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Health information, messaging and warnings on alcohol packaging: a focus group study with young adult drinkers in Scotland

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ABSTRACT

Introduction: Alcohol packaging can communicate alcohol-related health information, messaging and warnings. However, there is a dearth of research exploring awareness of, and engagement with, health information and messaging on alcohol packaging, and response to novel alcohol warnings.

Methods: Eight focus groups were conducted in Glasgow (Scotland) with current drinkers ($n = 50$), segmented by age (18–24, 25–35), gender (female, male) and social grade (ABC1, C2DE), to explore awareness and use of health information and messaging on existing packaging, and perceptions of novel front-of-package warnings differing in size (small, large), form (text-only, text and image) and message content (general, specific).

Results: Unaided recall of some health information and messaging was high (e.g. units, pregnancy symbols); however, most participants did not attend to or meaningfully engage with these, viewing them as unnoticeable, obscure and ineffective. Participants were skeptical of alcohol companies' motivations with respect to health messaging on products. They were surprised to see the novel warnings on alcohol products but generally supported their inclusion. Most thought that these warnings could increase awareness of alcohol-related harms, particularly for younger or potential drinkers. Large, combined (text and image) warnings with specific messages on the front of packaging were considered most engaging and potentially effective.

Conclusions: The health-related information and messaging on alcohol packaging in Scotland is failing to inform consumers about the potential risks associated with alcohol use. Prominent warnings on alcohol packaging could help to capture attention, increase awareness of alcohol-related harms, and may support a reduction in consumption and alcohol-related harms.

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Introduction


Globally, alcohol use is associated with substantial health, economic, and social burdens (Cukier et al. 2018; GBD 2016; Alcohol Collaborators 2018; Ranaweera et al. 2018), being a major contributor to disability-adjusted-life-years, injuries, and mortality (Rehm et al. 2017; Peacock et al. 2018). The harmful use of alcohol results in approximately 3 million deaths per year globally (WHO 2018). Europe has the highest level of alcohol consumption and lowest prevalence of abstainers worldwide (WHO 2020b). Alcohol misuse is a significant public health issue in the United Kingdom (UK) (Balakrishnan et al. 2009), as it is in many other countries, placing considerable strain on financial and medical resources (Williams et al. 2018). Within the UK, Scotland registered the highest rate of alcohol-specific deaths in 2018, with 20.8 deaths per 100,000 people (Office for National Statistics 2019). Alcohol consumption accounted for 8% of the burden of disease and an estimated 3,705 deaths in

Scotland in 2015, with cancer and liver disease the top causes of alcohol-related deaths (Tod et al. 2018).

Alcohol packaging is often present at the point of purchase and the point of consumption, making it an appropriate medium for communicating drinking and health-related information to consumers (Calvert 2018). However, research suggests that the health-related information displayed on alcohol packaging is suboptimal (Petticrew et al. 2016; Coomber et al. 2018). Research in the UK found that most young drinkers, including almost half of higher-risk drinkers, did not recall seeing any health information, messages or warnings on alcohol packaging in the past month (Critchlow et al. 2019). Improving how this type of information is presented on packaging could help to increase awareness of, and reduce, alcohol-related harms (Royal Society for Public Health 2018).

Warnings on the packaging of potentially harmful consumer products are a particularly useful way of

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 Supplemental data for this article can be accessed [here](#).

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communicating these risks to the public (Rosenblatt et al. 2018). They are a low-cost, high-reach intervention that can allow consumers to make more informed choices. For example, health warnings on tobacco products – a key tobacco control tool required by most countries (WHO 2008; Moodie et al. 2020) – attract and hold attention, expand knowledge of smoking-related harms, and deter uptake among nonsmokers (Hammond 2011; Noar et al. 2016; Moodie et al. 2020). It is important to know whether warnings work, with effectiveness generally gauged across five domains: attention, reading and comprehension, recall, judgements, and behavioral compliance (Argo and Main 2004). Effectiveness may be affected by visibility, saliency, message content, and exposure (May et al. 2020). Improving the design of warnings on alcohol products, for instance by displaying a range of general and specific health-related messages, may help attract consumer attention, increase awareness of alcohol-related harms, improve engagement, and support a reduction in alcohol use (Miller et al. 2016; Wigg and Stafford 2016; Winstock et al. 2020; Hobin, Schoueri-Mychasiw, et al. 2020; Sillero-Rejon et al. 2020).

