

Evidence That a Volitional Help Sheet Reduces Alcohol Consumption Among Smokers: A Pilot Randomized Controlled Trial

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Cigarette smokers have greater problems with alcohol than members of the general population, due partly to the influence of smoking on alcohol consumption. The present study was designed to test the ability of implementation intentions to reduce alcohol consumption among cigarette smokers. Sixty-five smokers (37 women, 28 men; age $M = 33.77$, $SD = 9.69$) were randomly allocated to an active control condition ($n = 31$) or were asked to form implementation intentions using a volitional help sheet ($n = 34$). The outcome measure was subsequent alcohol intake, measured 1-month postbaseline. There was a significant decrease in alcohol consumption in the intervention group but not in the control condition. At the end of the study, alcohol consumption had decreased significantly, by 2.00 standard units (i.e., 16 grams alcohol) per week in the intervention group, but had increased marginally (by 0.46 standard units per week) in the active control condition ($d = 0.63$). The findings support the efficacy of the volitional help sheet to reduce alcohol consumption among smokers. Further research is needed to refine the volitional help sheet and explore its efficacy among other at-risk groups.

Keywords: smokers; brief intervention; volitional help sheet; alcohol; implementation intention

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THE CRIME AND ANTISOCIAL BEHAVIOR arising from excess alcohol consumption¹ are estimated to cost the English economy £7.3 billion each year and the cost of alcohol-related harm to the National Health Service (NHS) in England is £2.7 billion (NHS Information Centre, 2011). Reducing alcohol consumption is therefore a priority in ameliorating the social, health, and economic costs of excess alcohol consumption. However, despite government-level responses in the form of laws restricting the availability of alcohol (e.g., pricing) and advice about moderate drinking, both alcohol-related mortality and morbidity remain high. Indeed, there is some evidence to suggest that the situation is worsening: Between 2002–03 and 2009–10, admissions to English hospitals for alcohol-related reasons increased from 510,800 to 1,057,000 (NHS Information Centre, 2011). This pattern of alcohol-related harm reverberates around the globe: Excessive alcohol consumption in the U.S. was estimated to cost \$223.5 billion in 2006 (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011).

There are multiple interacting biological, psychological, and social factors that may contribute to low success rates for alcohol reduction programs. One possible reason for the seeming lack of success in reducing alcohol consumption is that governments typically do not target resources at cigarette smokers, perhaps partly because cigarette smokers respond poorly to treatment for alcohol compared with nonsmokers (Hintz & Mann, 2007). However,

¹Note that the U.K. government considers “excess alcohol consumption” to be women regularly exceeding 2–3 units alcohol/day and men regularly exceeding 3–4 units alcohol/day. A unit is defined as 8 grams/10 ml of pure alcohol, which is equivalent to half a pint/300 ml of ordinary strength beer, a 125 ml glass of wine at 9% strength or one measure/25 ml of spirits.

cigarette smokers represent an important group at risk of excess alcohol consumption and associated morbidity and mortality. Cigarette smokers have higher levels of alcohol consumption than nonsmokers (Kahler et al., 2008) and, by some estimates, smokers drink more than double the amount of alcohol than do nonsmokers (Whatten, 1999). Moreover, concurrent tobacco and alcohol use increase the risks of cardiovascular disease and cancer at several sites, including cancers of the oral cavity and pharynx, larynx, and esophagus (e.g., Pelucchi, Gallus, Garavello, Bosetti, & La Vecchia, 2008). The present study was designed to test the ability of a brief psychological intervention to reduce alcohol consumption among smokers.

A growing body of research suggests that nicotine enhances reward-based learning in humans and animals (e.g., Barr, Fitzgerald, Farzan, George, & Daskalakis, 2008). For example, Kenny and Markou (2006) showed that self-administration of nicotine among rats increased the sensitivity of brain reward systems by lowering reward thresholds, thereby making rats more sensitive to environmental incentives and rewards up to 36 days after nicotine had been removed. Among humans, these environmental incentives and rewards are likely to include alcohol, and consistent with findings from animal models (e.g., Barr et al., 2008; Kenny & Markou), smokers have been shown to be more susceptible to drug-related reinforcement than nonsmokers (e.g., Clark, Lindgren, Brooks, Watson, & Little, 2001), which might go some way to explaining why smokers drink alcohol to excess and are more resistant to alcohol reduction interventions. For example, Yurasek, Murphy, Clawson, Dennhardt, and Mackillop (2013) found that, compared to heavy drinkers² who did not smoke, heavy drinking smokers were impervious to shifts in alcohol pricing, which lessened demand for alcohol among heavy drinking nonsmokers, but not among heavy drinking smokers. This lack of sensitivity to alcohol pricing among smokers is consistent with the view that ongoing smoking (as opposed to uptake) is automatic and governed by a hypersensitive dopamine system that makes smokers more sensitive to environmental incentives and rewards (e.g., Hogarth, 2011).

The basis for the present intervention harnesses the strategic automaticity of implementation intentions as a way of overcoming the automatic influence of smoking on alcohol consumption (e.g., Hogarth, 2011). Implementation intentions (Gollwitzer, 1999)

are “if-then” plans that work by making critical cues salient (“if”) and associated responses automatic (“then”). In the context of reducing alcohol consumption, the critical cues include “If I am tempted to drink when I am feeling depressed. . . .” Appropriate responses would be strategies such as consciousness raising and stimulus control (e.g., Arden & Armitage, 2012). It is clear that the way in which these plans are formed is critical: Armitage and Arden showed that simply asking people to form plans had no effect on alcohol consumption whereas forming implementation intentions successfully reduced alcohol intake. An emerging body of research attests to the ability of implementation intentions to bring about significant reductions in alcohol consumption in the general population (e.g., Arden & Armitage; Armitage & Arden), but to date no studies have used implementation intentions to help at-risk groups, such as smokers, moderate their alcohol intake.

The present approach consists of a single self-completion exercise without input from a health professional, which contrasts with the typical “brief” alcohol intervention that consists of four face-to-face sessions with a health professional (e.g., Moyer, Finey, Swearingen, & Vergun, 2002), and raises the possibility that the present approach may be cost-effective. Although alcohol reduction interventions briefer than four face-to-face sessions are currently available, they are still more intensive than the present implementation intention manipulation (e.g., Dimeff, Baer, Kivlahan, & Marlatt, 1999; Miller, Sovereign, & Krege, 1988; Miller, Zweben, DiClemente, & Rychtarik, 1999). Moreover, alcohol reduction interventions are currently untested in smokers per se, have either been designed for college students specifically (e.g., Dimeff et al., 1999) or have been designed to focus on facilitating and engaging intrinsic motivation (e.g., Miller et al., 1988, 1999). In contrast, implementation intentions are volitional tools that are designed to translate motivation into appropriate action (e.g., Gollwitzer, 1999).

The overarching goal of the proposed research is therefore to test the ability of a unique, noninvasive, low-cost tool that can be used to reduce alcohol consumption among smokers. Previous studies that have used the volitional help sheet to reduce alcohol consumption did not assess whether participants were smokers (Arden & Armitage, 2012; Armitage & Arden, 2012). However, it seems reasonable to assume that the samples recruited by Arden and Armitage (2012) and Armitage and Arden (2012) will have included (but did not assess) proportions of smokers, and so it is hypothesized that the intervention will significantly reduce alcohol consumption among smokers.

²In Yurasek et al.'s (2013) study, “heavy drinkers” were defined as students who reported engaging in at least one heavy drinking episode in the preceding month.

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