



# Why do people eat the same breakfast every day? Goals and circadian rhythms of variety seeking in meals

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## ABSTRACT

People exhibit a circadian rhythm in the variety of foods they eat. Many people happily eat the same foods for breakfast day after day, yet seek more variety in the foods they eat for lunch and dinner. We identify psychological goals as a driver of this diurnal pattern of variety seeking, complementing other biological and cultural drivers. People are more likely to pursue hedonic goals for meals as the day progresses, which leads them to seek more variety for dinners and lunches than breakfasts. We find evidentiary support for our theory in studies with French and American participants ( $N = 4481$ ) using diary data, event reconstruction methods, and experiments. Both endogenously and exogenously induced variation in hedonic goal activation modulates variety seeking in meals across days. Hedonic goal activation predicts variety seeking for meals when controlling for factors including time devoted to meal preparation and eating, the presence or absence of other people, and whether people ate a meal inside or outside their home. Goal activation also explains differences in time spent on meals, whereas increasing time spent on meals does not increase variety seeking. Finally, we observed that a similar increase in hedonic goal activation enacts a larger increase in variety seeking at breakfast than at lunch than at dinner, suggesting a diminishing marginal effect of hedonic goal activation on variety seeking.

## 1. Introduction

People exhibit a circadian rhythm in the variety of foods they eat. Many people who choose to eat the same breakfast each day seek variety in their lunches and dinners (Khare & Inman, 2006). Why do the same people fluctuate so much in their variety seeking, in the same appetitive domain, even within the same day? Factors ranging from culture to biology contribute to this diurnal pattern of variety seeking (Khare & Inman, 2006). We have identified a novel and complementary psychological driver: diurnal variance in the pursuit of hedonic and utilitarian goals across meals. We propose that people are relatively more likely to pursue hedonic goals as the day progresses, with utilitarian goals most active in the morning and hedonic goals most active in the evening. This difference in goal activation modulates the variety they seek for meals. In food diary data, event reconstruction studies, and experiments, we tested whether natural and experimentally induced variation in hedonic versus utilitarian goal activation helps explain why people seek less variety across days for their breakfasts than for their lunches and dinners.

### 1.1. Circadian rhythms in meals and goals

Circadian rhythms are patterns that manifest in many physical, psychological, and behavioral domains over the course of a 24-h cycle (e.g., Bodenhausen, 1990; Panda, 2016). One peculiar circadian rhythm exists in the domain of food. Within the same person, appetitive domain, and day, there is substantial disparity in variety seeking across meals. People more often eat the same breakfast each day than the same lunch or dinner (Khare & Inman, 2006). One driver of this diurnal variation is a cultural constraint. Capitalist labor practices allow many people less time to select, prepare, and consume their breakfasts than their lunches or dinners (Khare & Inman, 2006). They thus have time to prepare and eat fewer combinations of food at breakfast than at lunch and dinner. A biological driver also contributes to this diurnal variation. Physiological arousal increases according to a concave function throughout the day, and people seek to optimize their stimulation level by matching the arousing effects of variety to the level of arousal they are currently feeling (Gullo, Berger, Etkin, Bollinger, & Morales, 2019).

We suggest a complementary (and malleable) intermediary psychological driver. We suggest there is substantial diurnal variation in the

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goals that people pursue for breakfast, lunch, and dinner and that this helps explain why people pursue different levels of variety seeking in meals across days. We adopted an item-based definition of variety seeking across days. For each person (*i*), we examined how many times the exact combination of foods consumed at meal *m* on day *d* was consumed on other days of the week. If Elizabeth Alexandra Mary Windsor ate Special K and a fruit salad for breakfast on Monday, for instance, how many other times did that queen eat that combination of foods for breakfast that week? We acknowledge that this is one of many ways to measure variety seeking, which includes variance in the nutritional content of foods eaten (Khare & Inman, 2006), types of cuisines eaten (e.g., pasta, Haws, Liu, Redden, & Silver, 2017), and perceptions of variety (Hoch, Bradlow, & Wansink, 1999).

Goals drive many decisions about what people eat. Two that are prevalent in decisions about food are hedonic and utilitarian goals (Dhar & Wertenbroch, 2000). Hedonic experiences are characterized as pleasurable and sensorial. Hedonic goals are pursued to produce hedonic experiences and the pleasurable sensations, affective states, and emotions they produce (Hirschman & Holbrook, 1982). In contrast, utilitarian experiences are more often characterized as useful and functional. Utilitarian goals are often pursued to fulfill a superordinate goal, as a means to an end, such as eating a particular food to facilitate weight control (Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008), optimize long-term health (Belei, Geyskens, Goukens, Ramanathan, & Lemmink, ), or maximize short-term performance (Gildersleeve, 2012; Loebnitz & Grunert, 2018). People pursuing a hedonic goal might have a milkshake to experience the cold, sweet, rewarding sensations it produces in their body, for instance, whereas those pursuing a utilitarian goal might eat a meal-replacement shake to help them control their weight. Hedonic and utilitarian goals are frequently in conflict when eating (Dhar & Wertenbroch, 2000), which often requires people to make trade-offs between maximizing pleasure and satisfying more utilitarian goals.

### 1.2. The present research

We suggest there is a circadian rhythm in the relative activation of hedonic versus utilitarian goals within the day. Long-term dietary goals may be active throughout the entire day but are often balanced against conflicting short-term goals (Orehek & Vazeou-Nieuwenhuis, 2013). We theorize that as the day progresses, the relative activation of utilitarian goals for eating declines, and the activation of hedonic goals increases. Consequently, for most people, hedonic goals are least active at breakfast and most active at dinner. Indirect support for our assumption from the literature includes research findings that indicate people more frequently exhibit the kind of self-control that utilitarian eating practices require in the morning than evening (Dhar & Wertenbroch, 2000; Kouchaki & Smith, 2014). Indirect evidence from practice comes from the breakfast foods featured in marketing campaigns (Bian & Markman, 2020), which tend to fulfill more utilitarian than hedonic goals. We have also found marketers emphasize the utilitarian rather than hedonic benefits of breakfast foods in observational pilot studies of online food manufacturers (Pilot Study A, Supplementary Material 1–2) and restaurant managers (Pilot Study B, Supplementary Material 3). While we hypothesize that the activation of hedonic goals increases throughout the day, we acknowledge that this increase may not be monotonic and likely to be larger at breakfast rather than at dinner. Similarly, Gullo et al. (2019) found that the increase in physiological arousal is greater in morning to midday rather than midday to evening.

Hedonic goal activation increases variety seeking (Whitley, Trudel, & Kurt, 2018). Variety helps fulfill hedonic goals by reducing the pleasure-dampening effects of satiation and habituation within and across meals (Galak & Redden, 2018). Satiation and habituation lead people to derive less pleasure from the last bite of a food than the first bite but can be slowed within the same meal by consuming by foods that actually differ or are perceived to differ (e.g., in flavor, texture, color; Redden, 2008; Rolls, Rolls, Rowe, & Sweeney, 1981). Likewise, people

seek to eat a variety of meals to counteract the effects of satiation and habituation on their enjoyment of meals recently eaten (Galak, Redden, & Kruger, 2009; Garbinsky, Morewedge, & Shiv, 2014).

