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REDUCING FRIDAY ALCOHOL CONSUMPTION AMONG MODERATE, WOMEN DRINKERS: EVALUATION OF A BRIEF EVIDENCE-BASED INTERVENTION

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Abstract — **Aims:** A randomized controlled trial was used to evaluate a brief research-based intervention designed to promote drinking within recommended limits on Fridays and Saturdays among moderate drinkers. **Methods:** The two-page, leaflet-like intervention included persuasive communication targeting motivational and volitional antecedents of behaviour as specified by an extended theory of planned behaviour (TPB) and implementation intention theory. Participants were randomly allocated to a control group (TPB questionnaire only) or to a group receiving the TPB questionnaire plus leaflet-like intervention. Cognitions and drinking behaviour were measured immediately before the intervention and at 8-weeks follow-up. The pre-intervention questionnaire was distributed to 573 participants of whom 347 (61%) responded at follow-up. **Results:** Significantly greater reduction in risky drinking on Fridays was observed among women (but not men) in the intervention group at 8-weeks follow-up. No other post-intervention differences were found. **Conclusions:** A low-cost, readily-produced, written intervention focusing on recommended daily limits reduced risky drinking amongst women on Fridays. Further work on similar interventions is warranted.

INTRODUCTION

Alcohol-related education has focused on weekly unit totals [Health Education Authority (HEA), 1995] but government guidelines have now highlighted the dangers of risky single-occasion drinking (RSSD). Safe limits have been set at ≤ 3 units of alcohol per day for women and ≤ 4 for men. Exceeding these limits is associated with damage to the heart, liver, brain, and immune system, as well as increased risk of unwanted pregnancies and involvement in accidents and crimes against persons (HEA, 1999). RSSD peaks at weekends (e.g. Pridemore, 2004) and, in the UK, alcohol consumption and alcohol-related harm is greatest on Saturdays evenings when ambulance calls peak (Greater London Alcohol and Drug Alliance, 2003).

Many researchers have recommended that promotion of safer drinking could be enhanced by targeting specific cognitive antecedents found to discriminate between moderate and risky drinkers (cf. Abraham *et al.*, 2006). Yet, attempts to promote sensible drinking have typically relied on social-skills training, and providing information and these have had limited success (Foxcroft *et al.*, 1997).

The theory of planned behaviour (TPB; Ajzen, 1991; 2001) is the most successful predictive model of health behaviour and has been used to predict drinking (Armitage *et al.*, 2002). The theory proposes that the best predictor of behaviour is the person's intention (e.g. 'I intend to drink within daily limits') which is determined by attitudes towards performing the behaviour (e.g. 'Drinking within daily limits would be good'), by perceptions of others' approval (e.g. People who are important to me think that I should drink within daily limits'), and by perceived control or self-efficacy (Bandura,

1997) (e.g. 'Drinking within daily limits would be easy/difficult for me'). However, despite impressive empirical support (Armitage and Conner, 2001) only a few studies have evaluated TPB-based interventions designed to change behaviour (Hardeman *et al.*, 2002).

The TPB presents intention as the most proximal determinant of behaviour but intention is not a sufficient prerequisite for action (Sheeran, 2002) and Gollwitzer (1999) has proposed that planning when and where to enact an intended action, referred to as forming 'implementation intentions', leads to automatic elicitation of planned actions in specified contexts. The utility of forming implementation intentions has been demonstrated across a range of health behaviours (Gollwitzer and Sheeran, 2006) and, given the ease with which this technique can be applied, it could be used to enhance the effectiveness of materials designed to promote reduction of RSSD amongst moderate drinkers (Murgraff *et al.*, 1996).

The present study used a randomized controlled trial to evaluate a low-cost, research-based, two-page, leaflet-like intervention designed to reduce alcohol consumption on Fridays and Saturdays among moderate drinkers engaging in RSSD (Murgraff *et al.*, 2006). It was hypothesized, that compared with control participants at post-intervention follow-up, moderate drinkers engaging in RSSD who receive the intervention will (i) report increased intentions and self-efficacy in relation to reduced alcohol consumption on Fridays and Saturdays, and (ii) report reduced alcohol on Fridays and Saturdays.

METHODS

Ethical approval was received from relevant committees at the two host institutions. A pilot study (involving 30 students) was used to modify or delete items eliciting non-responses or ceiling or floor effects. The final pre-intervention questionnaire (for the control group) and the same questionnaire plus the two-page intervention (for the intervention group) were

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distributed in random number sequences in university lecture theatres. Students were given ample time to complete the questionnaire and intervention exercises. They were asked to generate a personal code (including number of birth month) which was again requested at follow-up. This ensured anonymous data collection and allowed matching of pre- and post-intervention questionnaires. The follow-up questionnaire was administered in the same classes 8 weeks later.

