Temptation, Self-Control, and Consistency of Food Choices: An Online Experiment

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Abstract

We studied whether consumers exhibit dynamic (in)consistency in food choices when presented with different food alternatives or do they exercise self-control in their decisions. We use 141 subjects from a land grant university in the southeastern United States in a 2-day online experiment with seven combinations of food menus. We look at food menu rankings at color and information treatments, measures Global Temptation Index, and finally look at choice reversals of the selected food menus. From the preliminary analysis, we find that subjects prefer G & R (i.e. healthiest and unhealthiest menu) singleton menus compared to other menus. However, we do not find the impact of treatment conditions on food choice reversals. The findings of the study shed further light on why consumers exhibit dynamic (in)consistency.

1 Introduction

In this paper, we study whether students exhibit dynamic (in)consistency in food choices when presented with different food alternatives or do they exercise self-control in their decisions. Literature shows that the presence of high-calorie unhealthy items in the menu drains the self-control resources of consumers and leads to welfare-reducing food decisions (Sadoff and Samek, 2020). Consumers are overwhelmed with self-control costs when choice sets are comprised of healthy (less-tempting) food items and unhealthy but more delicious alternatives (Gul and Pesendorfer, 2001). Though, calorie labeling laws were designed to inform consumers about the nutritional content of food products and to nudge them to reduce their calorie intakes, a vast literature investigating the effectiveness of calorie labeling shows that the provided information does not improve the quality of food consumption (Cawley et al., 2018). There is experimental evidence that visceral feeling prevalent in food choice settings can impose self-control costs and reduce the effectiveness of label information (Huseynov et al., 2021a). Consumers are overwhelmed with self-control costs when choice sets are comprised of healthy (less-tempting) food items and unhealthy but more delicious alternatives (Gul and Pesendorfer, 2001). Gul and Pesendorfer's (henceforth GP) model suggests that forgoing a tempting food item imposes a self-control cost and discounts the net utility when the decision-maker consumes a healthy alternative.

The previous literature has shown that the presence of high-calorie unhealthy items in the menu drains the self-control resources of consumers and leads to welfare-reducing food decisions (Sadoff and Samek, 2020). This could be a plausible reason of what is happening at food swamps when abundant unhealthy menus are present. Moreover, young consumers are more prone to self-control issues, and they find it relatively difficult to control their temptation feelings compared to

older consumers (Ameriks et al., 2007). When the young do not have experience with self-control, the habit also may continue in the future.

This study enables us to understand the food decision-making process of young consumers. We focus on undergraduates of a land grant university in the southeast USA and investigate their food choice behavior. The experiment was tuned to capture under which conditions students exhibit dynamic (in)consistency in food choices and when they opt out by consuming high-calorie food alternatives. In the era where the average consumers are becoming overweight and obese, understanding the determinants of choice reversals of young consumers will help to develop better nudges to improve the quality of food decisions. Our design elicits university students' willingness to exercise self-control over food choice sets to increase the proportion of healthy food decisions. The research framework also reveals choice inconsistencies when consumers expect to adhere to their initial healthy food consumption plans, but they fail to follow their self-determined normatively superior diets during the actual choice. Our study stands out compared to the literature in three ways. First, we use seven menus for the ranking whereas the literature has predominantly used only three menus or has only focused on singleton menus as opposed to doubleton and tripleton menus. Thus self-control can be captured when tempting food items are present in the menu than a singleton menu. Second, we provide the opportunity for choice reversals. This captures the dynamic choice (in) consistency at two time periods. Further, in addition to those innovations, we also employ the Ameriks et al. (2007) Self-control measures and Toussaret (2018) Global temptation index (GTI) to the food choice experiment. Further, we use two information treatments as opposed to the most relevant existing study on this topic (Toussaret, 2018). Table 1 presents the research questions and related hypotheses with expected results.

TABLE 1 **Research Questions and Hypotheses**

Research question	Hypothesis	Expected result
1.1 Does providing information on the importance of the healthy diet in increase the proportion of consistent choices compared to the control condition?	$\%\ Consistent\ food\ choices$ $\text{trt } 1 >\ \text{control}$	We expect to observe a statistically a higher proportion of consistent food choices information treated group compared to the control condition
2.1 Do the selected food types have same level of deterrence i.e. global temptation index (GTI)	$GTI_{Green} < GTI_{Yellow} < GTI_{Red}$	Respondents exhibit lower GTI for healthy food compared to unhealthy food
2.2 Does control and treatment (1 & 2) conditions result in same GTI for unhealthy food products?	$GTI_{red}^{control} < GTI_{red}^{trt\ 2} < GTI_{red}^{trt\ 1}$	Respondents exhibit higher GTI with information and color than color treatment only and status quo receives lowest GTI
3.1 Does health consciousness (HC) improve Global temptation score	$GTI\ \propto HC$	Respondents avoid unhealthy food when they are health conscious
3.2 Does health consciousness reduces choice reversals	$Choice\ reversal\ \alpha\ \frac{1}{HC}$	Health conscious respondents makes lesser food choice reversals across time
4.1 Does subjective knowledge on food (SKF) improve Global temptation index	$GTI\ \propto SKF$	Respondents with relatively higher knowledge about healthy food avoid unhealthy food and thus they show higher GTI scores for unhealthy food

4.2 Does subjective knowledge on food reduces choice reversals	$Choice\ reversal\ \alpha\ \frac{1}{SKF}$	Respondents with relatively higher knowledge about healthy food make lesser food choice reversals
4.1 Does self-control (SC) improve Global temptation index	$GTI\ \propto SC$	Respondents with relatively higher self-control show higher GTI scores for unhealthy food as they tend to avoid them.
4.2 Does self-control on food reduces choice reversals	$Choice\ reversal\ \alpha\ \frac{1}{SC}$	Respondents with relatively higher self-control makes lesser food choice reversals

The following section presents the relevant literature in terms of the theoretical models on self-control, temptation and time inconsistent preference discourse, and the recent debate on healthy-unhealthy diet discussions and empirical studies especially focusing on experimental studies mainly of food choices. Section three discusses the theoretical model that we are using and section four present the data and methodology section. This section explains the experimental nature and design and empirical model that will be used in the study. The final section presents the preliminary findings of the study and the conclusions.

