Contraction with Unpacking: When Unpacking Leads to Lower Calorie Budgets

MIAOLEI (LIAM) JIA
XIUPING LI
ARADHNA KRISHNA

Consumers set a lower consumption budget when they set individual calorie budgets for constituent categories (e.g., breakfast, lunch, dinner, and snacks; categorical approach) versus when they set a total budget (overall approach). This contraction effect of unpacking a judgment is driven by motivated reasoning. Consumers are motivated to reduce calorie consumption, and this motive directs their cognitive elaboration for the budget decision to be on what to cut and how much to cut. Furthermore, the categorical (vs. overall) approach brings to mind more thoughts that are consistent with the motive to reduce consumption, which then leads to a lower calorie budget. Consistent with this explanation, the level of elaboration on reducing calorie intake—especially on occasions where overconsumption is less salient—mediates the contraction effect. In addition, the contraction effect is attenuated when the motive to reduce consumption is deactivated. Finally, while the contraction effect occurs when consumers have a motive to reduce consumption, the classic expansion effect of unpacking occurs when consumers are prompted to think about what to consume or are motivated to increase consumption. The results for calorie budgeting are shown to have downstream consequences on actual food consumption.

Keywords: budgeting approach, budget setting, unpacking effect, motivated reasoning, self-control, food consumption

Miaolei (Liam) Jia (miaolei.jia@wbs.ac.uk) is an assistant professor of marketing at Warwick Business School, University of Warwick, Coventry, United Kingdom, CV4 7AL. Xiuping Li (bizlx@nus.edu.sg) is an associate professor of marketing at NUS Business School, National University of Singapore, Singapore 119245. Aradhna Krishna (aradhna@umich.edu) is the Dwight F. Benton Professor of Marketing at the Ross School of Business, University of Michigan, Ann Arbor, MI 48109. This article is based on a portion of the first author's doctoral dissertation at the National University of Singapore. All three authors contributed equally to this work. The authors thank the editor, the associate editor, and the three anonymous reviewers for their very constructive comments. This research was supported by the Warwick Business School Research Allowance, awarded to Miaolei (Liam) Jia, and by the Singapore Ministry of Education Academic Research Fund Tier 1 under WBS R-316-000-100-112, awarded to Xiuping Li. Supplementary materials are included in the web appendix accompanying the online version of this article. Please address correspondence to Miaolei (Liam) Jia and Aradhna Krishna.

Editors: Darren W. Dahl and Margaret C. Campbell

Associate Editor: Lisa E. Bolton

Advance Access publication August 26, 2019

Consumers may have a desire to cut down consumption across various domains such as eating, smoking, and drinking (Heatherton and Baumeister 1996; Thaler and Shefrin 1981) but find it difficult to do so. Thus, there are weight-control programs (e.g., Weight Watchers, Jenny Craig) and diet apps (e.g., MyFitnessPal) to help them with food consumption restraint, smoking cessation programs to reduce or cease cigarette consumption, and alcohol control programs (e.g., Alcoholics Anonymous) to lower alcohol intake. While excess consumption is grievous for health in all these cases, it is especially widespread in the food consumption domain and is associated with many health problems, such as obesity and diabetes (Cutler, Glaeser, and Shapiro 2003).

Prior research has suggested that one means of effectively reducing one's food consumption is to set a consumption limit in advance (Herman and Polivy 2003, 2004). Obesity clinics and many weight-loss programs suggest that their clients set a numerical target for their calorie intake. For example, MyFitnessPal, a popular free mobile

 • Vol. 46 • 2020
DOI: 10.1093/jcr/ucz036

app for diet planning, has users set a daily calorie limit, as does the weight-loss program of the National Health Service of England. While these programs or apps have people set a daily calorie budget directly, MyFitnessPal's paid version has clients set calorie budgets by meal.

Do different approaches to budget setting make any material difference? That is, does having people set a limit by day, or by meal, make a difference in the daily budget that people set or in their actual consumption? This question is what we study in this research, focusing on the important domain of food consumption, and extending to the domains of smoking and exercise. We examine two different approaches that consumers may employ to set their daily consumption budgets. In one approach, consumers set an individual calorie budget for each consumption occasion (e.g., breakfast, lunch, dinner, and snacks; hereafter called the *categorical approach*). In the other approach, consumers directly set a total calorie budget, without explicitly setting individual budgets for each consumption occasion (hereafter called the *overall approach*). We study how the categorical and overall approaches result in different daily consumption budgets and why they do so.

In comparing the categorical and overall approaches, we add to the unpacking literature (Savitsky et al. 2005; Tversky and Koehler 1994). The classic unpacking effect (Tversky and Koehler 1994) shows that when people are asked to give an estimate for an overarching category (e.g., the probability of death resulting from natural causes) versus estimates for the subcategories (e.g., the probability of death resulting from heart disease, cancer, or some other natural cause), the total estimate is higher in the latter approach. Thus, the classic unpacking effect would suggest that decomposing a daily calorie budget into its constituent categories will increase the overall calorie budget. However, we propose and demonstrate when and why the opposite would be true.

Drawing upon prior research on motivated reasoning (Kunda 1990), we propose that directional motives will moderate the effect of unpacking by making people recall or pay attention to the motive-consistent information. Specifically, when setting calorie budgets, most people have a motive to reduce their calorie intake. We argue that the motive to reduce consumption will lead people to focus on what to cut rather than on what to consume. In addition, the categorical (vs. overall) approach offers people more opportunities to act on this motive to reduce consumption, and makes salient more consumption occasions to elaborate on what or how much to cut, resulting in a lower calorie budget. Therefore, when consumers unpack a daily calorie budget into several budgets for subcategories, they set a lower daily budget versus when they set the overall budget directly. We call this effect the *contraction effect of unpacking* (or simply the *contraction effect*). A set of seven studies supports the contraction effect and our argument for why directional motives propel this effect.

We contribute to two streams of literature. First, we contribute to the literature on unpacking effects (Redden and Frederick 2011; Savitsky et al. 2005; Sloman et al. 2004; Tsai and Zhao 2011; Tversky and Koehler 1994) by highlighting the role of motivation. Reconciling the contraction effect with the classic expansion effect of unpacking, we show a contraction effect when people are motivated to decrease their consumption (e.g., calorie intake and nicotine intake), but obtain an expansion effect when people have a motive to increase their consumption (e.g., fiber intake and exercise time).

Second, we contribute to the literature on budget setting. Prior research on financial budget setting has investigated the effect of confidence, difficulty, and importance of different overall budgeting contexts (e.g., weekly vs. monthly or monthly vs. yearly) on the budget that people set (Min and Ülkümen 2014; Ülkümen, Thomas, and Morwitz 2008). We show that when keeping the overall budget context constant (e.g., daily), the motive to increase versus decrease the budget can also play a critical role in predicting which budgeting approach (overall vs. categorical) leads to a higher budget.

Our research has direct implications for consumers, managers of diet programs and diet apps, and health-focused public policy officials involved with obesity or smoking cessation. Our research demonstrates that for consumers who want to cut down consumption, it is better to set individual budgets for each consumption occasion, rather than an overall budget. We also find that consumers adhere to such calorie budgets enough to yield lower actual calorie consumption with the categorical (vs. overall) budget setting approach.

Next, we discuss prior research and develop our conceptual framework.

THEORETICAL BACKGROUND

Three streams of literature are especially pertinent to our research—budgeting, unpacking effects, and motivated reasoning. We discuss each below.

Budgeting

Thaler (1985, 1999) argues that setting mental budgets is a way for people to better control their consumption to achieve their long-term goals. Later research indicates that such budgets help regulate people's consumption via two broad mechanisms. First, budgeting makes people plan their consumption ahead of their actual consumption, and a preset budget attenuates the visceral impact of temptations (Loewenstein 1996). Second, the preset budget serves as a concrete yardstick to effectively monitor consumption, which once again helps people resist temptations (Baumeister 2002). Both mechanisms therefore make people more conscious of their behavior, and result in

enhanced self-regulation and improved adherence to long-term goals.

Budgeting for Calorie Intake. In the food consumption domain, setting daily calorie budgets is a common way for dieters to cut down their food intake (Herman and Polivy 2003, 2004). For instance, Khare and Inman (2009), using a national food consumption diary panel, found that more than 84% of the panelists balanced high and low calorie intake between meals in the same day, suggesting that they may implicitly hold a mental budget for their daily calorie intake. More directly, Oh, Huh, and Mukhopadhyay (2016) conducted a global survey on calorie budgeting with respondents from Australia, Hong Kong, India, South Africa, the UK, and the US ($N = 3,150$). They found that as many as 47% of their respondents reported setting daily calorie budgets. In a field study, the authors further demonstrated that calorie budgets have behavioral consequences. In their study, participants kept food diaries for the entire day. In the late afternoon, approximately half the participants were given feedback regarding how many calories they had consumed until then, while the rest of the participants were not given this feedback. The researchers found that participants who were close to their daily calorie budget decreased their calorie consumption at dinner if they received the feedback before consumption (vs. if they did not receive the feedback). In comparison, those who were still far away from their daily budget increased their calorie consumption at dinner, after receiving the feedback.

Prior research on calorie budgeting has largely focused on the consequences of setting a budget—for instance, whether setting (vs. not setting) a budget affects consumption and what moderates this effect. In this research, we focus on different approaches for setting daily calorie budgets. As discussed earlier, a daily calorie budget is a common temporal frame that people use to set their eating allowance (Herman and Polivy 2004; Khare and Inman 2009). Specifically, we look at how the aforementioned overall versus categorical approaches impact the daily calorie budget that consumers set and their actual consumption. These two approaches are closely related to the unpacking effect that we discuss next.

Unpacking Effects

Classic Expansion Effect of Unpacking a Judgment and the Explanation. Unpacking a judgment refers to dividing the judgment of a multifaceted category into several judgments of its component categories (Tversky and Koehler 1994). The multifaceted category judgment (or the packed judgment) is similar to our overall approach, whereas the component-category judgment (or the unpacked judgment) is similar to our categorical approach. Prior research on the unpacking effect has typically found that the unpacked judgment increases the magnitude of numeric judgments compared to the packed judgment (Savitsky et al. 2005; Tversky and Koehler 1994). We hereafter refer to this classic effect of unpacking as the *expansion effect*. For instance, Tversky and Koehler (1994) asked participants to evaluate the probability of death resulting from natural causes in the United States. In the packed condition, participants directly estimated the overall probability of death resulting from natural causes. In the unpacked condition, participants separately estimated the probability of death resulting from three natural causes—heart disease, cancer, or some other natural cause—which were added to obtain the overall probability of death from natural causes. The researchers found that the sum of the individual probability estimates in the unpacked condition was higher than the overall probability estimate in the packed condition.