We argue that if people are less likely to pursue hedonic goals for their breakfasts than lunches and dinners, they should seek less variety across days in their breakfasts than in their lunches and dinners. If people are more likely to be pursuing utilitarian goals at breakfast, the pleasure enhanced by variety may be less important in their choice of foods than maximizing the efficiency of meal preparation, their health, weight control, or saving money. This “breakfast monotony” prediction complements the time-constraint driven prediction of Khare and Inman (2006). However, it stems from a distinct psychological mechanism in which time allocated to a meal is not externally constrained; instead, it is determined by goals associated with food consumption during that meal. We measured these goals, their diurnal variation, and their relationship to variety seeking.

A second related prediction was that relative variation in hedonic goal pursuit has a diminishing marginal effect on variety seeking across days from breakfast to dinner. Because the baseline of hedonic goal activation at breakfast is lower than at lunch than at dinner (i.e., breakfast < lunch < dinner), interventions increasing hedonic goal activation will produce a larger increase in variety seeking at breakfast than at lunch than at dinner (i.e., breakfast > lunch > dinner). Indeed, in previous research on variety seeking throughout the day, Gullo et al. (2019) found that physiological stimulation has a weaker influence on variety seeking as the day progresses. Because baseline physiological stimulation is typically lower in the morning than later in the day, the increase in variety seeking with physiological stimulation is stronger in the morning than later in the day. We suggest that, similarly, because the baseline of hedonic goal activation at breakfast is lower than at lunch than at dinner, the same increase in hedonic goal activation that might occur due to a weekend, holiday, change in diet, or marketing intervention will influence variety seeking more at breakfast than lunch, and at lunch than at dinner.

We used a multithreaded approach testing the role of hedonic goals using natural variation in hedonic goals (e.g., weekday vs. weekend Studies 1A–B), individual variance in goals (Study 2), and experimental manipulations (Study 3), rather than solely mediation analyses, as suggested by Spencer, Zanna, and Fong (2005). We also tested whether hedonic goal activation is a substantive predictor of variety seeking in meals when controlling for previously identified covariates such as time spent on meals, the presence of other people (Ariely & Levav, 2000; Higgs, 2015), and whether food is consumed inside or outside the home (Ratner & Kahn, 2002).

The materials and procedures were approved by the Boston University Charles River Campus Institutional Review Board. Informed consent was obtained for all participants in studies involving primary data collection with human subjects. Raw data and Stata code files are available on the Open Science Framework at <https://osf.io/dwx9j>.

## 2. Studies 1A & 1B: natural variations in hedonic goals

In Study 1A and 1B, we tested our central prediction by exploiting endogenous variation in hedonic goal pursuit at meals. With diary data, we compared meals eaten on weekdays and on the weekend. We assumed that people would be more likely to pursue hedonic goals when eating meals over the weekend than during weekdays. In a pretest, detailed in Supplementary Appendix 4, we found that hedonic goal activation was indeed higher on the weekend than during weekdays. While we acknowledge that a variety of factors change from week to weekend, we controlled for three important drivers in our pretest and in Studies 1B and 2: time spent on meals, the presence of others, and consumption location. We explored more factors regarding variation in hedonic goal activation from weekdays to weekend in Study 2. Moreover, we predicted the increased hedonic goal pursuit for meals over the weekend should exhibit diminishing marginal returns: it should increase

variety seeking more at breakfast than at lunch than at dinner.

### 2.1. Study 1A: the increase in variety seeking over the weekend is stronger for breakfast

Study 1A drew from a large ( $N = 1275$ ) sample of Americans who each provided a food diary in which they reported all meals eaten over the course of seven days. We started by statistically replicating the breakfast monotony effect found in [Khare and Inman \(2006\)](#), testing for lower levels of variety seeking across days at breakfast than at lunch than at dinner. We used a similar data set, but our empirical strategy differed in two important ways. First, our measures of variety seeking across days were based on the exact combination of foods consumed rather than the nutritional composition of the meal ([Khare & Inman, 2006, 2009](#)). Second, we exploited the natural increase in hedonic goals from the weekday to the weekend to examine how different levels of hedonic goal activation affect variety seeking.

#### 2.1.1. Method

In the focal study, our analyses examined food diary data collected by the NPD Group in 2004 from a nationally representative sample of Americans. The initial sample included 1713 respondents from 0 to 99 years old. We removed participants under 18 years of age, as their choices are likely to be influenced by their parents, which may bound the effect ([Botti & McGill, 2010](#)). The final sample consisted of 1275 American adults. We also limited our analysis to the first seven days of the diaries to facilitate the comparison of the results of this American sample to the French sample in Study 1B, who only recorded their meals for one week. The results are similar when including all 14 days recorded by the American sample, instead of seven (see Supplementary Material 5).

Information about six food occasions (breakfast, lunch, dinner, and three snacks) was recorded for each participant, every day for two weeks, in 2004. Due to our focus on meals, we removed snack observations (9% of the total food items consumed). Each observation captured the consumption of one food item (e.g., eggs) on a specific day  $d$ , for one meal  $m$ , for one panel member  $i$ . The NPD Group organized the food items in 166 categories (see Supplementary Material 6). The exclusions discussed above only slightly changed the estimates. All conclusions still hold using participants below 18, including snacks, and using the alternative categorizations from Study 1B (see Supplementary Material 5).

We measured variety seeking across days in two ways. First, we analyzed the data across days to produce a maximum of seven observations for each meal of each panel member. Our measure of variety seeking across days is a function of the number of weekly repetitions of each food combination (i.e., from one to seven repetitions) relative to the number of meals reported within the week (e.g., from one to seven breakfasts).

$$Variety_{ind} = \frac{\# Meals_{im} - \# Weekly Repetitions_{ind}}{\# Meals_{im}}$$

Specifically, we computed how many times a food combination consumed on day  $d$  was consumed on other days of the week for meal  $m$  of individual  $i$ . Supplementary Material 7 provides details on this disaggregated measure of variety seeking ( $M = 0.71$ ,  $SD = 0.22$ ). Minimal variety seeking occurs when a participant eats the same combination of breakfast foods every day on seven consecutive days (min. = 0.00), and maximum variety seeking occurs if they eat that combination only once in seven breakfasts (max. = 0.86). This measure is sensitive to small variations in food consumption: close combinations are considered to differ even if meals vary by a single item (e.g., a breakfast of ham and cheese on Monday, versus a breakfast of ham and cheese and egg on Tuesday).

