

**The Budget Contraction Effect:
How Contracting Budgets Lead to Less Varied Choice**

Kurt A. Carlson
McDonough School of Business, Georgetown University, Washington, DC 20057
kurt.carlson@georgetown.edu

Jared Wolfe
Long Island University - Post, Brookville, NY 11548
jared.wolfe@liu.edu

Simon J. Blanchard
McDonough School of Business, Georgetown University, Washington, DC 20057
simon.blanchard@georgetown.edu

Joel C. Huber
Fuqua School of Business, Duke University, Durham, NC 27708
joel.huber@duke.edu

Dan Ariely
Fuqua School of Business, Duke University, Durham, NC 27708
dandan@duke.edu

* Contact author: Kurt A. Carlson, Georgetown University, 37th and O St. N.W.,
Washington, D.C. 20057. Phone: 202-687-5325. E-mail: kurt.carlson@georgetown.edu.

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How do consumers adjust their spending when their budget changes? A common view is that the allocation of one's current budget should not depend on past budget allocations. Contrary to this, we find that when one's budget contracts to a particular level, consumers select less variety (as measured by the number of different items with some of the budget allocated to them) than when their budget expands to that same level. This *budget contraction effect* stems from a reduction in variety under the contracting budget, not from variety expansion under the expanding budget.

Evidence from our experiments indicate that the effect is driven by a desire to avoid feelings of loss associated with spreading allocation cuts (relative to reference quantities from prior allocations) across many items.

Key Words: budget contraction, allocation variety, loss aversion, reference quantities

In stable economic times, there are approximately 300,000 new unemployment claims in the US each month. Those who have lost their jobs typically experience an income loss of 25-40% in the 12 months following the loss (Ruhm 1991; Stephens 2001), because they either fail to find a new job or because the new job pays less than the lost job (Stephens 1997). Matters are even worse when the economy experiences a significant contraction. For example, a recent Pew survey found that during a recession (like the one that began in 2007), 55% of adult US workers experienced a work-related financial contraction due to a pay cut, a reduction in hours, or an involuntary transition to part-time work (Taylor et al. 2010). Also, more than half of those surveyed (62%) reported reducing their household spending in response to the economic contraction.

In addition to income contractions from economic hardship, there are many other life events that cause consumers to reduce their disposable budgets. Two of the most significant and common are paying for college (Souleles 2000) and retirement (Banks, Blundell, and Tanner 1998; Bernheim, Skinner, and Weinberg 2001). For example, Bernheim et al. (2001) found that retirement coincided with a drop in U.S. food budgets of 24% for households in the first income quartile, 15% for those in the second, and 9% for those in the third and fourth quartiles.

The prevalence of budget contractions in everyday consumer life raises the important question of how consumers adjust their spending under a budget contraction relative to a budget expansion. The standard economic view is that consumers move up and down their utility surface to whatever allocation provides the highest utility for the current budget. A basic assumption of this is that the shape of one's utility surface is not changed by the trajectory of one's budget. This means that if all other factors are held constant (e.g., tastes, prices, liquidity, etc.), the path down the utility surface will be the same as the path up. In terms of budget

allocations, this means that consumers will allocate their budget to the same set of goods in the same proportions for a budget of \$X, irrespective of whether their previous budget was greater than or less than \$X.

In this paper, we contend that this single path assumption and the implications derived from it are not warranted when consumers allocate a sequence of budgets. We propose that when a consumer allocates an initial budget across an assortment of items, the amount allocated to each item serves as a reference point for subsequent allocations. If a new budget is lower than the prior budget, the consumer must allocate less to some items than the reference level established under the prior allocation. Following loss aversion, we predict that consumers will anticipate psychological loss for every item for which their new allocation is less than its reference allocation. To minimize the sum of these anticipated psychological losses, consumers will allocate cuts to a relatively small subset of items. As a consequence, the number of different items to which a given budget (say \$100) is allocated (which we refer to as *allocation variety*) will be lower when the budget sequence is contracting (i.e., if the previous budget was higher at, say, \$150) than when it is expanding (i.e., if the previous budget was lower at, say, \$50). We refer to this effect of budget trajectory on allocation variety as the *budget contraction effect*.

In the remainder of this paper, we review the relevant literature and develop our research hypothesis that allocations of a given budget will be less varied when that budget was part of a contracting sequence than when the same budget was part of an expanding sequence. We then present several choice experiments that find choice patterns consistent with the budget contraction effect, and which allow us to trace its origins to loss aversion, where consumers use prior budget allocations as a reference point when contemplating future allocations.

THEORETICAL DEVELOPMENT

Consumption in the Face of Changing Budgets

It is well established that changes in income have a significant influence on aggregate consumption patterns (e.g., Hall 1979; Hall and Mishkin 1982). It is also known that consumers do not always react symmetrically to increasing and decreasing income. For instance, Shea (1995a, 1995b) analyzed quarterly US consumption data and found that drops in consumer income lead to larger changes in consumption than equal income increases. Likewise, Bowman, Minehart and Rabin (1993) found an asymmetry in how total consumption changes in the face of news regarding future income (expected to decrease, or expected to increase). They found that when consumers expect income to increase, they are more likely to immediately alter their total consumption than are consumers who expect their income to decrease. Dargay (2001) found that income effects on car ownership are not symmetric, with consumers being less likely to cut car spending when income declines than they are to expand car spending when income expands. More recently, Kamakura and Du (2012) found that during a recession, consumers increase (decrease) spending on essential goods that are consumed in less (more) visible circumstances as opposed to when the economy is expanding.

Unlike prior research, which has focused mainly on aggregate income changes and their effects on aggregate spending, we examine the effects of budget changes on allocations for individual consumers. We do so for three main reasons. First, it is difficult to study income effects without first specifying consumer expectations. Specifically, the study of income effects requires specification of whether an income shock was anticipated or unanticipated and whether it was expected to be permanent or transitory (Jappelli and Pistaferri 2010). Second, by focusing

on budgets instead of income, we can avoid the complex issue of expenditure smoothing via saving or borrowing against future income. Third, examining the effect of budget changes on allocations allows us to control for consumer myopia and liquidity constraints, the two hypotheses most typically advanced for asymmetric income effects (Shea 1995b).

In addition to our focus on discretionary budgets, the current work departs from prior work in two other important ways. First, prior research has generally used either panel data or aggregate-level consumption data to explore the effect of income changes on expenditures as a whole. Such settings are quite different from individual-level experiments that examine how a specific consumer reacts to a budget change. A consequence of this is that prior research lacks the strong internal validity and the concomitant causal inference that experimental designs provide. Second, whereas prior research has examined aggregate expenditures or how spending shifts from certain types of items to other types of items, we examine how the variety in one's allocation basket reacts to budget changes. This allows us to make direct statements not about substitution effects across products, but rather about the shape of the income expansion path.

The Consumer's Budget Allocation Problem

When allocating a budget across a set of items, the consumer's budget allocation problem can be stated as follows: *to identify and commit to the affordable assortment of items that is expected to provide the greatest utility*. In this statement, the identification and commitment to an assortment is the definition of a choice (Russo and Carlson 2002). Assortment refers to the set of items to which a non-zero amount of the budget is allocated. The term "affordable" simply means the consumer has sufficient resources to cover the total cost of the assortment. And the phrase "expected to provide the greatest utility" means that the consumer's objective is to

maximize expected utility, given an evaluation of the alternatives. Importantly, when making such choices, consumers do not necessarily maximize actual utility, but instead maximize expected utility (Coombs et al. 1970). This means that consumers can make choices that turn out to be suboptimal if their expectations are wrong, as has been well documented in literature on affective forecasting (e.g., Kahneman and Thaler 2006; Loewenstein et al. 2003). The disconnect between expected and actual utility often occurs because expected utility depends on how consumers evaluate alternatives, and evaluations often depend on the context in which the alternatives are considered (e.g., Johnson and Meyer 1984; Payne et al. 1993; Slovic et al. 1990). Thus, changes in context can alter the utility consumers expect to get from items, and thus alter how budgets are allocated.

