

Planning to Make Unplanned Purchases?  
The Role of In-Store Slack in Budget Deviation

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We propose that consumers have mental budgets for grocery trips that are typically comprised of both an *itemized portion* and *in-store slack*. We conceptualize the itemized portion as the amount that the consumer has allocated to spend on items planned to the brand or product level and the in-store slack as the portion of the mental budget that is not assigned to be spent on any particular product but remains available for in-store decisions. Using a secondary data set and a field study, we find incidence of in-store slack. Moreover, we find support for our framework predicting that the relationship between in-store slack and budget deviation (the amount by which actual spending deviates from the mental trip budget) depends on factors related to desire and willpower.

Researchers and practitioners alike have commonly assumed that unplanned purchases are largely due to consumers' susceptibility to in-store stimuli (Heilman, Nakamoto and Rao 2002; Park, Iyer and Smith 1989) and that, as a result, unplanned purchases represent unplanned spending (i.e., Mukopadhyay and Johar 2007). On the other hand, two major studies have reported the surprising finding that actual spending closely approximated spending intentions despite the fact that over 50% of purchases were unplanned (Kollat and Willett 1967; POPAI 1995). In this paper, we draw upon mental budgeting to provide an explanation for this apparent paradox.

While economists have traditionally assumed that money is fungible, research has shown that consumers use a form of mental budgeting where they allocate money to mental accounts and attempt to resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Although studies have found that consumers have budgets for groceries in general (Heath and Soll 1996; Heilman et al. 2002), we take this further to propose that consumers have a mental budget, even if implicit, at the shopping trip level which includes room for unplanned purchases. We posit that consumers anticipate the occurrence of unplanned purchases in their spending expectations because they realize they have neither the time (Zeithaml 1985) nor the cognitive resources to fully plan (Bettman 1979) and/or because they want to be able to make spontaneous decisions while in-store (Stern 1962).

Formally, we propose that consumers' shopping trip mental budgets are typically comprised of an itemized portion and in-store slack. We conceptualize the itemized portion as the amount of money that the consumer has allocated to spend on items planned to the brand or product level and the in-store slack is the portion of the mental budget that is not assigned to be spent on any particular product before the shopping trip begins. Instead, the funds remain

available for in-store decisions. We first provide evidence of in-store slack. We then examine the question of whether consumers' strategy of allowing themselves in-store slack is an effective tactic for adhering to their overall total budget or whether having in-store slack leads to over or underspending. To accomplish this goal, we present and test a framework describing how the relationship between in-store slack and budget deviation depends on consumer (impulsiveness and income) and trip characteristics (aisles shopped and trip length).

This study makes several important contributions to the literature. First, we find incidence of in-store slack using both secondary data and a field study. That is, consumers' mental budgets for the shopping trip include room to make unplanned purchases. Using free response data, we show that consumers employ this strategy both because they anticipate forgotten needs as well as because they realize that they will see extra items that they want - with some respondents even specifically indicating that they expect to make impulse purchases. In contrast to research which shows that consumers fail to predict future behavior (e.g., Khan and Dhar 2007; Simonson 1990; Zauberan 2003), our research suggests that the average consumer correctly anticipates unplanned purchases. Additionally, we contribute to the mental budgeting literature by showing that consumers' spending on grocery trips is remarkably close to their planned spend and that this difference does not depend on whether the consumer has a formal or implicit grocery budget.

We also make contributions to the dual process literature that depicts self-control as a battle between desire and willpower (Hoch and Loewenstein 1991; Shiv and Fedorikhin 1999; Vohs and Faber 2007). Specifically, we find that budget deviation depends on a three-way interaction between in-store slack, aisles shopped and impulsiveness. When only select aisles are shopped, our results indicate a negative relationship between slack and budget deviation and

suggest that consumers are not spending all of the money in their in-store slack. When most aisles are shopped however, slack has no impact on budget deviation for shoppers low in impulsiveness, but leads to overspending for highly impulsive shoppers. This suggests that exposing a shopper to more environmental cues creates enough desire for items that she ultimately needs to exert self-control to stay within her mental budget, but that highly impulsive individuals have insufficient willpower to do so. We also show that in-store slack attenuates the relationship between trip length (i.e., time spent in the store) and budget deviation, suggesting that making unplanned purchases using the in-store slack may reduce the self-control depletion that is likely to occur as the trip progresses.