Similar expansion effects of unpacking a judgment have been demonstrated with other kinds of judgments. For instance, Savitsky et al. (2005) found that evaluating each group member's contribution separately (unpacked condition), compared to evaluating the group members' contribution as a whole (packed condition), increases the magnitude judgment of group members' contribution. In consumer research, Johnson et al. (1993) documented that unpacking an overall insurance policy (e.g., a health insurance policy that covers hospitalization expenses due to "any reason") into its constituent elements (e.g., due to "any disease" and "any accident") increases the total insurance premium that consumers are willing to pay.

These expansion effects of unpacking a judgment have been explained mostly by an attention and memory account (Tversky and Koehler 1994) where attention is brought to additional items in the unpacked condition. The attention and memory argument proposes that unpacking a superordinate entity into its constituent categories may remind people of the less accessible categories that they would not otherwise have considered. For instance, in Tversky and Koehler's (1994) research, which examined subjective probabilities of death due to natural causes, participants in the unpacked condition were asked to consider various reasons for natural death, such as heart disease and cancer, but these causes of natural death were not brought to participants' attention in the packed condition. Similarly, in experiment 7 of Bolton, Warlop, and Alba's (2003) research, which investigated consumer perception of company cost, participants in the unpacked condition were prompted to think of the specific components of the company's labor cost such as "salaries and commissions paid to sales associates, salaries and bonuses paid to managers, salaries paid to other staff, and all other labor costs"; however, participants in the packed condition were not reminded of the specific components of the labor cost. Unpacking, which provides participants with more cues and reminders, thus results in a larger overall magnitude (of probability judgments, company cost estimates, etc.).

Supporting the attention to more items explanation, prior research has found that the unpacking effect is stronger when the number of unpacked categories is larger (Tversky and Koehler 1994), there is more dissimilarity among constituent categories (Rottenstreich and Tversky 1997), the component categories are less accessible (Brenner, Koehler, and Rottenstreich 2002), or the overall judgment is more complex (Kruger and Evans 2004). All these factors affect whether a subcomponent is likely to be ignored or overlooked in the packed judgment.

Contraction Effects of Unpacking a Judgment and Their Explanations. More recent research has shown that unpacking could lead to contraction effects in certain situations. The contraction pattern has been first demonstrated in probability judgments when the description of an overall event (rather than the judgment itself) is unpacked. That is, participants in the unpacked condition did not provide separate judgments for subevents; instead, they provided one judgment for the same overall event that was described as a multitude of its subevents. Sloman et al. (2004) showed that when the description of an overall event (e.g., the probability that "the amount of money that an undergraduate has on them is less than 40 dollars") is unpacked into atypical subevents (e.g., "50 cents, 1 dollar, or some other amounts that are less than 40 dollars"), the latter leads to a lower probability judgment of the overall event. This is consistent with the attention and memory account with the recall of typical (also more probable) subcategories being inhibited. Redden and Frederick (2011) similarly demonstrated that if a simple description of an overall event (e.g., the likelihood to obtain an even number in a dice-throwing game) is unpacked into a complicated description of subevents (e.g., the likelihood to obtain a 2, 4, or 6 in the game), people will subjectively feel the latter less likely even when they know that the objective probabilities are the same for the two descriptions. The authors explain this contraction pattern with the (dis)fluency heuristic—something that is hard to comprehend is deemed less likely to happen. These contraction effects are driven by the difference in the description of the event in the two conditions. In all our experiments, we keep constant the description of the events (and information) in the packed and unpacked conditions.

More relevant to our research is the work by Tsai and Zhao (2011). They showed the classic expansion effect when participants unpacked how much time they would spend on a pleasant event (e.g., chatting with fun people) into several estimates of subactivities (e.g., chatting with fun person A, chatting with fun person B, etc.), but demonstrated a contraction effect when an unpleasant event (e.g., chatting with boring people) was unpacked. Tsai and Zhao (2011) explain the expansion and contraction effects of unpacking time estimates for emotional events with an emotion intensification account. They suggest that unpacking intensifies the emotional responses and makes the disutility (utility) from unpleasant (pleasant) subactivities worse (better) than that from the packed case; moreover, consumers have a lay belief that people will spend less (more) time on more unpleasant (pleasant) tasks. Together, the above implies that time estimation will be higher in the unpacked scenario for pleasant events, resulting in the classic expansion effect, but lower in the unpacked scenario for unpleasant events, resulting in the contraction effect.

To reiterate, most prior research on unpacking a judgment has shown an expansion effect in various judgments and has explained the expansion by an attention and memory account. Tsai and Zhao (2011), however, have shown that for negative events, unpacking can lead to a contraction effect in time estimation due to the lay belief in a negative association between duration and intensity of negative emotion. Like Tsai and Zhao (2011), we propose and demonstrate another case for the contraction effect of unpacking a judgment. However, we offer a different argument for the contraction effect. We suggest that people's *motivation* can impact the direction of the unpacking effect, by changing the kind of information that draws attention and becomes accessible during the unpacking process. In other words, we propose a motive-directed attention and memory argument: when attention is motive driven, unpacking can result in an expansion or a contraction effect depending on the direction of the motive. We discuss this argument in more detail below.

Motivated Reasoning

It is well documented that motivation influences cognitive outcomes such as perception, memory, and recall (Balcetis and Dunning 2006; Buehler, Griffin, and MacDonald 1997; Kruglanski 1990; Kunda 1990; May and Irmak 2014). In particular, Kunda (1990) has made a distinction between the motive to be accurate in judgment and the motive to arrive at a particular result. Notably, she has discussed how the motive to arrive at a specific, directional conclusion affects cognition, attention, and reasoning.

When people have a directional motive to arrive at a particular outcome, they may engage in biased information processing that makes salient the information and strategies that are more compatible with the desirable conclusion (Kunda 1990). For instance, Buehler et al. (1997) demonstrated that motives guide people's attention when they make time predictions for an upcoming task. In their experiment 2, which employed a 2 (speed motive: yes vs. no) × 2 (accuracy motive: yes vs. no) between-subjects design, all participants were asked to solve word puzzles in three trials. Before the last trial started, the researchers manipulated the motive by incentivizing the participants either to complete the upcoming trial more quickly (i.e., speed motive) or to predict their completion time accurately

(i.e., accuracy motive). The results indicated that participants with a single speed motive predicted that they would complete the upcoming trial faster and indeed took a shorter time to complete the task than those in the other conditions. In addition, the speed motive made the participants think more about the strategies for the upcoming trial rather than about their past performance or problems, a pattern consistent with the premise that the motive directs attention and reasoning. In consumer research, similarly, May and Irmak (2014) showed that when impulsive consumers face an opportunity to indulge (e.g., consuming a bag of candies), they distort their memories of past consumption (e.g., recalling inaccurately that they consumed fewer calories on prior occasions) so that they can justify their indulgence.

As budgets are frequently set with directional motives, we further propose that motivated reasoning is likely to happen when consumers unpack a budget decision.

Hypotheses Development: When and Why Unpacking Leads to Budget Contraction

Building on the notion that unpacking may remind people of less accessible categories (Tversky and Koehler 1994), we argue that directional motives will guide consumers' attention and make accessible certain kinds of information when a judgment is unpacked. Specifically, we propose that a directional consumption motive (e.g., having a higher or lower level of consumption) will bias people's cognitive process and determine the direction of the unpacking effect on consumption budgets.

We focus our discussion here on the domain of calorie budgeting, even though we consider other consumption domains as well. Calorie budgeting generally comes with a motive to restrict calorie intake. Prior research has shown that having mental budgets for food intake can prime the goal to avoid food consumption (Krishnamurthy and Prokopec 2010). Krishnamurthy and Prokopec (2010) demonstrated that a mental budget leads to better self-control, but only when consumers' decision strategy is compatible with the avoidance goal. For instance, in one study where participants set a dessert-consumption budget beforehand, they selected fewer complimentary desserts on a virtual shopping trip compared to those who did not set such a budget. However, the budget aided self-control in food consumption only when participants were asked whether they would reject the desserts, and not when they thought about whether to accept the desserts.

We further posit that the motive to limit consumption makes people focus on what and how much to cut down from their consumption. Due to this directional motive to reduce food intake, each calorie budgeting decision may become a trigger for people to reflect on how to instantiate this motive. In other words, when people set a calorie budget, the final numerical target they set is not very dependent on the extent to which they elaborate on "what is to be consumed"; it depends more on how much they think about "what is not to be consumed or what is to be cut." Unpacking provides more opportunities to exclude food items or to cut a higher number of calories.

Specific to the calorie budgeting process, we argue that before they set a calorie budget, consumers may have a loose reference number of the daily calorie consumption in mind. This number could be the recommended daily calorie intake that they are frequently exposed to or their typical consumption level. Consumers under both budgeting approaches (overall and categorical) may start with a similar initial calorie number. However, those using the categorical approach (i.e., budgeting for breakfast, lunch, dinner, and snacks) may set a lower calorie budget because budgeting for individual categories would increase the directional elaboration on what and how much to cut, bringing to mind the less salient occasions where they can cut calories. That is, although consumers under the overall approach also engage in motivated reasoning, their elaboration is likely to focus on those salient overconsumption occasions, while consumers under the categorical approach are nudged to engage in motivated reasoning on all consumption occasions, including the less salient ones.

What would be those less salient occasions when people set their calorie budgets? Prior research has shown that the likelihood of overconsumption varies across consumption occasions. People in general have more food intake (de Graaf 2000) and consume more negative nutrients at dinner than at lunch or breakfast (Khare and Inman 2006). Besides the regular mealtimes (breakfast, lunch, and dinner), snacking would be considered unnecessary or overconsumption. Consumers under the overall approach may focus their attention on the most salient occasions where they tend to overconsume—dinner and snacks—and elaborate on how to cut calories from those consumption occasions. In contrast, those under the categorical approach are made to consider whether there is room for cutting down from each occasion—even for less salient overconsumption occasions (e.g., breakfast and lunch)—and are likely to come up with a higher total number of calories to cut down and therefore a lower calorie budget.