When it comes to allocating different budgets over time, one salient contextual feature is how the previous budget was allocated; in particular, how many of each item the budget was allocated to. We suggest that these quantities (which range from zero when nothing is spent on an item to the quantity of an item that could be obtained if the entire budget was spent on it) serve as reference quantities for the next budget allocation decision. Like other reference points (Kalyanaram and Winer 1995; Lattin and Bucklin 1989; Oliver 1980), these allocation reference quantities can influence how items are perceived and evaluated. We contend that each item's new allocation level will be evaluated relative to its reference quantity from the previous allocation such that a reduction in quantity will be seen as a loss, and an increase in quantity will be seen as a gain. As a consequence, contracting budget trajectories will involve reference quantities above those available to consumers under the new (lower) budget, causing consumers to see new allocation possibilities as losses relative to prior allocation levels. In contrast, an expanding budget trajectory will involve reference quantities below those available at the new

budget level, causing consumers to view expanding allocation levels as gains. As we discuss below, this can have implications for how consumers allocate a given budget (say \$80) to a set of items (say groceries) under a contracting budget trajectory (if, say, the previous budget was \$120) versus an expanding budget trajectory (if, say, the previous budget was \$40).

Asymmetry in allocations. There are several reasons why the allocation of a specific budget under a contracting trajectory could differ from an allocation of the same budget when the budget is part of an expanding sequence. First, consumers might have contractual obligations (akin to liquidity constraints) that cause them to focus most spending on contracted items, and requiring that non-contract items be cut when budgets contract. For example, consumers who buy a car with a loan or a house with a mortgage will have to cut other expenditures when their income declines. Second, consumers have more opportunity to learn what they really like when allocating larger budgets because the larger budgets allow for greater exploration. For example, someone who would love to belong to a country club, but only realizes how much utility they get from it after joining the club might come to this realization only after allocating a large discretionary entertainment budget, with some being allocated to the country club. Later, if their budget declines, they may continue with the country club membership and sacrifice other forms of entertainment. This example reflects consumer learning, where the higher budget allocation helped the consumer learn about her true preferences, and so responded to a different utility surface under budget contraction than under budget expansion.

Beyond learning asymmetries and contractual commitments, we expect there is another reason for budget allocations to differ for expanding and contracting budget trajectories. When a consumer allocates an initial budget to an assortment of items, the amount allocated to each item serves as a reference point for subsequent budget allocation decisions. This idea is consistent

with Geier, Rozin, and Doros' (2006) unit bias heuristic. Specifically, Geier et al found that consumers tend to accept as normal and optimal whatever reasonable quantity of an item they are presented with. In their study, they found that providing individuals with a larger scoop (a quarter cup) for scooping items (e.g., pretzels or M&Ms) caused people to take (and presumably consume) more of the items in the bowl than providing them with a smaller (tablespoon) scoop. They contend that the scoop created a reference quantity that seemed normal and appropriate, causing consumers to comply with it by scooping more when the scooper was bigger. If self-selected quantities gain a similar status, then original allocation quantities would be seen as reference values that are normal and appropriate.

When the new budget is lower than the initial budget, the consumer must allocate less to some items than the reference level for those items. Put differently, when one's budget contracts, the prospective amount of any item that had a non-zero prior allocation will be coded as either the same or as a loss relative to that item's reference level. Following loss aversion (e.g., Kahneman and Tversky 1979; Hardie et al. 1993; Novemsky and Kahneman 2005), we expect consumers will seek to avoid incurring such losses across many items. This is because the loss function is convex and steepest immediately below the reference level. Therefore, to minimize the sum total of these anticipated losses, consumers facing a contracting budget trajectory will distribute their budget cuts across a relatively narrower subset of items. As a consequence, the number of different items to which a given budget (say \$100) is allocated (i.e., allocation variety) will be lower when the previous budget was bigger (say \$150) than when the previous budget was smaller (say \$50).

We focus on allocation variety because the amount of variety in one's choice set is often an important factor that consumers contemplate when making purchase decisions (Kahn and

Ratner 2005) and because it provides a way to examine assortment differences across individuals. As noted above, we refer to the phenomenon of lower allocation variety for a given budget under a contracting trajectory relative to an expanding trajectory as the *budget contraction effect*. We test for this in the experiments below by comparing allocation variety for a sequence of budget allocations that is expanding to the allocations of the same budgets when the sequence is contracting. Our experiments control for learning about the alternatives and liquidity constraints.

In regards to loss aversion, the phenomenon is generally thought to occur because of the *expectation* that the pain of losing something will be greater than the pain of an equivalent gain (e.g., Ariely et al. 2005; Kahneman and Tversky 1984). Indeed, when gains and losses can be compared in the same context, the *anticipation* of greater feelings from a loss (versus an equivalent gain) relate to the choices consumers ultimately make (McGraw et al. 2010). Therefore, for the purposes of testing and understanding the budget contraction effect in this paper, we are interested in consumers' expected utility regarding the decisions that they make, rather than the actual experienced utility that follows after selected items are consumed and experienced. Similarly, for the purposes of testing and understanding the budget contraction effect in this paper, we are interested in the choices that consumers actually make, rather than the choices that they "should" make.

If budget trajectory influences allocations as we expect, then for consumers who make a sequence of three budgets allocations (low, middle, and high budgets) in either an expanding or a contracting sequence, the allocation variety for the lowest budget should differ more than the allocation variety for the highest budget. This is because the middle budget allocation provides a set of reference quantities that represent prospective losses for the lowest budget level in the contracting budget condition, but there are no such reference quantities for the lowest budget

allocation in the expanding budget sequence. In contrast, the middle budget allocation provides a set of reference quantities that signal prospective gains for the highest budget level in the expanding budget condition, but there are no such reference quantities for the highest budget in the contracting sequence. Since reference points are likely to be less salient under gains and since the concavity of the value function for gains is generally believed to be modest (with quickly diminishing marginal gains in utility), we expect this reference allocation effect to have little or no influence on allocations when budgets are expanding. We test for this asymmetry by comparing the slopes of the allocation varieties for each budget level across expanding and contracting budget conditions.

If we are correct, then a difference in the budget trajectory by itself is insufficient to create the budget contraction effect. This is because the effect requires reference allocation levels for the items being considered under the new budget- reference levels that come from allocation of the previous budget. Therefore, if one's budget declines, but they did not allocate the previous budget to specific items, there will be no reference allocation levels, and no felt loss from allocating less to an item. Therefore, when previous budgets were not allocated, the budget contraction effect should be mitigated.

Research Overview

The experiments below explore budget allocations for common consumer budgeting decisions, including grocery store purchases, investments, and cities to visit on a trip. The initial set of experiments demonstrates the budget contraction effect, while the later experiments explore the psychological mechanism underlying it. We measure *allocation variety* as the number of different items to which the middle budget is allocated. This differs from definitions

of variety-seeking that involve the pursuit of stimulation through the consumption of novel items (Faison 1977), and it differs from phenomenological definitions of variety-seeking that emphasize a preference for lesser-valued and previously unselected items over higher-valued and currently selected items (Mitchell et al 1995; Simonson 1990). However, allocation variety accords with more general definitions of variety-seeking, in which evidence of the pursuit of variety is revealed by a preference for larger portfolios of items over smaller portfolios of items (McAlister 1982; Kahn and Ratner 2005).