The remainder of this paper is organized as follows. We first describe our conceptualization of in-store slack and leverage a large existing field study to provide evidence of in-store slack. We then develop our conceptual framework and associated hypotheses regarding the relationship between in-store slack and budget deviation. Next, we test our hypotheses via a field study with over 150 respondents where we measure the amount of in-store slack. Additionally, we present free response data which examines the reasons why consumers have in-store slack. We close with a discussion of theoretical contributions as well as implications for managers and consumers.

## **IN-STORE SLACK**

While economists have traditionally assumed that money is fungible, research has shown that many consumers use a form of mental budgeting where they allocate money to different mental accounts (such as food, clothing and entertainment) and attempt to resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Thaler (1999) argues

that consumers use mental budgets in order to “facilitate making rational trade-offs between competing uses for funds” (p. 11), and Thaler and Shefrin (1981) propose that consumers use mental budgets as a form of self-control to ensure that they stay within aggregate spending limits. Grocery shopping is an example of a consumer domain where budgeting is commonly found. While studies have found that consumers have mental budgets for groceries in general (Heath and Soll 1996; Heilman et al. 2002), we argue that consumers have a mental budget for the amount of money that they plan to spend on a specific grocery shopping trip and that this trip mental budget includes room for unplanned purchases.

Grocery shopping is a routine activity and consumers’ shopping patterns tend to display a weekly cycle (Kahn and Schmittlein 1989). As a result, a shopper with an explicit weekly budget should have a mental budget for each shopping trip. If the shopper makes one shopping trip per budget cycle, then her trip budget will be equivalent to her weekly grocery budget. Likewise, if the shopper routinely makes multiple trips per week, she will need to mentally earmark only a portion of her weekly budget to be spent on the current trip due to anticipation of future expenses. Even if a consumer does not maintain an explicit budget, she will still have experience with the average amount of money that she has spent on similar trips due to the routinized nature of grocery shopping. Therefore, she will use spending levels from past trips as a basis for future spending expectations as is commonly done by organizations (Wildawsky 1964; Cyert and March 1963).

There is a large body of work which suggests that consumer decisions are made with regard to reference points and that expectations are a source of reference points (i.e., Kahneman and Tversky 1979; Thaler 1985, Tversky and Kahneman 1991). Just as consumers derive negative utility from paying more than their reference price for a specific item (i.e., Grewal,

Monroe and Krishnan 1998; Kalyanaram and Winer 1995; Thaler 1985; Winer 1986), consumers should also derive negative utility from exceeding their spending expectation for the trip. In this paper, we refer to the trip spending expectation as a mental budget regardless of whether the spending expectation originates from explicit budgeting practices or is a more implicit budget based on prior spending behavior. This terminology is consistent with Hauser and Urban's (1986) basic notion that "in a single period the consumer faces a fixed budget that s/he must allocate..." and "...for some goods s/he plans explicitly, for others s/he does not." (p.446) and with Novemsky and Kahneman's (2005) definition of a mental budget as a "consumer's set of intentions for money." Additionally, in our field study, we examine whether budget deviation varies depending on whether the budget is explicit or implicit.

Most consumers have forgotten necessities on past trips and may be aware that they have a tendency to succumb to impulses in-store (Rook and Fisher 1995); therefore we expect that consumers learn to anticipate the occurrence of unplanned purchases. It is well documented in the self-regulation literature that individuals employ techniques to help resist temptation (Baumeister, Heatherton and Tice 1994; Loewenstein 1996; Wertenbroch 1998) and one potential tactic is for consumers to attempt to avoid unplanned purchases by setting a tight trip budget before they begin their shopping trips. Instead, our thesis is that consumers manage this balancing act by leaving room in their mental budgets for unplanned purchases. We refer to this amount as the in-store slack. That is, we argue that consumers anticipate making unplanned purchases and allocate in-store slack for this purpose.