We also used two measures of variety seeking across days as robustness checks by examining the data at the level of meal,

aggregating the seven daily observations (see details in Web Appendix 8). First, we used an aggregated measure adapted from [Gullo et al. \(2019\)](#), the function of the number of unique different items consumed throughout the week and the total number of items consumed over the week. This measure ranges from 0 to 1 (i.e., no variety to maximum variety across days, respectively;  $M = 0.62$ ,  $SD = 0.23$ ). Second, we computed entropy, a measure of dispersion for categorical variables ([Van Herpen & Pieters, 2002](#)), which has been previously used to measure variety seeking ([Mitchell, Kahn, & Knasko, 1995](#)). This measure ranges from 0 to 3.23 (i.e., no variety over time to maximum variety over time;  $M = 1.78$ ,  $SD = 0.68$ ).

Consistent with [Khare and Inman \(2006\)](#), we used a multilevel model to account for the hierarchical nature of our data: day observations (level 1) are nested within meals (level 2), which, in turn, are nested within panelists (level 3). We used linear mixed-effect regressions with random intercepts at both the panelist and the meal-within-panelist levels.

#### 2.1.2. Results

We began by testing for the breakfast monotony effect, examining the direct effect of meals on variety seeking across days. We estimated a regression with a nominal meal variable, that is, two dummy variables for lunch and dinner, with breakfast serving as the reference category. The level of variety seeking was significantly lower for breakfast compared to lunch ( $\beta = 0.10$ ,  $z = 15.70$ ,  $p < .001$ ) and to dinner ( $\beta = 0.17$ ,  $z = 26.14$ ,  $p < .001$ ). The difference in variety seeking between lunch and dinner was also significant ( $\beta = 0.07$ ,  $z = 10.22$ ,  $p < .001$ ). See Supplementary Material 9 for detailed results. The effect of meals on variety seeking across days holds when using the alternative aggregated and entropy measures (Supplementary Material 5): variety seeking was significantly lower for breakfast as compared to lunch (aggregated:  $\beta = 0.18$ ,  $z = 31.10$ ,  $p < .001$ ; entropy:  $\beta = 0.46$ ,  $z = 25.93$ ,  $p < .001$ ) and to dinner (aggregated:  $\beta = 0.20$ ,  $z = 35.61$ ,  $p < .001$ ; entropy:  $\beta = 0.81$ ,  $z = 45.86$ ,  $p < .001$ ). The difference between lunch and dinner was also significant (aggregated:  $\beta = 0.02$ ,  $z = 4.28$ ,  $p < .001$ ; entropy:  $\beta = 0.35$ ,  $z = 19.67$ ,  $p < .001$ ).

As a preliminary test of the declining effect of hedonic goals on variety seeking across days, we estimated a model that includes interaction terms between the meal dummy variables and a dummy variable for weekday (0) or weekend (1; [Fig. 1](#), Panel A). Consistent with our main prediction, both interactions terms were significant (respectively,  $\beta = -0.03$ ,  $z = -6.98$ ,  $p < .001$  and  $\beta = -0.04$ ,  $z = -10.54$ ,  $p < .001$ ) such that the increase in variety seeking over the weekend was stronger for breakfast ( $\beta = 0.05$ ,  $z = 16.07$ ,  $p < .001$ ). The simple effect of weekend on lunch was smaller but significant ( $\beta = 0.02$ ,  $z = 5.58$ ,  $p < .001$ ). The simple effect of weekend was not significant for dinner ( $\beta = 0.003$ ,  $z = 1.21$ ,  $p = .23$ ).

### 2.2. Study 1B: cross-cultural replication controlling for meal-level situational covariates

There is certainly important cultural variation in the types of food people eat for different meals ([Spence, 2017](#)). Study 1B conceptually replicates the results from Study 1A with French participants, known to be more hedonic in their orientation toward meals and to spend more time eating than Americans ([Rozin, 2005](#); [Rozin, Remick, & Fischler, 2011](#)). Since [Khare and Inman \(2006\)](#) suggested that time scarcity influences the meal variations in variety seeking, we tested in Study 1B whether the results of Study 1A hold when time spent on meals is included as a control variable. Moreover, we also tested whether our findings hold when controlling for two factors that drive the influence of social norms on food choice (e.g., [Higgs, 2015](#)), whether a meal is eaten alone or in the presence of others, and whether it is eaten in or outside of the home.

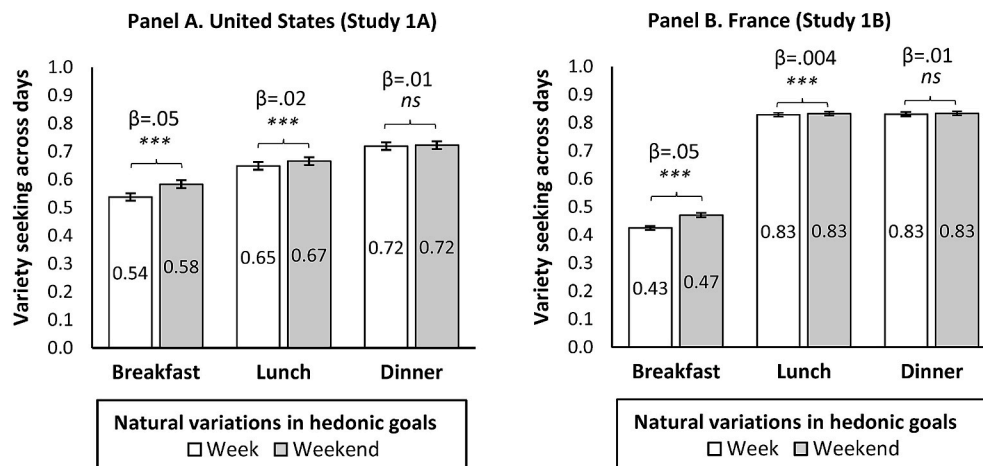


Fig. 1. Declining Effect of Hedonic Goals on Variety Seeking (Studies 1A & 1B). Note: Bars represent 95% confidence intervals.

### 2.2.1. Method

In Study 1B, we analyzed a French ANSES food diary database with a similar design to the NPD Group database used in Study 1A. ANSES, a public organization, collected food diaries in 2006–2007 from a nationally representative sample of the French population. This INCA2 database is publicly available (ANSES, 2014) and has been used in previous nutrition research (Dubuisson et al., 2010). The data consists of food diaries completed over a period of one week, including food consumption for three main meals and snacks. Consistent with Study 1A, we removed snacks and participants under 18 years of age, yielding a sample of 2624 adults. We used the same food categories and measures of variety seeking across days as used in Study 1A. As shown in Supplementary Material 10, the database includes three covariates at the meal level: duration of the meal (in minutes), whether the meal was eaten in the presence of others or alone, and the location where it was consumed (in or outside of the home). Compared to the NPD Group using 166 food categories (Study 1A), ANSES used 44 food categories (Study 1B). We recategorized the food items in Study 1A using the 44 categories from Study 1B to make the estimates from both studies more comparable. This alternative categorization did not change any of the results discussed in Study 1A.

