Carrots By Default: Are Healthy Defaults a Blessing or a Curse?

Helen Colby, UCLA, USA
Meng Li, University of Colorado,USA
Gretchen Chapman, Rutgers University, USA

EXTENDED ABSTRACT

Dietary behaviors are linked to heart disease and cancer, leading causes of death in the US (Mokdad et al. 2004), yet few methods have shown consistent effects on what people choose to eat. Recent research in psychology and behavioral economics has identified the default effect as a powerful, low cost method to "nudge" people towards optimal behavior in a variety of domains including retirement savings (Choi et al. 2003), consumer purchases (Brown and Krishnam 2004), buying green electricity (Pichert and Katsikopoulos 2008), vaccination (Chapman et al. 2010), and end of life decisions (Kressel and Chapman 2007). But no research has examined the default effect in dietary behavior. In this paper, we test how implementing healthy defaults in dietary settings can affect what people eat. In addition, we investigate the effect of healthy default on sales, and examine the mechanism of this effect.

A default option is "the choice alternative a consumer receives if he/she does not explicitly specify otherwise" (Brown and Krishna 2004), and the default effect refers to the tendency for people to stick to the default option instead of selecting an alternative option.

Hypothesis 1: *When a healthy alternative is set up as the default option in dietary settings (compared to when an unhealthy alternative is set up as the default), consumers will be more likely to choose the healthy option.*

It is possible that while healthy defaults can nudge people towards healthy choices, they could also drive away potential consumers from making a food purchase. Park et al. (2000) found that when consumers with low commitment to buying a car were presented with a default car model that was expensive and loaded with many fancy features they were less likely to buy a car. This finding suggests that consumers may be driven away from making a purchase if the default option presents barriers to buying. In the above car purchase study, the barrier is high price. In dietary behavior, the default food option may also present barriers to purchase if consumers perceive the default as too unappealing—for instance, when the default is a healthy, but unappetizing option.

Hypothesis 2: *When a healthy alternative (compared to an unhealthy alternative) is set up as the default option in dietary settings, consumers will be less likely to make a purchase.*

Why would healthy defaults drive away customers, who could easily opt out of the default if they do not like it? One reason could be that a healthy default deprives the customer if she accepts the healthy default of feeling virtuous (as she did not actively choose it) and makes the customer feel particularly guilty if he selects the indulgent option (as he went out of his way get it). These feelings about virtue could drive people away from making purchases when the default option is a healthy but unappetizing alternative.

Hypothesis 3: *Customers who stick with a healthy default will be judged (by self and others) as less virtuous than those who opt out of an unhealthy default. Similarly, consumers who opt out of a healthy default will be judged (by self and others) as less virtuous than those who stick with an unhealthy default.*

Hypothesis 4: *The impact of healthy defaults on perceived virtue results in healthy defaults driving away sales.*

The current research includes six studies that examined the influence of defaults on consumer dietary choices.

Study 1a

Most cafés have a default milk type (the milk used if the customer does not request otherwise). For example, at Starbucks®, the default milk type is 2% milk. In this study, we observed consumers' choice of milk in espresso coffee drinks at two coffee shops, which had different defaults for the type of milk used in such drinks.

Methods

A researcher surreptitiously observed the milk type used in the espresso drinks that customers ordered at two coffee shops. In coffee shop #1 (Starbucks®), the default milk is 2% milk, and in coffee shop # 2 (PJ's coffee®), the default milk is whole milk. In both coffee shops, the barista used the default milk type for all hot Cappuccino and Latte drinks unless the customer requested another milk type. The observations occurred during a single 2.5-3.5 hour period at each coffee shop to avoid recording repeat customers.

Results and Discussion

At Starbucks®, where 2% milk was the default milk used in hot espresso drinks, 53% of such drink orders used 2% milk, and no one ordered whole milk; conversely, at PJ's coffee®, where whole milk was the default milk, 55% of the drink orders used whole milk and only one order (3%) used 2% milk. At Starbucks®, orders with other milk types included 17% with skim milk, 27% with soy, and one order (3%) with 1% milk; at PJ's coffee® orders with other milk types included 39% with skim milk, one order (3%) with soy milk, one order (3%) with 2% milk, and none with 1% milk. The difference in choice of different milk types between the two coffee shops was significant (Fisher's test = 44.07, $p < .001$).