We argue that there are at least two reasons why consumers would have in-store slack. First, some consumers will have in-store slack because they realize they are unable to completely plan all the items they need to buy. Consumers tend to have difficulty retrieving all their grocery

needs from memory (Bettman 1979) due to limited processing capacity (e.g., Miller 1956). Therefore, consumers often need to rely on external cues which aid retrieval from memory (i.e., Lynch and Srull 1982; Tulving and Psotka 1971). Since grocery shopping is a common occurrence, shoppers will be aware that in-store stimuli will trigger forgotten needs and will incorporate this expectation into their mental budgets. Second, some consumers may purposefully leave themselves some slack because they want the financial flexibility to spontaneously make decisions in-store. For example, Stern (1962) finds that shoppers purposefully wait until they are in-store to determine what they want to buy because they want to get ideas for dinner. Likewise, Iyer (1989) reports that 42% of study participants who made an unplanned purchase cited “item required for a recipe made up in-store” as a reason. Being able to make such spontaneous decisions has been shown to contribute to the hedonic value of shopping (Babin, Darden, and Griffin 1994). This leads to our prediction that consumers will leave room in their trip budgets to make unplanned purchases.

### **PRELIMINARY STUDY**

To provide preliminary evidence of in-store slack, we employ data from the 1995 customer intercept study conducted by the Point of Purchase Advertising Institute (POPAI). In that study, over 2000 customers were intercepted as they entered grocery stores located in fourteen cities across the United States (see Inman, Winer, and Ferraro 2009). Before they entered the store, respondents were asked what items they planned to purchase and how much they intended to spend. Planned items could be generally planned items like “vegetables” or specifically planned items like “Kellogg’s Frosted Flakes.” After consumers checked out, interviewers recorded information regarding the actual items purchased and the actual amount

spent. Kollat and Willett (1967) have previously found that this research format does not impact the amount that consumers spend (we also provide evidence of this in our field study).

One surprising finding from the POPAI (1995) data was that, despite the fact that over 50% of the purchases were unplanned, actual spending closely approximated spending intentions. In fact, the average planned spend was \$45.99, while the average total amount spent was \$49.82 – the average budget deviation (defined as total amount spent – total planned spend) was only \$3.83. These descriptive statistics strongly suggest that shoppers have a mental budget for the trip which includes room to make unplanned purchases without exceeding this budget. Although the POPAI study did not investigate in-store slack specifically, we use it to provide preliminary evidence of in-store slack by estimating the relationship between number of planned purchases and number of unplanned items while controlling for the trip budget.

In lieu of a mental budget for the trip, one would expect that the number of unplanned purchases would increase as the number of planned purchases increases because larger trips are associated with greater amounts of unplanned purchasing (Kollat and Willet 1967). On the other hand, if consumers have fixed budgets but varying amounts of in-store slack, then the results should tell a different story. Individuals who planned fewer items but had the same total trip budget (i.e., had more in-store slack) should make more unplanned purchases. Conversely, those who planned a greater number of items should make fewer unplanned purchases because they have less room in their budgets to do so. Therefore, we employ the POPAI data to estimate the effect of number of planned purchases on number of unplanned purchases both with and without the trip budget variable. In addition, we include demographic variables and the covariates of aisles shopped and trip length—which have been shown to be related to the likelihood of an unplanned purchase (Inman et al. 2009).

The results are presented in table 1. As expected, there is a positive relationship between the number of planned items and the number of unplanned items ( $\beta = .13, p < .01$ ) when the trip budget is not included. However, this result reverses when the amount of the trip budget is included. There is a positive relationship between the trip budget and number of unplanned items ( $\beta = .18, p < .01$ ), but there is now a negative relationship ( $\beta = -.35, p < .01$ ) between the number of planned purchases and number of unplanned purchases. This result is consistent with our conceptualization of in-store slack. Individuals who have the same trip budget but planned a fewer number of planned purchases made more unplanned purchases because they had more in-store slack. Additionally, the fact that including the trip budget variable increases the  $R^2$  significantly from 30.7% to 59.9% indicates the importance of including the trip budget when examining in-store decision making behavior.