2 Review of Literature

2.1 Theoretical Models on time-inconsistent behavior, temptation, and self-control

Different theoretical models and their extensions have been used to model the dynamic inconsistencies in intertemporal decision-making within the field of behavioral economics. Strotz's model (1955)[1] provided the impetus in the field of economics for many more studies with extensions in time-inconsistent behavior (Shefrin and Thaler, 1978; Ainslie, 1992; Lowenstein and Prelec, 1992; Rabin, 1998; O'Donoghue, and Rabin, 1999; GP 2001; Noor, 2005 and 2011; Fudenberg and Levine, 2006; Noor and Takeoka 2010 and 2015). Shefrin and Thaler (1978) contributed to time-inconsistent behavior by incorporating self-control into the models. All these models somehow are related to time-inconsistent behavior and have attempted to incorporate various extensions as well as deal with varying assumptions. Summarizing these studies, Sprenger (2015), identifies two features of dynamic inconsistencies. The first is the identification of preferences from time-dated monetary choices and the second feature is that most experimental designs have focused on dynamically inconsistent models than the explicit dynamic inconsistencies. Out of these, GP (2001) explains dynamic inconsistencies with the help of normative utility and temptation utility. This has served as a model for many extensions due to the nature of the identification of these utilities.

GP (2001) proposed a theoretical model for time-inconsistent preferences which permits self-control and testable welfare implications following the revealed preference approach. GP's (2001) model has been widely used with extension by various studies (GP, 2004; Noor, 2005 and 2011;

[1] Though it was Strotz (1955) who came up with a formal framework to model dynamic inconsistent behavior, this has been in the realm of economic discussion from the times of Hume (1739), Smith (1759) and Malthus (1826).

Fudenberg and Levine, 2006; Noor and Takeoka 2010 and 2015. Another advantage of this model is that GP (2001) uses menu-dependent preferences, thus defining the considered menu as the choice primitive. As a model, this provides clarity as well as enhances applicability. The time-inconsistent model of consumption explains the difference in consumption at two time periods as a change in preferences. According to GP (2001), the distortion in consumption is due to the decision-maker succumbing to temptation. Thus this distortionary behavior is explained with the help of the optimal response of the utility-maximizing agent who experiences a trade-off between temptation utility and incurred self-control costs. GP (2004) defined dynamic self-control preferences extending the GP (2001) to an infinite horizon consumption.

Noor (2005) extends the GP's (2001) model to account for individual's future temptation. This supports the notion of preference reversals through temptation for future consumption (Noor, 2007). In another study, Noor (2011) assessed the dynamic behavior of a decision-maker whose menu rankings are subject to temptation. They point out that distancing an individual from the consequences of his/her choices separates normative preference and temptation. An individual may be tempted to eat unhealthy food during a diet plan while acknowledging that s/he shouldn't be doing it. In these circumstances, the choices are affected by two preference orders. The first one is temptation preferences which capture the subject's desires, and the normative preference is which captures the individual's view of what choice s/he should be making. The individual is assumed to have temptation when his/her desires conflict with normative preferences. So it is important to identify which observable behavior identifies an individual's struggles with temptation and reveal that individual's normative and temptation preferences. According to Noor (2011), at least in static environments, normative preferences are revealed when the individual is

distanced from the consequences of choices s/he makes. Noor concludes that normative preference can be seen as an alternative for the welfare criterion whereas the revealed preference criterion would be viewed as contaminated with temptation. Noor (2011) has three contributions in the realms of a) foundation for temptation, b) Temptation by menus, and c) foundation for sophistication distinguishing it from GP (2001). Yet, still GP (2001) self-control model stands alone as it is more flexible to use with limited menus and two time periods. Due to these features, this model is still considered to be a useful model for empirical applications. GP focuses on choices coming from one point in time: i.e. ranking of menus of ex-ante period, and dwells on the interpretation of the representation to describe subsequent dynamic choice behavior, while Noor (2011) suggests the more the distance between the highest and the least tempting choices, the decision-maker falls for temptation.

Recent empirical literature uses GP (2001) model as it is a much simpler utility model which cater to the time inconsistency. Thus studies on self-control related to food and diet use the GP (2001) model as the foundation (Toussaret, 2018; Husyenov et al, 2021), and this paper builds upon the foundations of GP (2001) as well.