The consideration sets used in the experiments below were designed to have a substantial amount of utility independence across the items so that participants would be unlikely to make decisions about one item conditional on the other items they select. We expect that when complementarity exists, the budget contraction effect will still operate but will do so at the level of goal-derived categories, rather than at the level of product categories (Barsalou 1983; Blanchard and DeSarbo 2013; Ratneshwar, Pechmann and Shocker 1996). For example, although one can see frosting and cake mixes as complements that are part of a distinct product category, we believe the consumer who wants to bake cakes will see them as members of a single goal-derived category ("Items I need to make a cake"), and, under budget contraction, will be more likely to stop buying items from an entire category (e.g., items to make a pizza) in order to preserve other goal-derived categories (e.g., baking a cake). Thus, it is not immediately clear how inherent complementarity in the consideration set might influence the budget contraction effect. In some cases, the budget contraction effect might lead to cutting several items that belong to one goal-derived category. In other cases, it might lead to a shallow cut of items across all categories. And the issue is further complicated by the reality that each individual consumer constructs her own unique goal-derived categories at will. For these reasons, we selected sets of

items for the experiments below that we believe are unlikely to be seen as obvious complements of the same goal-derived category.

EXPERIMENT 1: Allocation Variety in Grocery Orders

This experiment tests whether there are mean and slope differences between budget expansion and budget contraction paths. Respondents made grocery budget allocations for three budgets that were allocated either in an expanding (\$40, \$80, \$120) or a contracting budget order (\$120, \$80, \$40). Across these different budget scenarios, we expect lower allocation variety among participants in the contracting condition than among those in the expanding condition, and we expect this difference to be most pronounced for the lowest budget.

Method

Participants (N = 451) from a national online panel were asked to imagine a shopping spree with a given budget to buy groceries at Costco. They were asked to allocate the budget across nine different products that generally come in boxed packages: Thomas' English Muffin Mix & Match (\$3.58), Milton's Multi-Grain Bread (\$4.88), M&M's Milk Chocolate (\$17.97), PowerBar Performance Variety Pack (\$21.88), Mott's Variety Pack Apple Sauce (\$8.30), Chef Boyardee Beef Ravioli (\$8.30), Red Baron Deep Dish Singles Pizza Variety (\$10.44), DiGiorno Pepperoni Pizza (\$12.88), and The Cheesecake Factory Original Cheesecake (\$9.45). In the budget expansion condition, participants began with a \$40 budget, and indicated the quantity they would purchase of each item on a product order form (e.g., 4 boxes of Thomas' English Muffin Mix & Match, 3 boxes of Chef Boyardee Beef Ravioli, 0 boxes of PowerBar

Performance Variety Pack, etc.). After allocating the initial budget, participants were told to imagine that a few weeks had passed, and they had eaten all the food, but now had won an \$80 shopping spree at Costco, and they could spend it as they wished on the same set of nine products. Participants used a new blank product entry form to complete this second allocation. After this, participants imagined the same scenario, but this time with a budget of \$120. The stimuli for participants in the contracting budget were the same as those described above, except that the first budget was \$120, the second budget was \$80, and the third budget was \$40.

Since real prices and products were used in this experiment, it was not possible to restrict participants to spending the exact dollar amount of each shopping spree (e.g., exactly \$40). Therefore, participants in this experiment were not required to spend exactly the amount of their shopping spree budget. Rather, those who over-spent their budget would do so expecting to cover the difference out of their pocket, and those who under-spent their budget would do so expecting to forfeit the remainder of the shopping spree budget.¹

Results

After eliminating 9 participants with missing values, we were left with 442 observations (for three budget levels) for our analyses. The experimental design included two budget trajectories (expanding and contracting) across respondents, and three budget levels (\$40, \$80, and \$120) within respondents. We analyzed allocation variety as a function of 1) three budget levels (\$40, \$80, and \$120; within-subjects), and 2) two budget trajectories (expanding and

¹ The average total spending at the \$40, \$80, and \$120 budget levels did not significantly differ between the expanding and contracting conditions (\$40 Budget: $M_{\text{exp}} = 58.96$, $M_{\text{con}} = 58.57$, $F(1, 450) = 0.00$, $p > .90$; \$80 Budget: $M_{\text{exp}} = 103.60$, $M_{\text{con}} = 106.70$, $F(1, 450) = .03$, $p > .80$; \$120 Budget: $M_{\text{exp}} = 149.28$, $M_{\text{con}} = 129.06$, $F(1, 450) = .95$, $p > .30$; respectively).

contracting; between-subjects) via a within-subject ANOVA. In addition to including individual random effects, we also included the total number of items purchased as a covariate. Planned contrasts were then used to investigate our hypotheses.

As shown in Figure 1, greater budgets lead to greater mean number of grocery items chosen. (For reference, sample mean quantities purchased of each item at each budget level are shown in Table 1). We find a significant interaction between budget levels and the budget trajectory ($F(2,879) = 3.46, p = .03$), which is best explained by contrasting the slopes of the budget trajectory. The within-subject difference in allocation variety between the lowest budget level and the highest budget level is significantly greater for the contracting as opposed to the expanding budget condition ($M = .36; F(1,879) = 6.86, p = .01$). This difference in slopes provides the first support for the budget contraction effect.

Insert Figure 1 about here

Insert Table 1 about here

Another approach to test for the budget contraction effect is to examine allocation variety measured as the number of different products chosen for the middle budget across budget trajectories. It involves a comparison in which participants in both conditions have made one prior allocation and are facing the same current budget. Contrasts revealed lower allocation variety for the \$80 budget in the contracting condition ($M = 4.17$) than in the expanding budget condition ($M = 4.62; F(1,879) = 20.41, p < .01$). At all budget levels, we find that participants in the contracting condition had lower allocation variety than those in the expanding condition. Specifically planned contrasts revealed that when the budget was \$40, participants in the contracting condition had a lower allocation variety in their choice sets ($M = 2.99$) than did those

in the expanding condition ($M = 3.57$; $F(1, 879) = 36.78$, $p < .001$). Finally, at the highest budget level (\$120), there also was a significant difference in allocation variety between participants in the contracting condition ($M = 4.82$) and those in the expanding condition ($M = 5.12$; $F(1, 879) = 5.46$, $p = .02$). These effects hold while controlling for the number of items purchased, which does relate to allocation variety ($F(1,879) = 50.34$, $p < .01$).

Discussion

The budget contraction effect that we found is consistent with consumers seeking to avoid spreading losses shallowly across many items and instead focusing them on a narrower set of items. Our explanation for the budget contraction effect stems from the idea that the allocation of the initial budget provides a reference quantity for each item in the allocation set. Experiment 2 explores the generalizability of the budget contraction effect by examining a setting in which money is allocated to investments. In this case, the allocation is not to different products, but to an assortment of financial investment vehicles. Further, the use of investments instead of groceries helps eliminate potential variation due to any possibility of dependence among the available items; participants do not have any information to potentially attempt making inferences regarding complementarity of the available alternatives.

EXPERIMENT 2: Allocation Variety in Financial Diversification

It is common for people to have retirement accounts to which they contribute each month. Such accounts generally allow investors to adjust how their balance is allocated across various investments. In this experiment, we explore how individuals allocate investment contributions to

various investment vehicles under either increasing or decreasing investment allocation budgets. This experiment allows us to examine whether the budget contraction effect generalizes to a setting in which the budget and the items to which the allocations are made are both monetary. By limiting the number of investment vehicles to four, and by sizing the budgets so that there is sufficient money to allocate at least some of it to all four vehicles, it is possible to mute any possible effects of differential consideration of costly alternatives in the initial allocations of the declining and expanding budget conditions (i.e., those first faced with the largest budget and those first faced with the smallest budget) that could have potentially existed in Experiment 1. In addition, since there are no prices for the items in this setting and since all items had positive expected value, we were able to require participants to allocate the exact amount of each budget.

Method

Participants were 588 adults from a national online panel. Each participant was asked to imagine that the US Government was implementing a new retirement plan that gave individuals money each month to allocate to four investment vehicles that differed in their risk and likely return: “Very safe, guaranteed low returns,” “Safe, almost always with modest returns,” “Somewhat risky, normally with above average returns,” and “Very risky, with the possibility for high returns.” The plan allowed individuals to spread their monthly investment stipend/budget across the four vehicles as they wished. Each participant received and allocated three retirement budgets in either an expanding sequence (\$500, \$1000, \$1500) or a contracting sequence (\$1500, \$1000, \$500).

