Pictorial warning labels against sugar

Foto: SVT

Göran Greider vill ha hjälp mot sitt sockersug

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Introduction

Sweden and much of the rest of the world has seen an increase in obesity and diabetes which can be linked to an increase in sugar consumption. Despite this link, sugar consumption remains high and calls from the World Health Organization (2015a) have been made to reduce sugar intake. Despite this evidence of worse health outcomes, sugar is still consumed in too large quantities (WHO 2019). Governments around the world, such as Mexico and Denmark, have tried to curb this problem by imposing taxes on sugar. A meta analysis by Cabrera Escobar et al. (2013) showed that sugar taxes have the desired effect on consumption. However, such taxes can be very administratively costly, and lead to other spillover effects such as job losses (BMJ 2012). A nudging approach targeted at the behaviors causing sugar consumption may, therefore, be better, or act as a complement to taxes.

When designing measures to reduce sugar consumption one may draw inspiration from the tobacco industry. Nudging with the target of reducing consumption of tobacco has been used since the 60's in various forms and with varying results. The lessons learned may be useful in implementing a nudge to reduce sugar consumption. The history of nudging tobacco consumption is easiest remembered through the warning labels on cigarette packages. The US was first to introduce the labels and had a warning saying "Caution: Cigarette Smoking May Be Hazardous to Your Health". Over the years, more countries introduced requirements that cigarette packages had to have some sort of warning. The warnings evolved into mentioning what specific sickness smoking contributed to, instead of being a general health warning. The well known pictorial warnings displaying gruesome images of some of the diseases caused by smoking were successively introduced. The pictorial warnings are associated with increased quit attempts, smoking cessation in the short term, and less prevalence of smoking (Popova 2016).

The history of warning labels for sugar-sweetened beverages (SSB) is much shorter than that of tobacco but has still managed to gain traction amongst policymakers in the western world.[1] The current debate around warning labels concerns their effectiveness in actually reducing consumption of SSBs as well as how the labels would be designed to induce the largest drop in consumption. Grummon et al (2019) find that octagon-shaped labels with descriptions of the health effects and beginning with the marker word "WARNING" are most effective in increasing fear and thinking about harms that are connected with SSB consumption in an online laboratory setting. Mantzari (2020) finds on the other hand no evidence that pictorial warnings or calorie information labels reduce selection and consumption when it involves an actual selection of drinks. They warn that

[1] We limit the focus of our nudge on sugar consumption to SSBs since others have previously focused on SSBs, and it is a good place to start in reducing overall sugar consumption.

pictorial warnings may not be as effective in a realistic setting where choices have to be made. Donnelly et al (2018) on the other hand found that introducing pictorial warnings reduced sales of SSBs in a hospital cafeteria. The study was however of limited duration and the label was not placed on the bottle itself but rather on the shelves.

This paper continues by first mapping the decision process of buying an SSB. It then proceeds by introducing our proposed nudge and how the nudge can be tested to have an effect. The paper concludes with a discussion.

Decision Mapping

The desired outcome of our nudge is to reduce purchases of SSBs from stores and the subsequent consumption of the beverage. Figure 1 presents a decision map, as we view it, of going to a store and performing the desired action of not buying an SSB. We limit our nudge to stores and not restaurants or other points of selling in order to make the implementation of our nudge more manageable. The consumer purchasing an SSB can be roughly divided into two types. The first type are those who set out to purchase an SSB when entering the store as part of or as the only item on a shopping list. The other type of consumers are those who went into the store, see the drink, and wish to make an impulse purchase. Common with both types is that they are not informed of the long term health consequences or that they are present biased[2], or adhere to the status quo bias[3]. Sugar is not as well known to be detrimental to one's health, as tobacco is, which may explain the uninformedness. The present bias is more attributable to those who are aware of the health consequences but are not able to resist the immediate benefit of drinking an SSB. A third cause as to why people purchase and consume SSBs is the status quo bias; certain events or days can be associated with the individual buying a drink, for example during Fridays or when going to see a movie.