2.2 Experimental evidence on temptation, self-control and time inconsistent food choices

High-calorie food intake is one of the most widely prevalent phenomena among mundane health issues. Due to various reasons, individuals consume more high-calorie food than what the U.S. Department of Health recommends[2]. Appealing presentation and advertising arouse temptation and visceral feelings from consumers. In food swamps, these tempting factors are in abundance

[2] U.S. Department of Health recommended daily recommended calorie intake for females: 1600 to 2400 calories per day, for males: 2000 to 3000 calories per day

(Cooksey-Stowers et al., 2017)). In this situation, even though consumers decide not to consume unhealthy food now, they decide to consume it later, exhibiting inconsistent behavior. This phenomenon is known as intertemporal decisions which are not consistent over time. Consistency in intertemporal choices has been extensively studied in experimental economics literature, more specifically on individual intertemporal decision-making. Subjects in these studies show a reversal of preferences between a smaller reward, which is immediately gratified, and larger rewards, which will be gratified later (Mischel et al., 1969: Mischel, 1974; Thaler, 1981). The earlier reward is preferred when it offers an immediate payoff, while the later reward is preferred when the payoff of the rewards is delayed (Gul and Pesendorfer, 2004).

Recent literature has seen a growing number of studies in dynamic inconsistency in food choice decision-making. As food choices are determined not only by prices, preferences, income, and information, a broad array of strategies like nudges, marketing, and pertinent exogenous factors can be used to influence the consumer's food choices as well (Just et al., 2007). Hence, this broad array of strategies can be utilized to improve the diet quality and health of the general public. This is where self-control and temptation play an important role. Tastier food may lead to self-control problems and subjects may tend to fall for immediate gratification. Thus, external cues can have a greater effect on their food selection and consumption. Consequently, commitment to consistency in food choices is becoming important in the food environments. Recent studies have shown that food deserts and food swamps are not leading to healthy eating and may predict obesity and unhealthy eating behaviors.

For example, Sadoff et al., (2015) investigate the dynamic inconsistency and the demand for commitment in food choice by manipulating the proportions of the healthy and unhealthy food

items in the food bundle using a natural experiment in a grocery store. Around one-fifth of respondents showed dynamic inconsistencies. Among this cohort, almost all the participants shifted towards less healthy food items, depicting a clear indication of inconsistency. Nearly one-third of the participants chose to commit to their choices (Sadoff et al., 2015). Since the subject's immediate choices leaned towards unhealthy food items, this finding is consistent with the models of temptation and self-control.

In a slightly different field experiment, Sadoff and Samek (2019), studied the drivers of commitment demand with food choices. They conclude that a significant number of people are unaware of the benefits of commitment devices and they can learn through these interventions of information and experience. Further, these interventions do not come at the cost of short-term welfare losses. Carol and Samek (2018) provide a series of challenges and barriers that can be met while conducting field experiments on food purchase behavior at grocery stores. Further, they provide a simple guide to best practices that can be followed by other researchers while doing food purchase behavior field experiments. Also, Just et al., (2007), highlight that since there is an asymmetry in how individuals value gains over losses, there rises a disparity in WTP and WTA. This makes them stay with the default options even when the switching costs are rather low or even zero. According to them, food decisions are rather emotional than rational thoughts.

Huseynov et al., (2021b) use the preference elicitation method developed by GP (2001) to detect the changes in the in the proportion of time-consistent food choices using a 2 stage lab experiment. They find that 46% of the menu rankings in the second stage were not consistent with the WTP measures at stage 1. It was observed that temptation reduced the share of consistent choices by

almost 43% in the high calories category. Male participants were less consistent than the female – participants. They conclude that menu-dependent preferences have a heterogeneous impact on the consistency of food choices. The study suggests incorporating non-conventional models explaining visceral feelings in their research design and investigating the role in economic decisions. In another lab experiment with a controlled choice environment, Thunstrom et al (2015) studied the certainty of future preferences and the overconfidence in predicting future preferences for food snacks for now and for the future. Subjects were uncertain about their preferences for today and the future. And when the future is more distant, the preference uncertainty increases.

In another study, the menu-dependent temptation was measured by calorie counts (Huseynov et al., 2021a). This study manipulated the temptation differences exogenously by changing the calorie difference of the food choices, building upon the mode of GP (2001) and Noor and Takeoka (2010). They find calorie information increases the probability to choose lower calorie food option by 3 to 10%. At the same time calorie distances negate the effect of information by 3%. Denoting that higher the calorie distance between food choices, the consumer is tempted to lesser healthy food choices. Further, visual attention to the food descriptions is moderated by the effect of the information. This posits calorie difference variable is a suitable proxy for self-control cost. A positive relationship between the number of calories in snacks and the degree of temptation the snacks generate was observed. It was also found that the effect of relative calorie information depends on the relative calorie difference.

Toussaert (2018) attempted to elicit temptation and self-control in a lab experiment using subject preferences over menus. Building upon the GP (2001) framework, of costly self-control, the subjects were given a tedious task to complete, and the temptation was to allow them to read a

story in between. She concludes that reducing or restricting the availability of tempting options on the menu could be welfare-maximizing. On a similar note, Liu et al., (2022) studied how menu frame affects food choice and food wastage using field experiments and an online survey, and investigated three aspects: anchoring bias, compromise effect, and menu-dependent self-control. Subjects order less food when presented with a narrow menu compared to a broader menu. Studies by Samek (2019), Cassari (2009) and Brune et al. (2021) also study self-control and temptation in different contexts using non-food contexts.