In other words, we argue that motivation affects the direction of the unpacking effect by leading people to think in a motive-consistent fashion. For calorie budgeting, the motive to reduce consumption biases cognition by making salient more occasions to cut calories and directing people to elaborate on what to cut on those less salient overconsumption occasions, which leads to the contraction effect of unpacking. Formally, we propose that:

> **H1:** Consumers with a motive to reduce consumption will set lower daily consumption budgets using a categorical approach (e.g., setting a daily calorie budget by budgeting for breakfast, lunch, dinner, and snacks) versus an overall

approach (e.g., directly setting the daily calorie budget); we call this effect the contraction effect of unpacking.

H2: The contraction effect of unpacking is mediated by the extent of motivated reasoning—the directional elaboration that is consistent with the motive to reduce consumption.

The Activation of the Motive to Reduce Consumption. We have argued that a motive to reduce consumption directs people's cognitive process and leads to the contraction effect of unpacking. If our argument holds, then when the motive to reduce calorie intake is deactivated, the contraction effect should be attenuated. Therefore, we propose that:

H3: The contraction effect of unpacking will be attenuated when the motive to reduce consumption is deactivated.

The Direction of Consumption Motives and Direction of Elaboration. We argue that directional motives make people think in a motive-consistent fashion, and that this motive-consistent thinking results in greater elaboration on certain information and thoughts. In the calorie budget setting, for instance, the motive to reduce consumption makes people elaborate more on what to cut, rather than on what to consume, which leads to the contraction effect. However, by this same argument of "elaboration on reducing consumption resulting in the contraction effect," if people are prompted to elaborate on "what to consume" (and not on "what to cut"), the expansion effect of unpacking will be obtained. Thus, we posit that:

H4a: When consumers elaborate on what to consume rather than on what to cut, the expansion effect of unpacking will occur: a categorical (vs. an overall) approach will lead to a higher daily budget.

Furthermore, if indeed the motive to reduce calorie intake leads to the contraction effect of unpacking in calorie budgeting, we should expect that when consumers are motivated to increase consumption in a particular domain, the opposite would be true. For instance, people may have a motive to increase consumption in domains such as exercise time or fiber intake, and unpacking should make them elaborate more on what and how much to consume. Consequently, in these budget settings, people should come up with more opportunities to increase their consumption, which should lead to the expansion effect of unpacking. Hence, we propose that:

H4b: When consumers have a motive to increase consumption, the expansion effect of unpacking will occur: a categorical (vs. an overall) approach will lead to a higher daily budget.

Next, we present seven studies to test our hypotheses.

STUDY 1: WHAT SHOULD MY DAILY CALORIE BUDGET BE?

Study 1 tests our basic hypothesis (hypothesis 1)—the contraction effect of unpacking.

Design, Participants, and Procedure

We used a one-way design with three conditions: one condition for the categorical approach and two conditions for the overall approach, as both overall conditions had been used in prior research (Tsai and Zhao 2011; Tversky and Koehler 1994). In the categorical condition, participants were asked to budget their daily calorie intake by setting the budget for breakfast, lunch, dinner, and snacks, respectively. In the two overall conditions, participants set their daily calorie budget directly. The first condition, the overall-without-category-information, mimics the paradigm in the classic unpacking effect. Participants in the overall condition were asked to set a daily calorie budget directly without being reminded to include all the consumption categories described in the categorical condition. However, to equate the amount of information provided across the categorical and overall conditions, in the second overall condition, the overall-with-category-information, participants were reminded of the component meals that they were budgeting for.

Two hundred ninety-six Amazon Mechanical Turk (MTurk) workers (M_{age} = 34.63, SD = 10.44, 141 males) participated in the study for a small monetary payment. Participants in all three conditions were first provided with three pieces of information about calories: (i) calorie content, several examples of the calorie content in common food items; (ii) daily calories, a reasonable range of daily calorie intake; and (iii) calorie and weight link, where participants were told that "if you want to lose weight, you may consider taking in fewer calories per day." After reading the information provided, all participants were asked to set their daily calorie intake budget for the next month.

In the categorical condition, participants were asked to set calorie budgets for four eating occasions (breakfast, lunch, dinner, and snacks). Specifically, they were told: "set daily calorie budgets for how much you plan to consume each day for the next month for each meal and snacks." The budgets that participants set for each of the four occasions were automatically summed as their total daily budget and shown to them on the same screen. The calculation and presentation were done while participants were completing the task; thus, they knew their total daily budget and could adjust the budgets for the components.

In the overall-with-category-information condition, participants were told (similar to the categorical condition): "set a daily calorie budget for how much you plan to consume each day for the next month, including your calorie intake for breakfast, lunch, dinner, and snacks." Here,

however, the participants were asked to set a total daily budget but not budgets for each meal.

In the overall-without-category-information condition, participants were simply asked to set their daily calorie intake budget. Specifically, they were told: "set a daily calorie budget for how much you plan to consume each day for the next month" (screenshots for all three conditions can be found in web appendix A).

After participants in all three conditions had set their calorie budgets, they reported their hunger level, gender, age, weight, height, and ethnicity. Gender and age were included in all the studies. Hunger level, weight, height, and ethnicity were also included in studies 3 and 6. Participants' weight and height information was used to calculate their BMI (body mass index). No factors except gender were significant in any of the studies ($ps > .10$). Women set lower calorie budgets than men in all the studies ($Fs > 17.62$, $ps < .001$), as we would expect; however, gender did not interact with any of the manipulated factors in any study ($Fs < 1.50$, $ps > .22$). Thus, none of these factors are discussed further.

Results and Discussion

We excluded participants who set either extremely high consumption budgets (i.e., more than three standard deviations away from the mean) or extremely low consumption budgets (i.e., fewer than 50 calories for daily calorie budget). We used the same data screening criteria for all studies, and details of the data screening for all studies can be found in web appendix B. Based on these screening criteria, two participants who set extremely high budgets (i.e., more than 3SD away from the mean) were excluded from further data analyses. Two hundred ninety-four participants remained in the analyses.

An ANOVA revealed a significant effect of the budgeting approach on the calorie budget that participants set ($F(2, 291) = 3.06$, $p < .05$, $\eta_p^2 = .02$). Contrast analyses further indicated that participants set a significantly lower daily budget under the categorical approach ($M = 1{,}801.92$ calories, SD = 559.54) than under either the overall-with-category-information approach ($M = 1{,}981.39$ calories, SD = 534.87; $F(1, 291) = 4.75$, $p = .03$, $\eta_p^2 = .03$) or the overall-without-category-information approach ($M = 1{,}978.16$ calories, SD = 631.17; $F(1, 291) = 4.51$, $p = .04$, $\eta_p^2 = .02$). There was no significant difference in the daily budget between the two overall-approach conditions ($F(1, 291) = .002$, $p = .97$, $\eta_p^2 < .001$).

Discussion. Study 1's results suggest that when consumers set calorie budgets, unpacking does not increase the budget as previous research has consistently documented; in fact, the budget decreases, consistent with our prediction (hypothesis 1). The contraction effect of unpacking happens whether or not participants are reminded of each meal in the overall condition. This finding suggests that the contraction effect is a result of the budgeting approach used, not of the decision-relevant information available to the participants, or the different descriptions of the overall event (Redden and Frederick 2011; Sloman et al. 2004). This finding is also corroborated by there being no significant difference between the two overall approaches.

Since there were no significant differences between the two overall conditions in study 1 (and in a replication study; see below), we use only the overall-with-category-information condition in the subsequent studies (henceforth called the overall condition).

Replications of Study 1. We conducted three separate replications of study 1 for reasons of robustness, and to rule out possible alternative explanations of our results: one replication used different subcategories (specifically, vegetables, fruits, grains, dairy, protein foods, and other food groups); a second replication removed "if you want to lose weight, you may consider taking in fewer calories per day," which may externally trigger the motive to cut calories; in a third replication, in the categorical condition, the overall budget was not displayed to the participants. In all three replications, we obtained the contraction effect (see details for all three replications in web appendix C).

The results of all the replication studies discussed above suggest that (1) showing people the total daily budget in the categorical approach does not affect the contraction effect; and (2) when people are budgeting for calorie consumption, their motive to cut calories does not require an external prompt. That is, budgeting for calorie intake seems to automatically elevate the goal of consumption restriction (Krishnamurthy and Prokopec 2010; we directly tested this assumption in study 5).

Having established the contraction effect of unpacking in study 1, we now examine the proposed underlying process of the contraction effect in studies 2 to 5.

STUDY 2A: ELABORATION ON REDUCING CALORIES ON DIFFERENT CONSUMPTION OCCASIONS

Study 2a tests hypothesis 2. We argue that the contraction effect will be largely driven by more thoughts on what and how much to cut down. People using the overall approach might focus their attention on the salient overconsumption occasions, while those using the categorical approach engage in motive driven thinking on all occasions. Therefore, the difference between the two budgeting approaches is more likely to be driven by the directional thinking on the less salient occasions where one could overconsume. To determine which consumption occasions these would be, among the four consumption occasions investigated in the current research, we conducted a pretest.

Salience of Overconsumption Occasions—Pretest

Four hundred MTurk participants (M_{age} = 35.58, SD = 12.40, 179 males) were asked whether they felt they overconsumed for breakfast, lunch, dinner, or snacks (yes or no). The results revealed that more participants believed that they tended to overconsume on the occasions of dinner (54.3% of the participants) and snacks (39.5%), compared to lunch (23.0%) and breakfast (5.5%). The percentages of participants indicating dinner and snacks were significantly higher than those indicating breakfast or lunch (ts > 4.60, ps < .001); this pattern was also consistent with prior research findings (de Graaf 2000; Khare and Inman 2006). Dinner and snacks were thus grouped as the more salient overconsumption occasions, and lunch and breakfast were grouped as the less salient overconsumption occasions. Per this pretest, hypothesis 2 would suggest that people are more likely to differ in their levels of elaboration on reducing calories for breakfast and lunch (less salient overconsumption occasions), but not differ on the dinner and snacks occasions. Furthermore, the greater elaboration on reducing calorie intake for breakfast and lunch will drive the contraction effect of unpacking.

Design, Participants, and Procedure

Study 2a used a one-factor (budgeting approach: categorical vs. overall) between-subjects design. Three hundred ninety-six MTurk workers (M_{age} = 33.86, SD = 10.59, 207 males) participated in the study for a small monetary payment. The instructions and questions were similar to the categorical and the overall-with-category-information conditions of study 1, except that participants were not informed about the link between weight loss and calorie intake. Right after participants had set the budgets, they responded to a process measure. Specifically, participants indicated to what extent they had elaborated on how much to reduce their calorie consumption for breakfast, lunch, dinner, and snacks, respectively (1 = not at all, 7 = very much), when they were setting the budgets earlier. Participants' ratings for breakfast and lunch were averaged to form an elaboration index for less salient overconsumption occasions (r = .622, p < .001), and their ratings for dinner and snacks were averaged to derive an elaboration index for more salient overconsumption occasions (r = .552, p < .001) (participants' ratings for each occasion can be found in web appendix D). Finally, all participants reported their gender and age.