For each of the three sequential budget allocation decisions, participants reported how much of the current budget (in dollars) they wished to allocate to each of the four investment

vehicles. Vehicles that received a non-zero investment amount were deemed to have been invested in for that budget. Thus, a participant's allocation variety for a given budget could range from a low of one (i.e., the entire budget allocated to one vehicle) to a high of four (i.e., some portion of the budget was allocated to each of the four vehicles). As above, the key test was whether the mean and slopes for the allocations of a given budget were less varied (i.e., applied to fewer vehicles) in the contracting sequence than in the expanding sequence.

Unlike in the grocery purchases, participants in this experiment were not led to believe that the previous allocation had been consumed, but rather that each new allocation would be added to the previous month's (e.g., "The government has decided to up the allocation amount for this month. This month they are giving people \$1000 to invest."). Thus, if the budget contraction effect only occurs when individuals cannot pursue inter-period allocation strategies, it should not occur in this experiment.

Results

As in Experiment 1, the experimental design had two budget trajectories (expanding and contracting; between-subjects) and three budget levels (\$500, \$1000, and \$1500; within-subjects), and we analyzed allocation variety as a function of budget trajectories, budget level, and their interaction via a within-subject ANOVA. Three measures of allocation variety were thus obtained for each of the 588 participants.

First, we found a significant interaction between budget allocation and budget trajectory ($F(2,1772) = 28.53, p < .01$). Figure 2 displays the (between-subject) number of investments to which participants in the expanding and contracting conditions allocated each of the three budgets (between-subject means). As in Experiment 1, planned budget level*budget trajectory

within-subject planned contrast reveals that the slope (difference in allocation variety) between the largest and smallest budgets (within-subjects) was significantly greater in the expanding than contracting condition ($M = .44$, $F(1, 1772) = 54.78$, $p < .001$). This again provides support for the budget contraction effect.

Insert Figure 2 about here

Second, we found, as expected, that allocation variety was lower for the \$1000 budget under the contracting trajectory ($M = 2.95$) than it was for the expanding trajectory ($M = 3.26$; $F(1, 1172) = 52.17$, $p < .001$). Comparing the allocation variety for the other budget levels revealed a pattern similar to that observed in Experiment 1. Specifically, at the lowest budget level (\$500), participants in the contracting condition had a lower allocation variety in their choice sets ($M = 2.57$) than did those in the expanding condition ($M = 3.17$; $F(1, 1172) = 204.66$, $p < .001$). Additionally, at the highest budget level (\$1500), the difference was smaller, but significant ($M_{contracting} = 3.14$; $M_{expanding} = 3.30$, $F(1, 1172) = 14.73$, $p = .01$).

Discussion

This experiment found that the budget contraction effect occurs for incremental financial investments, and, just as with Experiment 1, demonstrates a much larger impact of two contractions against a control compared with two expansions against a control. Since participants in this experiment were drawn from a national sample of US adults, it is possible that this sample contains many novice investors. Since novices often take information-processing shortcuts (e.g., Ratneshwar and Chaiken 1991), it is possible that participants in this experiment simply took the shortcut of cutting categories. For this reason, we examined the robustness of the budget contraction effect using individuals with a relatively high knowledge of investing. We ran a

follow-up experiment using 54 middle managers and executives enrolled in a Weekend MBA program at a top business school. The experiment occurred two weeks after participants completed the core finance course, ensuring that all participants were well-versed in the topics of finance and investing.

The results from this smaller sample of well-versed participants are nearly identical to the results of the larger online sample (between-subject means: $M_{500exp} = 3.33$; $M_{1000exp} = 3.33$; $M_{1500exp} = 3.40$; $M_{500con} = 2.33$; $M_{1000con} = 2.83$; $M_{1500con} = 3.17$). Though the difference in allocation variety for the \$1500 budget was not significant across the two budget trajectories ($F(1, 52) = .98, p > .30$), the difference for the \$1,000 budget was marginally significant ($F(1, 52) = 2.92, p < .10$), and the difference for the \$500 budget was very significant ($F(1, 52) = 12.82, p < .001$). Finally, a slope test (i.e., a planned budget level*budget trajectory linear contrast) also revealed a steeper slope in the declining budget condition ($M = .84$) than in the expanding budget condition ($M = .07$; $F(1, 52) = 6.35, p < .05$).

The first two experiments demonstrate in very different contexts that declining budgets generate less mean allocation variety than do expanding budgets and, through slope tests, that the successive declines have a much larger impact over initial control choices than do successive budget expansions.

EXPERIMENT 3: Allocation Variety in Travel Itineraries

This experiment assesses allocation variety by the number of cities to be visited on a trip with differing numbers of days, thus testing whether the effect extends to time budgets. The question of extension to time budgets is important because time is one of the most significant

resources consumers have to allocate (Okada and Hoch 2004). The generalization of the budget contraction effect to time budgets is uncertain, though, because money and time differ in the length of planning horizons they encourage (Lynch et al. 2010), in the concreteness of their valuation (Okada and Hoch 2004), in their tendency to direct attention to possession versus experience (Mogilner and Aaker 2009), and in the extent to which they encourage heuristic versus systematic processing (Saini and Monga 2008). Thus, anticipated psychological reactions to changes in time budgets may differ from changes in monetary budgets.

To examine the allocation of time budgets, Experiment 3A explores how people allocate travel day budget to cities when planning a trip through Western Europe. Experiment 3B uses this same travel context to examine whether making many shallow cuts to a reference allocation is indeed expected to involve more severe feelings of loss than making fewer deep cuts.

Experiment 3A: Impact of a high initial budget

Method. All participants (N = 410) from a national online panel were asked to imagine winning an all-expense-paid trip through Western Europe for 21 days. Participants in the expanding budget condition were then told that due to work obligations, they could only travel for 7 of the 21 days. Participants were then shown the list of cities they could visit (i.e., Amsterdam, The Netherlands; Copenhagen, Denmark; Edinburgh, Scotland; Lisbon, Portugal; London, England; Madrid, Spain; Marseilles, France; Milan, Italy; Munich, Germany; Naples, Italy; Paris, France; Prague, The Czech Republic; Rome, Italy; Vienna, Austria) and were told to indicate which cities they would visit and how many days they would spend in each city. After making the initial allocation, participants were told that time had freed up in their work schedule and they could now travel instead for 14 days. Participants completed a new travel itinerary

indicating how they would allocate their 14 travel days across the various cities. Finally, participants were told that their schedule had freed up completely and they could travel instead for all 21 days, and they completed a final travel itinerary.

Participants in the contracting travel budget condition followed the same procedure, except the order was reversed, beginning with 21 days and ending with 7 days, with each contraction due to an unexpected constraint in their work schedule.

Results. As with the previous experiments, we analyzed the allocation variety as a function of the three budget levels (7 days, 14 days and 21 days; within-subject) and budget trajectory (expanding or contracting; between-subject) via a within-subject ANOVA.

First, we report a significant interaction between budget trajectory and budget level ($F(2,815) = 9.43, p < .01$). To illustrate this interaction, Figure 3 presents the between-subject average allocation variety for the three budgets measured by the number of cities each participant would visit for the expanding and contracting conditions. As predicted, a within-subject slope test (i.e., a planned budget level*budget trajectory within-subject contrast) reveals that the difference in allocation variety between the highest and lowest budgets was significantly greater for participants in the contracting budget condition than for those in the expanding budget condition ($M = 1.00; F(1, 815) = 18.86, p < .001$).

Insert Figure 3 about here

We also report on the simple effect of budget trajectory conditional on budget level. First, at the middle budget level (14 days), participants in the contracting condition had a lower allocation variety in their choice sets ($M = 5.64$) than did those in the expanding condition ($M = 6.46; F(1, 815) = 25.97, p < .01$). The same was true for the 7-day budget, where participants in the contracting condition had a lower allocation variety in their choice sets ($M = 3.11$) than did

those in the expanding condition ($M = 4.43$; $F(1, 815) = 66.96$, $p < .001$). At the highest budget level (21 days), there was a smaller, but significant difference in allocation variety between participants in the contracting condition ($M = 7.28$) and those in the expanding condition ($M = 7.60$; $F(1, 815) = 4.13$, $p = .04$).