3 Research Method

3.1 Model

This study built its theoretical model using the framework of Gul and Pesendorfer (2001) on self-control costs, temptations, and menu-dependent preferences. Suppose, tere are two food items x $(low - calorie\ and\ healthy)$ and y $(high - calorie\ and\ unhealthy)$. A consumer normatively prefers choosing x over y. However, she may fail in self-control and choose y if y is also on the menu. If both x and y are available on the menu, and still the consumer chooses x, it suggests that she exercises self-control over her temptation. Gul and Pesendorfer (2001) constructs menu-dependent preferences and menu-rankings to capture this phenomenon:

$$\{x\} \succ \{x, y\} \succ \{y\}$$

When the decision-maker has the $\{x\} \succ \{x,y\}$ menu ordering, it reveals that she prefers restricting the choice set and the presence of y in the choice sets reduces her utility. Self-control is captured by a strict preference for $\{x\}$ over $\{x, y\}$.

$$U(A) \coloneqq \max_{x \in A} u(x) + v(x) - \max_{y \in A} v(y)$$

Where u and v are von Neumann-Morgenstern utility functions over food menus. The v is referred to as the agent's temptation ranking, and u is referred to as commitment ranking over menus. $\max_{y \in A} v(y) - v(x)$ is interpreted as the (utility) cost of self-control.

We use Toussaert (2019) and construct seven menus to elicit participants' menu-dependent preferences to food items. In this new modeling approach, consumers also face a food item *z* which is less (more) tempting compared to *y (x).* We identify individual preferences for tempting goods and the healthy alternative using the menu-ranking elicitation method. For instance, the menu ranking $\{x\} > \{x, z\} > \{x, y\} > \{x, y, z\} > \{z\} > \{y, z\} > \{y\}$ indicates that the decision-maker prefers the healthy alternative *x* and experience self-control cost due to the existence of *z* and *y* in the food choice environment. S/he is also willing to commit to the alternative x (i.e., $\{x\} > \{x, z\} > \{x, y\}$) by limiting her/his choice set. We also employ the global temptation index developed by Toussaert (2019) to quantify how many times a food alternative was excluded from the choice to establish a commitment. For instance, the alternative *y* was excluded from menus in all instances of our example. Hence, our decision-maker feels an intense temptation feeling towards the alternative *y*, and this food item has the greatest temptation rating. The alternative *z* has also been excluded in several pair-wise rankings but not so frequently compared to alternative *y*. We can conclude that from the decision-maker's perspective alternative *z* is less tempting than alternative *y*.

Design: We conducted incentivized food-bundle choice experiments with university students. This experiment will have two stages involved. First, we identified three food menus that are found in the common restaurant near the university. But we made sure that the food menus have salient caloric differences. Thus, we selected the following food items. We kept the main dish, the same for all three menus, but we changed the side dish in a manner where the total calorie values are different. The calorie difference between the food items was approximately 200 cal. The lowest caloric item or the healthiest food side dish was fruit salad, the next option was side salad mix and the unhealthiest option was Mac & Cheese. The study was conducted in two days: day1 and day 2. The participant must be available in the campus. Recruitment emails and flyers were shared among the undergraduate students. They were asked to choose convenient days for them to take part in the study.

Then depending on the dates they have chosen, on the day 1, they will receive an email to a Qualtrics link. This day 1 study has to be completed within the same day. The average time taken for this online experiment is around 20 minutes. The day 1, survey included the experiment and survey questions. The firs task was to ranking of the seven menus presented with the mentioned three food items. This includes 3 singleton menus as well as seven non-single ton menus. This ranking was used to calculate the Global temptation index (Toussaret, 2018). How many times a particular menu was avoided. Based on the rankings, probability scores were assigned to the menus. For the same rankings, a randomly assigned probability scores were used following Toussaret (2018). In this ranking experiment, after ranking is completed, the respondent is provided with the most preferred food menu, based on his rankings. So the final menu would be their chosen menu at the end of day 1. After this experiment, the next section of the survey was to rate the selected three food menus, based on Temptation, Satiety, healthiness, and Taste. These

ratings were done using Likert scales. We also obtained information on the approximate number of calories they consumed for the day. The next set of questions were based on demographic and socio-economics status questions. We also included a hypothetical self-control measure questions proposed by Ameriks et al (2007) which measures Expectation-Ideal gap and Temptation – Ideal gap. In addition to these we included questions on health consciousness, subjective knowledge on food, time related beliefs and eating behavior and question on environmental factors on eating (peers, stress, workload).