Results and Discussion

Eight participants were excluded from the analyses (five set extremely low, and three set extremely high, calorie budgets). Three hundred eighty-eight participants remained in the analyses.

Daily Calorie Budget. An ANOVA revealed that participants set a lower daily calorie budget under the categorical approach (M = 1,705.18 calories, SD = 791.56) than under the overall approach (M = 1,880.38 calories, SD = 669.01; $F(1, 386) = 5.54$, $p = .02$, $\eta_p^2 = .01$).

Elaboration on Reducing Calories. A 2 (budgeting approach: overall vs. categorical) × 2 (consumption occasion: less vs. more salient overconsumption occasions) repeated-measures ANOVA revealed a significant main effect of the consumption occasion: participants elaborated more on reducing calorie consumption on the more salient overconsumption occasions (M = 4.07, SD = 1.76) than on the less salient overconsumption occasions (M = 3.49, SD = 1.78; $F(1, 386) = 64.41$, $p < .001$, $\eta_p^2 = .14$). The main effect of the budgeting approach was not significant ($F(1, 386) = .54$, $p = .46$, $\eta_p^2 = .001$). In addition, there was a significant interaction effect ($F(1, 386) = 9.14$, $p = .003$, $\eta_p^2 = .02$). A planned contrast analysis further revealed that participants elaborated more on reducing calorie consumption on the less salient overconsumption occasions (breakfast and lunch) under the categorical approach (M = 3.66, SD = 1.75) than under the overall approach (M = 3.32, SD = 1.81; $F(1, 386) = 3.50$, $p = .06$, $\eta_p^2 = .01$). However, participants' elaboration on reducing calorie consumption on the more salient overconsumption occasions (dinner and snacks) did not differ significantly between the two conditions ($M_{categorical}$ = 4.02, SD = 1.69; $M_{overall}$ = 4.12, SD = 1.83; $F(1, 386) = .29$, $p = .59$, $\eta_p^2 = .001$).

The Mediational Role of Elaboration on Reducing Calories. We used the bootstrap resamples method (N = 5,000, SPSS macro; Preacher and Hayes 2008) to test whether the greater elaboration on the less salient overconsumption occasions (breakfast and lunch) mediates the effect of the budgeting approach on total budget set. We noted earlier that the categorical approach led to a marginally higher level of elaboration on the less salient overconsumption occasions (b = .34, t = 1.87, p = .06); additionally, a higher level of elaboration on the less salient overconsumption occasions significantly decreased the numerical value of total budget set (b = –108.07, t = –5.32, p < .001). After we controlled for the budgeting approach, the level of elaboration on the less salient overconsumption occasions continued to have a significant effect on total budget set (b = –104.35, t = –5.13, p < .001). However, after we controlled for the level of elaboration on the less salient overconsumption occasions, the direct effect of the budgeting approach (overall = 0, categorical = 1) on total budget set was marginally significant (b = –139.96, t = –1.93, p = .054). Because the 95% confidence interval ([–81.14 to –1.20]) for the indirect effect did not include zero, we conclude that the level of elaboration on the less salient overconsumption occasions mediated

the effect of the budgeting approach on total budget set. We also conducted a mediation analysis using the level of elaboration on the more salient overconsumption occasions as the mediator, and the mediation did not work.

Discussion. In summary, study 2a's results reveal that when people set budgets for their calorie intake, the categorical (vs. overall) approach leads them to elaborate more on cutting calories for more consumption occasions, and this greater elaboration on less salient overconsumption occasions to reduce calories drives the contraction effect (hypothesis 2). In study 2b, we further test this motivated reasoning by examining the budgets that people set for consumption occasions, since the numerical budgets are the consequences of the motivated reasoning on each consumption occasion.

STUDY 2B: CALORIE BUDGETS FOR SUBCATEGORIES

In study 2b, we ask participants in the overall condition to divide the daily budget that they set into subcategories. If, as we argue, the contraction effect is driven by people considering more consumption occasions to cut down with the categorical (vs. the overall) approach, then we would see a difference in the budgeted consumption between the overall and the categorical conditions on the less salient overconsumption occasions (breakfast and lunch), but not on the salient ones (dinner and snacks).

Design, Participants, and Procedure

Study 2b used a one-factor (budgeting approach: categorical vs. overall) between-subjects design. Three hundred ninety-eight MTurk workers (M_{age} = 34.42, SD = 11.47, 199 males) participated in the study for a small monetary payment. After the budgeting task (using the same instructions as in study 2a), in the overall condition, immediately after participants set the overall daily calorie budget, they were asked on the next screen to allocate their overall budget into four budgets: breakfast, lunch, dinner, and snacks. Participants were informed about the overall budget they had set, and a validation was set up to ensure that the sum of the four food categories' budgets was equal to the overall budget that they had set. In both conditions, participants' budgets for breakfast and lunch were summed to form the budget for less salient overconsumption occasions (r = .268, p < .001), and the budgets for dinner and snacks were summed to derive the budget for more salient overconsumption occasions (r = .166, p = .001) (participants' budgets for each occasion can be found in web appendix D). Finally, all participants reported their gender and age.

Results and Discussion

Six participants set extremely high calorie budgets and were excluded from further analyses. Three hundred ninety-two participants remained in the analyses.

Daily Calorie Budget. An ANOVA revealed that participants set a lower daily calorie budget under the categorical approach (M = 1,883.45 calories, SD = 590.66) than under the overall approach (M = 2,012.97 calories, SD = 556.04; $F(1, 390) = 4.99$, p = .03, η_p^2 = .01).

Budgets for Consumption Occasions. A 2 (budgeting approach: overall vs. categorical) × 2 (consumption occasion: less vs. more salient overconsumption occasions) repeated-measures ANOVA revealed a significant main effect of consumption occasion: the summed budget for breakfast and lunch (M = 1,002.39 calories, SD = 375.20) was higher than the summed budget for dinner and snacks (M = 945.27 calories, SD = 341.19; $F(1, 390) = 7.12$, p = .008, η_p^2 = .02). The main effect of the budgeting approach was also significant, as discussed earlier ($F(1, 390) = 4.91$, p = .03, η_p^2 = .01). Although the interaction effect between the budgeting approach and the consumption occasion was not significant ($F(1, 390) = 1.95$, p = .16, η_p^2 = .005),[1] the results of the planned contrast analysis were consistent with our predictions: participants set a lower summed budget for the less salient overconsumption occasions (breakfast and lunch) under the categorical approach (M = 956.23 calories, SD = 373.32) than under the overall approach (M = 1,050.46 calories, SD = 372.05; $F(1, 390) = 6.26$, p = .01, η_p^2 = .02); however, there was no significant difference in the summed budget for the more salient overconsumption occasions (dinner and snacks) between the two conditions ($M_{categorical}$ = 928.72 calories, SD = 337.38; $M_{overall}$ = 962.51 calories, SD = 345.15; $F(1, 390) = .96$, p = .33, η_p^2 = .002).

The Mediational Role of Calories Budgeted for the Less Salient Overconsumption Occasions. We conducted a mediation analysis (Preacher and Hayes 2008) to test whether the summed budget set for the less salient overconsumption occasions (breakfast and lunch) mediates the effect of the budgeting approach on total budget set. As noted above, the budgeting approach had a significant negative effect on the summed budget for the less salient

1 We conjecture that the insignificant interaction might be driven by the following reasons. First, a very large sample size is required to detect the interaction in study 2b, which rests on the simple effect of the budgeting approach being smaller in one condition (more salient overconsumption occasions) than in the other condition (less salient overconsumption occasions); a total sample of more than 780 participants would be required to achieve a statistical power of .80 for the predicted pattern of results (Keppel and Wickens 2004). Second, when allocating the total calories into different consumption occasions in the overall condition, participants might have been reminded about the less salient overconsumption occasions, which could have weakened the interaction effect.

overconsumption occasions ($b = –94.23$, $t = –2.50$, $p = .01$); furthermore, the summed budget set for the less salient overconsumption occasions had a significant effect on total budget set ($b = 1.27$, $t = 28.55$, $p < .001$). When we controlled for the budgeting approach, the summed budget set for the less salient overconsumption occasions continued to have a significant effect on total budget set ($b = 1.26$, $t = 28.25$, $p < .001$). However, when we controlled for the summed budget set for the less salient overconsumption occasions, the direct effect of the budgeting approach (overall = 0, categorical = 1) on total budget set was no longer significant ($b = –10.54$, $t = –.31$, $p = .75$). Because the 95% confidence interval ([–211.33 to –23.81]) for the indirect effect did not include zero, we conclude that the summed budget set for the less salient overconsumption occasions mediated the effect of the budgeting approach on total budget set. We also conducted a mediation analysis using the summed budget set for the more salient overconsumption occasions as the mediator, and the mediation did not work.

Discussion. Study 2b's findings support our prediction that the categorical (vs. overall) approach leads people to consider and cut down their calorie intake for the additional consumption occasions of breakfast and lunch, which are not as salient in people's mind as dinner and snacks in terms of overconsumption. Together, the results of studies 2a and 2b provide converging evidence for our proposed motivated reasoning explanation.

In study 3, we further test the motivated reasoning account by examining the role of the motive. We argue that calorie budgeting elicits the motive to reduce consumption and biases people's thinking toward what to cut or how to cut. If the contraction effect is indeed driven by the motive to cut down calorie consumption, we should expect the contraction effect to be attenuated when the motive to reduce calorie consumption is deactivated (hypothesis 3).

STUDY 3: CALORIE BUDGETING AND THE MOTIVE TO REDUCE FOOD CONSUMPTION

We directly manipulate participants' motive to reduce calorie intake in study 3. For many people, calorie restriction is a means to achieve their weight-control goal (Herman and Polivy 2004). However, if people are exposed to messages advocating that exercise is more important in achieving their weight-control goal, their motive for restricting calorie intake can be deactivated. Therefore, we propose that the contraction effect will be attenuated when people are explicitly told that exercise is better for controlling weight compared to dieting (vs. when they are told the opposite). We test this prediction in study 3.

