

# Can Nudging Principles Encourage Behaviours Associated with Obesity Prevention?

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# Abstract

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The prevalence of overweight and obesity has increased substantially, with more than two-thirds of adults in developed countries being overweight or obese. To reduce the incidence of overweight and obesity, consumers need to engage in obesity prevention behaviours, such as consuming a healthy diet and exercising regularly. However engagement, or lack of engagement, in these behaviours is often habitual and thus difficult to change. A limitation of most current health behaviour change approaches is an assumption that consumers are rational and think consciously about all of their decisions. In contrast, the social marketing discipline acknowledges the habitual nature of health behaviours, and incorporates various strategies from marketing and other disciplines that address the habitual nature of human behaviour, and can be useful for promoting positive health behaviour change. One of the proposed ‘tools’ of social marketing is nudging which alters the way that options are presented in the environment to influence habitual behaviour. Despite the fact that the original studies in psychology that underpin nudging were conducted as early as in 1970s, the term has only been coined recently (Thaler & Sunstein, 2008). A lot is still unknown about the efficacy of this approach in different contexts. This thesis comprises three studies that investigate the efficacy of nudging for influencing obesity prevention behaviours.

Firstly, a systematic literature review evaluated the evidence relating to the use of nudging interventions to influence food and beverage choices. The review included 13 articles comprising 26 original nudging studies. Reflecting the challenges of a new field of study, there were only three studies that provided high level evidence, with the majority of included studies using approaches that provided low level evidence, with average quality ratings. The most effective nudging interventions were ‘priming’ (rearranging environments to make healthier options for visible, accessible or available) and ‘salience’ (labelling interventions) nudges combined (all three studies were effective), followed by ‘priming’ nudges alone (seven out of 12 were effective), and then ‘salience’ nudges alone (five out of 11 were effective). The other nudging methods provided mixed results, but overall, there was evidence of a positive

influence of nudging strategies on healthier food and beverage choices in some commercial settings, although, various nudging techniques had mixed efficacy.

The nudges identified in the literature review only evaluated the acute effect of a nudge, and it is unclear if continued nudging can be effective in maintaining behaviour change. The second study in this thesis aimed to better understand how ‘salience’ nudges, specifically labelling, could influence behaviour over a longer period of time (12 weeks). A field experiment tested the efficacy of an attribute-framed ‘salience’ nudge indicating calorie information, for influencing milk consumption in a workplace. A nudging sign stating “Pick me, I am lower calorie” placed on low-fat milk increased the consumption of both low-fat and full-cream milk in the first two weeks of the intervention. Low-fat milk consumption increased by 1.76 litres and consumption of full-cream milk increased by 0.52 litres ( $P=0.03$ ) compared to baseline (previous 12 weeks). The results suggest that a ‘salience’ nudge achieved a behaviour change, but also had a “spill-over” effect on full-cream milk consumption. However, after the first two weeks the response became increasingly variable such that over the entire intervention period milk intake did not differ from baseline. The results indicate that nudging may influence low-fat milk consumption transiently, but should be used with caution (due to a possibility of a spill-over effect also increasing full-cream milk consumption). In addition, nudging may only have a transient effect on behaviour, with nudges becoming less effective after a short time.

The final study tested a nudging toolkit for assisting with weight maintenance. This study contributed to a number of under-researched areas, as identified in the systematic review and Study two. These areas were: testing the efficacy of nudges for influencing behaviour maintenance over a longer period of time, by 1) regularly introducing new nudges due to the transient efficacy of individual nudges identified in the second study; 2) using the combined effect of multiple ‘priming’ and ‘salience’ nudges; 3) using a randomised controlled trial to provide high level evidence; and 4) facilitating consumer self-administered nudging, a low-cost and sustainable approach to behaviour maintenance. The health literature suggests that long-term weight-loss is difficult (four out of five people put the weight back on). A purpose-designed program “Stick With It!” tested the feasibility and efficacy of a self-nudging toolkit to

assist with weight-loss maintenance for people who had recently lost weight in a weight-loss trial. The toolkit comprised various nudging items, primarily ‘salience’ and ‘priming’ nudges, that participants could self-administer in their home and other environments, to help them engage in weight maintenance behaviours. The program was deemed feasible, achieving good participation rates from both the control (71%) and intervention (90%) groups over six months, with generally positive participant feedback about the nudges used (6.1 out of 10). Yet, the results did not show efficacy of the program – both intervention and control participants regained weight (2.6kg and 2.1kg respectively,  $P < 0.001$ ), and there was no difference in weight regain between groups ( $P = 0.45$ ). Thus, the self-nudging toolkit was ineffective for assisting consumers with weight maintenance over a period of six months. Potential explanations for the lack of effectiveness were a lack of compliance with the program (item usage varied from 5 to 18 items), variability of participants and their response to the nudging toolkit, participant awareness of the purpose of the nudging items, the type of nudging items used, and the small sample size.

This thesis highlights the diversity of nudging approaches, and their flexibility in application to various behaviour changes. Further contribution comes in demonstrating mixed efficacy of nudges for influencing obesity prevention behaviours. ‘Priming’ and ‘salience’ nudges can influence behaviour change, however there was no evidence of efficacy for behaviour maintenance, suggesting nudging may have an acute effect on behaviour, with the effect wearing off after repeated exposure. Methodological contribution of this thesis lies in employing high quality evidence approaches, including a systematic literature review and a randomised controlled trial, methods previously under-utilised in the nudging literature. The conclusions and limitations of this thesis inform future research in relation to testing efficacy of nudging in environments where consumers are not responsible for implementing the nudges, and are not aware of the purpose of the nudge. Examples include in situations of acute choices and environments accessed by large groups of customers, such as supermarkets. These interventions could prove more effective for influencing healthfulness of choices at the population level.

**Keywords:** *nudging, obesity, behaviour change, social marketing, behavioural economics*