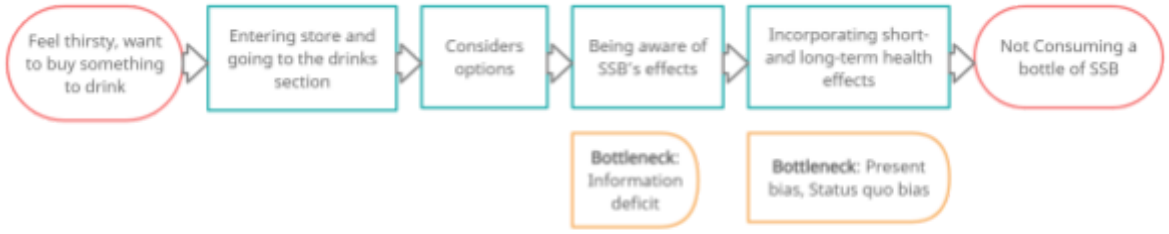

Figure 1. Decision map with identified bottlenecks.

[2] Present bias in this context is a preference for receiving benefits of an action immediately while cost of the action is delayed (O´Donoghue & Rabin, 1999).

[3] When considering options, the status quo alternative would be not to make a decision or maintain their current or former decision (Samuelson & Zeckhauser, 1988).

The nudge

Our nudge is the implementation of pictorial warnings accompanied by a text warning and informing of a specific health-related issue that has a strong causal link with excessive sugar consumption. The warnings would be part of a container's regular labels, similar to those of cigarette packages and would be designed in the following way. Similar to labels on cigarette packages, a gruesome picture of rotting teeth or other health consequences caused by excess sugar consumption would be placed inside an octagon shaped label with text, see Figure A.3. The text would contain the phrase "WARNING:" followed by a specific mention of a consequence caused by sugar consumption and which is relevant to the picture. The containers that would be marked are those in stores in Sweden. Our nudge works in dissuading SSB consumption by addressing the two previously mentioned biases and knowledge gaps. The nudge addresses the information deficit by informing the consumer about the consequences, similarly to how pictorial warning labels were associated with increased knowledge of the harm of smoking (Noar et al 2016). For those who are already aware, rebiasing, and adhering to their availability bias is done through the pictures which paint a grim and memorable reminder of the long term consequences.

By having pictures and an associated informative and specific warning text, the availability heuristic is catered to by making the information easily remembered and attainable when thinking about an SSB (Kahneman & Tversky, 1974). Previous research has found that pictorial warnings attract and keep attention longer than written warnings, though the ability to recall the negative health effects is not significantly different (Popova, 2016). Our nudge can therefore be seen as catering to the availability bias, more so than informing consumers. The pictorial warnings also debias the present bias by lowering the utility gained from purchasing and consuming the SSB. Having graphic pictures associated with what you drink or eat may reduce your appetite (Legget, 2015), lowering your immediate utility and causing some individuals to consume less SSB. With the help of addressing these biases, the status quo bias is in turn debiased by disturbing the engrained consumption habit.

The nudge has the upside of drawing from the experience from the tobacco industry which may assist the implementation of the nudge in the political, bureaucratic, economical and public support spheres. The nudge also has the advantage of being scalable and cost-effective to implement once the decision has been made. Being a pure nudge also means that price signals are not distorted and quantities are not restricted. The scale of our nudge can be enhanced by implementing a mandatory graphical picture for producers of SSB who sell within Sweden, not just in stores. The pictorial warning labels on cigarette packages was deemed cost-effective since the labels are changed frequently anyway, and there is no cost to the government and the taxpayers (WHO, 2015b). The same should apply for pictorial warning labels on SSBs.

