action to prevent alcohol abuse.

However, research in the UK has shown that young people often ignore safe drinking messages and warning labels because they find them unrealistic, could not identify with them, and because drinking is part of their social life helping them build their social identity (Hackley et al., 2008; Szmigin et al., 2008).

This study responds to the call from Minton et al. (2016) for studies into, first, how conflicted primes work where one prime influences a consumer in one direction, while another prime influences the consumer in a different direction (in this study, alcohol abuse vs. safe drinking primes) and, second, which types of primes carry more weight in the consumer's decision. Methodologically the study responds to the call by Boerman et al. (2017) for studies using eye-tracking to understand how consumers respond to online targeted advertisements.

In this project we investigate the impact of alcohol related social media content on young people's attitude towards alcohol consumption, and evaluate the likely effectiveness of social media marketing to deliver safe drinking messages. To understand cognitive responses to social media stimuli it is useful to understand how visual attention contributes to intent to consume alcohol (Feng, 2003; Henderson and Hollingworth, 1998). Specifically, our objectives are to examine: (a) the influence of social media images illustrating peers consuming alcohol and safe drinking advertisements on intent to consume alcohol; (b) the interaction between safe drinking advertisements and user-generated images (UGIs) to influence intent to consume alcohol; and, (c) how visual attention to different stimuli may affect intent to consume alcohol.

Two studies were designed to investigate the research objectives. Study 1 used an experimental research design to investigate the first two objectives and study 2 used an eye-tracking experiment to explore the third objective.

This research has theoretical implications as it builds on Locke's (2015) call for the development of a priming theory and an understanding of how priming works (Locke, 2015). It also has practical implications since the results can be used to inform effective online social marketing advertisements

by understanding potentially dysfunctional effects of the advertising context, such as the appearance of safe-drinking messages alongside UGIs of young people in enjoyable social situations consuming alcohol.

To achieve the research objectives and build the hypotheses, the theoretical approaches used in this research are social comparison theory (Festinger, 1954), the influence of peer norms and peer socialisation on behaviour (Borsari and Carey, 2001) and priming (Erb et al., 2002). Empirically, this study is concerned with young adults, a demographic group amongst which peer influence on substance abuse is considerable, and a group that makes extensive use of social media. The central question that is addressed is how young adults are influenced by social media content in their feelings towards alcohol consumption. The policy implications of the research lie in informing the use of social media as a tool to reduce excessive alcohol consumption among young adults.

Theoretical Background

Impact of user-generated messages on young people

The most popular social networking site worldwide is Facebook. Since its launch in 2004, it has amassed over 1.65 billion active users (Statista, 2016). Almost 90% of 18-29 year olds are active Facebook users (Duggan et al., 2015). Wilson, Gosling and Graham (2012) conducted a systematic literature review of empirical academic research into Facebook, identifying 226 relevant articles. They noted that social media in general and Facebook in particular provide social scientists with "an unprecedented opportunity to observe behaviour in a naturalistic setting, test hypotheses in a novel domain, and recruit participants efficiently from many countries and demographic groups" (Wilson et al., 2012, p. 203). The principal reason that users engage with Facebook is to maintain social relationships. The use of Facebook is associated with the concept of social capital, enabling users to maintain close relationships where they have strong social ties, manage more peripheral

relationships where they have weak ties, and "crystallize otherwise ephemeral relationships" (Wilson et al., 2012, p. 209). Facebook users post content (user-generated content) both to represent their authentic self-identity and for purposes of "impression management", that is to say, to represent an idealised self (McAndrew and Jeong, 2012). Facebook is also a platform which facilitates young people's comparisons of their lives with others, which can negatively affect psychological health, triggering jealousy, social anxiety, and inadequacy (Steers et al., 2014). This research draws on social comparison theory (Festinger, 1954) which explains how individuals compare themselves with others in order to evaluate their own opinions and abilities. Social comparison is a psychological process that is fundamental to how we feel about ourselves (Mussweiler, 2011). Because Facebook users interact with peers and friends, both similarity to comparison standards and high personal relevance exist, which fuel social comparison and negative feelings (Smith and Kim, 2007). Engaging in upward social comparison involves Facebook users comparing their lives to what they see and read, feeling they are lacking, leading to feelings of missing out, which in turn influences decision making and behaviour (Abel et al., 2016).

Perceptions of peer norms among young people are shown to have the single strongest influence on their alcohol consumption (Perkins, 2002). There exists a widespread misperception of such norms, with young people overestimating the permissiveness of peers regarding alcohol use (Perkins, 2002). The proliferation of images on Facebook illustrating young people drinking serves to exacerbate the perceived extent of alcohol abuse among young people. Novak and Crawford (2001) show that a positive association exists between the perception that the use and abuse of alcohol is common at university and high levels of alcohol consumption among students. Engaging in social comparison also led to higher alcohol consumption among students. Specifically, young people who pay high attention to social comparison information and who perceive their peers to be heavy drinkers were the highest consumers of alcohol (Novak and Crawford, 2001).