While research on warnings on alcohol products is growing, most studies have been quantitative (e.g. Gold et al. 2020). We used focus groups in Scotland to explore, in-depth, young adult drinkers' awareness of the health information and messaging currently displayed on alcohol packaging, how it is perceived and if it is used, and also perceptions of novel health warnings.

Methods

Design and sample

Focus groups were conducted in Glasgow (Scotland) in September 2019 with 50 young adult past-month drinkers segmented by age (18–24, 25–35), gender (female, male), and social grade (ABC1, C2DE), see Table 1. Previous research has recommended that the impact of alcohol health warnings be investigated within different subgroups, such as age, gender or socio-economic position (Pechey et al. 2020). Participants with similar characteristics may feel more comfortable engaging in focus group discussions (Greenwood et al. 2014). Social grade was categorized by the occupation of the person in the household with the greatest income (National Readership Survey [date unknown]). This is an established classification system in the UK with grades A, B and C1 signifying higher and middle class groups and C2, D and E working class groups. Focus groups, which have

previously been used to explore attitudes toward novel warnings on alcohol products (Thomson et al. 2012; Roderique-Davies et al. 2018; Vallance et al. 2018), allow participants to interact with, and discuss, realistic examples of alcohol packaging. We focused on young adults as an ongoing review of the trade press and gray literature in the UK shows that alcohol producers regularly target this age group when (re)designing packaging (Boggis 2008; Clark 2008; Bell 2020). They are also an important group for public health in terms of hazardous drinking (e.g. Patton and Boniface 2016). There was a mix of drinking behaviors within and between groups according to units consumed in the past week (National Health Service 2018). While almost all participants ($n=48$) had drunk alcohol in the past week, the number of units consumed by past-week drinkers ranged from 2 to 80 with a median of 13.5 units ($SD=13.64$), which is within the low-risk weekly drinking guidelines (i.e. below 14 units) (UK Chief Medical Officers (CMO) 2016).

Procedure

Participants were recruited, face-to-face, in Greater Glasgow by a market researcher using a brief recruitment questionnaire (see [Supplementary Material](#)) which captured demographic and drinking information. Potential participants were asked 'When was the last time you drank alcohol?'. Those who had consumed any amount of alcohol in the past 30 days were considered current drinkers, while those who answered 'Never' or 'More than 30 days ago' were deemed ineligible. At recruitment, participants were given information about the study and potential ethical concerns (e.g. confidentiality, anonymity, right to withdraw). Prior to each group, all of which were moderated by DJ, participants were asked to provide consent. It was explained at the start of each group that all contributions were valued and encouraged, and that participants could refrain from answering any questions for any reason. All groups lasted approximately 90 minutes and were audio-recorded. A semi-structured discussion guide was used to address the research aims and ensure commonality across groups.

Each focus group consisted of two sections: alcohol packaging as a promotional tool (not reported here); alcohol packaging as a health messaging tool. Participants discussed their unaided awareness of existing health information and messaging on alcohol packaging. Participants then discussed their knowledge of alcohol-related harms and sources of information, as well as perceptions and use of health information and messaging on current alcohol packaging.

Participants were then shown nine alcohol products displaying mocked-up labels (see [Figure 1](#) and [Supplementary Material](#)), featuring three warnings on the front differing in size (small, large), form (text-only, text and related image), and message content (general, specific). A range of warnings were used to exemplify general and specific alcohol-related health harms and explore responses. The general warning was 'Alcohol damages your health' (with the accompanying image showing a hospitalized patient in bed). Alcohol is a major cause of liver disease and cancer globally (Williams et al. 2018;

Table 1. Age, gender, social grade, number of participants, median units in the past 7 days.