Participants

Numbers in trial arms and attrition figures are provided in Fig. 1. During pre-intervention administration 481 self-reported non-drinkers were excluded from the study. None of the self-reported drinkers withdrew. This resulted in 619 pre-intervention respondents. Given our focus on moderate drinkers, respondents who reported consuming more than 59 units a week ($N = 46$, 19 women and 27 men) were removed. The remaining 573 respondents (399 women and 174 men with a mean age of 26 years) reported drinking an average of 4.04 (SD = 4.05) units on Fridays and 4.48

(SD = 3.89) on Saturdays over the previous month. Of these, 347 (61%) completed the post-intervention questionnaire (8 weeks later). Analyses were conducted on a longitudinal sample of 347 respondents (254 women and 93 men, mean age 26.49 years, SD = 7.73).

Measures

Both the pre- and post-intervention questionnaires began by defining a unit of alcohol and providing a table converting measures of alcoholic drinks into units of alcohol. One unit (i.e. 8 g of ethanol) was defined as: half a pint of ordinary strength lager/beer/cider, a single 25 ml pub measure of spirits, a small glass of wine or a pub measure of fortified wine.

Multi-item scales were employed to measure cognitions. All items used a Likert format in which statements were followed by a seven point response scale anchored by 'strongly agree' and 'strongly disagree'. Table 1 lists cognition measures, illustrative items, response options, number of items per scale, Cronbach's alpha alphas, scale means and standard deviations for the 347 follow-up respondents.

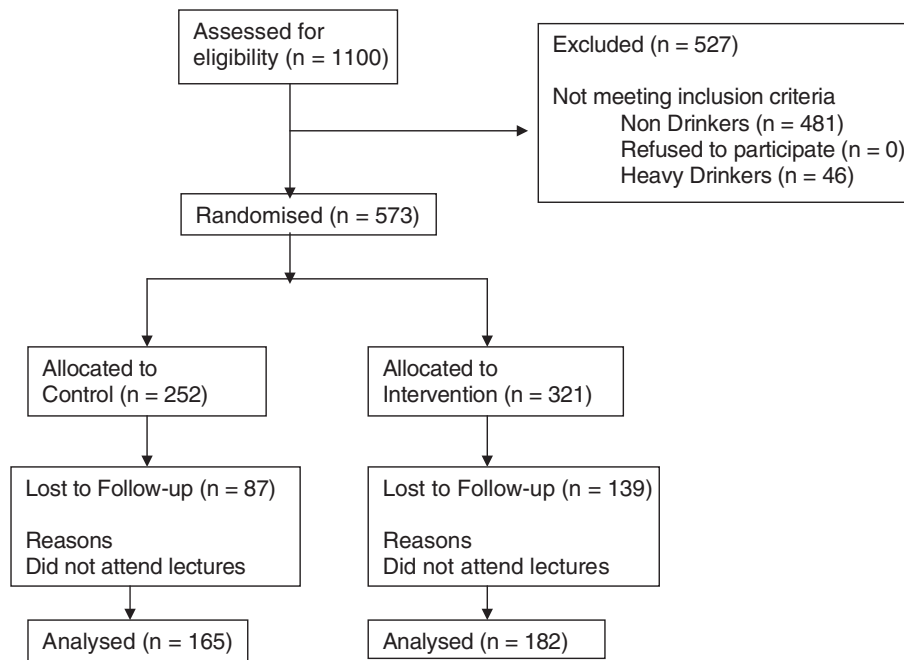


Fig. 1. Progress of participants through the trial.

Table 1. Illustrative items, number of items, alpha coefficients, means and standard deviations for intention and self-efficacy measures

Measure ($N = 347$)	Illustrative Item	No. of items	Alpha	Mean	SD
Intention	I intend to drink no more than 3 units of alcohol a day during the next 2 weeks	2	0.59	4.08	1.81
Self-efficacy	It is likely that I will reduce the amount of alcohol I drink in the next two weeks	3	0.60	5.59	1.37
Self-efficacy (action-specific)	For me during the next two weeks reducing my regular alcohol consumption when out with a group of friends for an evening would be quite difficult	3	0.68	5.10	1.49

At pre- and post- intervention, respondents were asked to record the average number of units consumed during the last month on Fridays and Saturdays, e.g. Please estimate the average number of units you consumed last month on an average Friday’.