Taking into account research illustrating the prevalence of social comparison on Facebook, as well as the strong link between perceived alcohol consumption among peers and higher levels of alcohol consumption, this paper posits the following:

H1: Seeing user-generated images on Facebook of peers consuming alcohol is likely to increase the intent to consume alcohol

Impact of safe drinking messages on young people

In cognitive psychology priming refers to a process where the activation of one thought can stimulate other related thoughts and lead to relevant attitudes and behaviours automatically and subconsciously (Berkowitz, 1984; Schröder and Thagard, 2013). Hence, media stimuli, such as advertisements, can trigger certain beliefs and views towards a behaviour or object (Iyengar et al., 1982) which later leads to practising (or not) this behaviour (Stajkovic et al., 2006). For example, when people see a message on the negative effects of alcohol abuse they are likely to create a negative perception of this behaviour and avoid it in the future. Media priming explains that there is a link between beliefs and intentions and when this link is activated (by a message) it is strengthened, leading eventually to a change in intention (Fishbein and Yzer, 2003). For example, Cappella et al. (2001) found that exposure to an advertisement highlighting the negative consequences of marijuana use strengthened negative beliefs towards marijuana. Therefore, it is expected that a similar process will occur in the use of safe-drinking adverts, which stimulate negative beliefs about alcohol abuse, leading to a lower intent to consume alcohol. Including the safe-drinking advertisement primes people to consider risks. According to Erb et al. (2002) priming affects people's risk preferences, and judgements that are contrary to the prime are made with less confidence. Therefore, a safe drinking advertisement should significantly affect decisions to moderate alcohol consumption. Consequently, it is hypothesised that:

H2: Presence of a safe-drinking advertisement on Facebook reduces the intent to consume alcohol

According to the motivational model of alcohol use (Cox and Klinger, 1988) people make decisions on alcohol consumption based on inter-related factors including positive (e.g. socialisation) and negative (e.g. health damage) incentives related to alcohol use. When positive incentives are predominant the consumption of alcohol is more likely, while negative incentives can lead to less alcohol consumption or even abstinence. A meta-analysis of priming effects on impression formation (DeCoster and Claypool, 2004), showed that the context of priming influences its effectiveness. This relationship has also been found in advertising research (Doyle and Lee, 2016). In addition, Fox et al. (1998) emphasised the importance of conducting research in the context in which warnings will be used. In the context of a Facebook page users are expected to interact with different UGIs in combination with sponsored and related advertisements. Therefore, an understanding of the influence of the context of the UGI images on the impact of safe-drinking advertisement on young people's responses is necessary. If the users are exposed to positive consequences of alcohol use, such as having a good time in social situations with friends, triggered by UGIs showing young people drinking alcohol in the context of a pleasant social activity, this positive priming is expected to lead to positive beliefs and intentions towards alcohol use (Fishbein and Yzer, 2003). For example, Sheeran et al. (2005) found that when social drinkers were primed with socialising cues, thoughts about drinking and alcohol choices were triggered. UGIs can trigger feelings of social comparisons and even social exclusion diluting the negative priming effect of a safe drinking advertisement on the intent to consume alcohol (Stroebe et al., 2013). So, it is important to investigate the moderating influence of UGIs illustrating positive alcohol connotations on the impact of a safe drinking advertisement on young people. Previous papers have argued that priming negative health effects can be effective in reducing intentions to engage in risky behaviour, even when positive priming

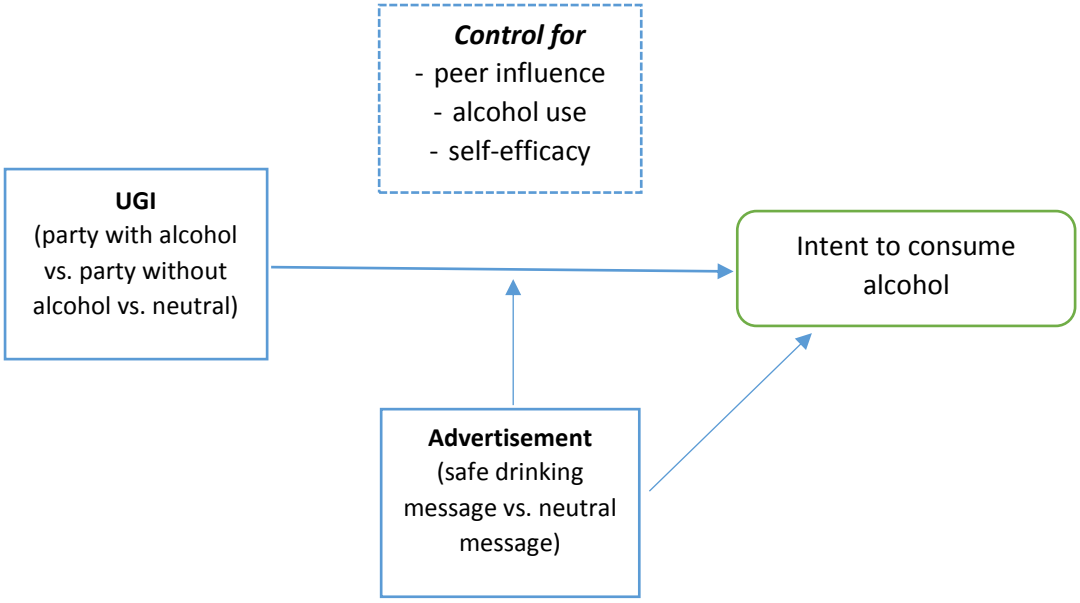
(acceptance of the behaviour by friends) is also present (Cappella et al., 2001; Fishbein and Yzer, 2003). Therefore, this paper posits that:

H3: The presence of the safe-drinking advertisement moderates the impact of UGI of peers consuming alcohol on intent to consume alcohol

Influences on alcohol use

Drinking self-efficacy is the ability to resist a drink containing alcohol, particularly in high-risk situations such as when out with friends (Oei and Burrow, 2000). Many studies have confirmed the impact of self-efficacy on alcohol consumption (Aas et al., 1995; Elek et al., 2006; Greenfield et al., 2000; Sitharthan and Kavanagh, 1991; Williams et al., 1998). Alcohol consumption is also strongly associated with peer influence; studies have shown that an individual's consumption will vary to match that of a drinking partner (Collins et al., 1985), and that people prone to peer pressure are more susceptible to contagion (including priming) (Crandall, 1988; Janis, 1954). Susceptibility to peer influence particularly with respect to alcohol consumption, is higher among younger age groups (Bobo and Husten, 2000; Borsari and Carey, 2001; Henriksen et al., 2008; Seaman and Ikegwuonu, 2010). In addition, alcohol consumption habits have been associated with attentional bias for alcohol cues, and heavy drinkers were found to use automatic processes to reverse rational intentions to reduce or stop alcohol use (Baker et al., 2014; Pothos and Cox, 2002). Self-efficacy, peer pressure and drinking habits have been strongly linked to future alcohol consumption and strength to resist therefore they will be used as covariates for the hypotheses tested. Figure 1 shows the conceptual framework of the study.

Figure 1: Conceptual Framework



Study 1

Design and sample characteristics

Study 1 was a 2 (advertisement prime: safe drinking vs. neutral) x 3 (UGI: party with alcohol vs. party with no alcohol vs. neutral) between-subjects design, with intent to consume alcohol as the dependent variable. The study was conducted among 495 members (42% male, 58% female) of a Qualtrics online panel. Participants were selected to be 18-25 years old, Facebook (FB) users and alcohol consumers. Respondents were randomly allocated to one of the six conditions after responding to the screening questions. No information about the desired sample demographics was contained in the introductory text or screening questions, so as to avoid fake responses (Geuens and De Pelsmacker, 2017; Kees et al., 2017).

The six experimental conditions have 74 to 91 participants (Table 1). Participants first completed the screening questions and then a quota question about their age, so that a balance of male and female participants for each condition was ensured (the limits were minimum 40% and maximum 60%). Subsequently the participants saw a Facebook page followed by the questionnaire which included the dependent and the control variables. Differences in the number of participants per conditions arose because of the required age quotas and because more participants were included in the 'safe-drinking' conditions to ensure an acceptable number of participants per condition after deleting those who failed to notice the safe drinking advertisement.

Table 1: Study 1 Design and Sample

Test	**Stimuli**	**Noticed safe drinking advertisement (final sample)**	**Did not notice safe drinking advertisement**	**N**
1	Safe drinking advertisement & UGI party with alcohol	81	9	90
2	Neutral advertisement & UGI party with alcohol	75	n/a	75
3	Safe drinking advertisement & UGI party without alcohol	81	10	91
4	Neutral advertisement & UGI party without alcohol	74	n/a	74
5	Safe drinking advertisement & UGI neutral	83	7	90
6	Neutral advertisement & UGI neutral	75	n/a	75
	Total	**469**	**26**	**495**

The number of participants per condition was well above the recommended numbers for experimental research (Geuens and De Pelsmacker, 2017). Ethics approval for all the studies and pre-tests was granted by **[deleted for peer review purposes]**.

Stimuli

Six FB pages[i] were developed pairing UGIs with either a safe-drinking or a neutral advertisement. The advertisements were selected to have similar colours to avoid the confounding effect of colour (Gorn et al. 1997). The UGIs included both male and female young people, from a mixture of ethnic backgrounds, so that the participants experienced the same level of involvement with the advertisement. Facebook users are more likely to look at content posted by members of their own age group than other age groups (McAndrew and Jeong, 2012) therefore, the UGIs were selected to show young people 18-25 years old. The safe drinking advertisement was the same size as the neutral advertisement. The same applied for the UGI images. Both elements were placed in the FB newsfeed with UGI on top and advertisement below. FB layout and other elements were held constant across tests to improve internal validity by controlling for extraneous sources of stylistic variation.

Pre-tests

The first pre-test was conducted with 19 University students. They looked at one of the four FB pre-test pages, answered the questionnaire, and had a follow-up qualitative interview to elucidate their answers to the questionnaire and their views on the stimuli. The four FB pages showed four UGIs in the news feed and an advertisement on the right-hand side of the page (Condition 1: UGI party with alcohol & safe drinking ad, Condition 2: UGI party with alcohol & neutral ad, Condition 3: UGI party without alcohol & safe drinking ad; Condition 4: UGI party without alcohol & neutral ad).