Group	Age	Gender	Social grade	Participants	Units
1	18–24	Female	ABC1	7	12
2	18–24	Female	C2DE	7	14*
3	25–35	Female	ABC1	6	16
4	25–35	Female	C2DE	5	8
5	18–24	Male	ABC1	7	16
6	18–24	Male	C2DE	6	13
7	25–35	Male	ABC1	6	15.5
8	25–35	Male	C2DE	6	9.5

*Two participants had not consumed alcohol in the past 7 days.



Figure 1. Alcohol packaging displaying warnings differing by size, form, and content.

WHO 2020a), hence the two specific warnings were ‘Alcohol increases risk of liver disease’ (with the accompanying image showing a person clutching their liver) and ‘Alcohol causes cancer’ (with the accompanying image showing a CT scanner). Although tobacco research suggests that warnings about long-term health problems have less resonance with younger people (Slovic 2000), we decided to use these warnings due to their applicability to the whole population and to maintain international relevance. Previous alcohol studies have used a similar range of warning designs, e.g. differing sizes (Al-Hamdani and Smith 2017), text-only and text-and-image (Clarke et al. 2020), general and specific content (Miller et al. 2016; Blackwell et al. 2018), liver and cancer messages (Sillero-Rejon et al. 2018; Weerasinghe et al. 2020). Participants were asked to imagine that the warnings could be used across a range of alcohol products and shown three bottles (vodka) displaying the general warning and asked to discuss these. They were then shown, and discussed, three bottles (gin) with the liver warning, and finally three bottles (wine) displaying the cancer warning. Following discussion of each warning set, the bottles remained on display to allow participants to make comparisons across sets. Participants were given time to inspect the products before discussing their perceptions of the various design elements and considering potential ways to improve them.

Participants were given an oral debrief of the study, contact details for Drinkline (alcohol support), and £30 shopping vouchers for their time. DJ recorded audio notes after each group to note dominant speakers and impressions of group interaction. Ethical approval was granted by the General University Ethics Panel at University of Stirling (GUEP 668R).

Analysis

Audio recordings were transcribed by professional transcribers. Thematic analysis was conducted as per Braun and Clarke’s (2006) guidelines using an inductive approach. The

transcripts were reviewed for accuracy and familiarity by DJ, then examined by DJ and CM to identify initial thematic codes. Codes were developed inductively, based on initial observations that were summarized into conceptual categories and gradually refined and linked to other conceptual categories using NVivo 12 Pro. Codes were then collated into potential themes by DJ and reviewed by CM and RP to create a thematic framework. Five key themes were refined and defined by the research team (DJ, CM, RP, NF and RC): Knowledge of alcohol harms, and recall of health information and messaging on packaging; Awareness, perceptions and use of health information and messaging on packaging; Perceptions of alcohol companies’ approach to health messaging on packaging; Perceptions of novel warnings and impact on appeal; Effective warning design. These themes were examined to identify patterns across the groups. Representative quotations are provided in the Results to illustrate key themes. Where there are differences by age, gender or social grade, they will be identified in the text.

Results

Knowledge of alcohol harms, and recall of health information and messaging on packaging

Participants were generally knowledgeable of some of the potential harms of alcohol use, typically through social/familial connections, TV campaigns, newspapers, and medical centers. No participant mentioned alcohol packaging as a source of information about possible harms. When asked about the types of health information and messages on alcohol packaging, there was high unaided recall of unit information, pregnancy symbols, alcohol by volume (ABV), and drinking guidelines, with several groups also mentioning a responsible drinking message. There was low unprompted recall of nutritional information (e.g. calories), drink-driving and age-restriction messages, and ‘Drinkaware’ on packaging.

