RUNNING HEAD: Review of Responsible Drinking Messages

**The Science of Absent Evidence:**

**Is there such thing as an effective responsible drinking message?**

Antony C. Moss\*; Ian P. Albery

School of Applied Sciences, London South Bank University, UK.

**Conflicts of interest**: No funding or external support was received for the preparation of this manuscript. ACM acts as an unpaid scientific advisor to the Drinkaware Trust.

\*Correspondence regarding this manuscript: Dr Antony C. Moss, School of Applied Sciences, London South Bank University, London, SE1 0AA, United Kingdom. Tel.: +44 207 815 5777, Email: [mossac@lsbu.ac.uk](mailto:mossac@lsbu.ac.uk).

**Abstract**

**Aims**: We conducted a systematic literature review of studies evaluating the effectiveness of responsible drinking messages (RDMs). **Methods**: We searched PsycINFO, MEDLINE, and Google Scholar to June 2016 for studies evaluating the effectiveness of RDMs. Only eight studies met the inclusion/exclusion criteria. Due to a small number of search results and broad inconsistency in methods and outcome measures, quantitative synthesis was not possible so a narrative summary of findings was conducted. **Results**: A review of findings from these articles suggested a disjointed approach in terms of the format and content of RDMs evaluated, as well as the dependent variables used to judge their effectiveness. An overall pattern emerged suggesting that RDMs may have beneficial effects across various outcome measures, including reducing prospective alcohol use. However, due to the inconsistent approach to both the development and evaluation of RDMs, it was not possible to draw any clear conclusions in terms of effectiveness, or indeed the potential size of any effects. **Conclusions**: A systematic approach to the development and evaluation of RDMs is recommended to ensure that a clearer evidence base is established in this area, particularly in light of the substantial public funds which are often spent on RDM campaigns.

**Key words**: Alcohol, Alcohol misuse, Public Service Announcements, Responsible Drinking Messages, Systematic Review.

**Short summary**: A systematic review of studies evaluating the effectiveness of responsible drinking message campaigns reveals an inconsistent approach to message design and evaluation. Findings of the review suggest the need for a more consistent approach to aid in the development of a clearer evidence base in this area.

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1. **Introduction**

A range of measures designed to tackle the harmful consequences associated with excessive consumption of alcohol have been proposed, adopted and implemented internationally. These include increases in taxation on alcoholic beverages, as well as volumetric and unit-based pricing, attempts to provide information about the harms of alcohol, as well as messages which promote responsible drinking, and interventions targeted more specifically at vulnerable groups. There is debate around the utility of these different approaches to minimising the harms of alcohol, with some arguing that the existing evidence only supports the revision of pricing policies through legislative intervention (e.g. Anderson, Chisholm & Fuhr, 2009). Such an approach has been recently implemented by the Scottish legislature, such that alcohol pricing will be based on a minimum cost per unit.

While price-based interventions are amongst the more influential levers for reducing alcohol-related harms and occupy more time with regards to policy debates in relation to alcohol harm reduction initiatives, information dissemination and educational interventions continue to form an important component of many national harm reduction strategies. For example, in the UK, the government’s Alcohol Strategy includes education and prevention (especially targeting young people) as a key component of harm reduction (Home Office, 2012). However, the evidence base supporting the effectiveness of such interventions can lead to some inconsistency in approach. For example, Public Health England recently published a list of interventions for reducing a variety of public health harms which, in relation to alcohol harms, listed only two – brief alcohol interventions and care teams in acute alcohol settings (Public Health England, 2016).

The research available to date regarding the effectiveness of RDM campaigns is not especially compelling, and has many gaps. Meier (2011) has argued that research into the effects of general alcohol marketing is itself not well-suited to guiding policy decisions. In short, our understanding of the impact of marketing campaigns (whether pro-drinking or pro-RDM) requires greater exploration.