The intervention

The intervention informed readers of recommended daily limits (because knowledge has been found to be poor, Murgraff *et al.*, 1999) and used persuasive arguments targeting cognitive predictors of action specified by the TPB. Participants were encouraged to prioritize drinking-reduction plans and to form implementation intentions. The intervention was printed on two sides of A4 and attached to the back of the pre-intervention questionnaire.

Beliefs about others’ approval were targeted by asserting that drinking in accordance to daily recommendations is accepted by peers, e.g. ‘A third of all students do not drink at all or drink within recommended limits.’ Advantages of drinking within daily limits were listed to engender positive attitudes, e.g. More money for other things; fewer headaches and hangovers; being able to get up in the morning feeling refreshed; lower blood pressure; lower risk of liver disease and road accidents’.

The text attempted to boost readers’ self-efficacy by suggesting that reduction is not difficult, e.g. It would be easy for you to reduce your daily alcohol intake. Just drink a little less every day and soon you’ll be enjoying drinking without the risk of harm’. In addition, six strategies for reducing alcohol consumption were provided: (i) stock up at home on soft drinks and alcohol free drinks; (ii) tell other people that you are cutting down so that they avoid putting pressure on you; (iii) keep a diary of how much you drink; (iv) do not let anyone pressure you into having another drink; (v) have clear reasons for refusing a drink such as ‘no thanks, I have had enough’, or ‘I have a lot on tomorrow’; and, (vi) when you are in a round choose alcohol free drinks.

Finally, in order to prompt formation of implementation intentions readers were told that it does not take much effort to reduce your consumption. . . make concrete plans to reduce your drinking.

If you want to reduce your drinking, when will you start to reduce your alcohol intake? . . .this week, next week’, in three week’s time, in 4 week’s time or, ‘in 5–8 week’s time’.

On what day will you start? (Sunday, Monday, Tuesday, . . .)

Where do you intend to start reducing drinking?’ at home, in the pub, in clubs, in bars, in restaurants, at parties, at a ‘friend’s house. etc.

RESULTS

Analyses

Responses were defined as engaging in RSSD if they reported drinking >3 units for women or 4 units for men, on average, for either Friday or Saturday nights. Of the 347 participants available at follow-up, 128 (37%, 52 controls and 76 in the intervention group) had been engaging in RSSD on Fridays during the month before the study and 165 (47.5%, 76 controls and 89 in the intervention group) on Saturdays during the same month. Given potential differences between Friday and Saturday night drinking, data were analysed separately for Fridays and Saturdays. Differences in post-intervention cognitions and reported alcohol consumption on Fridays and Saturdays were examined using univariate analysis of covariance (ANCOVA). For each analysis, trial arm provided the between subjects factor (i.e. intervention versus control) and the measure at pre-intervention acted as a covariate, controlling for any pre-intervention differences between groups.

Findings

Table 2 presents findings for the 128 respondents who reported RSSD on Fridays in the pre-intervention questionnaire. Comparing post-intervention measures for the intervention (*N* = 76) and control group (*N* = 52), while controlling for pre-intervention measures, no significant differences were found for post-intervention intentions or self-efficacy. However, the intervention group reported significantly higher self-efficacy in relation to specific actions that could promote alcohol reduction, than the control. For this effect Cohen’s *d* revealed a small effect size (*d* = 0.21). The intervention group also reported fewer average units consumed on Fridays (*d* = 2.05) than control participants (*d* = 2.44) representing a small to medium effect size (*d* = 0.44).

Identical analyses were conducted for the 165 participants who reported RSSD on Saturdays in the pre-intervention questionnaire (89 in the intervention and 76 in the control). No significant difference in average units consumed was found

Table 2. Follow-up means for intentions, self-efficacy and Friday alcohol consumption

Measure	Intervention group (<i>N</i> = 76)	Control group (<i>N</i> = 52)	Difference between means (95% CI)	Effect size <i>d</i>	<i>F</i> (ANCOVA)
Intentions at follow-up [Mean (SD)]	2.73 (1.36)	2.69 (1.39)	-0.53-0.45	0.02	0.01
95% CI	2.42-3.04	2.30-3.08			
Self-efficacy [Mean (SD)]	5.18 (1.53)	5.20 (1.25)	-0.48-0.52	0.01	0.03
95% CI	4.83-5.52	4.85-5.54			
Self-efficacy (action) [Mean (SD)]	4.75 (1.56)	4.42 (1.61)	-0.89-0.23	0.21	3.90*
95% CI	4.38-5.10	3.96-4.86			
Average units consumed on Fridays at follow-up [Mean (SD)]	2.05 (0.89)	2.44 (0.85)	0.07-0.70	0.44	3.99*
95% CI	1.84-2.26	2.20-2.67			

**P* < 0.05.

between the intervention (2.18, SD = 0.92) and control groups (2.26, SD = 0.94). Similarly no significant differences were observed in intentions (intervention mean = 2.88, control mean = 3.03) or self-efficacy (intervention mean = 2.56, control mean = 2.64). The only significant difference was observed for action-specific self-efficacy [intervention mean = 4.72 (SD = 1.55), control mean = 4.47 (SD = 1.65)] resulting in a mean difference of .25 (95% confidence intervals -24 to -74) and representing a small effect size ($d = 0.15$, $F = 4.39$, $P < 0.05$).

