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Nudging healthy food choices: a field experiment at the train station

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ABSTRACT

Background Recognizing the mindless nature of many food decisions, it has been suggested that attempts to increase healthy eating should not focus on convincing people what is 'right' but rather aim to adjust the environment such that people are automatically directed toward healthy choices. This study investigated a nudge aiming to promote healthy food choices in train station snack shops.

Methods The nudge involved a repositioning of food products: healthy foods were placed at the cash register desk, while keeping unhealthy products available elsewhere in the shop. Three snack shops were included: a control condition; a nudge condition repositioning healthy products and a nudge + disclosure condition employing the same nudge together with an explanatory sign. Next to examining its effectiveness during 1 week, the study assessed customers' acceptance of the nudge.

Results Controlling for a baseline week, more healthy (but not fewer unhealthy) products were sold in both nudge conditions, with no difference between the nudge and the nudge + disclosure condition. A majority of customers reported positive attitudes toward the nudge.

Conclusions: Repositioning healthy foods is a simple, effective and well-accepted nudge to increase healthy purchases. Moreover, disclosing its purpose does not impact on effectiveness.

Keywords food choices, healthy eating, nudging

Despite their good intentions, it has become apparent that many people do not succeed in adhering to a healthy diet. This is witnessed by a plethora of findings ironically showing that, on the one hand, people are highly concerned about their weights,[1] and on the other hand, people are getting heavier and heavier.[2] Without thinking, they continue to fall for the chocolate cake instead of the apple. Indeed, it is the 'without thinking' aspect that makes this behavior particularly difficult to change: (unhealthy) food choices are often made mindlessly.[3] This means that many food choices are not based on rational considerations but are rather driven by impulsive tendencies: for example, people tend to eat whatever is most salient.[3]

Recognizing the mindless nature of many food decisions, it has been suggested that attempts to increase healthy eating should not focus on convincing people what is 'right'—a strategy that would require conscious deliberation about food choices—but rather aim to adjust the environment in such a way that people are automatically directed toward healthy choices.[3] Particularly nudging is becoming increasingly popular in this regard.

Nudging as a strategy to influence behavior was first coined by Thaler and Sunstein.[4] They define a nudge as 'any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives'. Within the healthy eating domain, this means for instance that 'putting fruit at eye level counts as a nudge. Banning junk food does not'.[4] Nudges work by appealing to people's cognitive biases, gently steering decisions to the option that for example appears to be the 'default', is most salient or most straightforward.[5]

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Many examples can be found where nudges effectively changed behavior in various domains. For instance, prototypical examples include placing unhealthy foods further away,[6,7] or reducing plate sizes,[8] both leading to less unhealthy food consumption in terms of the amount eaten. Outside the lab, nudges have, for example, been found effective in the domains of saving,[9] pro-environmental behavior[10] and charity donations.[11]

Given these promising results, now seems to be the time to apply nudging healthy behaviors in real-life contexts as well. The current study investigates a simple nudge in a complex real-life situation in which people may be particularly likely to make quick and mindless food choices: a train station snack shop. Our first aim is to investigate the 'effectiveness' of a nudge involving a simple food repositioning manipulation where healthy foods are placed near the cash register. Marketing professionals have long known that the cash register is a place where people make impulse purchases—a tendency that is typically exploited by placing unhealthy junk foods (chocolate bars, crisps, cookies) at this 'hot spot'. Indeed, the train station snack shops in our study also had a display selling unhealthy snack foods near the cash register, while healthy products were found elsewhere in the store. The current manipulation aimed to reposition these products and place healthy foods (e.g. fruits, muesli bars) at the cash register desk (repositioning unhealthy choices to elsewhere in the store) to promote purchases of healthy products.

A second research aim examined whether disclosing this manipulation to customers would affect its effectiveness: would the nudge be effective only if people were unaware, unobtrusively luring them toward the promoted behavior, or would it still work when people were notified of its purpose. Third, we were interested in customers' 'acceptance' of the nudge. To this end, customer opinions about healthy eating in general and regarding the use of this nudge to improve healthy eating were assessed. Surprisingly, while the acceptability of nudges has been a rich point of debate among academics and policymakers,[5,12] the extent to which a nudge is accepted by its actual targets has hardly been subjected to research.

While the current study has obvious practical relevance, the latter two research aims are also particularly important with regard to the topical debate on nudging: despite its presumed effectiveness, the use of nudging strategies is also met with opponents who argue that steering people toward a certain behavior (particularly while they are unaware of being nudged) is ethically unacceptable.[5,12] The current study will study the effects of disclosure and the acceptance of this specific nudge in the health domain, thereby bringing empirical insights into the ethical debate.