Discussion. The data from this experiment replicate the budget contraction effect found earlier for time budgets. Specifically, the budget contraction effect replicated both in terms of the main effect at the middle budget and the slope difference. A noteworthy design feature of this experiment was that participants were told at the outset to imagine they had won a trip for 21 days. This is a departure from prior studies, where the initial default budget that participants brought to each decision context was presumably zero (i.e., not having won a shopping spree to Costco and not having been given money by the government to invest for retirement). Nevertheless, the effects here replicated those above. This indirect evidence suggests that the budget contraction effect does not stem from differences in budget trajectory alone, but rather from differences in reference quantities that emerge when initial budgets are allocated to items. We examine this idea directly in Experiment 4.

Thus far, three experiments using groceries, investments, and travel itineraries have found that allocations of contracting budgets have lower allocation variety than allocations of expanding budgets. Despite the fact that at the lowest budgets, there is the smallest opportunity to find differences of extreme magnitude, the reported experiments thus far have consistently found that the largest differences in allocation variety across the budget trajectories come from the lowest budget levels. While this is consistent with evidence that consumers are hoping to avoid some of the feelings of loss from making broad, but shallow allocation cuts to many items, the evidence is indirect.

The purpose of the next experiment is to provide more direct evidence that the budget contraction effect stems from a desire to avoid feeling of loss. Specifically, the next experiment uses the travel itinerary task to show how a desire to avoid feelings of loss associated with making cuts to many options may underlie the budget contraction effect.

Experiment 3B: Expected feelings of loss from broad versus focused-cuts

This experiment examines the expected feelings of loss of two different strategies for dealing with a declining budget: a “broad-cut” strategy involves making many small, shallow cuts across many items, whereas a “focused-cut” strategy involves focusing cuts on a limited set of items. As discussed, choices derive from expected utility (e.g., Mellers and McGraw 2001), and not from actual experienced utility after decisions are made, so this is why we specifically focus on expected feelings of loss to better understand why the budget contraction effect may occur. The loss aversion account for the budget contraction effect suggests that consumers expect it will involve less severe feelings of loss to execute a focused-cut strategy than a broad-cut strategy.

Method. Participants were 124 undergraduate students from a large eastern university who participated in exchange for monetary compensation (\$10). They were given the same 21-day budget scenario used in the budget contraction conditions of Experiment 3A, and were asked to indicate how they would allocate their travel budget. Participants were then told to imagine that they could only travel for 14 days, and so had to eliminate 7 days of travel in a way requested by their travel agency. Participants in the focused-cut condition were told that they would have to use a focused-cut strategy to adjust their travel plans: “For logistical reasons, the travel agency with which you booked your trip tells you that you must cut your 7 days in a way

that preserves *the length of your stay in as many cities as possible, thus leading you to have to cut out some of your chosen cities altogether.*” Participants in the broad-cut condition read the same instructions, but were told that they would have to use a broad-cut strategy to revise their travel plans. The italicized portion above was replaced by: “*visiting as many cities as possible, thus leading you to have to reduce the number of days you spend travelling in at least some of your chosen cities.*”

All participants then reported on 9-point scales the expected psychological experience of making these cuts (“How much loss do you expect to feel as a result of adjusting your travel schedule by cutting out some of your chosen cities altogether?”, “How psychologically painful do you expect your decision to cut out some of your chosen cities altogether will be?”). On the same scale, respondents assessed the expected general difficulty of making the cuts (“How difficult do you expect your decision of which of your chosen cities to cut out altogether will be?”). We explore expectations regarding difficulty and psychological experience because according to loss aversion, expectations regarding the psychological experience drive allocation decisions (e.g., the strategies taken by participants in experiments 1-3A), and not the expected difficulty, actual difficulty, or actual psychological experience that results from the use of a particular allocation strategy.

The first two questions allow us to assess whether expected psychological experiences differ for the two strategies. The general difficulty question allows us to determine if the two strategies are perceived to be differentially effortful to apply, a potential alternative explanation for the budget contraction effect. We asked this question because if the focused-cut strategy is expected to be easier to execute, the budget contraction effect might stem from a perceived

difference in effort needed to execute specific reduction strategies, as opposed to a difference in expected psychological experiences of executing different strategies.

Results. Results revealed that participants in the broad-cut condition expected to experience greater feelings of loss ($M = 5.26$) than those in the focused-cut strategy condition ($M = 4.47$; $F(1, 122) = 4.79, p < .05$). This same pattern was found for the psychological pain question, with participants who used the broad-cut strategy anticipating directionally greater psychological pain ($M = 3.66$) than those who used the focused-cut strategy ($M = 3.08$; $F(1, 122) = 2.28, p = .13$). An equally weighted linear combination of these two measures produced the same result; those in the broad-cut condition anticipated greater feelings of loss ($M = 4.46$) than did those in the focused-cut strategy ($M = 3.77$; $F(1, 122) = 4.50, p < .05$). Finally, the anticipated difficulty of implementing the two strategies did not differ ($M = 4.29$ for both conditions, $F(1, 122) = 0.00, p > .50$).

Discussion. These data provide process evidence about the budget contraction effect, showing that consumers faced with allocating a reduced budget anticipated that making broad, shallow cuts to many alternatives would involve greater feelings of loss than making focused, deep cuts to a few alternatives. However, there was no difference in expected general difficulty of implementing the two strategies. This suggests that the budget contraction effect stems not from a difference in expected effort of executing the two strategies, but rather from a difference in the expected negative psychological experience of implementing them, in line with a loss aversion account.

The final experiment examines directly whether reference quantities are necessary to product the budget contraction effect. Specifically, Experiment 4 tests the critical role of the

perception of losses in budget contraction by showing a moderation of the effect when specific items were not allocated in any previous budget.

EXPERIMENT 4: Allocation Variety Without Prior Allocations

The results of Experiment 3B show that consumers faced with allocating a reduced budget anticipate that making broad, shallow cuts to many alternatives would involve greater feelings of loss than making focused, deep cuts to a few alternatives. We have claimed the basis of these concerns about loss is the reference quantities established by the previous budget allocation. If so, then the budget contraction effect should not occur if respondents do not allocate their initial budget because without an allocation of the budget, reference quantities will not emerge. This experiment tests this by having some participants examine an initial set of alternatives with a budget in mind, but not actually allocating their initial budget.

Method. Participants were 416 adults from a national online panel. The experiment design was similar to that used in Experiment 1 involving grocery orders. However, this experiment employed a 2 (Budget trajectory: expanding or contracting; between-subjects) by 2 (Prior allocation: yes or no; between-subjects) design. All participants allocated an \$80 grocery budget after facing either a \$40 budget (expanding condition) or a \$120 (contracting condition), and after either allocating the initial budget (prior allocation) or not allocating the initial budget (no prior allocation).

Results. Since the only budget allocated by all participants was the \$80 budget, the analysis in this experiment revolves around the allocation variety of the \$80 budgets. The focus was to explore whether the budget trajectory's influence on allocation variety is moderated by

whether one's previous budget was allocated towards items in one's consideration set. If it is, then allocation variety for the \$80 budget should be lower in the prior allocation contracting condition than in the other three conditions. We analyzed the allocation variety via linear regression, with budget trajectory (1: contracting, 0: expanding), prior allocation (1: yes, 0: no) and their interaction as predictors.