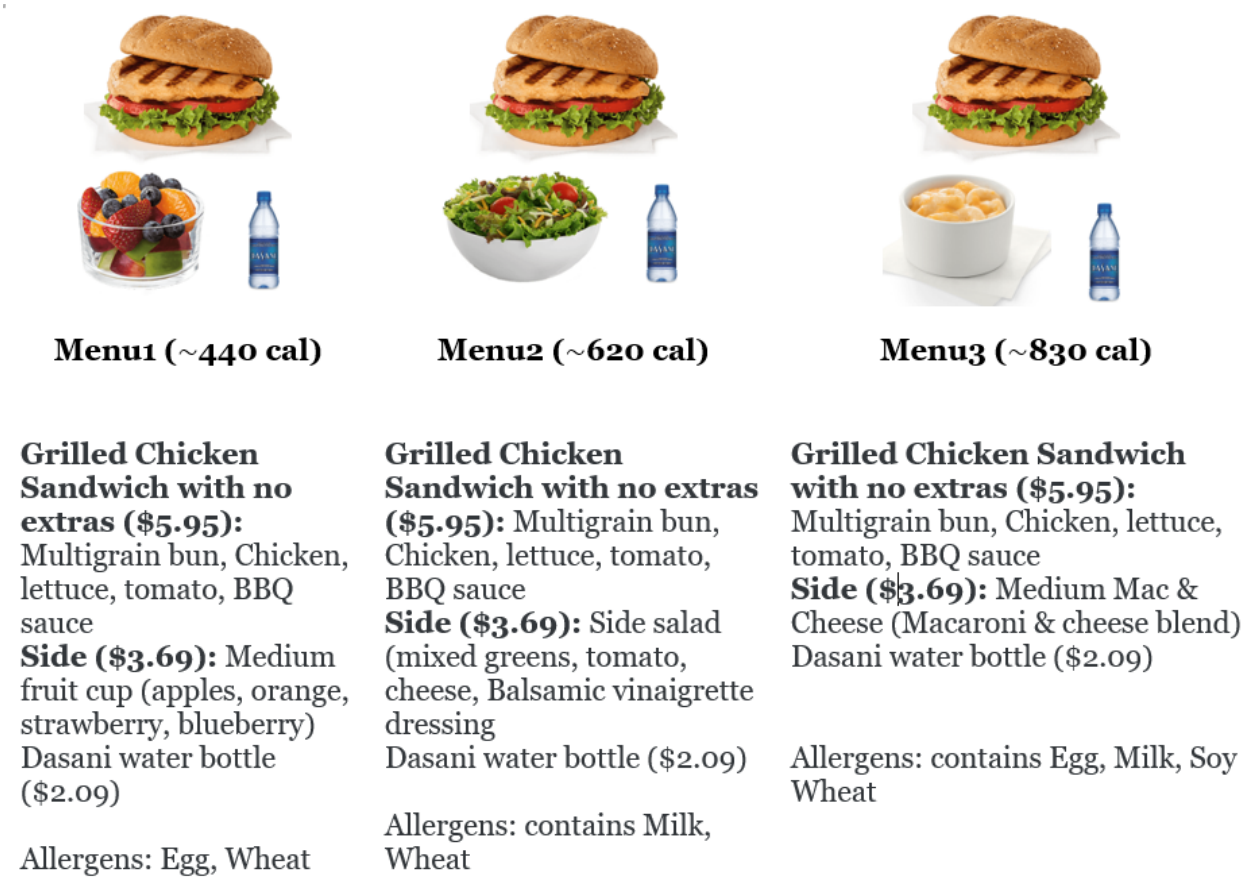

Figure 1: Food items and their ingredients used in the experiment.

On day 2, another Qualtrics link was shared with the subjects who completed the day 1. This was a small survey which had only 3 questions. On day 2, we gave the subjects the opportunity to

reverse their decision if they wanted. So we reminded them of their chosen food menu on day 1, and asked the subjects whether they wanted to change their meu selected or not. The reason for their decision was also noted. The day 2 survey would take less than one minute. But they were asked to make this decision before their lunch, and they need to purchase the food item from the restaurant within lunch time (before 2.00 pm). They will send the receipt to us, and the amount spent will be reimbursed to the subjects (approximately $13). To complete the study the food purchase had to be done on the day 2.

Treatments

We employed two treatments and one experimental control conditions. The control condition was the baseline, no interventions were made while participants ranked the menus in the study. Treatment 1 was a color intervention. Many studies have used Green, yellow or orange and red to depict healthy (low calorie), average healthy (medium calorie) and least healthy (high calorie) food items respectively. We used the same colors for the description of the food items. This is more sort of a nudge rather than a direct intervention. For treatment 2, we used color and information treatment together. The following information was provided before ranking the menus.

> "*Many studies have shown that people often establish tastes and habits while they are relatively young. Evidence suggests the early establishment of habits and preferences occurs for a variety of behaviors including food choice. An especially important time of life for food choice is when people step out independently for the first time and begin to make all of their own food decisions. The transition to college or university is a critical period for young adults, who are often facing their first opportunity to make their own food decisions. If they can develop better eating habits which transfer to a future lifestyle, resulting in good health later on.*
>
> *Poor eating habits and limited physical activity can likely increase the risk for osteoporosis, obesity, hyperlipidemia, diabetes, and cancer later in life. Such an unhealthy lifestyle is further linked to health-related quality of life, which is related to*

an individual's nutritional status. All of these associations suggest that it is important to establish good eating habits at an early age."

We did not want to guide the subject to a particular direction using the information. So our information provided both the positive and negative aspects of healthy and unhealthy eating. The information was extracted based on literature.

Table 3: Experimental Design

Stages	Description
Number of participants	141 subjects
	Day 1 2: Online field experiment (20 minutes)
	Day 2 3: Follow up survey (2 minutes)
Average earnings	Selected food order (~$13)
Interventions	Control
	Treatment 1: Color
	Treatment 2: Color and Information

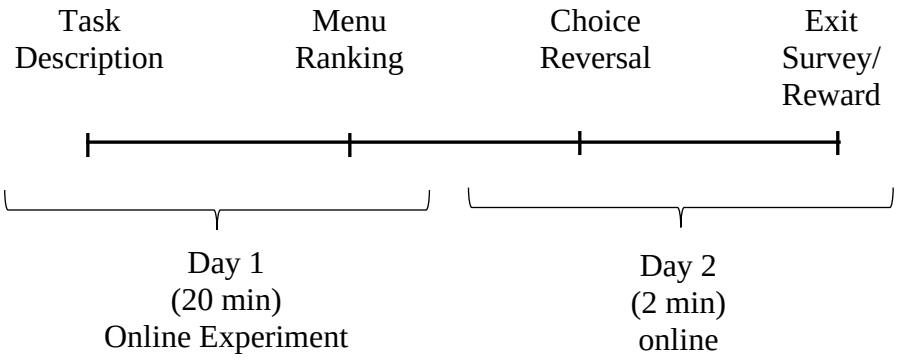

Figure 2: Timeline of the Experiment

Analysis

The primary outcome measure in the study 2 is a binary variable to capture whether subjects reversed their food choices on the second day of Study. The major explanatory variable is the Global Temptation measure à la (Toussaert, 2019) based on menu-rankings on day one. We also

collected other measures on day two of Study 2 to understand what factors lead to food choice reversals.