Methods

Design and procedure

The study was conducted at a train station in The Netherlands. Three platform-based snack shops were selected for the study, all looking the same and selling the same products. The study lasted two weeks: the first week was used as a baseline week, assessing regular product sales. The second week was the test week, in which the product repositioning manipulation was employed: one snack shop was left unchanged (control condition), displaying unhealthy snacks at the cash register section as usual. In the second snack shop, the cash register display was filled with healthy snacks instead, including fruits, several types of muesli bars, cereal biscuits and crackers (A complete list of products can be obtained from the authors upon request) (nudge condition). In the third shop, the same product repositioning manipulation was installed and a sign was posted near the display saying 'we help you make healthier choices', thus disclosing the manipulation (nudge + disclosure condition). Importantly, all products were sold in all shops: we only relocated healthy and unhealthy products, but we did not add or remove anything from the product assortment. Thus, in the control condition, the healthy products were placed at regular places at a distance from the cash register, and in the nudge conditions unhealthy products that were normally at the cash register were now elsewhere in the shop. Hence, customers retained their freedom to make any choice in any of the snack shops—an important criterion for an intervention to qualify as a nudge. The main dependent variable was the number of healthy 'nudged' snacks sold during the test week: those snacks that were positioned next to the cash register display. In addition, the number of unhealthy products and the total number of products sold was assessed.

Customer opinions

Next to gathering product sales data, a subsample of 91 customers (52% male, mean age 39 [SD = 15.75; range 17–75]) was surveyed after exiting the shops employing the control condition ($n = 30$), the nudge condition ($n = 30$) and the nudge + disclosure condition ($n = 31$). First, we probed, in both nudge conditions, whether they noticed any changes in the kiosks. Customers were first asked to indicate whether they noticed anything different in the kiosks (Yes/No). If they did not, we disclosed that we repositioned the healthy food next to the cash register (in the nudge condition) and that we added a sign to indicate that we were helping them to make a healthy choice (in the nudge + disclosure condition). Next we asked whether this set-up had influenced their product choice (Yes/No). In the control condition, we

immediately told customers that in some kiosks, the healthy food was placed next to the cash register and that we added a sign to indicate that we were helping them to make a healthy choice.

To gain insight into customers' acceptance of nudges, we asked customers from all conditions whether our nudge would be helpful to make healthier choices (Yes/No), and how they felt about being influenced in their product choice (with response options 'annoyed', 'don't care' or 'good').

Finally, several control questions were asked. Importance of healthy eating ('How important is it for you to eat healthily') was assessed on a scale ranging from 1 (not at all) to 10 (very much). In addition, gender and year of birth were assessed, and customers were given the opportunity to leave a comment.

Results

Product sales

The main analysis examined the difference between the three snack shops in the number of 'nudged products' that were sold in the test week. As product sales may differ between the shops due to circumstances outside of our control (e.g. different types of people at different platforms), product sales in the baseline week were included as a covariate. The ANCOVA showed that the number of nudged products that were sold was significantly different between the shops; $F(2, 17) = 8.26$, $P = 0.003$, $p\eta^2 = 0.49$. More specifically, as expected, the 'nudged products' were sold significantly more often in the two shops where these products were repositioned next to the cash register (i.e. the nudge condition and the nudge + disclosure condition) compared with the control kiosk ($P = 0.00$ and 0.02, respectively). Whereas in the control shop on average 23 'nudged products' were sold each day, in the nudge condition this number was raised to 41. Sales numbers in the nudge + disclosure condition were a little lower, with an average of 35, but the difference with the nudge condition did not reach statistical significance ($P = 0.17$). In other words, in 1 week, 161 healthy food products were sold in the control condition, compared with the 287 in the nudge condition and the 245 in the nudge + awareness condition. Thus, the food repositioning nudge was effective in increasing the sales of the 'nudged products', and disclosing that the nudge did not make a difference (An additional, exploratory analysis including type of day (weekend versus weekday) as a factor did not yield a significant main effect of type of day ($P = 0.43$) nor an interaction effect between type of day and condition ($P = 0.48$), while the effect of condition remained significant ($P = 0.02$). This implies that the effectiveness of the nudge was not confined to weekends or weekdays only, when different types of travelers may have been at the shops (e.g. daily commuters versus others).

Further analyses were conducted to examine differences between shops in terms of sales of other products. No differences were found in the sales data of other (non-nudged) healthy products or unhealthy products (Ps > 0.19). In total, customers bought 335 food products in the control condition, 395 in the nudge condition and 396 products in the nudge + disclosure condition, on average each day. Together, these findings indicate that the increased purchase of healthy foods in both nudge conditions was not compensated for by decreasing purchase of other, healthy or unhealthy products.

Customer opinions

As for the customer opinions, 93% of them scored 7 or higher when reporting how important healthy eating was for them ($M = 7.9$, SD = 1.19).

When customers who exited the shops where either the nudge or the nudge + disclosure condition was employed were asked to report whether they noticed anything different, most responded negatively (75%), with only three customers correctly referring to the food positioning. After revealing that some changes were made in the shop to help customers make healthier food choices, about one-third of customers correctly identified the food repositioning manipulation. When asked whether the nudge influenced their product choice, nearly all customers responded that it did not (87%).