We found a marginally significant interaction between budget trajectory and prior allocation ($\beta = -.7220; t(412) = -1.68, p < .10$). This interaction can be decomposed by contrasting the simple effect of the budget trajectory between prior allocation conditions. We found a significant effect of budget trajectory on allocation variety when the initial budget had been allocated, but no such effect when it had not been allocated. Specifically, when the initial budget was allocated, there was less allocation variety in the contracting condition ($M = 4.00$) than in the expanding condition ($M = 4.65; \beta = -.65, t(412) = -2.10, p = .04$). However, when the initial budget had not been allocated, allocation variety in the contracting budget condition ($M = 4.84$) was not even directionally lower than allocation variety in the expanding condition ($M = 4.77; \beta = .07, t(412) = .24, p = .81$). Additionally, for those who experienced an expanding budget trajectory, allocation variety in the no prior allocation condition ($M = 4.77$) did not differ from allocation variety in the prior allocation condition ($M = 4.65; \beta = -.12, t(412) = -.39, p = .69$). However, in the contracting condition, there was a significant difference between the no prior allocation condition ($M = 4.00$) and the prior allocation condition ($M = 4.84; \beta = -.84, t(412) = -2.71, p < .01$), supporting the idea that the budget contraction effect really does stem from the contracting budget condition.

Insert Figure 4 about here

Discussion. These data show that the budget contraction effect depends on whether allocations towards a given set of alternatives were made with a prior reference allocation level in mind or not, adding support that the budget contraction effect stems at least partially from feelings of loss of reducing items. When a set of items was not previously selected, allocation variety was insensitive to budget trajectory, a result that is consistent with there being no feelings of loss associated with making cuts to those items, and so no need to focus cuts narrowly. The data in this experiment also helps rule out a possible drive to simplification (and thus less variety) in response to worsening prospects because allocation variety did not drop under worsening prospects when there was no initial allocation from which to adjust.

GENERAL DISCUSSION

The experiments in this paper have demonstrated an asymmetry in budget expansion and contraction paths, with those who arrive at a particular budget from a higher initial budget selecting fewer different types of items than those who arrive at the same budget from a lower initial budget. We found this budget contraction effect in grocery item purchases, investment allocations, and travel budgeting decisions. The results from our experiments suggest that the effect originates from a decrease in allocation variety when budgets contract, as opposed to an increase in allocation variety when budgets expand. Our results also reveal that the budget contraction effect stems from a desire to avoid the anticipated psychological losses associated with spreading budget cuts broadly (but shallowly) across many items. Support for this avoidance of anticipated losses comes from Experiments 3B and 4.

As we have shown it, the budget contraction effect is a causal influence of budget trajectory on the amount of variety in one's allocation set. We can make this strong causal claim because of the experimental designs we used in our experiments, wherein participants were randomly assigned to experience either an expanding or a contracting budget trajectory.

It is important to understand the influence of budget trajectory because even in stable economic times, millions of US households experience a negative budget shock in any given year. The role of budget trajectory (as opposed to income trajectory) on allocation variety might seem a bit academic at first, but for several reasons we believe allocation variety is the right place to start. The first reason is because demand models typically presume that income effects on demand are symmetric for budget expansions and contractions. Our results imply that they are not, in fact, symmetric. Rather, our results suggest that income elasticities for particular products are likely to be different when budgets expand than when they contract. The second reason is that the influence of budget trajectory may also influence the exact composition of consumer choice sets. For example, under budget contraction, multipack cereals may be less popular at breakfast and cities containing multiple activity options may be less popular on tours. Speculating on and exploring the nature of this influence is likely to be a fruitful avenue for future research.

In an attempt to test and understand the budget contraction effect, this paper relied on consumers' expected utility (e.g., Loewenstein et al. 2003) regarding the decisions that they make, rather than the actual experienced utility that follows from consumption. Similarly, this paper explored the choices that consumers actually make, rather than the choices that they "should" make. To better understand the downstream consequences of the budget contraction effect on consumer welfare, future studies might explore the actual experienced utility in

contexts similar to those presented in this paper. Doing so could contribute towards a better understanding of what decisions would help consumers maximize their experienced utility.

All of the experiments above used tightly controlled between-participants designs, which look for changes in allocation variety across adjacent allocations. It remains to be seen if the contraction effect is strong enough to compel a given consumer to opt for a less varied assortment at time $t+2$ with a budget B than at time t with the same budget (having had a larger budget at time $t+1$). For example, if a consumer allocates \$40 across a product set, then allocates \$80 across the same set, and then allocates \$40 again across the same set, will the original \$40 allocation have greater variety than the final \$40 allocation?

In addition to its theoretical importance, understanding the budget contraction effect might help companies market their products. For instance, companies like Amazon.com may prefer to emphasize during times of economic downturn, albums by artists whose other songs consumers already own, or focus on specific genres that the particular consumer has been most likely to purchase music from in the past. Doing so should be beneficial because such recommendations help consumer in an economic downturn find a way to keep their allocations narrow. During times of economic prosperity, however, it might help to expand recommendations to provide easier access to items that would maximize allocation variety.

An understanding of how the phenomenon can affect decision making can also help consumers predict their own future behavior and perhaps prevent times in which, say, choosing a smaller allocation variety during budget contractions could have damaging consequences. For instance, diversifying one's investment portfolio is considered a fundamental rule of prudent investing. But during downturns in the economy, investors may move their money into a smaller number of investments, ironically creating a less diversified and, therefore, more risky portfolio.

However, such potentially problematic situations may be overcome by an understanding of how one's decisions are affected by contractions in budgets. There are undoubtedly many more contexts in which the budget contraction effect plays a role in decision making, and hopefully our increasing knowledge of this effect can help us understand how people can best deal with harsh economic circumstances.

Conclusion

The budget contraction effect introduced in this paper is relevant for understanding the expenditure decisions of consumers whose budgets undergo a contraction, whether the contraction is due to an income shock, to a substantial price increase, or to a drop in discretionary budget due to an increase in expenditure elsewhere. Since individual budget contractions are more common during economic downturns, the budget contraction effect is particularly helpful for understanding how consumers adjust their spending during economic contractions. Our evidence predicts that economic downturns cause consumers to be narrower in their choice sets and allocate their budget to fewer categories, suggesting that economic downturns might be a particularly important time for brands to reinforce relationships with consumers who are looking to narrow their consumption.

We have argued that the budget contraction effect occurs because consumers make choices by referring not only to the utility they expect to get from the items they select, but also to the psychological costs they expect to incur from consuming these items at levels below a prior reference level. The idea that consumers make choices by focusing on expected utility rather than actual experienced utility is not a unique contribution of this work, as that idea can be traced as far back as Bernoulli in 1738, and more recently to Fechner in 1860, who established

quantitative psychophysics using a subjective utility scale (see Coombs et al. 1970). Rather, our main contribution is to show that prior budget allocations create allocation quantities that act as important reference points for future budget allocation decisions. And that part of the utility consumers anticipate, and therefore part of the utility that influences their choices, comes from the losses or gains they anticipate relative to reference quantities obtained from their previous budget allocations.

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Figure 1. Between-Subject Number of Grocery Items Purchased by Condition (Experiment 1)

