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# Nudging for healthier choices with menu design: An experimental investigation of explicit and implicit status quo bias.

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## Abstract

The increasing rates of obesity in the US and in other developed countries is reaching epidemic proportions. Concerns over the health consequence to individuals as well as the economic loss to society due to medical cost has prompted public agencies, including government, cities and school districts, to implement regulation that seek to prevent and reduce the spread of obesity. Initially policies aimed at providing consumers with better information related to food choices and caloric content. However, it has been shown that information based policies fail to have the desired impact on people's behaviour. (Just and Gabrielyan 2016; Liu et al. 2014).

Insights from behavioural economics have been successfully used to engineer choice environments that nudge individuals to make healthier decisions (Just and Gabrielyan 2016; Thaler and Sustein 2008). Numerous studies have successfully showed that modifying the layout of school cafeterias can impact student's food choices. Extending these results to the restaurant setting is lacking, despite the evidence suggesting a positive association with out-of-home eating and increased bodyweight (Bezerra et al. 2012; Lachat et al. 2012). Nudging consumer choices in restaurant settings may be feasible through menu design. Currently, most of the literature relating to menu design and healthy choices focus on identifying the most impactful approaches to communicate caloric information (Morley et al. 2013, Cioffi et al. 2015).

Behavioural economics suggest that status quo bias may provide another means to design menus that nudge customers towards healthier choices. Status quo bias results from people's tendency to choose the default decision; the suggested decision; or to maintain the previous decision taken (Samuelson and Zeckhauser 1998). Preference for defaults has been observed in diverse decision making contexts, including medical choices, economic choices (Samuelson and Zeckhauser 1998) and choice for ecological services (Vetter and Kutzner 2016). The often-cited examples is from Johnson and Goldstein (2003) who find experimentally that the number of people who consent to organ donation is almost twice as high when the default is to opt-in to organ donation as opposed to opt-out. Furthermore, defaults in restaurants are common. Meals are prepared according to chef specification and procedures unless stated

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otherwise (Thaler and al. 2012). Side dishes to a meal are often set to a default (i.e. fries or specific vegetables) while other options are available when specified. Some defaults may be implicit in the sense that they are the social standard. For example sandwiches are by default made with white bread, cappuccino's prepared with cow's milk and coffee served in the caffeinated version. However, many restaurants also offer alternatives to these social standards if specified at the time of ordering (i.e. whole wheat bread, soya milk and decaf).

This paper presents the results of an experimental study that took place at the Paul Bocuse Institute's experimental restaurant in Ecully, France. The subjects were not selected, but are naturally occurring clients that chose to reserve for lunch and pay 25 for a three course meal (appetizer, main course, dessert). The focus of this experiment was to observe subject's choice for a dessert prepared in two versions that varied the levels of fat and sugar content. Treatments were devised to test status quo bias with explicit and implicit defaults. The implicit defaults refer to what is considered 'the social norm' such that the default is the 'regular' choice. The 'alternative' choice deviates from the regular one according to fat and sugar level. All subjects made the choice between the same two desserts, but the alternative switched from being 'reduced in fat in sugar' in the LIGHT treatment to 'enriched in fat and sugar' in the RICH treatment. The explicit default is controlled by changing the 'automatic choice' that is made when the subject does not make an effort to specify the other option. These treatments are use included at the explicit level; the neutral (NEUT) treatment did not include an automatic choice and asked consumers to choose between the regular choice and the alternative. This is the control group since it forces a choice on consumers and avoids status quo bias. The regular (REG) treatment makes the 'regular dessert' choice the 'automatic' choice; consumers must check a box at the bottom of the order sheet to specify that they prefer the alternative option. The alternative (ALT) treatment presents the alternative dessert as the 'automatic' choice, consumers must check a box at the bottom of the order sheet to specify that they prefer the regular dessert. In total this produces six treatments; the three treatments, NEUT, REG and ALT, each with the alternative set to either the LIGHT or RICH treatment. To avoid ambiguity, we illustrate the content for two treatments. The REG-LIGHT treatment offers the regular dessert as the automatic choice, a box at bottom of the sheet can be marked for the alternative dessert described as lighter in this treatment. The ALT-LIGHT treatment sets the automatic choice to the alternative lighter version of the dessert; a box at bottom of the sheet can be marked for the regular dessert.

The results confirm status quo bias for both implicit and explicit defaults. First, the proportion of consumers choosing the regular choice in the control group (NEUT) is not statistically different ( $p\text{-value} > 0.1$ ) between the two opposing alternatives (LIGHT vs. RICH), with individuals choosing the regular version with a frequency of 62% and 75% in the LIGHT and RICH treatments respectively. In other words, subjects prefer the regular option even if it is compared to an alternative with opposing qualities, confirming implicit status quo bias. Second, to analyse the explicit status quo we examine separately the LIGHT and RICH treatment to avoid confounding effects. In the LIGHT treatments we find that the alternative choice is chosen with a frequency of 79% when it is set as the automatic choice (ALT-LIGHT) compared to 38% in the control group (NEUT-LIGHT), this is statistically significant ( $p\text{-value} < 0.001$ ). Similarly, in the RICH treatment, the alternative is chosen 67% when it is the automatic choice (ALT-RICH) of the time compared to 25% in the control group (NEUT-RICH) and is statistically significant ( $p\text{-value} < 0.001$ ). In other words, people systematically stick with the automatic choice without regards to its attribute. Furthermore, examining the results from a healthy choice perspective reveals that when implicit and explicit defaults are combined to favor healthy choices (the REG-RICH treatment) the number of consumers choosing healthy are at its highest level (86%) among all treatments. These results provide consistent evidence across multiple treatments that status quo bias strongly influences individual choices.

Concerns have been raised that nudging individual's choices may not be durable if it decreases satisfaction of outcomes. However, using a follow up survey we find that the nudging caused by the different treatments in this study did not adversely affect the satisfaction of

dessert choices. In the final section of the paper we discuss the implication of our results, ethical consideration of nudging and difficulties that may arise in implementing menu design changes in restaurant settings.

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