Awareness, perceptions and use of health information and messaging on packaging

Most did not use existing health information and messaging on alcohol packaging, some previously ‘*struggled to find*’ (18–24 F, ABC1) health information on packaging or were noticing it for the first time when interacting with alcohol products they were shown, e.g. ‘*I’ve actually never noticed them*’ (18–24 F, ABC1). For instance, one female participant mentioned being unaware of pregnancy symbols: ‘*I didn’t even know about the pregnant lady. I never even noticed the pregnant lady*’ (25–35 F, C2DE). There was also very low awareness of low-risk drinking guidelines (CMO; UK Chief Medical Officers 2016), and very few participants adhered to these.

People aren’t paying attention to it. I wasn’t aware of half the information on labels (25–35 F, C2DE)

What do they recommend for a week? (25–35 M, C2DE)

I went to my dentist recently and he was going through the questionnaire. He went, “how many units are you drinking a week?”. I went, “the recommended amount” and, in my head I’m going, “I don’t even know what the recommended amount is” (25–35 F, ABC1)

Some of the information on packaging was used to make healthier drinking choices. Several participants reflected upon the number of units in products before consuming alcohol or used ABV to determine the strength of alcoholic drinks to help them drink in moderation. However, most of those who used units did so the day after drinking to assess their suitability to drive, while most participants who used ABV used it to accelerate intoxication, choosing not to purchase alcohol ‘*that’s under a certain percentage*’ (25–35 F, C2DE).

The higher [the ABV] the better I suppose. The higher the percentage the more appealing it is (18–24 F, C2DE)

You are going to go and get the highest percentage so you can get there [intoxication] quicker (18–24 M, ABC1)

Participants explained that some information displayed on alcohol packaging created confusion, e.g. what constitutes a unit of alcohol and how units should be used to regulate drinking: ‘*It’s not understood. It’s never been explained*’ (18–24 F, C2DE). It was suggested that this information would be more useful and accessible if all packaging included unit information per serving.

Perceptions of alcohol companies’ approach to health messaging on packaging

All groups believed that alcohol companies seek to minimize the amount, saliency (e.g. font size, positioning), and effectiveness (e.g. content) of health information, messaging and warnings on alcohol packaging, e.g. ‘*I think they don’t want to brand themselves as something that’s bad for you*’ (25–35 F, ABC1). Some participants thought that the health information, messaging and warnings currently included on alcohol packaging are there because alcohol companies ‘*just*

do, legally, what they’re supposed to’ (25–35 M, C2DE) rather than wanting to inform consumers.

It has to be put on there so they’ll make it as small and unnoticeable as possible because, let’s be honest, promoting the fact that you know you shouldn’t be drinking this isn’t going to sell bottles (18–24 F, ABC1)

They need to tick a wee box, and they’re not putting them [warnings] to stand out (25–35 F, ABC1)

It’s [health messaging] just there because they have to put it on isn’t it? They don’t care; they just want to sell it (18–24 F, C2DE)

I don’t think they take it [health messaging] seriously (18–24 M, C2DE)

Although recalled by several groups, the ‘please drink responsibly’ message was considered particularly confusing and met with disdain across all groups given the lack of clarity about what this actually means. Participants were cynical of this message, viewing it as unhelpful, ambiguous and unlikely to have any meaningful impact, with comparisons drawn to similar messages used in gambling advertisements.

Lots of the people that are going to be buying it are going to be drunk themselves which already lowers your inhibitions. So, I mean your definition of responsibility will change depending on how much you drink (25–35 M, ABC1)

For me, “please drink responsibly”, people have different perceptions. For me, drinking responsibly is thinking about are you going to be driving tomorrow? Do you need the car? Plan ahead. For other people drinking responsibly could mean something else (25–35 F, C2DE)

What is drinking responsibly? Is it not drinking a lot? Is it only drinking a couple of times a week? Is it drinking within your house? Is it drinking in a legalised environment? It’s quite vague but it’s like as if this is just covering its arse, the drink companies are like “well we told them to drink responsibly, so we can’t be blamed for them going out and causing fights and stuff” (25–35 M, ABC1)

One participant contended that the variant ‘please enjoy responsibly’ was positively framed to evoke positive feelings about drinking, further highlighting the mutability of ‘responsible drinking’ definitions.