Experiment

To evaluate the effectiveness of the nudge, we propose a between-subject lab experiment. Our proposed experiment is in many respects similar to the experiment performed by Mantzari et.al. (2020) but with some improvements. It is designed in such a way that free cans of SSB and carbonated water are placed in a waiting room for an experiment (f.e. Dictators game or Prisoners' dilemma). The experiment is not of immediate interest to the nudge but instead serves the purpose of placing the individuals into the waiting room where they would be exposed to the drinks choice. Participants would be called to join an experiment and those who accepted would be called and told to wait in the waiting room, ideally alone to remove a possible source of social conformity, for some time, say 15 minutes.[4]

When the participants are in the waiting room, free containers of carbonated water and SSBs would be available and free to take.[5] All taken containers would be replenished with new ones after each participant, and a score of how many cans that were taken would be kept which would constitute the extensive margin. If cans are not finished during the waiting or experiment, the remaining contents could also be measured to map out the intensive margin. Cans not left behind would be assumed to be fully consumed. A t-test would then be used to estimate any statistically significant differences between the groups. The different labels would be those of the containers from the regular control group, the treatment group of pictorial warnings associated with text, and a second treatment group where the labels only contain the text "See nutritional information".[6] The inclusion of a second treatment group enables us to separate the effect that **a** label has, versus the effect of **our** proposed label. If this effect is not controlled for, the novel sight addition of a label to a well-known brand of SSB may interfere with the effect of the warnings. Participants would be randomly selected into the three groups.

Mantzari et.al. (2020) had very dark pictorial warning labels placed on the side of the bottles, which lead to participants not noticing them. Our labels would therefore be designed in such a way that they are easily spotted and placed on the front of the cans. However, we

[4] This type of experiment is more like a psychology experiment since we do not plan to inform the participants that they are in a second "true" experiment, which raises moral questions. It is also possible to adapt the experiment to the economics approach and inform the participants. However, this is likely to increase conformity to social norms and risk decreasing the internal validity.

[5] In Mantzari et.al. (2020) they used still water as an alternative to the carbonated SSBs. We believe that carbonated water is likely a better substitute for someone who is considering buying a carbonated SSB. Additionally, carbonated water is closer to SSBs in price than still water is. This increases the external validity of the experiment since carbonated water and SSBs also have the same price here (free).

[6] See the Appendix for examples of labels.

still face the same problems with external validity that stems from the lab environment and the fact that participants would most likely be students.

Discussion

A potential problem with our proposed nudge is that if we manage to affect people's decision making into buying less SSBs, the producers will most likely react to this by replacing the added sugar with nonnutritive sweeteners to make people continue buying their products. This outcome might not be unambiguously positive since there is still not enough evidence on the long term health effects of large consumption of nonnutritive sweeteners. A recent meta study found no or positive effects (BMJ 2019), while a second one found some negative effects (Azad et al. 2017).

A second potential limit of our nudge is that people might get desensitized to the pictorial warnings after some time; similar to advertisements, warning labels wear out over time (Blair 2000). There might be an initial significant effect on the consumption of SSBs that decreases as time goes on and the new labels are normalised in people’s consciousness, becoming the new status quo. It is difficult to say anything about how strong such an effect could be, but if our nudge would be implemented we recommend conducting frequent follow up research and the use of several different rotating labels (Popova 2016).

A possible spill-over effect from our nudge is if people substitute their decreased sugar consumption of SSBs by increasing sugar intake from other condiments with high sugar contents such as confectionery. Since no experiment has measured any increase in other sugary condiments, the field experiment by Donnelly et al (2018) did not control for this either, implementing the nudge would require monitoring other high-sugar products to make reliable evaluation of the nudges impact on overall sugar consumption.

With our nudge we believe that sugar consumption can be reduced and lead to healthier individuals, much like the case for tobacco.

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Appendix

Examples of pictorial warning labels and implementations for cans:

Figure A.1

Figure A.2

Figure A.3

Figure A.4