Design, Participants, and Procedure

We used a 2 (motive to reduce calorie intake: active vs. inactive) × 2 (budgeting approach: overall vs. categorical) between-subjects design. One hundred twenty-two undergraduate students from a large public university in Singapore ($M_{age} = 20.75$, SD = 1.42, 57 males) participated in the study for partial course credit. The study included two phases.

In phase 1, we manipulated participants' motive to limit their calorie consumption. Under the guise of a reading comprehension study, participants were asked to read one of two articles. In the motive-active condition, participants read an article that stated that to lose weight, "eating less" is better than "exercising more." In the motive-inactive condition, they read that to lose weight, "exercising more" is better than "eating less" (see details of the two articles in web appendix E).

Since the task was framed as a reading comprehension task, after participants read the article, we asked them the following questions: (1) "How difficult was the article to understand?" (1 = not at all difficult, 9 = extremely difficult); (2) "How convincing is the evidence in the article?" (1 = not at all convincing, 9 = extremely convincing); and (3) "To what extent do you find the message in the article to be persuasive?" (1 = not at all persuasive, 9 = extremely persuasive).

To check whether our motive manipulation was successful, all the participants then responded to three items concerning their beliefs. Specifically, they were asked to rate the extent to which they agreed that: "I think to lose weight, eating less is better than exercising more," "I think to lose weight, exercising more is better than eating less" (reverse-coded), and "If I want to lose weight, I will try to eat less rather than exercise more." (1 = strongly disagree, 9 = strongly agree). The average of the three items ($\alpha = .80$) served as the measure of participants' motive to reduce calorie intake to achieve their weight-control goals.

In phase 2, in a separate survey called the "calorie budgeting survey," participants were asked to set calorie budgets for their daily consumption, using either the categorical or the overall approach, similar to study 1, with one exception in the instructions. As the study was conducted in Singapore, we provided a reasonable range of daily calorie intake for Singaporeans (see web appendix F for details). At the end of the study, participants were debriefed on the real purpose of the study and given materials supporting both dieting and exercise being very important for losing weight.

Results and Discussion

First, we examined whether the two articles used to manipulate participants' motive were similar in terms of difficulty and credibility. ANOVAs revealed that participants

perceived these two articles to be equally difficult to read ($M_{\text{motive-active}} = 2.62$, SD = 1.81; $M_{\text{motive-inactive}} = 3.11$, SD = 1.97; $F(1, 120) = 2.07$, $p = .15$, $\eta_p^2 = .02$), equally convincing ($M_{\text{motive-active}} = 4.51$, SD = 1.78; $M_{\text{motive-inactive}} = 5.00$, SD = 1.72; $F(1, 120) = 2.41$, $p = .12$, $\eta_p^2 = .02$), and equally persuasive ($M_{\text{motive-active}} = 4.48$, SD = 1.79; $M_{\text{motive-inactive}} = 4.95$, SD = 1.88; $F(1, 120) = 2.05$, $p = .16$, $\eta_p^2 = .02$). Second, an ANOVA with the motive to reduce calorie intake as the dependent variable revealed that participants endorsed eating less to lose weight to a higher degree in the motive-active condition ($M = 5.02$, SD = 1.74) versus those in the motive-inactive condition ($M = 3.57$, SD = 1.51; $F(1, 120) = 24.26$, $p < .001$, $\eta_p^2 = .17$). Thus, the manipulation was effective.

Using the total calorie budget as the dependent variable, a 2 (motive to reduce calorie intake: active vs. inactive) × 2 (budgeting approach: overall vs. categorical) ANOVA revealed that there was a significant main effect of the budgeting approach: participants set a lower daily calorie budget under the categorical approach ($M = 1{,}905.82$ calories, SD = 750.27) than under the overall approach ($M = 2{,}303.61$ calories, SD = 715.79; $F(1, 118) = 9.73$, $p = .002$, $\eta_p^2 = .08$). The main effect of the motive was not significant ($M_{\text{motive-active}} = 2{,}085.49$ calories, SD = 762.98; $M_{\text{motive-inactive}} = 2{,}123.93$ calories, SD = 756.84; $F(1, 118) = .43$, $p = .52$, $\eta_p^2 = .004$). More importantly, there was a significant interaction between the motive and the budgeting approach ($F(1, 118) = 7.10$, $p = .009$, $\eta_p^2 = .06$). A contrast analysis further revealed that in the motive-active condition, participants set a lower daily calorie budget under the categorical approach ($M = 1{,}664.26$ calories, SD = 599.11) than under the overall approach ($M = 2{,}420.00$ calories, SD = 717.76; $F(1, 118) = 16.72$, $p < .001$, $\eta_p^2 = .12$). However, in the motive-inactive condition, the difference in daily calorie budgets set via the categorical approach ($M = 2{,}097.65$ calories, SD = 809.33) versus the overall approach ($M = 2{,}157.04$ calories, SD = 698.89) was not significant ($F(1, 118) = .10$, $p = .75$, $\eta_p^2 = .001$).

Discussion. In study 3, the manipulation check of the motive was conducted before the budgeting task, resulting in the possibility of a demand effect. Another caveat of study 3's manipulation check was that it did not directly measure participants' motive to reduce calorie intake. To address this concern, we conducted a post-test. MTurk participants ($N = 104$, $M_{\text{age}} = 35.84$, SD = 11.46) were randomly assigned to either the motive-active or the motive-inactive condition and read one of the two articles. After participants responded to the three-item reading comprehension questions as in the main study, they indicated whether they wanted to reduce their daily calorie intake (by choosing between "Yes" and "No"); 63.5% of the participants in the motive-active condition indicated that they wanted to reduce calorie intake, while only 44.2% of those in the motive-inactive condition indicated so (χ^2 (1) = 3.87, $p < .05$), indicating that our manipulation of motive worked.

The results of study 3 provide support for our argument that the contraction effect of unpacking occurs when people have an active motive to reduce calorie intake. The focal motive in this study is the goal to reduce calorie intake. Study 3 shows that when such a motive is deactivated, the difference between the categorical and the overall approaches is attenuated (hypothesis 3). Note that in the diet-motive inactive condition, participants might have a goal to exercise more, and this motive may have made them less likely to engage in motivated reasoning about calories to cut, leading to the null effect of unpacking. The motive to exercise more can lead to an expansion effect of unpacking if participants are asked to set their exercise time budget, which we test in study 5.

In the next study, we test hypothesis 4a. We posit that if people's directional thinking under the motive to reduce consumption leads to the contraction effect, then an elaboration on what to consume should result in the expansion effect of unpacking (hypothesis 4a). In addition, one could argue that the emotion intensification effect demonstrated in time estimation (Tsai and Zhao 2011) could also happen in calorie budgeting—that people may have higher negative affect toward calories in the categorical (vs. overall) condition and hence set a lower calorie budget. We also address this concern in study 4 (and in study 5).

STUDY 4: SETTING NUMERICAL BUDGETS DIRECTLY VERSUS BY PLANNING WHAT TO CONSUME

In study 4, we manipulate the direction of the elaboration by either explicitly instructing participants to think about food items to consume or not. Studies 1–3 imply that without the instruction about the direction to think, the motive to limit calorie intake makes consumers elaborate more on what to cut down.

Design, Participants, and Procedure

We used a 2 (budgeting approach: overall vs. categorical) × 2 (elaboration manipulation: listing food items to consume first and adding these items to obtain the calorie budget vs. directly setting the calorie budget) between-subjects design. Four hundred two MTurk workers ($M_{\text{age}} = 35.49$, SD = 11.41, 152 males) participated in the study for a small monetary payment. All participants first learned that their task was to set the next day's calorie intake, and were provided with the calorie information of some common food items. They were not given a daily range of calories (to test whether the contraction effect is contingent on the provision of the daily range) or information relating calories to weight.

About half the participants were instructed to plan for food items to consume for the next day to arrive at their daily budget. Specifically, in the categorical condition, participants were asked to list all food items that they planned to eat for breakfast, lunch, dinner, and snacks, respectively. In the overall condition, participants were also asked to list all food items that they planned to consume the next day, with a reminder to include all food items that they planned to eat for breakfast, lunch, dinner, and snacks. As people may consume the same foods on multiple occasions and may consume them in different quantities, participants were also instructed to indicate the quantity and the number of times the food item would be consumed. After the food planning stage, on a separate screen, participants in both conditions were shown the food items that they had just listed, and asked to estimate the number of calories that each food item contains, one by one. Participants' calorie estimations for all food items were then summed and used as their calorie budget for the next day. The other half of the participants were asked to set their budget directly with either the categorical or the overall approach, as in study 1.

After the budgeting task, adapting the measure used in Tsai and Zhao (2011, 462), we asked all participants to indicate how they felt when they thought about consuming calories for breakfast, lunch, dinner, and snacks, respectively (1 = very unpleasant, 7 = very pleasant). The average of these four items served as the measure of "emotional intensity" ($\alpha = .77$). Finally, all participants reported their gender and age.

Results and Discussion

Three participants set extremely high calorie budgets and were excluded from further analyses. Three hundred ninety-nine participants remained in the analyses.

A two-way ANOVA, using budgeting approach and elaboration manipulation as independent variables, and calorie budget as the dependent variable, did not reveal any significant main effects (Fs $< .23$, ps $> .60$). However, there was a significant interaction effect between budgeting approach and elaboration manipulation ($F(1, 395) = 9.58$, $p = .002$, $\eta_p^2 = .02$). Contrast analyses revealed that when directly setting budgets for calorie intake, participants set a lower daily budget under the categorical approach ($M = 1{,}515.46$ calories, SD = 561.29) than under the overall approach ($M = 1{,}682.25$ calories, SD = 653.16; $F(1, 395) = 3.77$, $p = .05$, $\eta_p^2 = .01$). However, when planning for food items first, the categorical approach ($M = 1{,}690.15$ calories, SD = 654.77) led to a higher daily budget than the overall approach ($M = 1{,}462.27$ calories, SD = 672.90; $F(1, 395) = 5.85$, $p = .02$, $\eta_p^2 = .02$).