Key points arising from the pre-test helped to develop the stimuli and questionnaire further. The safe drinking advertisement used in the pre-test (NHS Change4Life - see https://www.nhs.uk/Change4Life/supporter-resources/downloads/C4L_alcohol_booklet.pdf) was found to be easily ignored which is in line with the phenomenon called 'banner blindness' (Drèze and Hussherr, 2003). For example: "I saw the pictures first and the people … that (advertisement) is the last thing I saw. I noticed it was there but didn't actually bother to look at it … I didn't read it"

(male interviewee); and this exchange: Interviewer "So do you think this (Change4Life) would make an impact on you, do you think it's a good advertisement?"; interviewee (female) "Not in the slightest". Other participants pointed out that they would have noticed it more if it was in their news feed. In terms of the questionnaire, the wording of the dependent variables changed to be clearer to the participants. The UGI were amended, first, to reflect the age of the target population and, second, based on participants' comments, to make them more ethnically diverse.

Based on the interview feedback, different safe-drinking advertisements (pre-test 2) and different advertisement positions in the FB page (pre-test 3) were tested.

In the second pre-test, different adverts were tested for their perceived effectiveness (Table 2). Six safe-drinking adverts were selected based on the different appeals or/and styles (Okazaki et al., 2010).

Table 2: Pre-test 2 on safe drinking advertisements perceived effectiveness

Advertisement	Description	Reasons for choice
A1	Change4life UK Department of Health safe-drinking advertisement	Cartoon, lively theme and use of metaphor
A2	Young man alone with the slogan 'Boozers are losers'	Offensive tone
A3	Shot glasses on a white background representing three adverse consequences of excessive drinking with the text 'You choose'	Simple design and fear appeal combined with information of negative implications of alcohol misuse
A4	Young woman looks like a zombie after a night out with the text 'night of the reckless drunk'	Fear appeal and black humour along with the use of cultural reference to zombie movies which are very popular to the target demographic
A5	Alcohol know your limits advertisement showing an injured young man with the text '44% of all violent crime is alcohol related'	Fear appeal with information about alcohol misuse in relation to violent crimes; black and white image
A6	A drinkaware advertisement showing a clear next to a blurred picture along with the lines 'a night you will never forget' and 'a night you can't remember' respectively	Rhetorical trope combined with low fear appeal

The second pre-test was administered on Amazon Mechanical Turk, an online labor market which crowdsources “human intelligence tasks” (Paolacci et al., 2010) and a common source of participants of experimental research (e.g. Eriksson and Simpson, 2010). Participants of a Mechanical Turk panel were asked to judge the adverts based on an 18-item scale created to measure advertisement effectiveness. The scale comprised items used in previous studies (Chan et al., 2007; Okazaki et al., 2010; Soh et al., 2009) and had high reliability (α=.970). The participants were randomly allocated to one of the six advertisements and rated it on a 7-point scale using a range of adjectives such as reliable, useful, creative, convincing, truthful and believable. To avoid including participants from outside the target population screening questions were not asked at the start, but at the end participants were asked for their age and whether they consumed alcohol. Those outside the age range or who did not consume alcohol were excluded, yielding 267 qualified participants. Using a one-way between groups analysis of variance (ANOVA) it was found that there was a statistically significant difference for the six adverts’ effectiveness: $F(5,261)=3.601$, $p=.004$. A5 had the highest effectiveness score (M=92.59, SD=28.28, min=23, max=126). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for A5 was significantly different from A3 (M=75.82, SD=26.76) and from A1 (M=76.11, SD=22.38) but not from the other safe drinking advertisements. Therefore, A5 was selected, guided by the literature that finds fear appeals more effective when information is also present (Tannenbaum et al., 2015), due to less distressing images causing lower levels of disengagement (Kessels et al., 2010) and because it had the highest perceived effectiveness which is in line with another study by Kersbergen and Field (2017).

The third pre-test examined different advertisement positions to ensure maximum attention (Wedel and Pieters, 2000). Results of the first pre-test suggested that the advertisement would gain more attention in the Facebook news feed than on the right-hand side. Two FB pages were tested with a Mechanical Turk panel following the same process as with pre-test 2 and 109 participants were randomly allocated to a FB page. The FB pages had the same UGIs with young people socialising while consuming alcohol at the same position and the same ‘violent crimes’ advertisement in

different positions; in one FB page the advertisement was on the right-hand side, while in the other FB page it was in the newsfeed under the UGIs. Everything else on the FB page was held constant. A chi-square test for independence (with Yates Continuity Correction) indicated statistically significant differences between the position of the advertisement and whether people noticed it [$x^2(1,n=109)=8.575$, $p=.003$]; the likelihood that the advertisement would be noticed was greater with the vertical layout (safe drinking advertisement in the FB news feed).

Measures

Intent to drink was measured with a 3-item scale constructed for the purposes of this research and following the guidelines for scale development (Rossiter, 2002). Previous studies have used scales to measure intent to reduce alcohol consumption or a single-item scale to measure intent to drink right now. Therefore, for the purposes of this study a new scale was developed to measure the intent to drink now and in the future. Participants were asked about their intent to drink alcohol on their next night out with friends after watching the FB page, and whether they would like to drink less or more than usual ($\alpha= .663$). Cronbach's alpha for this scale is acceptable considering the small number of items in the scale (Briggs and Cheek, 1986).