Global temptation index measures the number of times an individual excludes a food option from considering when comparing two nested options. As per Toussaert (2019), Global Tempation Index for food category $x \in \{G, Y, R\}$ as

$$GT_{-x} = \sum_{\mathcal{M}_x} 1_{\{M \setminus \{x\} \succ M\}}$$

Where $\mathcal{M}_x = \{M \in \mathcal{M} | x \in M \text{ and } M \neq \{x\}\}$.

This index is based on the definition of temptation as an option that triggers a desire for commitment i.e. option *m* is a *temptation* in menu $M \; if \; M\{x\} \succ M$.

A stricter version of Global Temptation Index for food category $x \in \{G, Y, R\}$ is

$$\widetilde{GT}_{-x} = \sum_{\widetilde{\mathcal{M}}_x} 1_{\{M \setminus \{x\} \succ M\}}$$

Global Temptation Index

$$GT_{-x} = \mathrm{X}_i\beta + \mathrm{M}_i\gamma + \epsilon_i$$

$$GT_{-x} = \mathrm{X}_i\beta + \mathrm{M}_i\gamma + \overline{\tau_1}T_1 + \overline{\tau_2}T_2 + HC_i + SKF_i + SC_i + \epsilon_i$$

Choice reversal

$$1(choice\ reversal)_i = \mathrm{X}_i\beta + GT_{-x}\alpha + \mathrm{M}_i\gamma + \overline{\tau_1}T_1 + \overline{\tau_2}T_2 + HC_i + SKF_i + SC_i + \epsilon_i$$

Where X_i is a vector of individual controls and M_i measures of subject i's menu preferences. T_1 and T_2 are dummies for treatment 1 and 2 and control is the reference category. $\overline{\tau_1}$and $\overline{\tau_2}$ are the average treatment effects of the treatment 1 and 2. In many instances the individual treatments effects of the treatment 1 and 2 are mean zero with random variable. Thus our primary interest would be on average treatment effect on the outcomes. HC_i is the health consciousness score. SKF_i is the subjective knowledge on food and $SC_i$is the self control measure of Ameriks (2007).

4 Preliminary Results and Conclusion

This section presents the preliminary findings of the study, which includes the menu rankings and the choice reversals.