Regarding acceptance of the nudge, about which customers from all three shops ($n = 91$) were questioned, a large majority of 76 customers were positive about being helped to make healthier choices (i.e. feeling 'good' about it); 4 were negative ('annoyed') and 9 were indifferent ('don't care'; 2 missing values). This outcome did not differ between conditions, $\chi^2(4) = 4.37$, $P = 0.36$. Finally, slightly more than half of the customers felt that a food replacement and a sign indicating its purpose would indeed be helpful to make healthy food choices (55%). Customers in all three conditions were similarly positive about the nudge, $\chi^2(2) = 3.43$, $P = 0.18$.

Discussion

Main findings of this study

The current study aimed to investigate a nudge designed to promote healthy food choices in a complex real-life setting. Besides the effectiveness of the nudge, we focused on the effect of disclosing the nudge to its targets and on customers' acceptance of the nudge. Three important conclusions can be drawn from this study. First, re-arranging the position of foods strongly impacts customers' food choices. In line with

our predictions, placing healthy foods next to the cash register desk nearly doubled the sales of these foods (287 versus 161) after just 1 week. Despite its simplicity and cost effectiveness, this intervention can result to be a successful strategy to help people make healthier food choices.

A second conclusion is that the addition of a sign next to the cash register desk, saying that 'we help you make a healthy choice', did not have any additional benefit to the sales of healthy food products, nor did it decrease the nudge's effectiveness. Although it may then be argued that such a sign becomes unnecessary, it however conveys an important message: being transparent about nudging customers into buying healthy food products removes most ethical or moral concerns regarding our intervention.

A last conclusion that can be drawn from this study is that most people regard healthy eating as highly important, and that consequently, it is not surprising that the intervention was favorably accepted by most customers. Indeed, 85% of the customers welcomed interventions that could help them make healthier food choices. This would imply that, besides increasing sales, a company or government would thus only benefit in terms of image from interventions trying to help their customers or citizens reach their (health) goals.

What is already known on this topic

Accumulating research has shown the potency of nudging in establishing behavior change in various domains.[6–11] Nudging is potent, because it does not rely on effortful processes but rather exploits the mindless nature of people's decision-making by appealing to their cognitive biases. Eating in particular is one area in which people's decisions are largely guided by cognitive biases and simple cues in the environment. Accordingly, it has been suggested before that using environmental cues that steer people toward healthier options might be a fruitful road to stimulate healthy eating.[3,7]

What this study adds

The current study contributes to the literature in two important ways. First, it is among the first to study the effectiveness of a nudge targeting healthy food choices in a public setting. Public transport stations may be typical settings in which people make quick and mindless decisions. While these used to be generally regarded as 'dangerous circumstances' in the sense that people would be easily tempted to discard their health goals and indulge in unhealthy foods, the current study shows that rash decision-making can also be guided toward healthier options.

Second, this study contributes empirical data to the ethical debate on nudging by focusing on the role of transparency and by gaining insight into customers' views on being nudged. Our finding that it is possible to nudge people into buying more healthy food products while at the same time being transparent about the intervention is good news for nudges in general, as it could relieve concerns about the ethics of (covert) manipulation of behavior. Future research should examine whether similar findings can be achieved in other domains. In addition, knowing that customers were very accepting of the nudge could be considered as a relevant criterion for further implementation. More in general, we stress that it is important to include nudgees' viewpoints in discussions on nudging, rather than limiting the debate to policy-related or ethical concerns only.

Limitations of this study

One limitation that is important to note is that customers in the current study did not buy fewer unhealthy products. That is, they were more likely to buy one of the nudged products, but not instead of their usual purchase of unhealthy products. The current study design cannot tell us whether we managed to make people choose a healthy snack over an unhealthy one, whether we just motivated already healthy people to buy an additional healthy snack or whether people who chose an unhealthy treat were triggered to compensate with an additional healthy one. Future research would need to record and examine changes in individual purchases before and after food repositioning manipulations to gain further insight into this matter. Obviously, the healthy products were placed only at the cash register, promoting impulsive last-minute buying decisions while other product choices (e.g. selections of unhealthy products) had already been made earlier in the store. It would thus be recommended to employ further changes with regard to product placements in stores to optimize and promote the sales of healthy products. For example, healthy products could be placed not only at the cash register but also additionally at the entrance of the store. We would predict to find larger effects when multiple nudge techniques are employed.

Finally, recognizing that the high acceptance of the nudge employed in the current study cannot be generalized to other domains, it is essential to further investigate the acceptability of nudges, particularly in domains that people may find less important. Also, to gain more in-depth insight into people's acceptance of the food repositioning nudge, future studies including larger, representative samples employing both qualitative and quantitative assessments of customer opinions are recommended.

To conclude, the current study shows that a simple adjustment in the product placement within a store can increase the

sales of healthy products. This nudge was equally effective when its purpose was disclosed. Moreover, customers appear quite accepting of being helped to make healthier choices. Altogether, the use of nudging thus seems a promising approach to promote healthy choices (also) in public settings.

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