The drinks observed at Starbucks® had marginally lower fat calories than drinks at PJ's coffee® ($M_{Starbucks} = 43.75$ vs. $M_{PJ's} = 63.55$, $t(59) = 1.88$, $p = .07$). However, the fat calorie count in Starbucks® was inflated because most consumers who opted out of the default in Starbucks® chose soy milk, while opt-outs at PJ's coffee® chose mainly skim milk (soy milk has higher fat content than skim milk). If calories from the healthy, plant-based fat in soymilk is excluded, this difference in fat calories is be more extreme.

This study provides evidence in support of Hypothesis 1, that is, a healthier default option leads to healthier milk choices among coffee drinkers. However, the observational nature of the study entails that participants are not randomly assigned to conditions, and therefore, self-selection may have caused people who are more concerned with dietary health to purchase coffee at a coffee shop that offers healthy options as the default. To address this issue, we conducted Study 1b.

Study 1b

In this field study, a team of researchers set up a coffee stand on a university campus during a campus-wide event, offering a free cup of Cappuccino in exchange for filling out a survey. During the study, the default type of milk used in the Cappuccinos was experimentally manipulated to further test Hypothesis 1.

Methods

Three hundred and eighty-four students and visitors participated in the study. Participants ordered a drink from one of two research assistants statitioned at either end of a long table. Default milk type was whole or skim milk, although participants could request skim, 1%, 2%, whole, or soy milk.

Results and Discussion

An overwhelming majority of participants in the whole milk default condition had a Cappuccino with whole milk (182 out of 183). Similarly, a vast majority of participants in the skim milk default condition had a Cappuccino with skim milk (196 out of 201). We categorized milk type into whole, skim milk, and other to test the effect on milk type of default condition, and results confirmed it was highly significant (Fisher's exact test = 513.54, $p < .001$).

This study demonstrated a drastic default effect, replicating findings from study 1a in a field experiment. The default effect was much larger in study 1b than in study 1a, which could be attributed to several factors. Most notably, the Cappuccino drink was free in study 1b but not in study 1a, and people may have felt more reluctant to request a non-default option in study 1b because they did not want to appear picky and unappreciative of what they had been offered for free. Study 2 returns to a store setting.

Study 2

In this field study we manipulated the default condition for an item that was available for purchase in a real store setting, with highly visible signage indicating the presence of an alternative option. In this way, we hoped replicate the effect of the default effect in a setting where participants are real customers spending their own money, and to explore how customers react to a less appealing default (Hypothesis 2).

Methods

This study was conducted in the student store of a large university. The store sells school-branded apparel, gifts, and office supplies, including university coffee mugs. During the study, mugs came with a free snack packed inside. For this study, we manipulated the default gift received with the purchase of a mug. Each mug available for sale was filled with a snack in a clear cellophane baggie. The two options were M&M'S®, an unhealthy snack (258 calories and 11 grams of fat per ¼ cup of snack) and a healthier fruit and nut mix (140 calories and 6 grams of fat per ¼ cup of snack).

The default snack packed in the mugs was alternated on a weekly basis for four weeks. A small placard was placed next to the mugs in each of the two places in the store where the mugs were displayed, indicating the other snack was also available.

Results and Discussion

During the two weeks in which M&M'S® were the default snack, 14 mugs were sold, all of which were sold with M&M'S® (100%). During the two weeks in which the fruit and nut mix was the default snack, 25 mugs were sold, only 8 mugs were sold with M&M'S® (32%) (Fisher's exact test $p < .001$), demonstrating a default effect.

To examine whether the healthy default snack inside the coffee mug discouraged consumers from purchasing the mug (despite their freedom to switch to the more appealing yet less healthy M&M'S® as the free snack), we analyzed mug sales adjusting for overall sales in the store. The analysis revealed significant effects of default condition on mugs sold per $10 of revenue ($F(2,59) = 6.58$, $p < .01$, $\eta^2 = .18$). Mug sales with M&M'S® as the default gift were significantly higher than mug sales with fruit and nut mix as the default gift ($t(23) = 2.33$, $p = .03$).