1. **Responsible Drinking Messages**

In a review of campaigns and interventions for responsible drinking, Barry and Goodson (2010) concluded that there is a complete absence of shared understanding or definition of what constitutes responsible drinking – and in the research they reviewed – a scarcity of attempts to offer a working definition of the concept. In their analysis, Barry and Goodson suggest that those using the concept of responsible drinking treat it as something which has a commonly accepted definition. Another way of interpreting this absence of clear definition is that responsible drinking is not actually a discrete set of drinking behaviours which are inherently and universally ‘responsible’, but that responsible drinking is more suitably defined as any drinking behaviour which does not lead to harm, to oneself or others. They provide two examples of attempts to define responsible drinking. The first was taken from the Education Commission of the States (1977, cited in Barry & Goodson, 2010): “There are two responsible decisions a person can make about alcohol – either not to use it or to use it responsibly.” This is clearly not useful to the extent that it is tautological, reinforcing the sense that it is common knowledge what to “use it [alcohol] responsibly” means.

The second definition was empirically derived from a series of interviews and focus groups and goes further in providing an indication of what *responsible* might mean in the context of drinking: “[Responsible drinking is] drinking in a responsible manner that will not lead to problems for oneself and others, within specified safe drinking limits per occasion, while recognizing situations where one should not drink.” (Towers, Kishchuk, Sylvestre, Peters, & Bourgault, 1994, p.57). This definition still fails to be explicit about specific behaviours which comprise responsible drinking.

However, to demand a definition of responsible drinking which is more specific than that offered by Towers et al. (1994) may be neither feasible nor desirable. That is, what it means for an individual to drink in a responsible manner is likely to vary widely across individuals, and within individuals across different contexts. For instance, an individual may generally consider drinking within a given set of national guidelines to be ‘responsible’, but if the same individual were currently taking medication which contraindicated alcohol use, then abstinence would become a responsible behaviour, and maintaining drinking even at a level below a given guidelines amount would in fact become irresponsible. Similarly, while binge drinking might be commonly associated with irresponsible drinking, an individual who is planning a one-off celebration which will involve a drinking binge may not consider this an irresponsible behaviour, to the extent that they have considered, and attempted to plan for, any negative consequence of drinking heavily on a single occasion. These examples illustrate that discrete drinking behaviours may fluctuate in their degree of responsibility and irresponsibility, as a function of the current context, and the short- and long-term goals of the individual.

Evidently, while there is a lack of shared understanding as to what responsible drinking means, it is by no means simple to impose a singular definition which includes concrete examples of necessarily responsible drinking behaviours for all individuals, in all contexts. To the same extent, assessment of the efficacy of interventions aimed at increasing responsible drinking behaviour is made more difficult due to a lack of shared understanding about it would mean for such an intervention to be effective. To explore this apparent knowledge gap, we conducted a systematic review of the research which has attempted to evaluate the efficacy of responsible drinking message interventions.

1. **Method**

We followed the PRISMA guidelines for the reporting of systematic reviews (Liberati et al., 2009). A systematic review of research evaluating the effectiveness of responsible drinking message media campaigns was undertaken. For the purposes of this review, RDMs were campaigns which explicitly sought to encourage responsible drinking practices, rather than campaigns or messages which sought to highlight alcohol harms, or provide medical information regarding alcohol (e.g. Chief Medical Officer/Surgeon General’s warnings, or unit content displayed on packaging).

* 1. *Data sources*

We identified all relevant English-language manuscripts published up to June 30th 2016 using the following databases: PsycINFO, MEDLINE and Google Scholar. No start date was specified in the search, given that there have been no previous reviews of this area.

* 1. *Inclusion/Exclusion criteria*

Articles included were English-language original research papers published in peer-reviewed journals which examined the effects of responsible drinking message interventions on relevant dependent variables (specifically: attitudes towards alcohol, attitudes towards the responsible drinking message itself, alcohol-related risk perceptions, intentions to drink, and actual alcohol intake).

Excluded articles were those which tested the effectiveness of interventions which did not contain any message regarding responsible drinking. Examples of excluded studies were those which evaluated interventions which promoted knowledge of alcohol related harms (but did not provide explicit information about responsible drinking practices) (e.g. Kalsher et al., 1993), or studies which evaluated the effectiveness of messages placed on alcohol containers related to unit contents (e.g. Laughery et al., 1993). Studies involving underage drinkers were excluded (though in practice none were identified). This meant that the minimum age for inclusion varied by country (e.g. 18yrs in the United Kingdom and Australia, 21yrs in the United States of America).

