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Review

Viewpoint: Effectiveness or consumer acceptance? Tradeoffs in selecting healthy eating nudges

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ABSTRACT

Governments and companies that want to promote healthier eating must consider both the effectiveness and the acceptance of the 'nudges' given to consumers. Our review of the literature uncovers a wide range of nudges towards healthy eating, from nutrition labeling to portion size reductions, which are found to vary greatly in effectiveness and levels of public acceptance (64% of women; 52% of men). Acceptance of a nudge is inversely related to its effectiveness: only 43% of respondents approved the most effective intervention – portion and package size reductions. Approval levels increased with the *perceived* effectiveness of the nudge and with the perception that the nudge is good for both health and business (as opposed to only one of the two), especially among respondents who identify as conservatives. To encourage acceptance of the most effective nudge strategies, governments and companies should therefore correct misconceptions about which nudges work best, and should underscore the win-win potential for health and business.

1. Introduction

A growing number of governments as well as private organizations, such as food producers and retailers, are considering implementing nudges promoting healthier eating. A nudge can be defined as "any aspect of the choice architecture that alters people's behavior in a predictable way (1) without forbidding any options, or (2) significantly changing their economic incentives. Putting fruit at eye level counts as a nudge; banning junk food does not" (Thaler and Sunstein, 2008). Healthy eating nudges reject both libertarian *laissez-faire* attitudes (e.g., "*caveat emptor*") and paternalistic interventions such as food prohibition (Capacci et al., 2012).

We draw attention to two important issues regarding healthy eating nudges. First, that using "nudge" as a generic term may be misleading as it covers a wide variety of interventions, including various labeling schemes, changes to the visibility of different food options, convenience of selection or consumption, and reductions in the size of food portions, packaging or containers. Second, that there are major differences between these nudges, both in terms of their effectiveness and their acceptance by citizens and consumers alike. In our view, it is time that policy makers and managers move beyond discussing the value of healthy eating nudges in general to consider both the expected effectiveness and public acceptance of specific types of nudges.

To achieve these goals, we first review the large literature on the effectiveness of nudges to promote healthier eating and on the public acceptance of nudges in general. We then present the results of a survey of consumers' perceptions of seven types of healthy eating nudges, which we use to examine the drivers of nudge approval. Our analyses highlight the existence of a tradeoff between consumer acceptance and nudge effectiveness, but also provide new insights for policy makers and managers intending on promoting healthier eating, as well as for research on food nudges.

2. The diversity of healthy eating nudges

2.1. Categorizing healthy eating nudges

Researchers have tested dozens of different interventions aiming to promote healthy eating (Bauer and Reisch, 2019). These can be classified in many ways, based on the intervention instrument (e.g., changes to the product itself or to its environment, see for example Dolan et al., 2012; Hollands et al., 2017; Hollands et al., 2013; Kraak et al., 2017) or hypothesized mechanisms of action (e.g., attention or social norms, see for example BIT, 2014; Chance et al., 2014; Ly et al.,

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Table 1
Seven types of healthy eating nudges.