Post hoc analysis

The trial was not designed to test for moderating effects but given the larger number of women in the trial the above analyses were re-run for men and women separately.

Among those who reported RSSD on Fridays prior to the intervention, men in the intervention group were found to report higher post-intervention self-efficacy in relation to specific actions that could promote alcohol reduction ($M = 4.66$) than men in the control group ($M = 4.16$) [$F(1,35) = 6.32$, $P < 0.05$]. Women in the intervention group were found to report fewer RSSD sessions ($M = 1.91$) than those in the control group ($M = 2.43$) [$F(1,91) = 5.61$, $P = 0.02$]. No other significant differences were found.

No differences were found between the intervention and control groups, when men and women were examined separately, at post-intervention for those who reported engaging in RSSD on Saturdays.

DISCUSSION

Among moderate women drinkers who reported RSSD on Fridays in the month before the intervention, the intervention led to a statistically significant reduction in the average number of reported alcohol units consumed on Fridays in the second month following the intervention. On average, women in the intervention condition reported consuming approximately half a unit of alcohol less than those in the control each Friday. This is a small change from either a clinical or social perspective but it represents a medium effect size and is encouraging because the intervention was easy to produce and quick to administer. The failure of the intervention to produce even a trend towards reduced consumption of the (relatively few) male students studied may indicate that young women are more amenable to drinking-reduction advice, perhaps because they suffer greater problems as a result of alcohol consumption than young men (Wechsler *et al.*, 1995). Failure of the intervention to have an effect on reported alcohol consumption amongst those engaged in RSSD on Saturdays may reflect a more embedded and pervasive drinking culture on Saturday evenings which may require more intensive interventions than the leaflet-like intervention tested here.

The intervention was successful in promoting action-specific self-efficacy, that is, the belief that one can take actions that would lead to reduced alcohol consumption such as refusing offers of alcohol after drinking 4 units. However, this effect was only evident for men and only those selected because they had reported RSSD on Fridays. Overall the

research-based leaflet failed to change key alcohol-related cognitions as specified by the TPB. It may be that an improved leaflet or a more intensive intervention is required to change these cognitions that have been previously found to be related to alcohol consumption (Armitage *et al.*, 2002). The limited impact on cognitions found to predict alcohol consumption may also suggest that the intervention effect on women's alcohol consumption on Fridays was due to the implementation intention component, rather than the persuasive communication (see Milne *et al.*, 2002 and Murgraff *et al.*, 1996 for similar results) but further experimental work would be required to confirm such mediation.

A number of limitations of the present study should be acknowledged. High attrition resulted from our reliance on students' attendance at lectures and attrition meant that the study was underpowered to find the smaller effect on self-efficacy (Table 2), with only 31% chance of detection. Larger studies might be better able to detect small effects on alcohol-related cognitions. Follow-up was limited to 8 weeks so it is unclear how long observed effects would have been maintained beyond this time. Studies with longer follow-up would be informative. The study was also open to a number of response biases. First, our data is based on self-reports of drinking behaviour and while self-report data has sometimes been found to be a reliable method of data collection in alcohol studies (Wechsler and Isaac, 1992), it would be prudent to replicate these results with more objective drinking measures, for example, using blood tests. Students are an important target group in relation to alcohol consumption reduction but they have also been found to have higher levels of self-monitoring and greater compliance with recommended advice (Sears, 1986) which may reduce the generalizability of our findings to non-student samples.

These limitations notwithstanding, our results have implications for practice and research. The study demonstrated that a short research-based, persuasive intervention employing implementation intention formation can influence young women who are drinking over recommended limits. This suggests that such interventions should be tested in developing alcohol reduction materials (Abraham *et al.*, 2006). Future research could test whether this approach would work with teenage girls and older women. It would also be interesting to test more intensive interventions based on theory-derived persuasive communication and implementation intention formation with a view to discovering whether these might have an impact on men's drinking or drinking on Saturdays.

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