* 1. *Search strategy*

We used the following keywords/subject headings to search each database: Responsible Drinking Message; Responsible Drinking OR Sensible Drinking AND [alcohol; alcohol misuse]; Public Service Announcement AND [alcohol OR responsible drinking OR alcohol misuse OR sensible drinking]; Mass Media AND [responsible drinking OR sensible drinking]. The results of this search and subsequent screening is illustrated I Figure 1.

* 1. *Study selection*

The initial search (using the search terms and inclusion/exclusion criteria noted above) was conducted independently by the first author and another reviewer, and results were then compared. Of the eight articles which were identified for inclusion in this review, both reviewers identified the same seven, and the first reviewer identified one further article which the other had not found. After discussion, it was agreed that all eight articles were suitable for inclusion in the review.

* 1. *Analytic approach*

Having identified the relevant articles for inclusion in this systematic review, it was decided that a narrative synthesis was the most appropriate analytic approach. As highlighted in more details below, not only were there a small number of articles suitable for inclusion, but these articles varied widely in terms of their design, and use and definition of outcome measures. As such, a quantitative synthesis of findings was not possible.

1. **Study and participant characteristics**

The articles identified for inclusion in this review utilised very diverse methods, covering a wide range of different RDM-types. Table 1, below, summarises the key characteristics and results of each article included in this review.

With regards to the demographic characteristics of the participants included across these studies, there is an evident bias towards young adults (18-21), apart from two studies (Barber et al., 1989; Churchill et al., 2016) which included a wider age range. Worthy of note is the fact that, in those studies conducted in the USA, this age range would comprise mostly underage drinkers. Most studies included an even balance of male and female participants, except for the three most recent studies which included either all or mostly female samples (De Graaf et al., 2015; Moss et al., 2015; Churchill et al., 2016). This is an interesting trend and, in all three instances, appears to be attributable to the fact that the studies were conducted at universities, and the majority of students taking part happened to be female.

There was a great deal of variation across all eight studies with regards to the format and content of the RDMs. Delivery modes included television advertising, leaflets, web-based information, and posters. The contents of the RDM were different in almost every study, with some studies focusing on the degree to which personalising or tailoring messages to individual participants would influence the impact of the message on the relevant dependent variables.

Finally, there was also a range of different outcome measures included across the studies to determine the effectiveness of the RDMs under evaluation. Of the eight studies: five measured attitudes towards alcohol; four measured prospective drinking intentions; four measured changes in actual alcohol consumption; one measured alcohol-related risk perceptions, and two assessed attitudes towards the RDMs themselves.

1. **Review of RDM research findings**

While attempts to evaluate the efficacy of RDM campaigns delivered through the media are somewhat scarce, the first study which we identified was conducted over two decades ago. Barber, Bradshaw and Walsh (1989) evaluated the efficacy of television advertising in reducing alcohol consumption. The researchers examined the impact of an online advertising campaign promoting *controlled-drinking*, as well as the effect of participants receiving a letter prior to the start of the television campaign, advising them that it would soon begin. Results demonstrated that the advertisements were effective in reducing alcohol consumption, but only when participants had received a letter announcing the campaign. It is perhaps somewhat surprising that, following Barber et al.’s (1989) study, we did not identify any further research in this area which utilised alcohol consumption as an outcome measure until Moss et al.’s study in 2015. Indeed, the three most recent studies identified (Moss et al., De Graaf et al., 2015, Churchill et al. 2016) each included alcohol consumption as a dependent measure. Contrasted with Barber et al.’s much earlier finding that alcohol intake might be reduced, these three studies were equivocal, showing an immediate increase in consumption during exposure to RDMs (Moss et al.), and no effect on prospective alcohol consumption in the other two studies. It is important to note that each of these studies utilised very different modes of RDM delivery, and even the definition of alcohol intake as a dependent variable was inconsistent – ranging from consumption during active exposure to RDMs in Moss et al., to 3-weeks after the RDM campaign had ended in Bradshaw et al.’s study.