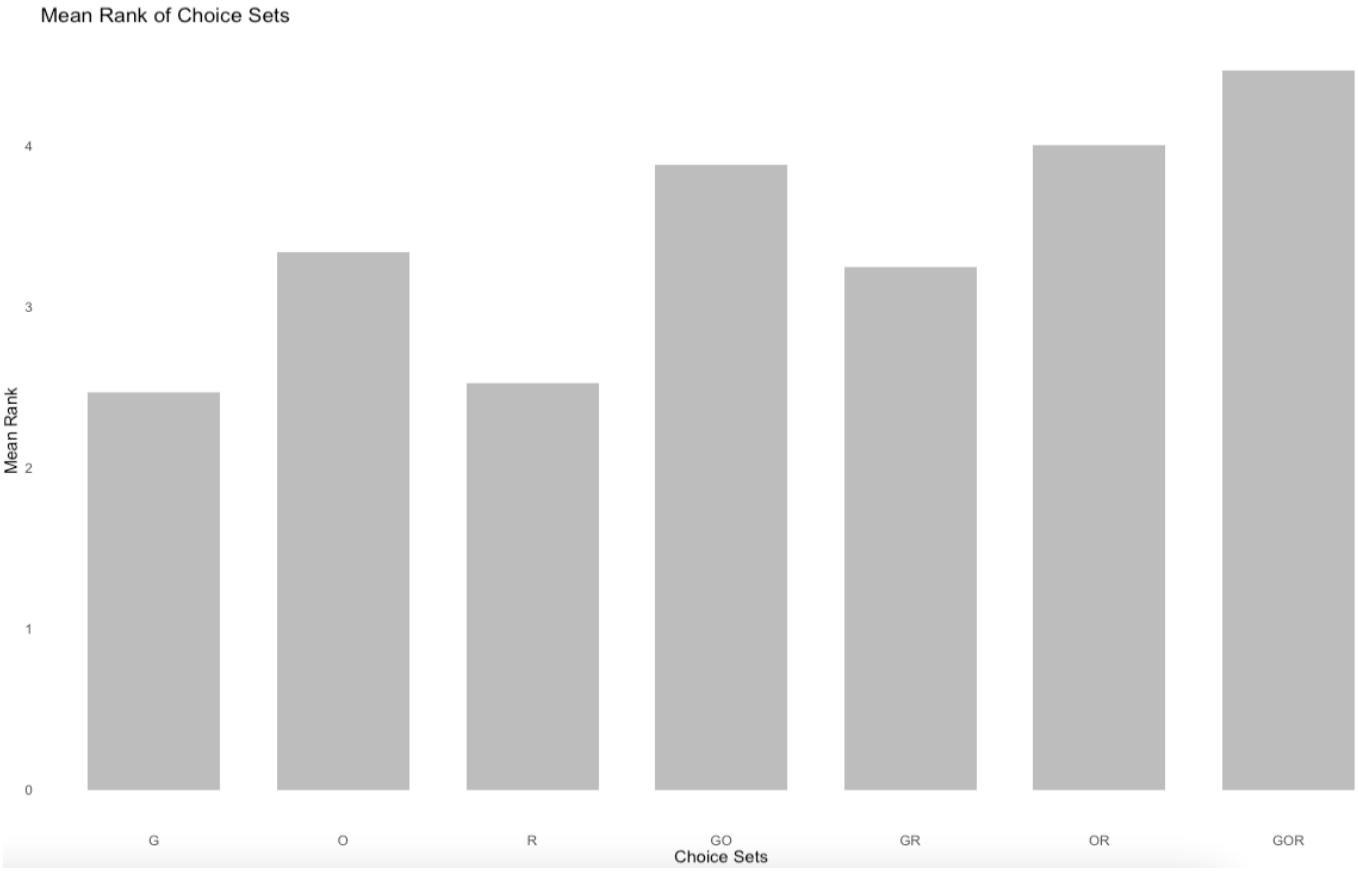

Figure 3: Rankings of the seven menus

Figure 3 presents the average ranking of menu selections. The Singleton G and R menus emerged as the most favored options. This finding implies that study participants generally opted for either the healthiest or the least healthy food alternatives.

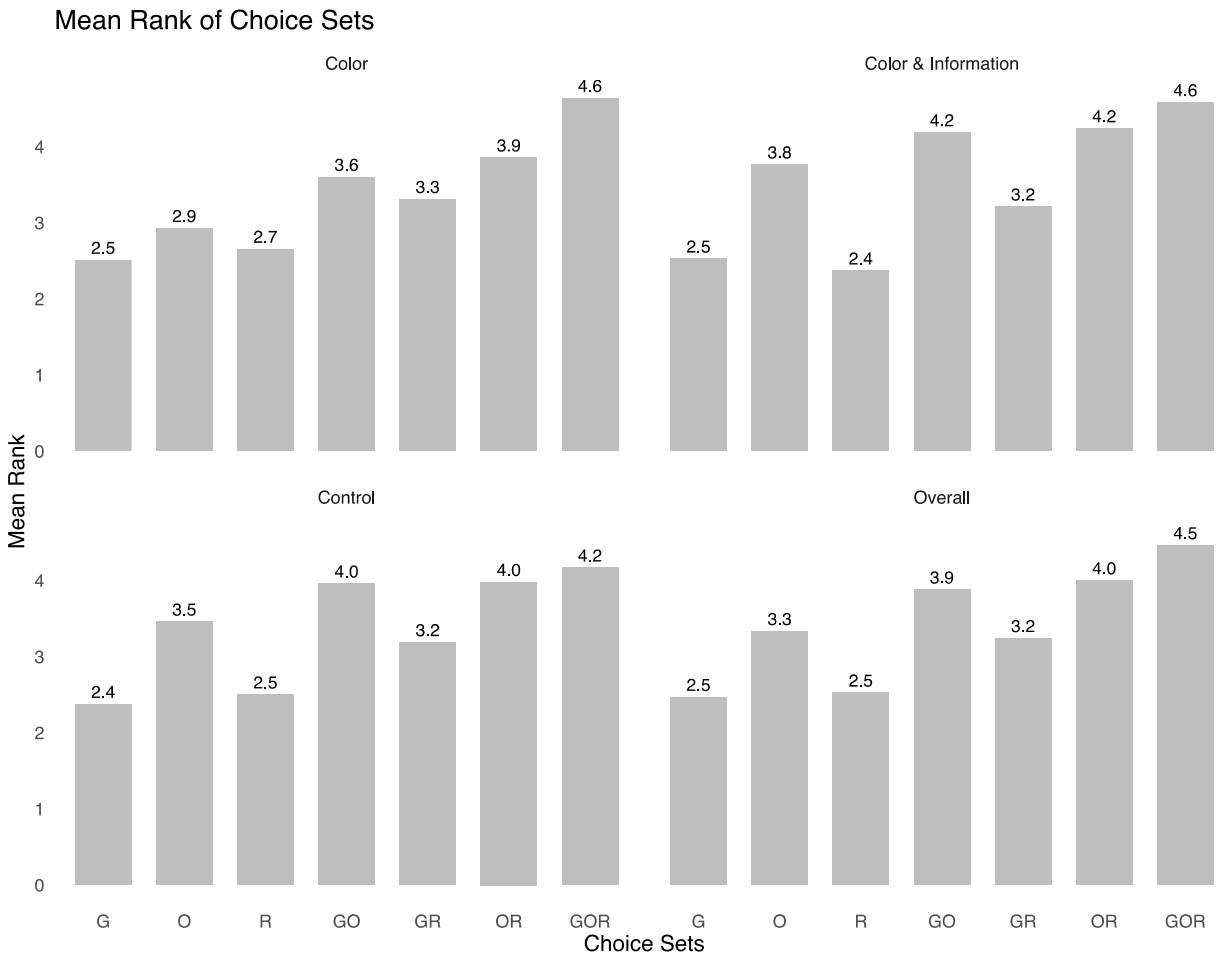

Figure 4: Average rank of the seven menus at various treatments

Figure 4 illustrates the mean values of menu rankings across study conditions. It is noteworthy that the menu alternative GOR is the least preferred food choice in all experimental treatments. We also observe that the menu alternative O becomes the third preferred choice in the Color treatment.