For the control variables, self-efficacy was measured with a short version of the DRSEQ-R questionnaire (Oei et al., 2005) designed to measure drinking refusal self-efficacy; five items related to social pressure were selected for this construct ($\alpha =.853$). Peer influence was measured with seven items taken from Santor et al. (2000) ($\alpha =.884$). A shorter version with 5 items from the Alcohol Use Disorders Identification Test (AUDIT) was used to measure current alcohol consumption ($\alpha =.707$) (Miles et al., 2001). All control constructs have good reliability with Cronbach's alpha greater than 0.7 (DeVellis, 2016).

The advertisement effectiveness measure used the same 18-item scale used in the pre-test ($\alpha =.960$).

All constructs were calculated as sums of their components.

Results

A baseline analysis of alcohol consumption among the different conditions using a one-way between groups analysis of variance (ANOVA) showed no significant differences of alcohol consumption for the different conditions [$F(5,463)= 2.113$, $p=.063$]

The safe drinking advertisement effectiveness was retested during the main study and found to be high (M=87.70, SD=18.6, min=29, max=126). Using a one-way between groups analysis of variance (ANOVA) no significant impact was found of the different UGIs on the perceived advertisement effectiveness [$M_{\text{UGI party with alcohol}}$=89.33 (SD=17.682); $M_{\text{UGI party without alcohol}}$=88.12 (SD=20.514); $M_{\text{UGI neutral}}$ = 85.70 (SD=17.518); $F(2, 242)=.813$, $p=.445$]

The hypotheses were tested using a univariate analysis of covariance (ANCOVA) controlling for self-esteem, self-efficacy and alcohol consumption.

The results show support for H1, which posits that seeing UGIs of peers consuming alcohol is likely to increase the intent to consume alcohol. Under conditions without the safe-drinking advertisement, the results indicate a significant impact of the presence of alcohol in UGIs on the intent to drink; with UGI with alcohol ($M_{\text{UGI party with alcohol \& no ad}}$= 9.08) leading to higher intent to drink compared to the UGI showing young people partying without alcohol ($M_{\text{UGI party without alcohol \& neutral ad}}$ = 8.42 ; $F(1,144)=6.527$, $p=.012$). There was also a statistically significant difference when the UGI with alcohol ($M_{\text{UGI party with alcohol \& neutral ad}}$= 9.08) was compared to neutral UGI ($M_{\text{neutral UGI}}$ = 8.28 ; $F(1,145)=8.880$, $p=.003$) in the context of a neutral advertisement.

H2, which proposes that the presence of a safe-drinking advertisement on Facebook reduces the intent to consume alcohol is also supported. Those who saw the FB pages with the safe drinking advertisement reported lower intent to consume alcohol in comparison to those who saw the neutral advertisement, regardless of the UGI content. The intent to drink alcohol was lower when the safe drinking advertisement was present ($M_{\text{safe drinking ad}}$ = 6.00) than when a neutral advertisement was present ($M_{\text{neutral ad}}$ = 6.52; $F(1,464)=6.920$, $p=.009$), supporting H2. In addition,

there was a statistically significant difference between those who reported they noticed the safe drinking advertisement ($M_{\text{noticed the advertisement}} = 7.66$) and those who did not ($M_{\text{didn't notice the advertisement}} = 9.08$; $F(1,266)=8.393$, $p=.004$) on their intent to drink; providing further support for H2.

The results also illustrate that the presence of the safe-drinking advertisement reduces the impact of UGIs with alcohol on intent to drink, supporting H3. Under conditions of UGIs with alcohol consumption, the presence of the safe drinking advertisement led to lower intent to consume alcohol ($M_{\text{UGI party with alcohol \& safe drinking ad}} = 7.51$) compared to a neutral advertisement ($M_{\text{UGI party with alcohol \& neutral ad}} = 9.08$; $F(1,151)=21.223$, $p=.000$). However, with the UGIs showing young people socialising without alcohol the presence or absence of the safe drinking advertisement had a similar effect on intent to consume alcohol ($M_{\text{UGI party without alcohol \& safe drinking ad}} = 7.70$; $M_{\text{UGI party without alcohol \& neutral ad}} = 8.42$; $F(1,150)=2.003$, $p=.159$). The results were similar when there was no UGI with alcohol/party ($M_{\text{UGI neutral \& safe drinking ad}} = 7.76$; $M_{\text{UGI neutral \& neutral ad}} = 8.28$; $F(1,153)=.924$, $p=.338$). Therefore, our results indicate that priming risk via the safe-drinking advertisement moderates the influence of UGI's with alcohol on intent to drink (supporting H3). This evidence is strengthened by the conditions without UGI's with alcohol, showing no significant impact of the safe drinking advertisement on intent to drink.