I mean it’s a connotation isn’t it? It’s a positive experience, you’re never going to think, “oh that’s bad”. I’m going to enjoy that. To enjoy something is about the night that you’re going to have. The possibility of more (25–35 M, ABC1)

Perceptions of novel warnings and impact on appeal

The most common response to the alcohol products with mockup warnings (Figure 1) was unprompted mention of similarity to tobacco warnings; warnings are prominently displayed on tobacco packaging in many countries. Notwithstanding tobacco products setting a precedent, and most participants considering some form of warnings on alcohol products appropriate and potentially informative and useful, particularly for ‘*teaching kids*’ (25–35 M, C2DE) and younger people, the consensus was that they would nevertheless be surprised to see such warnings on alcohol products.

I think I would understand completely why, and I would welcome it (salient warnings). So, there's going to be an impact, 100%; however, it's not going to be life-changing, but I think it's definitely a positive, 100% (25–35 M, ABC1)

Kids can look at that and understand wee bits and it would deter them (25–35 M, ABC1)

Well it would surprise me by the fact that it's not normally there. Which is a really good point that you [another participant] brought up, because why is it on cigarettes when alcohol does as much damage? (25–35 F, C2DE)

Several participants made numerous unprompted comments about the myriad ways that the presence of these types of warnings on alcohol packaging could reduce appeal. The consensus was that warnings would make alcohol products unsuitable gifts, participants would be more reluctant to bring them to social gatherings, and they would look unattractive in the home. These impacts were not mentioned by participants in either of the 25–35-year-old male groups.

I think it would make people drink less. It wouldn't if you were buying it to drink but if you were buying for a gift, you would maybe not buy for a gift (25–35 F, ABC1)

I think it would take away the glamorisation of it. People are saying if it looks fancier they would take it to a dinner party. I think if it looks like that and I was turning up to somebody's house, I don't think I would want to take that (18–24 F, C2DE)

My children might see it as well. That would be the other thing. If my children seen that bottle and read that label they would be like, "why are you doing that, Mum?" (25–35 F, ABC1)

It was suggested that social media 'influencers' would not include such products in their social media posts as prominent warnings would 'interrupt the fun' (18–24 F, ABC1) of socializing.

I feel they've just ruined my Saturday night (25–35 F, ABC1)

That's just going to kill my buzz if I'm going out, I'm not going to be like, "class" (18–24 M, ABC1)

Participants within the male groups mentioned taking steps to avoid seeing warnings during consumption, such as peeling off or hiding the label (e.g. by putting bottles in sleeves). The reduced appeal caused by having warnings positioned on the front of packaging was also thought to extend to younger people, who may be put off when they see these products as litter.

It does put me off a little bit, but I would just take off the label (18–24 M, ABC1)

As soon as I bought it I'd rip it off. One hundred percent I would do that (25–35 M, C2DE)

When I was younger and I used to see cigarette packages sitting on the pavement or stuff like that, I would look at it and think, "I'm never going to smoke". So, maybe young people would look at that and think, "I'm not going to drink" (18–24 M, C2DE)

Effective warning design

When considering the novel warnings, the general view was that size, positioning and type matters. Participants felt that larger text-only warnings were more eye-catching than small

text-only warnings and required less effort on the part of the consumer as 'it is just bold and it's in your face' (25–35 M, C2DE). Having warnings on the 'front and centre' (25–35 M, ABC1) of packaging was consistently viewed as the best position to make the warnings stand out. This was seen as the optimal location as it would be at eye-level on shelves in retailers, although a few participants also suggested placing warnings on the neck of bottles.