We also conducted contrast analyses by comparing directly setting budgets to planning for food items under the overall approach condition (and under the categorical approach condition). The results revealed that under the overall approach, participants set a higher budget when they directly set budgets ($M = 1{,}682.25$ calories, SD = 653.16) than when they planned for food items ($M = 1{,}462.27$ calories, SD = 672.90; $F(1, 395) = 5.93$, $p = .02$, $\eta_p^2 = .02$); however, under the categorical approach, participants set a lower budget when they directly set budgets ($M = 1{,}515.46$ calories, SD = 561.29) than when they planned for food items ($M = 1{,}690.15$ calories, SD = 654.77; $F(1, 395) = 3.77$, $p = .05$, $\eta_p^2 = .01$). Note that we have no a priori hypotheses for these comparisons, and they could go in either direction because there may be two opposing forces. Although setting calories budgets directly, compared to listing food items, makes people focus more on what to cut, this process also makes budget setters more likely to start from a normal high consumption level than from zero as in the food listing condition.

Ruling Out Emotion Intensification as an Alternative Explanation of the Contraction Effect. Using average emotional intensity as the dependent variable, a two-way ANOVA revealed that there were no significant main effects or interaction effect (Fs < 2.63, ps $> .10$). The pattern was the opposite of what the emotion intensification account would predict ($M_{categorical} = 5.04$, SD = 1.11 vs. $M_{overall} = 4.83$, SD = 1.28; $F(1, 395) = 2.62$, $p = .11$, $\eta_p^2 = .007$) and hence could not explain the contraction effect obtained in our study. We also measured emotional intensity in study 5; similar patterns emerged (details of these analyses can be found in web appendix G).

Discussion. Study 4 shows that when individuals directly set budgets for their calorie consumption, the categorical (vs. overall) approach leads to a lower daily budget. However, when individuals set the budget by thinking about food items to consume, the categorical (vs. overall) approach leads to a higher daily budget. The results of study 4 provide further support for our proposed motivated reasoning account—that greater elaboration on reducing consumption drives the contraction effect (hypothesis 2). When we shift people's focus and make them elaborate on what to consume, the expansion effect is obtained (hypothesis 4a).

This study also helps us rule out a potential alternative explanation for the contraction effect—that it is driven by more concrete planning in the categorical approach. If this argument were true, we should have also observed the contraction effect in the condition where participants planned for the items to consume, but we did not. Study 4's results also show that the contraction effect is not contingent on the provision of the daily range of calories (we did not provide this piece of calorie information to the participants, but we still obtained the contraction effect).

In study 5, we further test the role of the motive. We test hypothesis 4b, which suggests that if a motive to decrease consumption drives the contraction effect, then a motive to

increase consumption (e.g., with exercise time) should lead to the expansion effect.

STUDY 5: BUDGETING FOR CALORIE INTAKE VERSUS EXERCISE TIME

We suggest that exercise time may be a domain where most people want to increase consumption. We first pretest this assumption and then test hypothesis 4b within this domain.

Pretest

We did a pretest with MTurk participants ($N = 97$, $M_{age} = 39.30$, SD = 14.11, 34 males), presenting questions for calorie and exercise consumption in counterbalanced order. Participants indicated their motives to decrease/increase calorie intake and to decrease/increase exercise time. For both domains, participants responded to two seven-point scale items (reduce-increase and avoid-approach). The average of the two items (for the calories measure, $r = .711$, $p < .001$; for the exercise measure, $r = .767$, $p < .001$) served as the measurement of participants' motive. A paired samples t-test revealed that participants had a stronger motive to increase consumption when they thought about exercise time ($M = 5.29$, SD = 1.52) versus calorie intake ($M = 2.81$, SD = 1.54; $t(96) = 11.07$, $p < .001$, $d = 1.12$). Furthermore, for calories, participants' mean rating score was significantly lower than the scale midpoint of 4 ($t(96) = -7.61$, $p < .001$, $d = -.77$), while for exercise, it was significantly higher than 4 ($t(96) = 8.33$, $p < .001$, $d = .85$). These results suggest that most people have a motive to reduce calorie intake, and a motive to increase exercise time. Hence, our assumptions are supported. Next, we present the main study.

Design, Participants, and Procedure

We used a 2 (budgeting target: calorie intake vs. exercise time) × 2 (budgeting approach: overall vs. categorical) between-subjects design. One hundred ninety-eight MTurk workers ($M_{age} = 34.36$, SD = 11.04, 65 males) participated in the study for a small monetary payment. Participants in the calorie intake condition were asked to set budgets for their daily calorie intake. We used the same overall versus categorical approach manipulation as we did in study 1, but with no calorie information, and with different subcategories. We changed the subcategories to have the same subcategories for calorie intake and exercise time—morning, afternoon, evening, and night. Participants in the exercise time condition were asked to set budgets for their daily exercise time using either the overall or the categorical approach—for morning, afternoon, evening, and night (categorical condition), or to set a daily exercise time budget directly, with the reminder to include their exercise time in the morning, afternoon, evening, and at night (overall condition). At the end of the study, we measured emotional intensity, gender, and age for all participants.

Results and Discussion

Four participants were excluded from the analyses (two set extremely low, and one set an extremely high calorie budget; one set an extremely high exercise time budget); one hundred ninety-four participants remained in the analyses.

To make the calorie intake condition and the exercise time condition comparable, we first standardized (Z-scored) the data within each budgeting target condition. In the results that follow, we report the raw data but perform our statistical tests on the Z-scored variables.

A 2 (budgeting target: calorie intake vs. exercise time) × 2 (budgeting approach: overall vs. categorical) ANOVA revealed that neither the main effect of budgeting target nor that of budgeting approach was significant (Fs < 1.43, ps > .23). However, there was a significant interaction effect between budgeting target and budgeting approach ($F(1, 190) = 14.34$, $p < .001$, $\eta_p^2 = .07$). Contrast analyses further revealed that when budgeting for calorie intake, participants set a lower daily budget under the categorical approach ($M = 1{,}602.09$ calories, SD = 602.50) than under the overall approach ($M = 2{,}012.83$ calories, SD = 511.64; $F(1, 190) = 11.92$, $p = .001$, $\eta_p^2 = .06$). However, when budgeting for exercise time, participants set a higher daily budget under the categorical approach ($M = 67.35$ minutes, SD = 46.75) than the overall approach ($M = 50.86$ minutes, SD = 43.66; $F(1, 190) = 3.51$, $p = .06$, $\eta_p^2 = .02$).

The results of study 5 support our motivated reasoning argument. When individuals have a motive to reduce consumption (e.g., budgeting for calorie intake), a categorical (vs. overall) budgeting approach results in a lower total consumption budget. In comparison, the expansion effect of unpacking is demonstrated in a domain where people want to increase consumption (namely, exercise time; hypothesis 4b).

To further test the role of directional consumption motives, we conducted two replication studies. In the first study, we asked smokers to set daily budgets for their nicotine intake from cigarettes (a pretest showed that smokers have a motive to reduce their nicotine intake) using either the overall or the categorical approach; we found that the categorical (vs. overall) approach led to a lower daily budget. In a second replication, we asked participants to set daily budgets for their fiber intake (a pretest showed that people have a motive to increase their fiber intake) using either the overall or the categorical approach; we found that the categorical (vs. overall) approach led to a higher daily budget. The details for the two replication studies can be found in web appendix H. The results of study 5 and the

two replication studies thus support our proposition that the motive to reduce or increase consumption is an important factor that may determine the direction of the unpacking effect.

Thus far, we have shown that a categorical (vs. overall) approach to setting daily calorie budgets leads to a lower budget (study 1) and that the greater elaboration on reducing consumption drives the contraction effect (studies 2a and 2b). In addition, the contraction effect is attenuated when the motive to reduce consumption is deactivated (study 3), and the expansion effect is obtained when people elaborate on what to consume (study 4) or when people have a motive to increase consumption (study 5). Study 6 tests whether budgeting approaches are followed through in actual consumption behavior.

STUDY 6: BEHAVIORAL STUDY—DOES A CATEGORICAL APPROACH REDUCE CALORIE INTAKE?

Design, Participants, and Procedure

The study used a one-factor (budgeting approach: categorical vs. overall) between-subjects design. One hundred female participants (M_{age} = 25.61, SD = 5.67) were individually approached in Singapore by a female research assistant to complete the study for a small monetary payment in local currency (equivalent to US $1.50) and a chance to win a lottery of a Starbucks gift card (worth US $15). Participants were approached either on a university campus or near public libraries. We recruited female participants for pragmatic reasons. First, prior research has found that females are more concerned about their food intake (Fishbach, Friedman, and Kruglanski 2003). Therefore, they would be more willing to participate in our study. In addition, based on our observation, females were more likely to take pictures of food before they eat and were more likely to follow our study protocol (e.g., sending images of their food) for this research.

The study consisted of two phases that lasted for two consecutive days. In phase 1 (day 1), participants were asked to set a calorie budget for their food consumption for the next day (day 2) using either the categorical or the overall approach. The instructions and questions were similar to the categorical and the overall conditions in study 1 (but with a reasonable range of daily calorie intake for Singaporeans; see web appendix F for details).

Participants were then asked to take pictures of all food items that they consumed on day 2, and to send the pictures to the research assistant via WhatsApp (participants were asked to become the research assistant's WhatsApp contact; all participants complied).

In phase 2 (day 2), at the start of day 2, the research assistant sent a WhatsApp message to each participant and reminded them to take pictures of all food items that they would eat that day. At the end of day 2, after participants had sent in their food pictures, the research assistant asked the participants whether there were any food items that they had eaten, but had not photographed. Participants were asked to describe these items in detail. The research assistant then asked the participants whether they would share their height and weight, or BMI information (at their will).

Results and Discussion

Ten participants (five in each condition) dropped out after day 1's budgeting task. One participant set an extremely high calorie budget and was excluded. Eighty-nine participants remained for further analyses.

Budget Setting. An ANOVA revealed that participants set a lower daily calorie budget under the categorical approach (M = 1,528.36 calories, SD = 645.52) than under the overall approach (M = 2,011.36 calories, SD = 590.36; $F(1, 87) = 13.55$, $p < .001$, $\eta_p^2 = .13$).

Actual Consumption. First, an ANOVA revealed that participants took a similar number of food pictures in the categorical (M = 4.31 pictures, SD = 2.95) versus the overall approach condition (M = 4.63 pictures, SD = 2.60; $F(1, 87) = .30$, $p = .58$, $\eta_p^2 = .003$). Based on the food pictures and the additional food items reported by the participants, two coders calculated the number of calories consumed by each participant in one day (see web appendix I for details of the calculation process). The two coders were blind to the study design and the hypotheses, and worked independently. The interrater correlation was high ($r = .68$, $p < .001$). Coders resolved disagreements through subsequent discussion.