Across all studies, with the exception of Moss et al. (2015), there was evidence of some positive benefit from the RDM interventions. While the reasons for this require further exploration, it is worth noting that Moss et al. was the only study which explicitly manipulated the context in which RDMs were displayed, utilising a bar laboratory to simulate a naturalistic drinking environment. Monk and Heim (2013a; 2013b) have demonstrated important differences in alcohol-related cognitions related to context, suggesting this is an area for future focus in determining the optimal placement of RDMs. Indeed, York et al.’s (2011) findings suggested that different message frames and degrees of message personalisation will have differential effects on drinking intentions, depending upon whether an RDM is targeting drinking at home, or drinking when going out.

Of particular interest for the development of RDMs in future, there appears to be an advantage to personalising messages towards specific audiences (e.g. Pilling & Brannon, 2007). However, York et al.’s (2011) findings suggest that the degree of tailoring used in messaging may have an upper limit in terms of increasing efficacy.

Two of the studies reviewed utilised experimental methods to evaluate current national RDM campaigns – both of which were delivered (predominantly) via posters. Glock et al. (2014) examined the effects of a national campaign in Germany, looking at impacts on implicit and explicit alcohol attitudes and expectancies, as well as drinking intentions and actual drinking. While some effects were found with regards to changes in implicit cognitions, no effects were identified for explicit cognitions, drinking intentions, or actual drinking. Moss et al. (2015) conducted a similar experimental evaluation of a UK-wide RDM campaign. The main outcome measure in this study was volume of alcohol consumed in a simulated bar (vs. ordinary lab) environment, when participants were exposed to the RDM posters. Results from this study were the only ones which suggested an iatrogenic effect – with poster exposure being associated with increased consumption. This was explained as being a potential consequence of the design of the posters, in which the actual RDM itself was not particularly prominent – an explanation supported by an eyetracking study demonstrating participants did not attend to the RDM contained within the posters.

1. **Conclusion**

The most notable finding from this systematic review is the scarcity of empirical evaluations of RDMs. The range of findings from this review suggests that RDM campaigns, in various forms, may be effective in producing changes in attitude, intentions and drinking behaviour (apart from Moss et al., 2015, in which an iatrogenic effect was observed). However, firm conclusions cannot be drawn from the evidence reviewed here due to the small number of studies, and the sheer breadth of both methodological variation and the type and content of the RDMs evaluated. Further, study samples from the most recent studies were limited to university students, who were mainly female. Given the implications of the studies in this review which suggest a degree of personalisation of RDMs may be beneficial, the evidence base clearly falls short in being able to identify how we might develop effective messages for a broad range of groups within society.

Interestingly, only one study focused explicitly on message development (Pilling & Brannon, 2007). All other studies either evaluated pre-existing messages, or did not present any explicit information about how the different message formats being compared were developed. In a pragmatic sense, it is possible that this bias towards evaluation (rather than evidence-based message and campaign development) may reflect the fact that campaigns of this kind would typically be developed by marketing agencies, who would utilise market research and insight methods (e.g. focus groups with members of the target audience) when creating specific RDM campaigns. Nonetheless, the evidence reviewed herein provides very little sound empirical foundation upon which one might develop clear, evidence-based recommendations for the development of effective RDM campaigns.

Despite the absence of a sound evidence base determining whether they are effective in reducing alcohol-related harms, RDM campaigns are likely to remain a key component of strategies developed by government departments, public health bodies, and third sector organisations. Given the resources which such campaigns require, we would suggest that these organisations have a moral and ethical obligation to build in robust development and outcome evaluation processes, to ensure that we develop a more useful evidence base in this area.