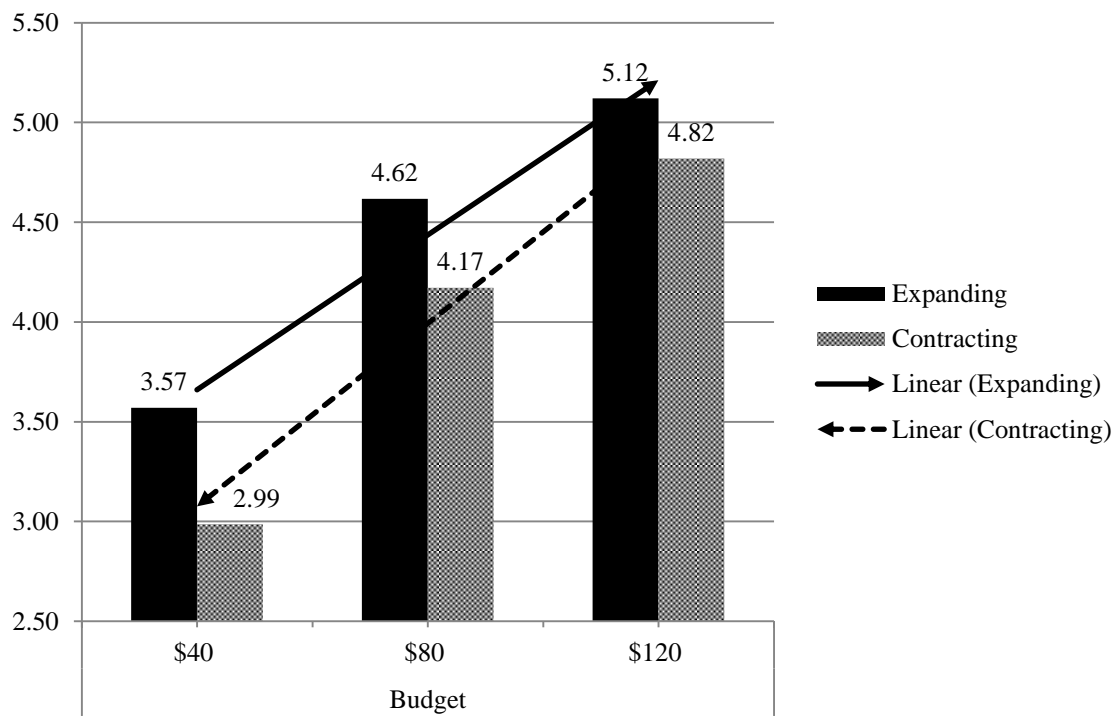


Figure 2. Between-Subject Number of Investments Selected by Condition (Experiment 2)

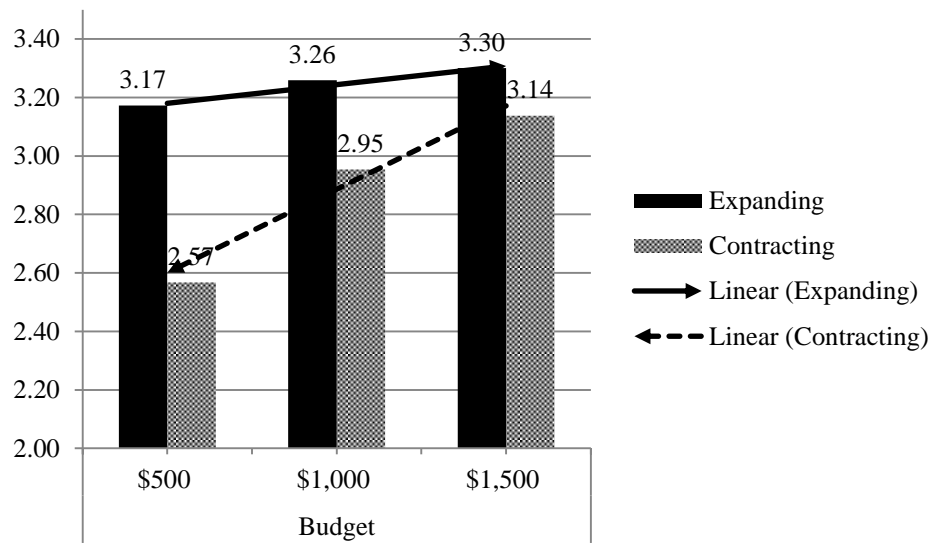


Figure 3. Between-Subject Number of Cities Visited by Condition (Experiment 3A)

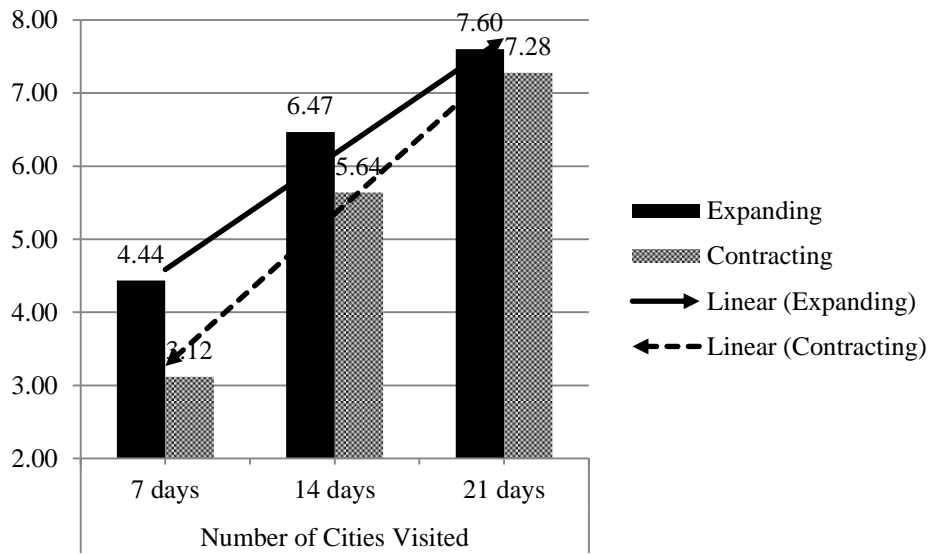


Figure 4. Number of Grocery Items Purchased by Condition at \$80 Budget (Experiment 4)

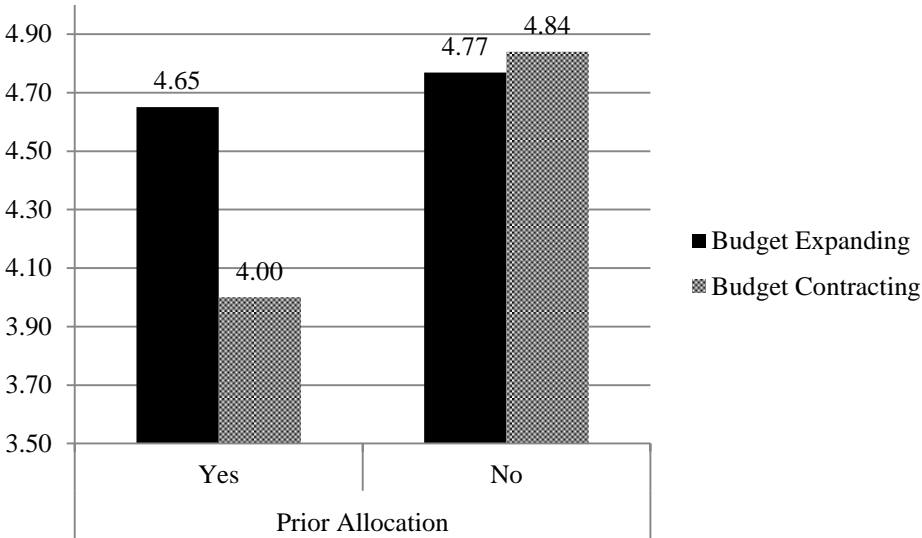


Table 1. Mean Quantity of Grocery Items by Budget Level and Trajectory (Experiment 1)

Grocery Items	Between-Subject Means						Within-Subject Differences	
	\$40 Budget		\$80 Budget		\$120 Budget		\$120 Budget - \$40 Budget	
	Expanding	Contracting	Expanding	Contracting	Expanding	Contracting	Expanding	Contracting
Thomas' English Muffin Mix & Match	0.86	0.90	1.48	1.25	2.02	1.65	1.19	0.75
Milton's Multi-Grain Bread	1.29	1.27	2.21	1.60	2.93	1.87	1.68	0.61
M&M's Milk Chocolate	0.16	0.14	0.41	0.35	0.85	0.51	0.70	0.37
PowerBar Performance Variety Pack	0.25	0.27	0.33	0.41	0.56	0.74	0.33	0.47
Mott's Variety Pack Apple Sauce	0.73	0.52	1.77	1.33	2.11	1.52	1.42	1.01
Chef Boyardee Beef Ravioli	1.47	1.42	2.35	2.12	3.20	2.54	1.79	1.13
Red Baron Deep Dish Singles Pizza Variety	0.91	0.98	1.65	1.95	2.48	2.12	1.61	1.15
DiGiorno Pepperoni Pizza	0.82	1.03	1.31	2.05	1.89	2.04	1.10	1.02
Cheesecake Factory Cheesecake	0.32	0.14	0.49	0.39	0.63	0.71	0.31	0.58

STIMULI APPENDIX

Experiment 1 - Budget Contraction Grocery Stimuli

Expanding (Contracting) Condition

Imagine that you won a \$40 (\$120) shopping spree at Costco. It couldn't have come at a better time because you have very little to eat in the house. Suppose you could spend the money on the items below. How would you spend it? Use the boxes to the right of each item to indicate how many of each product you would buy. If you would not buy a product, leave the box empty.