An ANOVA revealed that participants indeed consumed fewer calories under the categorical approach (M = 1,416.80 calories, SD = 492.78) than under the overall approach (M = 1,635.21 calories, SD = 447.79; $F(1, 87) = 4.78$, $p = .03$, $\eta_p^2 = .05$).[2]

2 We also compared participants' budget set to their actual consumption. A 2 (overall approach vs. categorical approach) × 2 (budget set vs. actual consumption) repeated-measures ANOVA revealed a significant main effect of budget set versus actual consumption: participants' calorie budget (M = 1,767.15 calories, SD = 661.53) was higher than their actual consumption (M = 1,524.78 calories, SD = 481.10; $F(1, 87) = 14.22$, $p < .001$, $\eta_p^2 = .14$). The main effect of the budgeting approach was also significant: calories (set and consumed) were lower under the categorical versus overall approach ($F(1, 87) = 13.07$, $p = .001$, $\eta_p^2 = .13$). Furthermore, there was a significant interaction effect ($F(1, 87) = 4.18$, $p = .04$, $\eta_p^2 = .05$). Contrast analyses further revealed that participants' budget set was not significantly different from the actual consumption when they used the categorical approach (M_{budget} = 1,528.36 calories, SD = 645.52; $M_{consumption}$ = 1,416.80 calories, SD = 492.78; $F(1, 87) = 1.50$, $p = .22$, $\eta_p^2 = .02$). However, the budget set was significantly greater than the actual consumption when participants used the overall approach (M_{budget} = 2,011.36 calories, SD = 590.36; $M_{consumption}$ = 1,635.21 calories, SD = 447.79; $F(1, 87) = 16.72$, $p < .001$, $\eta_p^2 = .16$).

The Mediational Role of the Budget Set. A mediation analysis (Preacher and Hayes 2008) was conducted to test whether the budget set mediates the effect of the budgeting approach on actual consumption. We found that the budgeting approach had a significant effect on the budget set ($b = –483.01$, $t = –3.68$, $p < .001$), and that the budget set had a significant effect on actual consumption ($b = .32$, $t = 4.64$, $p < .001$). When we controlled for the budgeting approach, the budget set still had a significant effect on actual consumption ($b = .30$, $t = 4.04$, $p < .001$); however, when we controlled for the budget set, the direct effect of the budgeting approach (overall = 0, categorical = 1) on actual consumption was no longer significant ($b = –71.71$, $t = –.72$, $p = .47$). The 95% confidence interval ([–279.35 to –59.62]) for the indirect effect indicated that the budget set mediated the effect of the budgeting approach on actual consumption.

Discussion. Study 6 demonstrates the contraction effect of unpacking with actual consumption. Furthermore, it shows that the effect of the budgeting approach on actual consumption is mediated by the calorie budget set, indicating that participants are affected by the calorie budget that they set for themselves.

GENERAL DISCUSSION

In seven studies, we demonstrate that consumers who budget for individual consumption occasions (e.g., three meals and snacks) set a lower daily calorie budget versus those who set their daily calorie budget directly—an effect we call the contraction effect of unpacking. We argue that the contraction effect occurs due to the directional motive to reduce consumption when consumers set their calorie budgets. The motive to reduce consumption makes consumers focus on what and how much to cut down; unpacking the overarching decision into multiple decision points offers more opportunities for consumers to elaborate in the direction consistent with their motive, resulting in a smaller calorie budget.

To test our argument that the contraction effect is indeed driven by greater elaboration to reduce calorie intake under the categorical (vs. overall) approach, we examine the underlying process (studies 2a and 2b) and test several theory-driven moderators (studies 3–5). Study 2a directly measures budget setters' level of elaboration and shows that there is greater elaboration to reduce calorie intake on less salient occasions under the categorical (vs. overall) approach, and that this elaboration mediates the contraction effect. Study 2b provides converging evidence for our proposed motivated reasoning process by examining the budgets set for subcategories in both the overall and the categorical conditions.

Studies 3–5 test the role of motivation. They show that if the motive to decrease consumption is deactivated, the contraction effect is attenuated (study 3); that when people are made to focus on what to consume, we obtain the classic expansion effect of unpacking (study 4); and that in domains where the motive is to increase, rather than to decrease, consumption (e.g., exercise time and fiber intake), we also obtain the classic expansion effect of unpacking. Study 6 demonstrates the contraction effect with actual consumption and shows that this effect is mediated by the budget set.

Theoretical Contribution and Practical Implications

We contribute to two streams of literature: the unpacking literature and the budgeting literature. We extend prior research on the unpacking effect by highlighting the role of motivational factors. Prior studies have demonstrated an expansion effect of unpacking (Savitsky et al. 2005; Tversky and Koehler 1994). We demonstrate a contraction effect of unpacking in the calorie budgeting domain and in the nicotine intake domain. We show that when people's motive is to reduce consumption, unpacking an overarching budgeting decision into multiple component decisions reduces numeric judgments.

The motivational account offers a new perspective on unpacking and extends the attention and memory argument (Tversky and Koehler 1994). Tversky and Koehler (1994) suggest that unpacking will increase numeric judgments by drawing people's attention to the subcomponents that they might otherwise have overlooked. Our proposed motivational account shows that the direction of motives would moderate their attention and memory argument. Note that in many contexts where classic unpacking effects have been documented (e.g., probability judgment), such a motive to increase or decrease a judgment may not exist. In these cases, people might have a motive to be accurate about their judgments (Kunda 1990), and the more extensive information search in the unpacking condition may lead to the increased attention and memory of the evidence relevant to the judgment.

Following Tsai and Zhao (2011), by including all subcategories in the description of the overall approach in all studies, we directly rule out the possibility that the contraction effect in calorie budgeting is driven by inhibiting the recall of the typical consumption categories (Sloman et al. 2004) or the (dis)fluency effect (Redden and Frederick 2011).

In studies 4 and 5 (details in web appendix G), we also provide evidence that the emotion intensification account (Tsai and Zhao 2011) cannot explain our results. We would like to argue that motivation, rather than emotional consequences (e.g., the unpleasantness of events being budgeted for), plays a more important role when consumers set a budget. As budget setting happens before real consumption, it allows people to be less influenced by their visceral

reaction in the consumption setting and more by their goals (Loewenstein 1996). For some emotionally negative activities (e.g., unpleasant but useful activities such as weeding the garden), people might have a motive to increase consumption. In these cases, unpacking the budgeting decision might lead to a pattern consistent with the classic unpacking effect and inconsistent with the emotion intensification account. It would be interesting for future research to explore the interaction between the motivational and affective responses when unpacking a judgment.

In addition to the literature on unpacking, our research also contributes to the literature on mental budgeting. Much of the prior mental budgeting literature focuses on the financial domain (Heath and Soll 1996; Thaler 1999) and examines the consequences of budget setting. We extend the literature to the calorie intake, exercise time, nicotine intake, and fiber intake domains and study how different budgeting approaches affect the budget that people set and their actual consumption. We show that people's motive to increase versus decrease consumption moderates the effect of the budgeting approach on the budget set.

Our research has significant practical implications. For individuals who are overweight or obese, our research suggests that it may be better to explicitly set budgets for each eating occasion rather than directly set a total calorie budget. Similarly, for smokers trying to cut down nicotine intake, it may be better to set nicotine budgets for shorter (vs. longer) time periods.

Ruling Out Other Alternative Explanations Specific to Unpacking Calorie Budgeting

We have already discussed and ruled out some alternative explanations for our results, at the end of studies 1, 4, and 5 (e.g., types of categories, specific instructions used or information given, emotion intensification account, and the concreteness of budget planning). We discuss two additional alternative explanations below.

Different Anchors. One could argue that people in the overall condition could start with a higher anchor (daily recommendation) and adjust downward, while people in the categorical approach could have a lower starting anchor, such as zero, and adjust upward by adding specific food items to consume. The insufficient adjustment from these two different anchors could lead to a lower calorie budget with the categorical approach.

The empirical findings of the current research, however, are not consistent with this explanation. First, different anchors cannot explain why the contraction effect is moderated by whether people have a motive to limit consumption (studies 3 and 5) or the results for nicotine budgeting (study 5 replication). Second, it cannot explain why people in the categorical (vs. overall) approach plan to cut down more calories for breakfast and lunch, but not for dinner and snacks (studies 2a and 2b). We also tested this explanation more directly in a follow-up study (see details in web appendix J), but we did not find support for it.

Default Units. Another alternative explanation concerns whether the budgeting unit is a default or nondefault unit. This explanation suggests that daily calorie intake is the default unit that most people would use to plan their calorie intake, and "per meal" is a nondefault unit. Min and Ülkümen (2014) showed that using nondefault (vs. default) units to set financial budgets decreases the perceived importance of the budgeting task, and then reduces the elaboration on the budgeting task, consequently leading to a lower budget. Following this logic, setting calorie budgets by meal (nondefault unit) would reduce the perceived importance of the budgeting task, which would lead to a lower budget set.

We would argue, however, that our study procedure was quite different from that of Min and Ülkümen (2014). In our studies, participants were asked to set daily budgets under both the overall and the categorical approaches. That is, participants were aware that they were setting a daily budget. Second, to directly address the issue of perceived budgeting importance, in a follow-up study, right after participants set budgets using either the overall or the categorical approach, they were asked to rate the perceived importance of the budgeting task. We found that there was no significant difference in perceived importance between the overall and the categorical approaches (see web appendix J for details). Finally, the default unit account cannot explain why the contraction effect is moderated by the activation and the direction of the motive (studies 3 and 5).

Limitations and Directions for Future Research

We reported partial eta-squared (η_p^2) for the effect sizes of our studies. Per Cohen (1988), a rule of thumb for cutoff points for small, medium, and large effect sizes, respectively, is .01, .06, and .14. Based on this rule, effect sizes of our studies (i.e., .01, .02, .03, .12, .06, and .13, respectively) are mostly consistent with small or medium effects. We think the large variances of our key dependent variable (numerical calorie budgets) might be one of the reasons for relatively smaller effect sizes in some studies. The heterogeneity among the participants also seems to play a role. For instance, studies 3 and 6 employed students at the same university, so the effect sizes reported in these two studies were larger (.12 and .13), versus studies conducted by recruiting MTurk workers. Although the effect sizes are relatively small, the contraction effect of unpacking demonstrated in the current research has also been replicated reliably in many studies reported in the supplementary materials. In addition, the budget differences between the overall and the categorical approaches are constantly above

100 calories in all studies, which would have important practical implications for people's consumption if they could be prompted to follow through with the budgets in their consumption behavior.