### 2.2.2. Results

Using the same empirical strategy and covariates, we replicated the breakfast monotony effect illustrated in Supplementary Material 9. Variety seeking across days for breakfast was significantly lower compared to lunch ( $\beta = 0.39$ ,  $z = 80.04$ ,  $p < .001$ ) and to dinner ( $\beta = 0.39$ ,  $z = 80.85$ ,  $p < .001$ ). The difference in variety seeking between lunch and dinner was not significant ( $\beta = 0.002$ ,  $z = 0.39$ ,  $p = .70$ ). These results hold when including the control variables (Supplementary Material 11, Model 2). The results also hold when using the aggregated measure of variety seeking across days (Supplementary Material 9).

As our focal test of the influence of hedonic goals on variety seeking across days, we estimated a model with the interaction terms between the meal dummy variables and the weekend dummy variable. Consistent with Study 1A, both interactions terms were significant (respectively,  $\beta = -0.04$ ,  $z = -17.27$ ,  $p < .001$  and  $\beta = -0.04$ ,  $z = -18.05$ ,  $p < .001$ ), such that increases in variety seeking over the weekend was greatest for breakfast ( $\beta = 0.05$ ,  $z = 26.74$ ,  $p < .001$ ; see Fig. 1, Panel B). The simple effect of weekend versus weekday was significant for lunch ( $\beta = 0.004$ ,  $z = 2.46$ ,  $p = .01$ ), but not for dinner ( $\beta = 0.002$ ,  $z = 1.51$ ,  $p = .13$ ). When including the control variables (Supplementary Material 11, Model 3), the simple effect of weekend versus weekday was significant for breakfast ( $\beta = 0.04$ ,  $z = 24.19$ ,  $p < .001$ ), but not for lunch ( $\beta = 0.001$ ,  $z = 0.44$ ,  $p = .66$ ) or dinner ( $\beta = 0.001$ ,  $z = 0.64$ ,  $p = .52$ ).

We estimated models with three-way interactions to examine

whether the control variables moderated the simple effect of weekend on variety seeking for breakfast (Supplementary Material 11, Models 4–6). The simple effect of weekend on variety seeking for breakfast was greater in the presence of others ( $\beta = 0.03$ ,  $z = 6.92$ ,  $p < .001$ ). Time spent on meals and consumption location, however, did not moderate the effect of weekday versus weekend on variety seeking for breakfast.

### 2.3. Discussion

In two studies, we found that American and French participants exhibited less variety seeking across days for breakfast than for other meals. Moreover, consistent with our variation-in-hedonic-goals account of variety seeking, we observed the predicted increase in variety seeking for meals on weekend days relative to weekdays. This increase is most pronounced for breakfast. These results are robust across both samples and three indices of variety seeking across days and hold when including three important situational covariates.

An important limitation is that controlling for time spent on meals in Study 1B did not affect the results, but the data do not allow us to reject the alternative possibility that time spent eating drives the increase in variety seeking for breakfast on the weekend (see Supplementary Material 12). We suggest a more general sequential explanation, such that the more proximal increase in hedonic goals over the weekend makes people spend more time on breakfast (but not vice versa), which allows greater variety seeking. We could not test this serial mediation in Study 1B but designed Study 2 to allow for such a test by measuring meal goals in the week and on the weekend. As an additional direct test of the goals versus time accounts of variety seeking, we directly compared experimental manipulations of increasing hedonic goals and increasing time spent eating on variety seeking at breakfast (Supplementary Material 17).

### 3. Study 2: measuring hedonic goals using the event reconstruction method

In Study 2, we extended testing of our theory by using a direct measure of the relative activation between hedonic and utilitarian goals. We used the event reconstruction method, or ERM (Schwarz, Kahneman, & Xu, 2009), adapted from the day reconstruction method, or DRM (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Compared to the DRM, which takes 45–75 min to complete, ERM is an efficient and effective method to facilitate access to episodic memory, minimize recall errors and biases, and increase the probability of precise recall (Grube, Schroer, Hentzschel, & Hertel, 2008). This design also allowed us to directly test our hypotheses using a different method.



### 3.1. Method

Using Amazon Mechanical Turk, we recruited 199 participants residing in the United States (43% female,  $M_{\text{age}} = 35.25$ ,  $SD = 9.83$ ). We asked participants, on a Tuesday, to recall eating episodes for the last two days: Monday (a weekday) and Sunday (a weekend day). We first asked participants to recall all their meals across the last two days. Participants indicated the type of each meal recalled (breakfast, lunch, dinner) and the time of consumption. Participants then rated each meal on three questions, presented in a random order: hedonic vs. utilitarian goal ("Generally, we distinguish between two food consumption goals: [a] a utilitarian goal derived from functional aspects of food or [b] a hedonic goal derived from sensory aspects of food. How would you categorize the goal of this eating episode?" from 1 = *utilitarian* to 7 = *hedonic*), enjoyment ("How much did you enjoy this eating experience?" from 1 = *not at all* to 7 = *very much*), and the vividness of their memory ("How vividly do you remember this eating episode?" 1 = *very vague* to 7 = *very detailed*).

Next, participants recalled and wrote down the combination of foods they consumed in each episode. They then completed a variety-seeking measure, which asked, "In the last seven days, how many times have you eaten [food items reported in the previous question] for [food occasion]," rated from 1 to 7. As in studies 1A and 1B, the measure was based on the number of weekly repetitions for a food combination, only the repetitions were self-reported in the present study. We then reverse scored this measure for clarity so that variety seeking ranged from 7 as the highest magnitude of variety seeking to 1 as the lowest magnitude of variety seeking.

We also included the three control variables for each meal, as in Study 1B: (a) whether the meal was consumed in the presence or absence of others and (b) in or outside the home, and (c) the duration of the meal (from 1 = *less than 10 min* to 5 = *more than 40 min*).

Consistent with Studies 1A and 1B, we used multilevel mixed-effects linear regression to account for the hierarchical nature of our data. Meal observations (level 1) are nested within panelists (level 2).

### 3.2. Results

As a test of our central prediction, we estimated a regression on variety seeking across days with independent variables: meals (lunch and dinner dummy variables), hedonic goals, and their interactions. The results yielded significant interactions between hedonic goals and the meal variables (i.e., dummy variable) for lunch ( $\beta = -0.18$ ,  $z = -2.60$ ,  $p = .009$ ) and dinner ( $\beta = -0.28$ ,  $z = -4.14$ ,  $p < .001$ ). As shown in Fig. 2 (Panel A), the simple effect of hedonic goals on variety seeking across days was stronger for breakfast ( $\beta = 0.31$ ,  $z = 5.57$ ,  $p < .001$ ) than for lunch ( $\beta = 0.13$ ,  $z = 2.85$ ,  $p = .004$ ) and dinner ( $\beta = 0.04$ ,  $z = 0.82$ ,  $p = .41$ ). Note that the slopes for lunch and dinner are marginally different

( $\beta = -0.10$ ,  $z = -1.68$ ,  $p = .09$ ). For illustrative purposes, we also plotted variety-seeking estimates at the mean and one unit above the mean of hedonic goals in Fig. 2 (Panel B). This result shows that the same change in hedonic goals led to greater change in variety seeking for breakfast than for lunch and dinner. The results hold when controlling for weekend, time spent eating, presence of others, and consumption location. See Supplementary Material 14 for details.