- ___ Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58
___ Milton's Multi-Grain Bread (2-loaves) -- \$4.88
___ M & M's Milk Chocolate (48 / 1.69 oz pk) -- \$17.97
___ PowerBar Variety Pack (24 bars) -- \$21.88
___ Mott's Variety Pack Apple Sauce (36 cups) -- \$8.30
___ Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30
___ Red Baron Deep Dish Singles Pizza Variety Pack (12 pack) -- \$10.44
___ DiGiorno Pepperoni Pizza (3 Pack) -- \$12.88
___ Cheesecake Factory Original Cheesecake (4 lb. cake) -- \$9.45

-- Page Break --

Now imagine that a month has passed and you won another Costco shopping spree from work. All the food you bought last time is all gone. This time the spree is for \$80 (\$80). Again it comes at a good time because you have almost no food in the house. How would you spend the \$80? Use the boxes to the right of each item to indicate how many of each product you would buy. If you would not buy a product, leave the box empty.

- ___ Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58
___ Milton's Multi-Grain Bread (2-loaves) -- \$4.88
___ M & M's Milk Chocolate (48 / 1.69 oz pk) -- \$17.97
___ PowerBar Variety Pack (24 bars) -- \$21.88
___ Mott's Variety Pack Apple Sauce (36 cups) -- \$8.30
___ Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30
___ Red Baron Deep Dish Singles Pizza Variety Pack (12 pack) -- \$10.44
___ DiGiorno Pepperoni Pizza (3 Pack) -- \$12.88
___ Cheesecake Factory Original Cheesecake (4 lb. cake) -- \$9.45

-- Page Break --

Imagine that you won a \$120 (\$40) shopping spree at Costco. It couldn't have come at a better time because you have very little to eat in the house. Suppose you could spend the money on the items below. How would you spend it? Use the boxes to the right of each item to indicate how many of each product you would buy. If you would not buy a product, leave the box empty.

- ___ Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58
___ Milton's Multi-Grain Bread (2-loaves) -- \$4.88
___ M & M's Milk Chocolate (48 / 1.69 oz pk) -- \$17.97
___ PowerBar Variety Pack (24 bars) -- \$21.88
___ Mott's Variety Pack Apple Sauce (36 cups) -- \$8.30
___ Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30
___ Red Baron Deep Dish Singles Pizza Variety Pack (12 pack) -- \$10.44
___ DiGiorno Pepperoni Pizza (3 Pack) -- \$12.88
___ Cheesecake Factory Original Cheesecake (4 lb. cake) -- \$9.45

Experiment 2 - Budget Contraction Investment Stimuli

Expanding (Contracting) Condition

Suppose that the Federal Government has decided to change the rules on saving for retirement. The new plan involves giving people money to invest as they wish for retirement. Each month you will be given an amount of money by the government and you can invest it across four different classes of investments (very safe, safe, somewhat risky, very risky). If you wish, you can put it all in one investment or you can spread it around as you wish. In the first month of the plan, the government is allocating you **\$500 (\$1500)** to invest. How would you allocate this money to the four investments below?

- Very safe, guaranteed low returns
- Safe, almost always with modest returns
- Somewhat risky, normally with above average returns
- Very risky, with the possibility for high returns

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The government has decided to **up (drop)** the allocation amount for this month. This month they are giving people **\$1000 (\$1000)** to invest. How would you allocate this money across the investments?

- Very safe, guaranteed low returns
- Safe, almost always with modest returns
- Somewhat risky, normally with above average returns
- Very risky, with the possibility for high returns

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The government has decided to **up (drop)** the allocation amount again this month. This month they are giving people **\$1500 (\$500)** to invest. How would you allocate this money across the investments?

- Very safe, guaranteed low returns
- Safe, almost always with modest returns
- Somewhat risky, normally with above average returns
- Very risky, with the possibility for high returns

Experiment 3 - Budget Contraction Investment Stimuli

Expanding (Contracting) Condition

Suppose that you have won a trip to Western Europe. The trip will pay for your travel for up to three weeks. Given your commitments here, you only have time to travel for one week. Indicate how you would allocate your **7 (21) days** of travel across the cities below. Note that to visit a city, you must allocate at least one day to that city.

Amsterdam, Lisbon, London, Madrid, Marseilles, Milan, Munich, Naples, Paris, Prague, Rome, Vienna.

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Now suppose that some of your commitments here **have freed up, allowing you to travel for two weeks (require that you limit your travel to just two weeks)**. Indicate how you would allocate your **14 (14) days** of travel across the cities below. Note that to visit a city, you must allocate at least one day to that city.

Amsterdam, Lisbon, London, Madrid, Marseilles, Milan, Munich, Naples, Paris, Prague, Rome, Vienna.

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Now suppose that all of your commitments here **have freed up, allowing you to travel for the full three weeks (require that you limit your travel to just one week)**. Indicate how you would allocate your 21 days of travel across the cities below. Note that to visit a city, you must allocate at least one day to that city.

Amsterdam, Lisbon, London, Madrid, Marseilles, Milan, Munich, Naples, Paris, Prague, Rome, Vienna.

Experiment 4 - Budget Contraction Grocery Stimuli, No Allocation on First Budget

Expanding (Contracting) Condition / With Allocation

Imagine that you won a **\$40 (\$120)** shopping spree at Costco. It couldn't have come at a better time because you have very little to eat in the house. Suppose you could spend the money on the items below. **How would you spend it? Use the boxes to the right of each item to indicate how many of each product you would buy. If you would not buy a product, leave the box empty.**

- | | |
|--|--|
| <input type="checkbox"/> Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58 | <input type="checkbox"/> Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30 |
| <input type="checkbox"/> Milton's Multi-Grain Bread (2-loaves) -- \$4.88 | <input type="checkbox"/> Red Baron Deep Dish Singles Pizza Variety Pack (12 pack) -- \$10.44 |
| <input type="checkbox"/> M & M's Milk Chocolate (48 / 1.69 oz pk) -- \$17.97 | <input type="checkbox"/> DiGiorno Pepperoni Pizza (3 Pack) -- \$12.88 |
| <input type="checkbox"/> PowerBar Variety Pack (24 bars) -- \$21.88 | <input type="checkbox"/> Cheesecake Factory Original Cheesecake (4 lb. cake) -- \$9.45 |
| <input type="checkbox"/> Mott's Variety Pack Apple Sauce (36 cups) -- \$8.30 | |

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Now imagine that a month has passed and you won another Costco shopping spree from work. All the food you bought last time is all gone. This time the spree is for **\$80 (\$80)**. Again it comes at a good time because you have almost no food in the house. How would you spend the \$80? Use the boxes to the right of each item to indicate how many of each product you would buy. If you would not buy a product, leave the box empty.

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|--|--|
| <input type="checkbox"/> Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58 | <input type="checkbox"/> Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30 |
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Expanding (Contracting) Condition / No Allocation

Imagine that you won a **\$40 (\$120)** shopping spree at Costco. It couldn't have come at a better time because you have very little to eat in the house. Suppose you could spend the money on the items below. **Take a moment to read the items and their prices. When you have done so, please click the red arrow below.**

- | | |
|--|--|
| <input type="checkbox"/> Thomas' English Muffins Mix & Match (2pk.12oz.) -- \$3.58 | <input type="checkbox"/> Chef Boyardee Beef Ravioli (10 / 15 oz. cans) -- \$8.30 |
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