Our research mainly focuses on consumers' calorie budget setting. A follow-up research question is how the categorical versus overall approach affects budget tracking (Heath and Soll 1996). Using the categorical approach, consumers set individual budgets for all eating occasions. These individual budgets provide subgoals and this goal specificity will be helpful for consumers to track their calorie intake. However, if consumers failed to meet the first few subgoals, for instance, there might be a backfire effect (Herman and Polivy 2004) that could affect consumers' motivation for the remaining subgoals. Future research can examine the effect of the budgeting approach on consumer budget tracking.

Another question regards which budgeting approach is closer to real consumption. Earlier unpacking studies suggest that it depends on whether people have a general tendency to overestimate or underestimate the judgment: unpacking leads to more accurate estimates in situations where people tend to naturally underestimate (Kruger and Evans 2004; Peetz et al. 2015), but to less accurate estimates in situations where people tend to naturally overestimate or be accurate (Peetz et al. 2015; Tversky and Koehler 1994). We find it difficult to provide a theoretically driven answer to this question when people have a directional consumption motive. It might be driven by how well people adhere to their budgets and other situational factors. More research is needed.

Finally, it would be interesting to understand other downstream consequences of different budgeting approaches. For instance, does a categorical (vs. overall) approach reduce the perceived difficulty of goal attainment? People set an overarching budget (goal) under the overall approach, whereas they set multiple smaller budgets (subgoals) under the categorical approach. Given that subgoals are easier to achieve, people might feel that it is less difficult to attain the goal that they set, and consequently might be more motivated to pursue their goal under the categorical (vs. overall) approach. Future research could investigate how budgeting approaches may affect goal attainment perception and goal pursuit.

DATA COLLECTION INFORMATION

All data were collected by or under the supervision of the first author. Study 1 was conducted on Amazon's Mechanical Turk platform (MTurk) in winter 2016. The three replications of study 1 were also conducted on MTurk: the replication with different subcategories (winter 2016), the replication without the calorie and weight link information (spring 2018), and the replication with the overall budget not shown in the categorical condition (winter 2017). Study 2a and study 2b were conducted on MTurk in spring 2019 and spring 2018, respectively. Study 3 was conducted at the Marketing Behavioral Lab of the National University of Singapore in autumn 2016. Studies 4 and 5 were conducted on MTurk in autumn 2017. The two replications of study 5 were also conducted on MTurk: the replication with nicotine intake (summer 2017), and the replication with fiber intake (spring 2019). Study 6 was conducted at the National University of Singapore and near public libraries in Singapore with the help of a research assistant in winter 2016. The additional study to test the different anchors alternative explanation was conducted on MTurk, and the additional study to test the default units alternative explanation was conducted at the Marketing Behavioral Lab of the National University of Singapore, both in spring 2018. All data were analyzed by the first author.

REFERENCES

Balcetis, Emily and David Dunning (2006), "See What You Want to See: Motivational Influences on Visual Perception," *Journal of Personality and Social Psychology*, 91 (4), 612–25.

Baumeister, Roy F. (2002), "Yielding to Temptation: Self-Control Failure, Impulsive Purchasing, and Consumer Behavior," *Journal of Consumer Research*, 28 (4), 670–6.

Bolton, Lisa E., Luk Warlop, and Joseph W. Alba (2003), "Consumer Perceptions of Price (Un)Fairness," *Journal of Consumer Research*, 29 (4), 474–91.

Brenner, Lyle A., Derek J. Koehler, and Yuval Rottenstreich (2002), "Remarks on Support Theory: Recent Advances and Future Directions," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, ed. Thomas Gilovich, Dale Griffin, and Daniel Kahneman, New York: Cambridge University Press, 489–509.

Buehler, Roger, Dale Griffin, and Heather MacDonald (1997), "The Role of Motivated Reasoning in Optimistic Time Predictions," *Personality and Social Psychology Bulletin*, 23 (3), 238–47.

Cohen, Jacob (1988), *Statistical Power Analysis for the Behavioral Sciences*, Hillsdale, NJ: Erlbaum.

Cutler, David M., Edward L. Glaeser, and Jesse M. Shapiro (2003), "Why Have Americans Become More Obese?" *Journal of Economic Perspectives*, 17 (3), 93–118.

de Graaf, Cees (2000), "Nutritional Definitions of the Meal," in *Dimensions of the Meal: The Science, Culture, Business, and Art of Eating*, ed. Herbert L. Meiselman, Gaithersburg, MD: Aspen, 47–59.

Fishbach, Ayelet, Ronald S. Friedman, and Arie W. Kruglanski (2003), "Leading Us Not into Temptation: Momentary Allurements Elicit Overriding Goal Activation," *Journal of Personality and Social Psychology*, 84 (2), 296–309.

Heath, Chip and Jack B. Soll (1996), "Mental Budgeting and Consumer Decisions," *Journal of Consumer Research*, 23 (1), 40–52.

Heatherton, Todd F. and Roy F. Baumeister (1996), "Self-Regulation Failure: Past, Present, and Future," *Psychological Inquiry*, 7 (1), 90–8.

Herman, C. Peter and Janet Polivy (2003), "Dieting as an Exercise in Behavioral Economics," in *Time and Decision: Economic and Psychological Perspectives on Intertemporal Choice*, ed. George Loewenstein, Daniel Read, and Roy F. Baumeister, New York: Sage, 450–90.

—— (2004), "The Self-Regulation of Eating: Theoretical and Practical Problems," in *Handbook of Self-Regulation: Research, Theory, and Applications*, ed. Roy F. Baumeister and Kathleen D. Vohs, New York: Guilford, 492–508.

Johnson, Eric J., John Hershey, Jacqueline Meszaros, and Howard Kunreuther (1993), "Framing, Probability Distortions, and Insurance Decisions," *Journal of Risk and Uncertainty*, 7 (1), 35–51.

Keppel, Geoffrey and Thomas D. Wickens (2004), *Design and Analysis: A Researcher's Handbook*, 4th ed., Upper Saddle River, NJ: Pearson Prentice Hall.

Khare, Adwait and J. Jeffrey Inman (2006), "Habitual Behavior in American Eating Patterns: The Role of Meal Occasions," *Journal of Consumer Research*, 32 (4), 567–75.

—— (2009), "Daily, Week-Part, and Holiday Patterns in Consumers' Caloric Intake," *Journal of Public Policy & Marketing*, 28 (2), 234–52.

Krishnamurthy, Parthasarathy and Sonja Prokopec (2010), "Resisting That Triple-Chocolate Cake: Mental Budgets and Self Control," *Journal of Consumer Research*, 37 (1), 68–79.

Kruger, Justin and Matt Evans (2004), "If You Don't Want to Be Late, Enumerate: Unpacking Reduces the Planning Fallacy," *Journal of Experimental Social Psychology*, 40 (5), 586–98.

Kruglanski, Arie W. (1990), "Motivations for Judging and Knowing: Implications for Causal Attribution," in *Handbook of Motivation and Cognition: Foundations of Social Behavior*, Vol. 2, ed. E. Tory Higgins and Richard M. Sorrentino, New York: Guilford, 333–68.

Kunda, Ziva (1990), "The Case for Motivated Reasoning," *Psychological Bulletin*, 108 (3), 480–98.

Loewenstein, George (1996), "Out of Control: Visceral Influences on Behavior," *Organizational Behavior and Human Decision Processes*, 65 (3), 272–92.

May, Frank and Caglar Irmak (2014), "Licensing Indulgence in the Present by Distorting Memories of Past Behavior," *Journal of Consumer Research*, 41 (3), 624–41.

Min, Bora and Gülden Ülkümen (2014), "The Effect of Default Time Units on Budget Estimation," in *NA—Advances in Consumer Research*, Vol. 42, ed. June Cotte and Stacy Wood, Duluth, MN: Association for Consumer Research, 86–90.

Oh, Ga-Eun (Grace), Young Eun Huh, and Anirban Mukhopadhyay (2016), "The Mental Budgeting of Calories: How Nutrition Information Influences Food Consumption Day by Day, Not Meal by Meal," in *NA—Advances in Consumer Research*, Vol. 44, ed. Page Moreau and Stefano Puntoni, Duluth, MN: Association for Consumer Research, 207–12.

Peetz, Johanna, Roger Buehler, Derek J. Koehler, and Ester Moher (2015), "Bigger Not Better: Unpacking Future Expenses Inflates Spending Predictions," *Basic and Applied Social Psychology*, 37 (1), 19–30.

Preacher, Kristopher J. and Andrew F. Hayes (2008), "Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models," *Behavior Research Methods*, 40 (3), 879–91.

Redden, Joseph P. and Shane Frederick (2011), "Unpacking Unpacking: Greater Detail Can Reduce Perceived Likelihood," *Journal of Experimental Psychology: General*, 140 (2), 159–67.

Rottenstreich, Yuval and Amos Tversky (1997), "Unpacking, Repacking, and Anchoring: Advances in Support Theory," *Psychological Review*, 104 (2), 406–15.

Savitsky, Kenneth, Leaf Van Boven, Nicholas Epley, and Wayne M. Wight (2005), "The Unpacking Effect in Allocations of Responsibility for Group Tasks," *Journal of Experimental Social Psychology*, 41 (5), 447–57.

Sloman, Steven, Yuval Rottenstreich, Edward Wisniewski, Constantinos Hadjichristidis, and Craig R. Fox (2004), "Typical versus Atypical Unpacking and Superadditive Probability Judgment," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30 (3), 573–82.

Thaler, Richard H. (1985), "Mental Accounting and Consumer Choice," *Marketing Science*, 4 (3), 199–214.

—— (1999), "Mental Accounting Matters," *Journal of Behavioral Decision Making*, 12 (3), 183–206.

Thaler, Richard H. and H. M. Shefrin (1981), "An Economic Theory of Self-Control," *Journal of Political Economy*, 89 (2), 392–406.

Tsai, Claire I. and Min Zhao (2011), "Predicting Consumption Time: The Role of Event Valence and Unpacking," *Journal of Consumer Research*, 38 (3), 459–73.

Tversky, Amos and Derek J. Koehler (1994), "Support Theory: A Nonextensional Representation of Subjective Probability," *Psychological Review*, 101 (4), 547–67.

Ülkümen, Gülden, Manoj Thomas, and Vicki G. Morwitz (2008), "Will I Spend More in 12 Months or a Year? The Effect of Ease of Estimation and Confidence on Budget Estimates," *Journal of Consumer Research*, 35 (2), 245–56.