This study demonstrates that default options can have a significant impact on behavior even in real retail settings in which customers are spending their own money to make real purchases. Although both the fruit and nut mix and the M&M'S® were available to customers who purchased a coffee mug, customers tended to take the default snack that was pre-packed in the mug. Additionally, the healthy default gift did reduce mug sales compared to the unhealthy default gift. Thus, costumers did have a negative reaction to the healthy default compared to the unhealthy default, by selecting away from the item.

Study 3

This study used hypothetical scenarios to test Hypothesis 2, and specifically, to investigate the impact of healthy default options on consumers' choices of restaurants.

Methods

Individuals recruited from Amazon Mechanical Turk ($N = 352$) completed an online survey in exchange for a small payment. Each participant saw six restaurant scenarios in sequence. They were told to imagine they were trying out three types of new restaurants for lunch: Sandwich shops, pizza shops, and burger shops, and would visit two of each kind of restaurant and then be asked to select which one they would prefer to return to if they were going to eat that type of food again.

For each of the three types of restaurant, two alternative restaurants were presented to each participant, one with a healthy default and another with an unhealthy default. First, participants were shown a picture of a restaurant and the menu, with the default option listed on the menu, along with the information that the alternative could be requested. Participants were then asked to select an entrée and drink. There was a special request text box where participants could make requests, including the non-default option. After choosing their order, participants were shown a picture of their food, and then moved on to order lunch at the other restaurant within the same type, which had a different default. After ordering lunch at both restaurants of the same type they were asked to choose which one they would be more likely to return to.

Each restaurant type had a specific default food option manipulated: turkey or beef burger patties, whole or skim milk cheese on pizza, french fries or carrots as a side.

Results and Discussion

Each participant placed six lunch orders, one in each restaurant. These lunch orders show a strong default effect. We used choice of the healthier or less healthy alternative as the dichotomous dependent variable in a within-subjects logistic regression. The analysis indicated a strong default effect— a main effect of default condition on choice ($\chi^2(1) = 324.44$, lnOR = 0.84, $p < .001$).

We next examined whether default condition affected the choice of whether to return to the restaurant. We coded whether participants chose to return to the restaurant with the healthy default (coded as 1) or the one with the unhealthy default (coded as 0) in each of the three restaurant types and averaged across restaurant types to compute the percentage of times each participant returned to the restaurant with the healthy default. The mean score was 46%, which was reliably

less than 50% in a one-sample t-test ($t(350) = 2.53$, $p = .01$). This indicates that participants were less likely to return to a restaurant with a healthy default than to a restaurant with an unhealthy default.

These results suggest that having a healthy default option may have a negative impact on restaurant choice in some situations. This was unlikely to be due to participants being reluctant to ask for the default, as 149 out of 352 participants (42%) made a special request on at least one of their six orders, and 14.5% of all orders contained special requests. Yet few of these special requests included a switch away from the default, as participants stuck with the healthy (95%) or unhealthy (93.5%) default an overwhelming majority of the time.

Study 4

We propose that healthy defaults prevent consumers from feeling virtuous about their choices. A consumer who sticks with the healthy default does not get to feel good about her choice, because she did not do anything active, and a consumer who opts out of the healthy default for a more indulgent selection may feel extra guilty for actively seeking an unhealthy alternative. In contrast, a consumer who opts out of an unhealthy default to request a healthy alternative gets to feel virtuous for his choice, and a consumer who sticks with an unhealthy default can enjoy his indulgent food relatively guilt-free because "I didn't request this". This leads to the counterintuitive hypothesis that unhealthy defaults allow consumers to feel more virtuous than healthy defaults, while still leading to the consumption of less healthy foods.

The purpose of Study 4 is to test whether participants judge consumers to be more virtuous when they make decisions in the context of an unhealthy default relative to a healthy default.

Method

Individuals recruited from Amazon Mechanical Turk ($N = 202$) participated in an online study in exchange for a small payment. Each participant saw four restaurant scenarios in a randomized order. Each scenario described two restaurants that served the same food item. One restaurant used a healthy ingredient as default, and the other used an unhealthy ingredient as default, but both offered the same set of options for the food item, and customers could request the non-default ingredient. Each scenario described two customers, one of whom visited the healthy default restaurants and the other who visited the unhealthy default restaurant. Both customers ended up eating the same food item, but one customer received that food item by sticking with the default, while the other customer received the food item by opting away from the default. For each scenario, participants were randomly assigned to see a version where both customers consumed the less healthy item or a version where both consumed the healthier item. Participants indicated "Who is more virtuous?" using a 5-point rating scale.