Visual Attention

Eye-tracking has been used in advertising for copy testing, advertisement avoidance and fine print on print, TV and online media to gain insight into attentive processes and to choose optimal advertisement designs (Duchowski, 2002; Higgins et al., 2014). In safe drinking messages and advertising, eye-tracking research has been used to assess their effectiveness and attention capture mainly on print media (e.g. Brown and Richardson, 2012; Fox et al., 1998; Kersbergen and Field, 2017; Thomsen and Fulton, 2007). However, research on eye movements while looking at advertisements is in its infancy (Higgins et al., 2014) with a clear gap in understanding attentive processes in the social media context where UG material and sponsored advertisements interact

using a variety of different presentation techniques (text, images, videos). In priming studies, Locke (2015) uses the example of Bargh's (2014) study in which shoppers in a supermarket were given a flyer containing health-related primes and they then bought fewer snack foods than a control group, to question if the participants actually read the flyer and if not how the results can be explained and how priming works. In addition, Monk et al. (2017) argues that since research into alcohol warnings has reported mixed results regarding effectiveness, further research is needed in combination with eye-tracking tools to capture attentional data.

Capturing eye-movements is a valid measure of visual attention that is linked to cognitive processing in an objective and unbiased way (Feng, 2003; Henderson and Hollingworth, 1998). The time of total fixations on an area reflects more than just its identification, and this duration is linked to underlying cognitive and perceptual processes related to this area (Henderson, 1992; Rayner, 1998). Visual attention has been linked to memory (Van der Lans et al., 2008; Wedel and Pieters, 2000), preference (Higgins et al., 2014) and decision making (Glaholt and Reingold, 2011; Stüttgen et al., 2012) and it has been found that greater attention to a warning message increases the likelihood of recalling its content (Krugman et al., 1994). In connection with warnings and public health advertising there is evidence that attention to these elements can influence behaviour. For example, in a study by Malouff et al. (1993) attention to warning labels led bar staff to consume less alcohol, and Kersbergen and Field (2017) found that due to very low attention to alcohol warnings there was no impact on drinking intentions.

Therefore, it is hypothesised that:

H4: An increase in visual attention to the safe drinking advertisement is likely to lead to a decrease in intent to drink alcohol

H5: An increase in visual attention to the UGI with alcohol cues is likely to lead to an increase in intent to drink alcohol

As mentioned earlier, the context of a stimulus can influence its effectiveness. Rayner (1998) found that the scene context has an effect on eye movements. Studies on warning messages show that higher levels of attention and understanding are achieved when they are presented in the specific usage context rather than out of context (Stewart and Martin, 1994). Simola et al. (2013) found that in the context of a print advertisement next to the editorial text, incongruent advertisements with the accompanying text received more visual attention than did congruent advertisements. In contrast to this, in the Internet context, Hervet et al. (2011) did not find the context relevant in influencing advertisement viewing time and Ramunno et al. (2012) found that fixation times on warning labels increased when there was no cigarette brand in plain packaging studies. With these mixed findings it is hypothesised that:

H6: there will be no significant difference on visual attention to the safe drinking advertisement when combined with UGIs showing alcohol consumption and when combined with UGIs without alcohol.

Study 2

Participants

36 undergraduate students from a UK University participated in Study 2. Their age was 18-25 years, 33% male and 67% female. This sample size is consistent with studies adopting a similar eye-tracking experimental design (Albert et al., 2005; Monk et al., 2017; Rayner et al., 2001). Participants were compensated with a £5 shopping voucher. The study design is presented in Table 3.

Table 3: Design of Study 2

Test	**Stimuli**	**N**

1	Safe drinking advertisement & UGI party with alcohol	9
2	Neutral advertisement & UGI party with alcohol	9
3	Safe drinking advertisement & UGI neutral	9
4	Neutral advertisement & UGI neutral	9

Stimuli

The same stimuli as for Study 1 were used. There were four FB pages using the UGIs with young people partying consuming alcohol versus the neutral UGIs with and without the safe drinking advertisement.

Methods

A Tobii X2-30 eye-tracker was used to collect visual attention data for the different elements of the FB page. The eye-tracker measured fixation duration (in seconds) calculated as the sum of the re-fixations in a specific area. This measure conceptually equates to a measure of attention for a specific area (Feng, 2003). The eye-tracker hardware was attached to the base of a laptop where the participants watched the stimuli. This equipment unobtrusively allows participants to move their head freely and it has a frequency of 30 Hertz, meaning it captures eye positions 30 times per second.

Participants were informed of the process, ethical clearance and their ability to withdraw at any time without having any consequences (no one withdrew at any point).

Because the stimuli viewing and eye movements can be affected by the goal of the viewer (Higgins et al., 2014) participants were told that this project is about how young people interact with social media without giving details of the focus on alcohol use in order to achieve subliminal priming (Stajkovic et al., 2006). Therefore, participants who later reported that they did not consume alcohol were excluded from the data analysis (three participants were thus excluded).

The experiment started with a calibration of participant's pupils. Each participant was randomly assigned to one of the four experimental conditions. The four FB pages were followed by an identical

questionnaire. Participants were instructed to relax and view the FB page just as though they were looking at their own FB profile at their own pace. Subsequently, they were asked to fill in the questionnaire with the independent and control variables (identical to Study 1). All constructs were measured using the same scales as Study 1. All of them had high reliability (Intent to drink: α =.798, AUDIT: α=.730, advertisement effectiveness: α=.941)

To reduce the attention variance due to individual differences in overall gaze time, proportion of time spent fixating on the UGIs or safe drinking advertisement was used to test the hypotheses (Fox et al., 1998; Shankleman et al., 2015; Thomsen and Fulton, 2007).