As a second test of our central prediction, we tested for an interaction between meals and week versus weekend. The analyses yielded a significant interaction between breakfast and dinner ( $\beta = -0.61$ ,  $z = -2.56$ ,  $p = .01$ ) but not between breakfast and lunch ( $\beta = -0.32$ ,  $z = -1.30$ ,  $p = .19$ ). The simple effect of weekend on variety seeking was significant only for breakfast ( $\beta = 0.42$ ,  $z = 2.21$ ,  $p = .03$ ). As predicted, the simple effects decreased for lunch ( $\beta = 0.09$ ,  $z = 0.57$ ,  $p = .57$ ) and dinner ( $\beta = -0.19$ ,  $z = -1.33$ ,  $p = .18$ ).

Finally, we examined whether the increase in variety seeking for breakfast over the weekend is due to a change in hedonic goals. We estimated a moderated mediation with 5000 clustered bootstrap samples, as shown in Table 1. Consistent with our prediction, the indirect effect of weekend on variety seeking through hedonic goals was significant for breakfast ( $\beta = 0.05$ , 95% CI [0.0004, 0.1090]) and decreased for lunch ( $\beta = 0.04$ , 95% CI [-0.0050, 0.0901]) and dinner ( $\beta = -0.01$ , 95% CI [-0.0599, 0.0271]).

Consistent with Study 1B, however, we also found that an increase in time spent eating mediates this effect (see Table 1, line 2). Therefore, we tested two serial mediation models with hedonic goals and time spent eating to discern the direction of the effect. As predicted, the simple effect of weekend on breakfast increased hedonic goals, which then led to longer time spent eating and then greater variety seeking (see Table 1, line 3). We also tested the causal chain by reordering the two mediators, where the longer time spent eating increased hedonic goals and then variety seeking (see Table 1, line 4). The confidence intervals for the alternative model were 0 for all three meals. Last, results from an additional mediation analysis revealed that the influence of weekday breakfast (vs. weekday other meals) on variety seeking across days was mediated by hedonic goals ( $\beta = -0.08$ , 95% CI [-0.1084, -0.0112]).

### 3.3. Discussion

The results of Study 2 support our hypotheses with direct measures of goals. Participants were less likely to pursue hedonic goals for breakfast than for lunch than for dinner. Furthermore, we have documented evidence of a declining effect of hedonic goals on variety seeking: consistent with our central prediction, we found that a change in hedonic goals was associated with a greater increase in variety seeking for breakfast than for lunch than for dinner.

The degree to which research participants pursued hedonic goals at meals predicted both how much time they spent eating and their level of

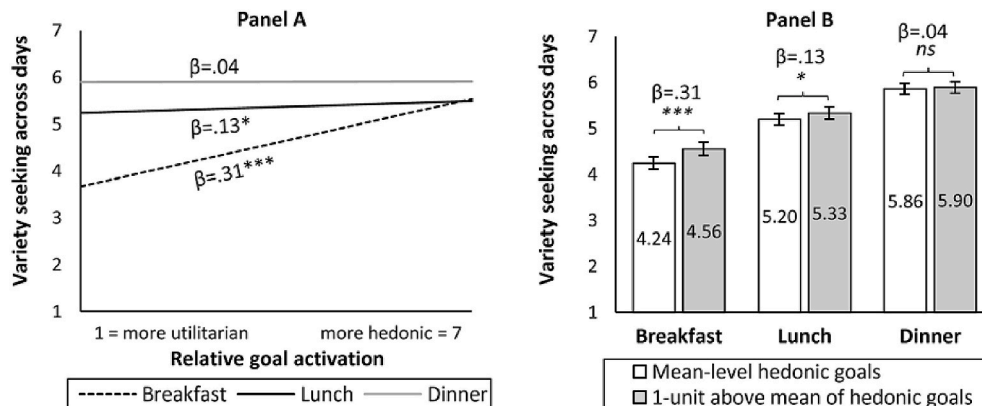


Fig. 2. Declining effect of hedonic goals on variety seeking (study 2).

**Table 1**

Variety seeking increases from week to weekend via hedonic goals and time (study 2).

	Indirect effects (95% confidence interval)		
	For breakfast	For lunch	For dinner
1: Meal*weekend - > goals - > variety	.0523* (.0004, .1090)	.0412 (-.0095, .0901)	-.0147 (-.0599, .0271)
2: Meal*weekend - > time - > variety	.0883* (.0227, .1727)	.0251 (-.0289, .0946)	.0031 (-.0590, .0646)
3: Meal*weekend - > goals - > time - > variety	.0162* (.0025, .0375)	.0128* (.0002, .0311)	-.0048 (-.0181, .0066)
4: Meal*weekend - > time - > goals - > variety	.0091 (-.0004, .0208)	.0026 (-.0055, .0124)	.0003 (-.0092, .0089)

Note: Moderated mediation results using mixed effects regressions with random intercepts by individuals. Indirect effects estimated with 5000 clustered bootstrap samples. \*95% confidence interval excludes zero.

variety seeking. The data do not support a model by which greater time spent eating drives the pursuit of hedonic goals and variety seeking. Together, the results support a goal-driven account of why people might both spend less time eating breakfast and exhibit a lower level of variety seeking for breakfast than for other meals (Khare & Inman, 2006).

In addition, the results provide further evidentiary support (in addition to the pretest reported before Study 1) for the assumption that hedonic goal pursuit at meals is greater over the weekend than on weekdays in Studies 1A and 1B.

Finally, consistent with our prediction, we find that influence of goals on variety seeking consumption will be smaller for dinner than for breakfast ( $b_{\text{dinner}} < b_{\text{breakfast}}$ ). However, we also find that the influence of goals on variety seeking did not reach statistical significance for dinner ( $b_{\text{dinner}} = 0$ ), which we did not expect. Considering study 1A in which our goal proxy significantly increased variety seeking for dinner, we believe that one reason behind study 2's results may be due to lower statistical power due to a smaller sample size ( $N = 200$  in study 2 vs.  $N = 1275$  in Study 1A).

#### 4. Study 3: manipulating hedonic goals using experimental design

In Study 3, we manipulated the pursuit of hedonic and utilitarian goals and measured their effects on what participants intended to eat for their next breakfast—whether they intended to repeat a combination of foods recently eaten for breakfast. The comparison of participants randomly assigned to a hedonic intervention, utilitarian intervention, and to no intervention (i.e., control condition) allowed us to test the effect of increasing hedonic goals on variety seeking and to examine whether people spontaneously pursue utilitarian goals at breakfast. Our theory predicts that, relative to the control group, participants in the hedonic goal intervention condition should be more likely to intend to consume a novel combination of foods for breakfast. If utilitarian goals are spontaneously pursued at breakfast, then participants randomly assigned to pursue a utilitarian goal for breakfast should be as likely to intend to repeat a recent meal as members of the control group.