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| **Table 1.** Summary of the characteristics and findings of each study included in the systematic review | | | | | | | |
| Article | RDM *Format* and Content | Sample Size | Gender (% M/F) | Age range | Country | Dependent Measures | Notes |
| Barber et al. (1989) | *Television advertisement*  Promotion of controlled drinking behaviour | 96  (across 4 conditions) | 56/44 | 18-67 | Australia | 1. Pre- and post-alcohol intake;  2. Alcohol danger perceptions;  3. Alcohol attitudes | Drinking was only reduced amongst participants who received a letter and who also saw the advertisement. |
| Brannon & Pilling (2006) | *Public Service Announcement (printed)*  Tailored messages promoting different drinking rituals | 133  (across 4 conditions) | 47/53 | 18-20 | USA | Drinking intentions | Messages promoting ‘ordered’ drinking (the idea that older drinkers drink responsibly) led to reduced intentions to drink amongst this underage drinking sample. |
| Pilling & Brannon (2007) | *Web-based persuasive messages*  Varied approaches to discourage heavy drinking | 227  (across 4 conditions) | 43/57 | 19.05\* | USA | Attitudes towards RDM | Participants reported more favourable attitudes towards more RDMs which had a greater degree of personalisation. |
| York et al. (2011) | *Web-based RDM embedded in a simulated website*  Messages matched to self-schema and/or website context | 184  (across 4 conditions) | 48/52 | 19.4\* | USA | 1. Intentions to drink at home and when going out over the coming week  2. Evaluation of the RDMs | Differential effects of self-schema and context matching on drinking at home and when going out. Identifies possible ceiling effect with regards to degree of message tailoring on RDM efficacy. |
| Glock et al. (2014) | *Poster campaign (mass media campaign over 5 years)*  Challenges positive and negative alcohol outcome expectancies | 81+83 (across 2 experiments) | *Exp. 1*  35/65  *Exp. 2*  31/69 | *Exp. 1*  22.49\*  *Exp. 2*  23.02\* | Germany | *Exp. 1*: Implicit and explicit alcohol expectancies  *Exp. 2*: Implicit and explicit alcohol attitudes  *Both*: drinking intentions | Both experiments revealed an effect of RDMs on implicit cognitions, but not on explicit cognitions. No significant effects of RDMs on drinking intentions. |
| Moss et al. (2015) | *Poster (taken from a mass media campaign, displayed in a simulated bar)*  Promotion of specific responsible drinking behaviours designed to avoid negative consequences of drinking | 50+35  +80+60  (across 4 experiments) | *Exp. 1*  0/100  *Exp. 2*  0/100  *Exp. 3*  37/63  *Exp. 4*  55/45 | *Exp. 1*  18-28  *Exp. 2*  18-26  *Exp. 3*  18-23  *Exp. 4*  18-25 | United Kingdom | 1. Volume of alcohol consumed in a taste preference task  2. Eyetracking data (Exp. 4 only) | Exposure to RDMs was associated with increased alcohol consumption. Eyetracking results showed low level of engagement with the core RDM contained within the posters, with greater focus on positive alcohol-related imagery. |
| De Graaf et al. (2015) | *Web-based intervention*  Framing of reasons for responsible drinking based on losses or gains | 90  (across 2 conditions) | 0/100 | 21.4\* | Germany | 1. Attitudes towards drinking  2. Intentions to drink  3. Actual drinking | Framing led to improved responsible drinking attitudes and intentions amongst different sub-groups or participants, no effects on actual drinking behaviour. |
| Churchill et al. (2016) | *Web-based intervention*  Framing of reasons for responsible drinking based on losses or gains, based on short or long term outcomes | 335  (across 4 conditions) | 20/80 | 18-56 | United Kingdom | 1. Drinking intentions  2. Drinking attitudes  3. Pre- and post-drinking | RDM based on loss led to lower drinking when short term consequences were emphasised, but only amongst participants with low self-reported autonomy. No effects found of RDM on attitudes or intentions |

\*The authors of these studies only provided a mean age for their participants

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Figure 1. PRISMA Flow Diagram showing results of search and screening process

Additional papers identified from reference lists

(n=0)

Included

Screening

Identification

Papers identified in electronic database searching

(n=468)

Papers excluded after full text review

(n=16)

Papers excluded after abstract screening

(n=387)

Papers after duplicates removed

(n=411)

Papers after abstract screening

(n=24)

Papers after full text review

(n=8)

Papers included in review

(n=8)