Results

A baseline analysis of self-reported alcohol consumption among the different conditions using a one-way between groups analysis of variance (ANOVA) showed no significant differences in alcohol consumption for the different conditions [$F(3,32)= 1.139$, $p=.348$]. The safe drinking advertisement effectiveness was retested during study 2 and again found to be high (M=92.11, SD=16.3, min=64, max=117). Using a one-way between groups analysis of variance (ANOVA) no significant impact was found of the different UGIs on the perceived advertisement effectiveness [$M_{\text{UGI party with alcohol}}$=94.67 (SD=14.04); $M_{\text{UGI neutral}}$ = 89.56 (SD=18.72); $F(1,16)=.429$, $p=.522$].

To examine whether an increase in fixations to the different elements of the FB page would influence the intent to drink alcohol, Pearson product–moment correlations were calculated.

There was a negative correlation between duration of visual attention to the safe drinking advertisement and intent to drink regardless of the UGI content ($r=-.654$, $n=18$, $p=.003$). A more in-depth analysis showed that when the UGI contained alcohol, there was a negative correlation between duration of visual attention to the safe drinking advertisement and intent to drink ($r=-.874$, $n=9$, $p=.002$), while when the UGI were neutral there was no correlation between visual attention to the safe drinking advertisement and intent to drink ($r=-.450$, $n=9$, $p=.224$). Therefore, it is found that an increase in visual attention to the safe drinking advertisement is likely to lead to a decrease in

intent to drink alcohol (H4) only when the safe drinking advertisement is presented in an alcohol related context (UGI with young people consuming alcohol).

There was a positive correlation between the duration of visual attention to the UGI containing alcohol and intent to drink ($r=.667$, $n=18$, $p=.003$). A further analysis showed that in the presence of the safe drinking advertisement, duration of visual attention to the UGI with alcohol has a positive correlation with intent to drink ($r=.874$, $n=9$, $p=.002$), while when there is no safe-drinking advertisement no significant correlation was found between duration of visual attention at the UGI with alcohol and intent to drink ($r=.326$, $n=9$, $p=.391$). Therefore, the findings show that an increase in visual attention to the UGI with alcohol cues is likely to lead to an increase in intent to drink alcohol (H5) only when the UGI with alcohol are presented along with the safe drinking advertisement.

An independent samples t-test was conducted to compare the visual attention to the safe drinking advertisement when combined with UGIs showing alcohol consumption and when combined with neutral UGIs. There was no significant difference in scores for UGIs with alcohol ($M=.49$, $SD=.19$) and for neutral UGIs ($M=.5$, $SD=.17$; $t(16)=.090$, $p=.929$, two-tailed). Therefore, the hypothesis that there will be no significant difference on visual attention to the safe drinking advertisement when combined with UGIs showing alcohol consumption and when combined with UGIs without alcohol (H6) is accepted.

Discussion

This study found that user-generated social media content can influence young people's intent to consume alcohol, consistent with social comparison theory (Festinger, 1954); believing that drinking culture is the norm, they report a higher intent to consume alcohol after seeing UGIs of other young people socialising consuming alcohol. This is in line with previous studies that found an association between individuals' and their peers alcohol consumption (e.g. Collins et al., 1985; Novak and Crawford, 2001; Perkins, 2002).

It was also found that the presence of a safe drinking advertisement reduced the intent to consume alcohol which was expected in line with risk priming theory (Erb et al., 2002). Reduced intent to consume alcohol was also supported by the fact that the safe drinking advertisement received positive evaluations and was noticed by the majority of the participants. For example, Kersbergen and Field (2017) found that attention to warning labels on alcohol packaging has no impact on participants drinking intentions and very little attention was allocated to warning labels even from people who actively wanted to reduce alcohol consumption. This supports the call and effort of previous studies for designing optimal safe drinking messages and advertisements in order to increase their attractiveness and effectiveness to contribute to behaviour change (e.g. Brown and Richardson, 2012; Kersbergen and Field, 2017; Oei and Morawska, 2004). Our research achieved this via extensive pre-testing to determine effective safe-drinking advertisement and checks on the effectiveness were repeated in both Study 1 and 2.

The presence of a safe drinking advertisement was also found to reduce intent to drink alcohol when UGIs with young people consuming alcohol were present. This finding is also in line with the study of Cappella et al. (2001) on marijuana use, who found that risk priming can be effective even when positive priming is present. This could be because the youth alcohol culture is primed, triggering the audience to consider the relevance and need for such safe drinking messages because no differences were found when the UGIs contained no alcohol cues. In addition, this can also be due to the importance of a congruent context to enhance safe drinking messages effectiveness (DeCoster and Claypool, 2004). For example, Simola et al. (2013) and Hervet et al. (2011) found that congruent advertisements were remembered better than incongruent in an offline and an online context respectively. Segev et al. (2014) also found more favourable responses for banner advertisements that were thematically congruent with a blog's context.