Results and Discussion

We averaged each participant's ratings across the four scenarios, to form one score for each participant and used a single sample t-test to demonstrate that this average score differed from zero ($M = 0.14$, $SD = 0.47$, $t(187) = 4.21$, $p < .0001$). Of the 188 participants, 92 (49%) had mean scores of exactly zero, 28 (15%) had negative (counter-predicted) scores, and 68 (36%) had positive (predicted) scores. Thus, although half of the participants saw no difference between the two customers, those who did perceive a difference viewed the customer who went to the unhealthy default restaurant as more virtuous.

Finally, we subjected the virtue ratings to an ANOVA that included as independent variables food scenario (lattes, burgers, etc.), consumption (whether both customers consumed the healthy or unhealthy item), and counterbalance order condition. The ANOVA showed no main effect of counterbalance order or food scenario, but there was a main effect of consumption, where the virtue effect was larger when the customers ate the healthy food than the unhealthy one (least square means 0.20 versus 0.09, $F(1,163) = 5.86$, $p = .02$, see table 2). Apparently, switching away from the unhealthy default to choose the healthy alternative yields a large boost in perceived virtue; in contrast, switching away from a healthy default to an unhealthy alternative yields only a small decrease in perceived virtue.

These results support the notion that healthy defaults cause consumers to be judged as making less virtuous choices, whatever food option they choose. A consumer who sticks with the healthy default is judged as less virtuous than a consumer who opts out of an unhealthy default. To a slightly lesser extent, a consumer who opts out of a healthy default for a more indulgent food is also judged as less virtuous that one who merely sticks with an unhealthy default. Thus, regardless of whether one consumes the healthy or unhealthy food, doing so is judged as more virtuous in the context of the unhealthy default compared to the healthy default. This virtue effect is thus a potential explanation for the finding from studies 3 and 4 that healthy defaults drive away sales.

Study 5

The purpose of study 5 was to bring together the virtue effect and the phenomenon that healthy defaults drive away sales, examining whether perceived virtue by the consumers themselves differ when the default is a healthy option versus when it is an unhealthy option, and whether such difference underlies the drive-away-sales effect.

Method

Individuals recruited from Amazon Mechanical Turk ($N = 200$) completed an online survey in exchange for a small payment. Participants read restaurant scenarios about a sandwich shop, a pizzeria, and burger restaurant. In each scenario, participants first indicated which of two options they usually purchased when patronizing that sort of restaurant (e.g., carrots or fries). Then they were asked to imagine that they purchased their usual item at a restaurant that used the healthy default and at a restaurant that used the unhealthy default. For each of these questions participants rated how good they felt about themselves. After completing these virtue ratings, participants indicated where they would go the next time they visited this category of restaurant: a restaurant that uses the healthy default or one that uses the unhealthy default.

Results and Discussion

We computed the difference in the rating of "how good do you feel about yourself" between the healthy default condition and the unhealthy default condition. A positive difference score (on a -7 to +7 scale) indicates that the participant felt more virtuous (for a given food order) at the restaurant with an unhealthy default. This virtue score was significantly higher than 0 for each of the three scenarios (all $t(176)$s > 4.13, ps $< .0001$).

We next examined participants' ratings of which restaurant they would patronize.

Most participants said they would go to the restaurant with the unhealthy default: Mean return ratings was above 0 (on a scale of -2 to +2, with positive values indicating preference for the restaurant with unhealthy default) for burger restaurant ($M = 0.74$, $t(176) = 11.06$, $p < .0001$), pizza restaurant ($M = 0.44$, $t(176) = 4.73$, $p < .0001$), and for sandwich shops ($M = 0.96$, $t(176) = 11.68$, $p < .0001$).

These results demonstrates that, consistent with study 4, participants feel more virtuous in the context of an unhealthy default. And, consistent with studies 2 and 3, participants prefer to return to restaurants that have an unhealthy default. Of primary interest, study 5 shows a relationship between judgments of virtue and interest in patronizing a restaurant in the future. Specifically, participants who feel much more virtuous at an unhealthy default restaurant than they do at a healthy default restaurant say they will patronize the unhealthy default restaurant. In contrast, participants who show no virtue difference show little preference for which restaurant to patronize.