It's where it needs to be to catch your eye (18–24 M, C2DE)

I think they need to be at the front because, like we've all said, you don't really pay attention to the small text on the back. So, I think it needs to be big and on the front if people are going to pay attention to it (25–35 F, C2DE)

There was a preference for combined (text and image) warnings to help 'visualise what could happen' (18–24 F, C2DE). These were deemed more eye-catching and required less cognitive processing than text-only warnings as the message was reinforced by the image. It was also suggested that including an image could help 'visual learners' (18–24 F, C2DE) and people with reading difficulties.

The most effective will be the ones with text and image. I don't personally like it. I don't think it's necessarily a great idea per se. But, I'd say that would be the most effective in deterring people (18–24 M, ABC1)

It's definitely more effective having an image regardless. I don't think the text does enough. I think people need to see that visual lead to go hand in hand with the text (18–24 M, ABC1)

You know what the damage is doing if you're walking past it. You don't need to put any effort into reading it (25–35 M, C2DE)

In addition to warning size, positioning and type, content was considered important with regards to potential effectiveness. While some considered 'Alcohol damages your health' too 'basic' (18–24 F, C2DE) and widely known to be effective, others felt it was the appropriate level of severity. Although several participants found the image of the hospitalized patient ambiguous, questioning 'what's actually happened' (18–24 F, ABC1) to the patient, others thought it consolidated the message.

I think it's more effective than asking people to "please drink responsibly". It's outright saying, "this can damage your health", and if it can break through to people I think it's kind of worth it (18–24 M, ABC1)

It's not just a label that's saying "it can damage your health". It's actually showing the impact of someone being taken to hospital through alcohol (18–24 F, C2DE)

The more specific health warnings (liver, cancer) received a lot of attention and were considered most impactful, with some taken aback by seeing them on alcohol products. The image of the person clutching their liver was generally viewed as more informative than the hospitalized patient because it 'shows, to an extent, the damage it can do to you' (18–24 M, ABC1). The CT scanner was perceived as the most attention-grabbing and thought-provoking image as it depicts what could be 'waiting for you' (18–24 M, ABC1). Most participants felt that warnings should incorporate

'realistic information' (18–24 F, C2DE), and noted the reliability of these warnings, particularly the cancer warning.

Cancer is a scary thing. I mean it affects a lot of people (18–24 M, ABC1)

Everybody knows somebody that's suffered from cancer (25–35 M, ABC1)

Some participants preferred the liver message ('Alcohol increases risk of liver disease') as it felt more nuanced than the cancer message ('Alcohol causes cancer'), allowing for individual differences such as drinking behavior and general health. Without statistics and 'cut-off' points, some questioned the likelihood of alcohol causing cancer, especially when consumed at moderate levels. Most groups suggested that it would be more useful if the type of cancer was specified, as well as the likelihood of developing cancer based on alcohol consumption.

I can see the point if you put "alcohol could cause cancer" but "causes cancer"? I don't know if I would say that's 100%, unless you've got proof that that is what it's doing (18–24 F, C2DE)

If they are going to dedicate a space to it, like you [another participant] said, they are better doing something that's going to capture your attention, so statistics or what exactly it's going to affect. Not these standard words (25–35 F, ABC1)

Have stuff on the front like risks and what the statistics are – people actually have to look at them (18–24 M, ABC1)

Participants recommended other possible changes to the content of warnings that may help enhance stand out and impact, suggesting that they also display various short-term effects of alcohol consumption (e.g. impairments, nausea, hangovers) or highlight that alcohol is potentially addictive, and include information on available support (e.g. a helpline). Rotation was also viewed as necessary to reach a greater number of consumers and prolong impact.

Maybe each bottle could be different, like different messages (25–35 F, C2DE)

Variations of the image, variations of the message (18–24 M, ABC1)

Discussion

For our sample of current, mostly past-week, drinkers, most were not aware of, or did not attend to or meaningfully engage with, the health information, messaging and warnings currently on alcohol packaging. They were considered neither salient nor effective. The inclusion of prominent warnings was generally supported and thought to help ensure that consumers are more appropriately informed about alcohol-related risks at the point of purchase and consumption.