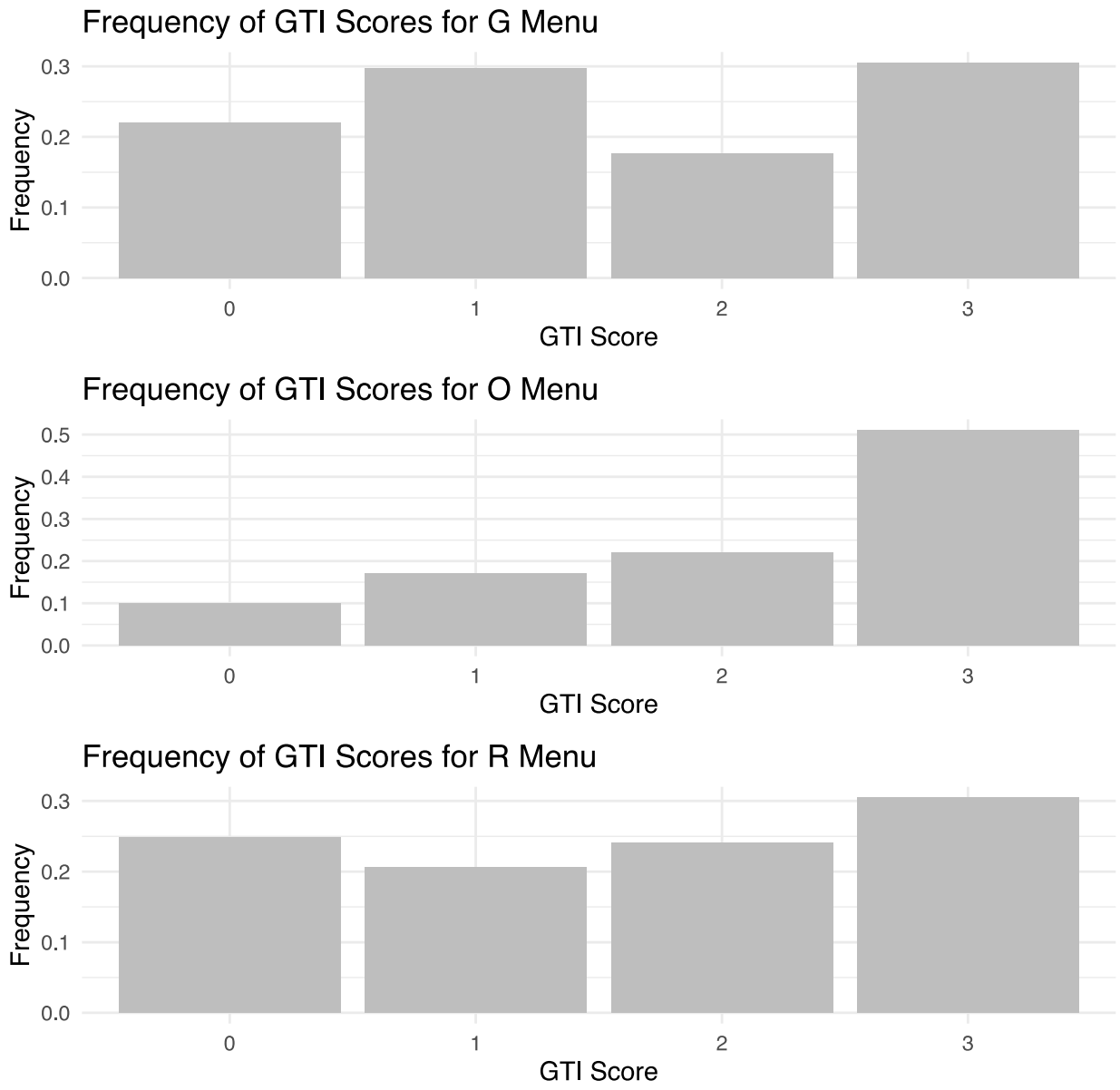

Figure 5: Mean values of the Global Temptation Index scores (Author calculations)

Figure 5 illustrates the mean values of constructed GTI scores of food alternatives. Interestingly, we find that O is the most tempted item among food alternatives.

Table 1: The Determinants of Dynamic Food Choice Inconsistency

	Dependent variable: Choice Inconsistency		
	(1)	(2)	(3)
Color Treatment	−0.11		−0.13
	(0.08)		(0.08)
Color and Information Treatment	0.02		0.02
	(0.10)		(0.10)
GTI_G		−0.003	0.005
		(0.03)	(0.03)
GTI_O		−0.01	−0.02
		(0.04)	(0.04)
GTI_R		0.06*	0.06**
		(0.03)	(0.03)
Constant	0.27***	0.16	0.20*
	(0.06)	(0.10)	(0.12)

OLS regression results with HC1 robust standard errors are reported.
*p<0.1; **p<0.05; ***p<0.01

Table 1 reports OLS regression analyses investigating the determinants of food choice inconsistencies. The results reveal that higher GTI values for R menu increases the proportion of inconsistent decisions.

Conclusion

In this paper, we studied whether students exhibit dynamic (in)consistency in food choices when presented with different food alternatives or do they exercise self-control in their decisions. From the preliminary analysis, we find that subjects prefer G & R (i.e. healthiest and unhealthiest menu) singleton menus compared to other menus. In the presence of O (medium healthy diet, salad), the rankings are lower, suggesting subjects avoid menu O. However, we do not find the impact of treatment conditions on food choice reversals. Also, only the GTI scores for the menu R explains the choice reversals but not the GTI scores of the G and O menus. Given the findings stem from preliminary analysis, these findings have to be interpreted cautiously. However with detailed analysis the study will shed further light on why consumers exhibit dynamic consistency.

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