General Discussion

Our studies demonstrated the default effect in consumer dietary choices (Hypothesis 1) and a negative effect of healthy defaults on sales (Hypothesis 2). We also show that this negative effect of healthy default on sales is linked to consumers' decreased feelings of virtue when they choose an option in restaurants with healthy defaults, whether their choice was a healthy or unhealthy option (Hypotheses 3 and 4).

Our studies suggest that people favor the default dietary option strongly over the alternative dietary option when making food or beverage choices. These studies included a variety of dietary stimuli —milk in coffee drinks, snack choices (M&M'S® or fruit and nut mix), and restaurant food choices (type of burger meat, type of cheese on pizza, French fries or carrots that came with sandwich orders) — spanning a variety of settings—coffee shops, a campus booth, a retail store, and hypothetical restaurants— and targeting both free products and products for purchase. A healthy default in all of these situations led to more healthy choices, indicating that a healthy default can have a powerful influence on dietary behavior across many domains and contexts.

The power of healthy defaults, however, is not limitless. Although healthy defaults increase the number of consumers who choose the healthy option, studies 3, 4 and 5 demonstrate that healthy can drive away sales, with studies 4 and 5 demonstrating that healthy defaults paradoxically make consumers feel less virtuous than they would had they consumed the same food but under a different default. Such feelings about virtue can lead to a choice not to patronize an eating establishment that uses a healthy default.

The negative effect that healthy defaults have on sales suggests that business owners should be cautious about implementing healthy defaults, and that calls for restaurants to implement healthy defaults for the good of their consumers should be tempered by concern about how such a switch may affect the bottom line.

There is a special category of food facilities where the negative effect of healthy default on sales may not manifest. In school lunchrooms and other dining facilities where the customers have few other options but to eat within the facility, implementing healthy defaults could provide large health benefits without affecting sales. We believe healthy defaults should be strongly encouraged in such environments, given the consistent default effect we have demonstrated throughout this paper.

One limitation of our studies is that behavior was measured as a one-shot choice. It is possible that people will stick to the healthy dietary default the first time they encounter it, but with time, the nudge from the default wanes and they will opt out and choose the more tempting but unhealthy option. However, for well-practiced behaviors such as ordering lunch or coffee at a familiar shop, past behavior can be a powerful predictor of current behavior (Ouellette and Wood 1998). Therefore, an initial healthy choice the first time someone walks into a dining establishment may have a long-lasting effect on dietary choices in the same setting.

Defaults can be a powerful tool to promote healthy dietary behavior. The current studies provide new evidence and insights into how healthy defaults work in various dietary contexts, and provide a warning that such defaults should be used with caution by business owners as they may have unintended negative consequces for the business.

REFERENCES

Brown, Christina L. and Aradhna Krishna (2004), "The skeptical shopper: A metacognitive account for the effects of default options on choice," *Journal of Consumer Research*, 31 (December), 529-39.

Chapman, Gretchen B., Meng li, Helen Colby, and HaewonYoon (2010), "Opting in versus opting out of influenza vaccination," *JAMA: The Journal of the American Medical Association,* 304 (July), 43-4.

Choi, James J., David Laibson, Brigitte C. Madrian, and Andrew Metrick (2003), "Optimal defaults," *The American Economic Review*, 93 (May), 180-85.

Johnson, Eric J. and Daniel Goldstein (2003), "Do Defaults Save Lives?" *Science,* 302 (November), 1338-339.

Kressel, Laura M. and Gretchen B. Chapman (2007), "The default bias in end of life medical treatment preferences," *Medical Decision Making,* 27 (May/June), 299-310.

Mokdad, Ali H., James S. Marks, Donna F. Stroup, and Julie L. Gerberding (2004), "Actual causes of death in the United States, 2000," *JAMA: The Journal of the American Medical Association,* 291(March), 1238-245.

Pichert, Daniel. and Konstantinos V. Katsikopoulos (2008), "Green defaults: Information presentation and pro-environmental behavior," *Journal of Environmental Psychology*, 28 (March), 63-73.

Ouellette, Judith A. and Wendy Wood (1998), "Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior," *Psychological Bulletin*, 124 (July), 54-74.

Thaler Richard H. and Cass R. Sunstein (2008), *Nudge: Improving Decisions About Health, Wealth, and Happiness,* New Haven, CT: Yale University Press.