However, the eye tracking study found no significant difference on visual attention to the safe drinking advertisement when combined with UGIs showing alcohol consumption and when

combined with UGIs without alcohol. This finding is in line with the study of Hervet et al. (2011) who did not find relevance of the context to influence advertisement viewing time online and contradicts previous studies in offline environments (Rayner et al., 2001; Simola et al., 2013; Stewart and Martin, 1994) probably because of the different nature of the media. This may be because of previous findings showing that participants get the essence of a scene at the early stages of looking at it and following fixations are made only to complete any missing details (Rayner, 1998), hence the safe drinking advertisement can potentially be effective even with a low visual attention duration. So, if our findings of significant differences in intent to drink without significant differences in visual attention are combined, then it can be concluded that it is the priming of an alcohol culture which explains the effectiveness of the safe drinking advertisement between different contexts and not the visual attention or avoidance due to different UGIs. This suggests that the priming of an alcohol culture (UGIs with alcohol along with safe-drinking advertisements) triggers the cognitive processes to evaluate the safe-drinking message and leads to a lower intent to consume alcohol.

Despite this lack of evidence of higher visual attention to the safe drinking advertisement in different UGI contexts, the eye-tracking study showed that an increase in visual attention to the safe drinking advertisement was likely to lead to a decrease in intent to drink alcohol only when the UGI with alcohol were present. This is further evidence to support the role of context on the effectiveness of priming safe drinking. Since it was also found that an increase in visual attention to the UGI with alcohol was likely to lead to an increase in intent to drink alcohol only when the safe drinking advertisement was present it is also very important to design safe drinking messages that can attract attention particularly at a UGI with alcohol context.

Conclusion

Young people are heavy social media users, suggesting that such media are one of the best ways to reach them in order to promote healthy behaviour changes. Safe drinking messages often compete with user generated alcohol promotion through images showing peers socialising consuming alcohol

triggering feelings of missing out and intent to consume alcohol. The safe drinking advertisement was found more effective in reducing intent to drink in the context of UGI containing alcohol cues. A primed alcohol culture was found to be an important driver of the safe drinking advertisement effectiveness with visual attention being important only in a congruent context. Policy makers and social marketers should consider creating effective safe drinking advertisements, relevant to the target audience and designed to attract their attention. These safe drinking advertisements have the potential to be more effective in driving healthier behaviour change when inserted in social media next to UGIs showing alcohol using image recognition technology (Gallagher, 2017). Image recognition technology has recently been adopted in online marketing communications (for example, Coca-cola and Under Armour), and can provide better solutions for advertisers since it fundamentally differs from the mainstream keyword (Dou et al., 2001), search engine (Yun Yoo, 2011) and web page phrases/content (Yeun Chun et al., 2014) activated advertisements.

Theoretical implications

This study extends and adds evidence to a growing body of literature investigating the effects of contextual materials near an advertisement on product evaluations and health behaviours (De Pelsmacker et al., 2002; Segev et al., 2014; Wansink and Chandon, 2006; Yi, 1990), and exploring how priming works towards the development of a priming theory (Janiszewski and Wyer, 2014; Locke, 2015; Minton et al., 2016). The safe drinking message was most effective on influencing intent to drink when the UGIs with alcohol were present, providing evidence that alcohol priming is important to trigger consumers' cognitive responses to alter their intentions towards alcohol consumption. No significant differences were found between levels of attention to the safe drinking advertisement in different contexts (H6). In addition, attention to the safe drinking advertisement (and therefore cognitive responses) was negatively correlated with intent to drink only in the presence of alcohol related context (H4). This suggests that cognitive responses to safe drinking

adverts work only in an alcohol primed context (for example, UGIs with alcohol); even if attention is paid to the safe-drinking advert in a context without alcohol this does not lead to cognitive responses on intent to drink because the context is non-congruent. It may be that in the absence of alcohol-related UGIs the safe-drinking advertisement was considered irrelevant and therefore did not influence the intent to drink in a statistically significant way.

Finally, this study responds to the calls for research investigating the impact of social media advertising on user behaviour (Ashley and Tuten, 2015; Okazaki and Taylor, 2013), by showing that advertising on social media interacts with the user-generated context differently from the context of print and other types of online advertisements (for example, banners on webpages and blogs). However, our study focused on only one behaviour and a specific type of advertising therefore future research is needed to shed light on how priming works in a social media context, where sponsored material interacts with user-generated content, by investigating different behaviours.

Practical implications

Findings from this research suggest ways in which public health advertisers could better deploy their financial resources and achieve their advertising objectives. For social marketers and public health advertisers the findings suggest that the user-generated context of messages can alter the impact of the message on the target audience. In this study, the safe-drinking message worked better where it was in context with user-generated images of alcohol consumption. Tentatively generalising from this finding, it can be suggested that positive health-related advertising will be more effective when shown in the context of UGIs that include the undesirable behaviour. For example, healthy eating messages may be more effective when shown alongside UGIs of poor dietary choices, and anti-smoking messages more effective alongside UGIs showing tobacco consumption. Therefore, there is a need for advertisers to go beyond online behavioural advertising (Boerman et al., 2017; van Reijmersdal et al., 2017) and use image recognition technology in order to avoid placing the advertisement in a dysfunctional environment.

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[i] stimuli are available upon request