##### 4.1. Method

One hundred and eighty-one Amazon Mechanical Turk workers residing in the United States (40% female,  $M_{\text{age}} = 36.34$ ,  $SD = 10.06$ ) were randomly assigned, on a Monday, to one of three groups: control ( $n = 60$ ), hedonic goal intervention ( $n = 59$ ), or utilitarian goal intervention ( $n = 62$ ). These goal manipulations were adapted from Botti and McGill (2010) and Whitley et al. (2018).

In the control group, participants were instructed, “Your objective for tomorrow: we would like you to eat breakfast.” In the hedonic goal intervention group, participants were instructed, “Your objective for tomorrow: we would like you to maximize your enjoyment with a pleasurable breakfast.” In the utilitarian goal intervention group, participants were instructed, “Your objective for tomorrow: we would like

you to maximize your convenience with an efficient breakfast.”

Next, participants identified the foods they intended to eat for breakfast the next day. To measure variety seeking, they indicated whether they had consumed that combination of foods at breakfast in the past week on a binary yes-or-no-choice measure. Participants rated the meal they planned to eat on its healthiness and tastiness and on their anticipated enjoyment. Next, they reported whether they planned to eat that breakfast in or outside the home, and in the presence or absence of other people. Participants also completed four measures of arousal in the morning ( $\alpha = .91$ , Smith, Reilly, & Midkiff, 1989) on 5-point scales with questions such as, “Assuming normal circumstances, how easy do you find getting up in the morning?” (with endpoints such as 1 = *not at all easy* and 5 = *very easy*).

Finally, we included two manipulation checks. First, we asked participants how much time they planned to spend preparing and eating their breakfast the next day, indicated on an analog slider with endpoints 0 and 60 min. Second, we included four measures of utilitarian versus hedonic goals adapted from Whitley et al. (2018) regarding the degree to which their goal for breakfast the next morning was related to enjoyment, pleasure, practicality, and convenience, on 7-point scales with endpoints 1 (*strongly disagree*) and 7 (*strongly agree*). We reverse coded the last two utilitarian items and averaged them with the two hedonic items into a single index ( $\alpha = 0.67$ ), with higher values indicating a more hedonic goal.

A manipulation check on hedonic goals revealed a significant main effect of condition ( $F(2,177) = 19.69$ ,  $p < .001$ ; see Supplementary Material 15). Hedonic goals were significantly greater in the hedonic goal intervention ( $M = 4.53$ ,  $SE = 0.12$ ) than the utilitarian goal intervention group ( $M = 3.63$ ,  $SE = 0.11$ ,  $\beta = -0.90$ ,  $t = -5.69$ ,  $p < .001$ ), and compared to the control group ( $M = 3.71$ ,  $SE = 0.11$ ,  $\beta = -0.83$ ,  $t = -5.17$ ,  $p < .001$ ). Suggesting that participants were already pursuing utilitarian goals for breakfast, there was no difference in the hedonism of the goal pursued between the utilitarian goal intervention and the control group ( $\beta = 0.08$ ,  $t = 0.48$ ,  $p = .63$ ).

##### 4.2. Results

As a test of our hypothesis on the effect of increasing hedonic goals on variety seeking, we conducted a logistic regression with variety seeking across days as a binary dependent variable (0 = I have consumed this meal in the past week; 1 = I never consumed this meal in the past week). The independent variables were a dummy for the control condition and a dummy for the utilitarian goal condition, with the hedonic goal condition as a reference category. There was a significant main effect ( $\chi^2(2) = 11.56$ ,  $p = .003$ ). Consistent with our prediction, planned contrasts showed that the hedonic goal intervention increased variety seeking at breakfast compared to the utilitarian goal ( $\beta = -1.12$ ,  $z = -2.95$ ,  $p = .003$ ) and control ( $\beta = -1.08$ ,  $z = -2.81$ ,  $p = .005$ ; Fig. 3) groups. We found no differences between the utilitarian goal and the control ( $\beta = 0.05$ ,  $z = 0.12$ ,  $p = .90$ ) groups. These results hold when controlling for eating location, presence of others, and morning arousal

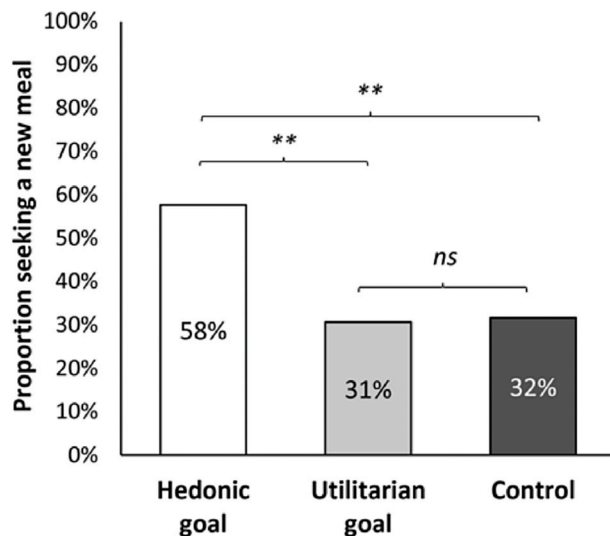


Fig. 3. Variety seeking by hedonic and utilitarian interventions.

(Supplementary Material 16).

#### 4.3. Discussion

Study 3 found that an experimental manipulation increasing hedonic goal activation for breakfast increased intended variety seeking for that meal. The results also provide novel evidentiary support for the default goal pursued by people at breakfast. The similarly low levels of variety seeking exhibited by control group members (32%) and participants instructed to pursue a utilitarian goal at breakfast (31%) suggest that the default is to pursue a utilitarian rather than a hedonic goal for breakfast. Of course, we cannot rule out that the results are partially driven by a demand effect such that any instructions (e.g., “maximize your enjoyment”) may encourage participants to do something different. However, not all instructions influenced intentions to repeat meals: the utilitarian goal scenario (“maximize convenience,” Study 3) and priming a goal to spend more time preparing and eating the meal (Supplementary Material 17) did not influence variety seeking compared to control conditions.

#### 5. Discussion

Across countries with different gastronomic traditions and cultures, we found a circadian rhythm in variety seeking across days: people more often eat the same meal every day at breakfast than at lunch or dinner. Our findings identify a psychological driver of this diurnal variation in variety seeking in meals across days. Different goals pursued at breakfast, lunch, and dinner underlie the different levels of variety sought at breakfast, lunch, and dinner. The relationship between goals and variety seeking across days was found in diary data, event reconstruction methods, and experimental methods. People were more likely to engage in variety seeking when endogenous factors increased their pursuit of hedonic goals, such as when eating meals over the weekend rather than on weekdays (Studies 1–2), or at dinner rather than at breakfast (Studies 1–2). Exogenous increases in the pursuit of hedonic goals affected a similar increase in variety seeking at breakfast in Study 3. Finally, we observed that a similar increase in hedonic goal activation enacts a larger increase in variety seeking across days at breakfast than at lunch than at dinner, suggesting a diminishing marginal effect of hedonic goal activation on variety seeking.