Nudge type	Logo	Definition and example
Cognitive nudges		
Descriptive nutritional labeling		• The government requires calorie and nutrition labels in supermarkets, cafeterias, and chain restaurants (such as McDonald's, Pizza Hut). • For example, the shelf label or the menu board provide information about calorie, fat, sugar and salt content.
Evaluative nutritional labeling		• The government requires labels in supermarkets, cafeterias, and chain restaurants (such as McDonald's, Pizza Hut) providing color-coded nutrition information that easily identifies healthier foods. • For example, the shelf label or the menu board provide information about calorie and fat content and a green sticker if the food is healthy or a red sticker if the food is unhealthy.
Visibility enhancements		• The government requires supermarkets, cafeterias, and chain restaurants (such as McDonald's, Pizza Hut) to make healthy food more visible and unhealthy food less visible. • For example, supermarkets place healthy food rather than unhealthy food near cash registers and cafeteria or restaurant make healthy food visible and easy to find on their menu and unhealthy food harder to find on their menu.
Affective nudges		
Healthy eating calls		• The government requires staff in supermarkets, cafeterias, and chain restaurants (such as McDonald's, Pizza Hut) to prod consumers to eat more healthily. • For example, supermarket or cafeteria cashiers or restaurant waiters ask customers if they would like to have fruits or vegetables.
Hedonic enhancements		• The government requires supermarkets, cafeterias, and chain restaurants (such as McDonald's, Pizza Hut) to make healthy food more appealing and unhealthy food less appealing. • For example, healthy foods are displayed more attractively in cafeteria counters or are described in a more appealing and appetizing way on menus.
Behavioral nudges		
Convenience enhancements		• The government requires cafeterias and chain restaurants (such as McDonald's, Pizza Hut) to include healthy food as default in their menu and supermarkets to make unhealthy food physically harder to reach on the shelves. • For example, vegetables are included by default in combo meals or in fixed menus in cafeterias and chain restaurants, but customers can ask for a replacement.
Size enhancements		• The government requires supermarkets, cafeterias and chain restaurants (such as McDonald's, Pizza Hut) to reduce the size of the packages or portions of unhealthy food that they sell and to increase the size of the packages or portions of healthy foods that they sell. • For example, cafeterias and restaurants serve smaller portions of fries and larger portions of vegetables or supermarkets sell smaller candy bars and larger strawberry trays.

2013; Wansink, 2015). Over the years, these classifications have tended to make finer and finer distinctions, which are not necessarily grounded in theory.

In a previous article (Cadario and Chandon, 2019), we offered a classification of healthy eating nudges based on the classic tripartite classification of mental activities: cognition, affect, behavior. We thus distinguished between interventions that seek to influence what people know (cognitive nudges), how they feel (affective nudges), or what they do (behavior nudges). We further distinguished between two or three subtypes for each category, leading to seven types of nudges. Cognitive nudges include "descriptive nutritional labeling," "evaluative nutritional labeling," and "visibility enhancements. Affective nudges consist of "healthy eating calls" and "hedonic enhancements". Behavioral nudges include "convenience enhancements" and "size enhancements." Table 1 provides a definition and examples for each of the seven types.

Our meta-analysis of 299 effect sizes from 90 articles found a standardized mean difference (Cohen's d) of 0.23 (equivalent to −124 kcal/day), indicating that healthy-eating nudges are moderately effective at improving food choices (Cadario and Chandon, 2019). It also revealed wide variations in the effectiveness of these nudges, which tended to increase as the focus of the nudges shifted from cognition ($d = 0.12$, −64 kcal) to affect ($d = 0.24$, −129 kcal) to behavior ($d = 0.39$, −209 kcal).

2.2. Existing evidence on the acceptability of nudges

Selecting the best nudge is not a matter of simply choosing the most effective. Decision makers must also take into account whether the intervention will be accepted by the target population (Sugden, 2018; Sunstein et al., 2017). Although nudges are generally well received (Reisch and Sunstein, 2016; Reisch et al., 2017), acceptance varies with the type of nudge, the beneficiary (public or private), and the political orientation of the respondents.

In the domain of food policy, little is known about public support for different types of healthy eating nudges (such as whether nudges that win public approval are those that are most effective) or what drives public acceptance of different types of nudge. In general, informative "system 2" nudges which require a deliberate action on the part of people, are better accepted than "system 1" nudges which influence people automatically without being necessarily aware of their impact (Felsen et al., 2013; Jung and Mellers, 2016). Similarly, a systematic review of the public acceptability of government interventions to change health concluded that "public acceptability of government interventions to change behavior is greatest for the least intrusive interventions, which are often the least effective" (Diepeveen et al., 2013). This suggests that nutritional labeling should get more support than changes to the size of plates and portions. However, it does not allow us to make predictions about other nudges such as visibility or convenience enhancements, whose intrusiveness is more difficult to assess.

Research has also found that support for nudges increases when they are aimed at influencing individuals, rather than society as a whole (Cornwell and Krantz, 2014; Hagman et al., 2015), when they are targeted at children (Evans et al., 2005) rather than at the self (Oliver and Lee, 2005), and when they are aligned with people's political orientation (Sunstein et al., 2017; Tannenbaum et al., 2017). For example, Tannenbaum et al. (2017) demonstrate a "partisan nudge bias" – i.e.,