Participants were largely unaware of the current UK drinking guidelines (UK Chief Medical Officers (CMO) 2016), in line with previous research (Royal Society for Public Health 2018), and did not consider them useful. This is unsurprising given that guidelines are often presented in very small font sizes, more than 70% of alcohol labels do not include the current UK guidelines (UK Chief Medical

Officers (CMO) 2016), and almost a quarter contain misleading, out-of-date health information (Alcohol Health Alliance UK 2020). Similarly, the 'please drink responsibly' message was typically seen as ambiguous and ineffective, supporting previous findings (Priory Group 2020). Research suggests that such industry-affiliated terms are strategically ambiguous (Smith et al. 2006; Maani Hessari and Petticrew 2018), and do not reduce consumption (Jones et al. 2017). Although frequently recalled, some participants were unsure of how to use existing unit information on packaging to moderate their drinking. ABV was primarily used as a guide for either drinking in moderation or to accelerate intoxication, with some participants choosing only to buy products (e.g. wine) above certain thresholds. Focus groups in Australia found that some young drinkers use standard drinks and ABV information to increase their alcohol consumption (Jones and Gregory 2009; Thomson et al. 2012). The present study suggests that the health information and messaging currently provided on alcohol packaging is failing to appropriately inform consumers of the risks associated with alcohol consumption.

The WHO recommends that, as a fundamental consumer right to information, warnings should reflect the harms associated with alcohol consumption (Jané-Llopis et al. 2020). A series of real-world quasi-experimental studies in Canada suggested that improving health messaging on alcohol products by varying highly visible labels (i.e. large and brightly coloured) with a variety of impactful messages (e.g. 'Alcohol can cause cancer') could be an effective population-level tool for increasing awareness and knowledge of national drinking guidelines (Schoueri-Mychasiw et al. 2020), improving knowledge that alcohol causes cancer (Hobin, Weerasinghe, et al. 2020), and reducing alcohol consumption (Zhao et al. 2020). Like these studies, the warnings in our study used serious health messages in different formats, which did attract and hold consumer attention.

Most participants were surprised at the idea of warnings on alcohol products, despite being accustomed to them on tobacco products, but felt they could help inform children and potential drinkers about alcohol-related harms. The novelty of being shown alcohol products displaying prominent warnings is likely to have influenced participants' responses, but the general view was that they would reduce the appeal of alcohol products (whether in the home, at social gatherings, on social media), make them less appropriate as gifts, and negatively affect socializing and perceptions of drinking as glamorous and fun. While some male participants indicated that they would engage in avoidant behavior as a result of this reduced appeal, for warnings on tobacco products longitudinal research shows that avoidant behavior may be a marker of engagement with warnings (Thrasher et al. 2016) and is linked to quitting (Yong et al. 2014). Despite the surprise at seeing the warnings, there was some support for including them on alcohol packaging. Some past research has similarly found there to be support for warnings on alcohol packaging, for instance pregnancy warnings (Thomson et al. 2012; Dekker et al. 2020) and text-only warnings (Clarke et al. 2020; Vallance, Stockwell, et al.

2020), while other work has found low acceptability for warnings with graphic images (Pechey et al. 2020). Differences in support are most likely due to differences in the types of warnings being evaluated. In this study, those who supported introducing warnings maintained they should be noticeable, fact-based and relevant to real life. Most participants thought that including a range of rotating warnings on packaging (e.g. short- and long-term risks) could help to reach more consumer profiles and prolong impact.