Our results are consistent with [Gullo et al. \(2019\)](#), in which consumers seek less variety in the morning due to a (diurnal) lower need for arousal. Thus, they are consistent with a circadian variation explanation. In a state of lower need for arousal, individuals are less likely to

enact hedonic goals. Theoretically, physiological differences should be a distal explanation and hedonic goals a more proximal explanation. Compared to (physiological) arousal, however, hedonic goals are psychological and more malleable. Consumers often consciously choose which goals to pursue.

Our research disentangles the underlying role of time in modulating variety seeking in meals across days. [Khare and Inman \(2006\)](#) suggested that time scarcity plays a causal role in variety seeking across meals. We suggest a revised view, that greater time usage is one of many downstream consequences of increased hedonic goals. In other words, the term “time scarcity” implies a deterministic constraint. People experiencing time scarcity might be viewed as constructing the optimal meal for which they have time (e.g., “I ate a breakfast bar because it required no time to prepare and I could eat it on the train”). Our findings suggest that people have some flexibility in the time they allocate to a meal, depending on the goal associated with its consumption (e.g., [Etkin, Evangelidis, & Aaker, 2015](#)). An increase in the pursuit of a hedonic goal for a meal increases how much time is allocated to the meal, which in turn increases variety seeking for that meal (Study 2). We did not find that increasing time devoted to a meal without changing the salient consumption goal increases variety seeking (Supplementary Material 17). Indeed, if people have little motivation to have a pleasurable breakfast and the goal pursued at breakfast is mostly utilitarian, spending additional time to prepare and eat a novel meal may be frustrating and feel counterproductive.

An obvious concern with this interpretation of the relationship between hedonic goals and variety seeking across days is the possibility that the declining influence of hedonic goals is simply due to a ceiling effect. In other words, there is already so much variety seeking at lunch and dinner that additional variation in those meals is impossible. We statistically tested for this alternative account of the relationship at dinner, where participants exhibited the greatest variety seeking, and found it to be implausible. In all studies comparing the influence of hedonic goals on variety seeking (Studies 1A, 1B, and 2), we found that variety seeking at dinner was statistically lower than the scale ceiling (all  $Z$ s  $\geq 3.13$  all  $p$ s  $\leq .002$ ). Thus, a ceiling effect is unlikely to explain the diminishing effect of hedonic goals on variety seeking from breakfast to lunch to dinner.

Variety seeking across days is likely to be affected by other factors present in the situation and within the consumer. We could control for two likely sources of influence: whether the meal was eaten in the presence or absence of others and in or outside the home. We included both factors as covariates in our analyses. Neither changed the significance of our central prediction (i.e., a  $meal \times goal$  interaction on variety seeking). As eating with friends, or eating out, could potentially increase hedonic goals, we also examined whether the covariates systematically moderated the main prediction. They did not (see Supplementary Material 13). Similarly, while our results are robust to two different cultures (France and the United States), we invite future research to explore breakfast monotony in the context of Asian cultures, where breakfast consumption clearly differs from Western cultures ([Howden et al., 1993](#)).

Last, an obvious concern associated with hedonic interventions is a potential negative impact on indulgent food choices. We believe that an increase in variety seeking at breakfast that is prompted by hedonic goals is unlikely to have deleterious health effects for most people. First, a growing body of work on food well-being ([Block et al., 2011](#)) shows that while visceral hedonic goals can lead to indulgent choices, epicurean hedonic goals can be an ally of healthy eating ([Cornil & Chandon, 2016a, 2016b](#)). Similarly, research has shown that hedonic enhancements (e.g., appetizing product names) can have a positive impact on consumer attitudes ([Cadario & Chandon, 2019](#)) and facilitate the choice and consumption of healthy foods ([Cadario & Chandon, 2020](#)). Second, the relationship between variety seeking and health outcomes is complicated. On the one hand, repeating the same meals (i.e., reducing variety seeking) leads research participants to eat less food due to

sensory-specific satiety (Meiselman, deGraaf, & Leshner, 2000). On the other hand, increasing variety seeking can also make a diet less boring and thus help people with a weight loss goal to sustain healthy dietary choices (Haws et al., 2017). In a longitudinal study, Haws et al. (2017) found that eating a greater variety of foods led to weight loss. This relationship appears to be strongest for variety seeking at breakfast and is particularly tied to the variety of vegetables a person consumes. To examine whether we observed a similar pattern in our samples, we reanalyzed data from Study 1A and found that (a) the indirect effect of the hedonic goal proxy on fruit and vegetable consumption through variety seeking was positive and significant, and (b) that this indirect effect was stronger for breakfast than for lunch and for dinner (see Supplementary Material 18 for details). This tentative evidence suggests that increasing variety seeking can lead to positive health consequences and provides avenues for future research.

We believe that the pattern of variety seeking across days might occur in other domains such as music (e.g., I am listening to the same songs in the morning and different songs in the evening) or social relationships (e.g., I would rather see a variety of friends in the evening but only family in the morning). We encourage future research to further examine this relationship between goals and variety seeking across domains and between multiple domains.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.appet.2021.105716>.

## Ethical statement

The materials and procedures were approved by the Boston University Charles River Campus Institutional Review Board. Informed consent was obtained for all participants in studies involving primary data collection with human subjects. Raw data and Stata code files are available on the Open Science Framework at <https://osf.io/dwx9j>.