Although cancer is a leading cause of death in the UK (Hydes et al. 2020), as it is elsewhere, and alcohol use is one of the largest modifiable cancer risk factors (Public Health Scotland 2020), some participants were unaware that alcohol causes cancer. Low awareness of the alcohol-cancer link has been found in other countries (Bates et al. 2018; Scheideler and Klein 2018; Thomsen et al. 2020; Weerasinghe et al. 2020), highlighting the potential role that well-designed warnings on alcohol packaging could have in improving awareness of alcohol-related harms and informing consumers (WHO 2020a). Cancer warnings are positively associated with consumers reading, thinking and talking about them, and self-reported intentions to reduce drinking (Hobin, Shokar, et al. 2020). Alcohol companies' opposition to proposed cancer warnings on packaging has been well documented, for instance in Canada (Stockwell et al. 2020) and Ireland (Vallance, Vincent, et al. 2020), as they refute the evidence that alcohol is a carcinogen (Petticrew et al. 2018). The current study contributes to this earlier work and alcohol warning design theory in the following ways. Participants considered the cancer warning particularly relatable and supported the inclusion of '*realistic information*' (18–24F, C2DE) on alcohol packaging, highlighting the importance of clear and relevant message content. Most groups thought that the cancer warning would be more believable, informative and effective if the types of cancers caused by alcohol consumption were specified, which could help to improve awareness and knowledge of the alcohol-cancers link.

The groups displayed a level of suspicion and mistrust of alcohol companies. Some participants contended that alcohol companies would not want salient health-related information or warnings on alcohol packaging, viewing it as detrimental to sales and positive perceptions of drinking. This was evident in participants' attitudes to responsible drinking messages, considered ambiguous and positively-framed, and the fact that other health-related messaging and information is seen as barely noticeable. Petticrew et al. (2016) found that font and pregnancy logos on alcohol labeling were smaller than would be accepted on other potentially harmful products. One female participant noticed pregnancy symbols on alcohol packaging for the first time when examining products in the group. Similar to the gambling industry (Newall 2019), research suggests that alcohol companies use 'dark nudges' and 'sludge' tactics to encourage behavior that is not in consumers' best interests and make behavior change more difficult, which can undermine scientific evidence by normalizing or encouraging alcohol consumption (Petticrew

et al. 2020). In the present study, a sample of current alcohol consumers were acutely aware of such tactics and thought that alcohol companies would strongly oppose the inclusion of salient and effective warnings on alcohol packaging, to the detriment of consumers.

Participants in our study attended to the warnings and generally found them more engaging than the information currently provided on alcohol packaging, with some suggesting they may help to reduce consumption, in line with previous research (Hobin, Schoueri-Mychasiw, et al. 2020). They viewed large warnings, displaying images and text, and placed on the front of packaging as most likely to increase perceptions of the associated health risks and intentions to reduce selection and consumption or quit. This is consistent with research on alcohol warnings (Wigg and Stafford 2016; Vallance et al. 2018; Pechey et al. 2020) and tobacco warnings (Hammond 2011; Noar et al. 2016). Indeed, some participants questioned why alcohol, a product with high rates of morbidity and mortality, like tobacco, differed so much in terms of health messaging and warnings. In terms of content, specific warnings may change alcohol-risk beliefs and encourage a reduction in drinking intentions for high-risk drinkers (Jongenelis et al. 2018). Supporting previous alcohol research (Miller et al. 2016; Blackwell et al. 2018), participants found specific warnings more believable and potentially effective than general warnings.

While our study allowed current drinkers to engage with realistic warnings on physical alcohol products, forced exposure in focus groups is not as realistic as in a retail setting or drinking venue (e.g. Hobin, Weerasinghe, et al. 2020). The study is also unable to provide any insight into the potential impact of the warnings over time. Participants generally reported low-risk levels of past-week drinking; as Hassan and Shiu (2018) note, further research is needed to determine whether drinking status should also be considered when assessing the efficacy of warnings on alcohol packaging. Another limitation is that although a range of views were encouraged and expressed, social desirability bias may have affected some responses. In addition, while focus groups facilitate meaningful exploration of a range of topics, they are not generalizable beyond the sample.

In conclusion, the health information, messaging and warnings currently on alcohol packaging in the UK is not adequately designed to meaningfully inform consumers about alcohol-related harms, let alone change their drinking behavior. Our findings are consistent with research from other countries with weak health messaging on alcohol packaging (e.g. Coomber et al. 2018; Jané-Llopis et al. 2020), and highlight the need for a more co-ordinated global response to warning design, as there is in the tobacco field.

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