## References

- ANSES. (2014). In *Etude Individuelle Nationale des Consommations Alimentaires 2 (INCA 2) (2006-2007)*.
- Ariely, D., & Levav, J. (2000). Sequential choice in group settings: Taking the road less traveled and less enjoyed. *Journal of Consumer Research*, 27, 279–290.
- Belei, N., Geyskens, K., Goukens, C., Ramanathan, S., & Lemmink, J. (2012). The best of both worlds? Effects of attribute-induced goal conflict on consumption of healthful indulgences. *Journal of Marketing Research*, 49, 900–909.
- Bian, L., & Markman, E. M. (2020). Why do we eat cereal but not lamb chops at breakfast? Investigating Americans' beliefs about breakfast foods. *Appetite*, 144, 104458.
- Block, L. G., Grier, S. A., Childers, T. L., Davis, B., Ebert, J. E. J., Kumanyika, S., et al. (2011). From nutrients to nurturance: A conceptual introduction to food well-being. *Journal of Public Policy and Marketing*, 30, 5.
- Bodenhausen, G. V. (1990). Stereotypes as judgmental heuristics: Evidence of circadian variations in discrimination. *Psychological Science*, 1, 319–322.
- Botti, S., & McGill, A. L. (2010). The locus of choice: Personal causality and satisfaction with hedonic and utilitarian decisions. *Journal of Consumer Research*, 37, 1065–1078.
- Cadario, R., & Chandon, P. (2019). Viewpoint: Effectiveness or consumer acceptance? Tradeoffs in selecting healthy eating nudges. *Food Policy*, 85, 1–6.
- Cadario, R., & Chandon, P. (2020). Which healthy eating nudges work best? A meta-analysis of field experiments. *Marketing Science*, 39, 465–486.
- Cornil, Y., & Chandon, P. (2016a). Pleasure as a substitute for size: How multisensory imagery can make people happier with smaller food portions. *Journal of Marketing Research*, 53, 847–864.
- Cornil, Y., & Chandon, P. (2016b). Pleasure as an ally of healthy eating? Contrasting visceral and epicurean eating pleasure and their association with portion size preferences and wellbeing. *Appetite*, 104, 52–59.
- Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. *Journal of Marketing Research*, 37, 60–71.
- Dubuisson, C., Liorret, S., Touvier, M., Dufour, A., Calamassi-Tran, G., Volatier, J.-L., et al. (2010). Trends in food and nutritional intakes of French adults from 1999 to 2007: Results from the INCA surveys. *British Journal of Nutrition*, 103, 1035–1048.
- Etkin, J., Evangelidis, I., & Aaker, J. (2015). Pressed for time? Goal conflict shapes how time is perceived, spent, and valued. *Journal of Marketing Research*, 52, 394–406.
- Galak, J., & Redden, J. P. (2018). The properties and antecedents of hedonic decline. *Annual Review of Psychology*, 69, 1–25.
- Galak, J., Redden, J. P., & Kruger, J. (2009). Variety amnesia: Recalling past variety can accelerate recovery from satiation. *Journal of Consumer Research*, 36, 575–584.
- Garbinsky, E. N., Morewedge, C. K., & Shiv, B. (2014). Interference of the end: Why recency bias in memory determines when a food is consumed again. *Psychological Science*, 25, 1466–1474.
- Gildersleeve, J. C. (2012). Carb loading strategy is spot on. *Nature Chemical Biology*, 8, 741–742.
- Grube, A., Schroer, J., Hentzschel, C., & Hertel, G. (2008). The event reconstruction method: An efficient measure of experience-based job satisfaction. *Journal of Occupational and Organizational Psychology*, 81, 669–689.
- Gullo, K., Berger, J., Etkin, J., Bollinger, B., & Morales, A. C. (2019). Does time of day affect variety-seeking? *Journal of Consumer Research*, 46, 20–35.
- Haws, K. L., Liu, P. J., Redden, J. P., & Silver, H. J. (2017). Exploring the relationship between varieties of variety and weight loss: When more variety can help people lose weight. *Journal of Marketing Research*, 54, 619–635.
- Higgs, S. (2015). Social norms and their influence on eating behaviours. *Appetite*, 86, 38–44.
- Hirschman, E. C., & Holbrook, M. E. (1982). Hedonic consumption: Emerging concepts, methods and propositions. *Journal of Marketing*, 46, 92–101.
- Hoch, S. J., Bradlow, E. T., & Wansink, B. (1999). The variety of an assortment. *Marketing Science*, 18, 527–546.
- Howden, J., Chong, Y., Leung, S., Rabuco, L., Sakamoto, M., Tchui, B., et al. (1993). Breakfast practices in the Asian region. *Asia Pacific Journal of Clinical Nutrition*, 2, 77–84.
- Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, 306, 1776–1780.
- Khare, A., & Inman, J. J. (2006). Habitual behavior in American eating patterns: The role of meal occasions. *Journal of Consumer Research*, 32, 567–575.
- Khare, A., & Inman, J. J. (2009). Daily, week-part, and holiday patterns in consumers' caloric intake. *Journal of Public Policy and Marketing*, 28, 234–252.
- Kouchaki, M., & Smith, I. H. (2014). The morning morality effect: The influence of time of day on unethical behavior. *Psychological Science*, 25, 95–102.
- Loebnitz, N., & Grunert, K. G. (2018). Impact of self-health awareness and perceived product benefits on purchase intentions for hedonic and utilitarian foods with nutrition claims. *Food Quality and Preference*, 64, 221–231.
- Meiselman, H. L., deGraaf, C., & Leshner, L. L. (2000). The effects of variety and monotony on food acceptance and intake at a midday meal. *Physiology & Behavior*, 70, 119–125.
- Mitchell, D. J., Kahn, B. E., & Knasko, S. C. (1995). There's something in the air: Effects of congruent or incongruent ambient odor on consumer decision making. *Journal of Consumer Research*, 22, 229–238.
- Orehek, E., & Vazeou-Nieuwenhuis, A. (2013). Sequential and concurrent strategies of multiple goal pursuit. *Review of General Psychology*, 17, 339–349.
- Panda, S. (2016). Circadian physiology of metabolism. *Science*, 354, 1008–1015.
- Ratner, R. K., & Kahn, B. E. (2002). The impact of private versus public consumption on variety-seeking behavior. *Journal of Consumer Research*, 29, 246–257.
- Redden, J. P. (2008). Reducing satiation: The role of categorization level. *Journal of Consumer Research*, 34, 624–634.
- Rolls, B. J., Rolls, E. T., Rowe, E. A., & Sweeney, K. (1981). Sensory specific satiety in man. *Physiology & Behavior*, 27, 137–142.
- Rozin, P. (2005). The meaning of food in our lives: A cross-cultural perspective on eating and well-being. *Journal of Nutrition Education and Behavior*, 37, S107–S112.
- Rozin, P., Remick, A. K., & Fischler, C. (2011). Broad themes of difference between French and Americans in attitudes to food and other life domains: Personal versus communal values, quantity versus quality, and comforts versus joys. *Frontiers in Psychology*, 2, 177.
- Schwarz, N., Kahneman, D., & Xu, J. (2009). Global and episodic reports of hedonic experience. In R. Belli, F. Stafford, & D. Alwin (Eds.), *Using calendar and diary methods in life events research* (pp. 157–174). Thousand Oaks, CA: Sage.
- Smith, C. S., Reilly, C., & Midkiff, K. (1989). Evaluation of three circadian rhythm questionnaires with suggestions for an improved measure of morningness. *Journal of Applied Psychology*, 74, 728–738.
- Spence, C. (2017). Breakfast: The most important meal of the day? *International journal of gastronomy and food science*, 8, 1–6.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89, 845–851.
- Stroebe, W., Mensink, W., Aarts, H., Schut, H., & Kruglanski, A. W. (2008). Why dieters fail: Testing the goal conflict model of eating. *Journal of Experimental Social Psychology*, 44, 26–36.
- Van Herpen, E., & Pieters, R. (2002). The variety of an assortment: An extension to the attribute-based approach. *Marketing Science*, 21, 331–341.
- Whitley, S. C., Trudel, R., & Kurt, D. (2018). The influence of purchase motivation on perceived preference uniqueness and assortment size choice. *Journal of Consumer Research*, 45, 710–724.