Given this initial support for our thesis that consumers' mental budget for the shopping trip includes in-store slack, the next logical question is whether this is an effective strategy. More specifically, we consider how the size of the in-store slack is related to budget deviation, which we define as the difference between the total mental budget and the actual total amount spent. That is, how does having in-store slack influence a consumer's tendency to overspend or under-spend relative to her overall budget for the trip?

## **HYPOTHESES**

In the mental budgeting literature, Heath and Soll (1996) argue that consumers will under-consume or over-consume in an effort to stick to their total mental budgets. This suggests that there will be no relationship between in-store slack and budget deviation, but other streams of literature provide conflicting predictions. On the one hand, shopping momentum (i.e., Dhar,

Huber and Khan 2007) suggests that if the shopper allows herself to start making unplanned purchases, then momentum would take over and she would continue to make unplanned purchases (presumably to the point of exceeding the total mental budget). On the other hand, a self-control depletion argument (Muraven and Baumeister 2000) suggests a negative relationship between slack and budget deviation. Specifically, we posit that if the consumer tries to force herself to not make any unplanned purchases (i.e., has no in-store slack), she would become so depleted by the end of trip that she would ultimately make unplanned purchases and exceed her total budget. Therefore, being able to make unplanned purchases using in-store slack should reduce depletion and decrease the tendency to exceed the total budget. Furthermore, shoppers with in-store slack may be expecting to have their needs and/or wants cued by in-store stimuli such as displays or aromas (i.e., Bettman 1979; Inman et al. 2009). If the shopper is not exposed to sufficient in-store stimuli or does not process the information, then the consumer may underspend relative to her total mental budget.

Given the conflicting predictions, it is important to consider individual or trip factors that will influence the relationship between in-store slack and budget deviation. Therefore, we now present our hypotheses which predict how the relationship between the size of the in-store slack and budget deviation will vary according to consumer and trip characteristics. Figure 1 summarizes the hypotheses that are tested in the field study.

--Insert figure 1 about here--

As the primary basis for our hypotheses, we draw upon the conceptual model proposed by Hoch and Loewenstein (1991), which asserts that self-control depends on the interplay between desire and willpower. As described in Hoch and Loewenstein (1991), proximity is a key aspect of desire (Faber and Vohs 2004; Mischel and Grusec 1967). Likewise, Laibson (2001)

argues that exposure to environmental cues increases the perceived marginal utility of consumption. Further, environmental cues also aid in retrieval of forgotten needs (e.g., Lynch and Srull 1982; Tulving and Pstotka 1971). In a grocery context, the number of aisles shopped will influence the shopper's proximity to items and therefore exposure to environmental cues. As a result, shopping more aisles should increase desire for a variety of items. Consistent with these arguments, Inman et al. (2009) find that the number of aisles shopped increased the probability of a given purchase being unplanned. Consequently, we expect that budget deviation will increase as more aisles are shopped.

Beyond the main effect of the number of aisles shopped, we also predict that aisles shopped will interact with in-store slack. Research shows that consumers' marginal propensity to consume varies depending on the mental account, with current income accounts being more readily spent than savings accounts (Shefrin and Thaler 1988). Likewise, we expect that consumers will have a high marginal propensity to consume from their in-store slack because they are mentally prepared to spend their in-store slack on the current trip. Even with a higher marginal propensity to consume, consumers should not make a purchase unless a need becomes salient. If a consumer only shops a few select aisles, they may not be exposed to enough stimuli to spend all of the funds in their in-store slack. On the other hand, a consumer who shops more aisles will be inundated with environmental cues. In this case, the shopper may find enough items to purchase on an unplanned basis that she will consume her in-store slack or even exceed it. Thus,

**H1:** There will be an interaction between in-store slack and number of aisles shopped such that the relationship between in-store slack and budget deviation will be stronger when most aisles are shopped than when only select aisles are shopped.

As the shopper is exposed to more in-store cues, she may need to exert self-control to stay within her trip mental budget. Therefore, we also need to consider factors that influence willpower. Impulsiveness is an individual difference variable which is of obvious relevance in this regard. According to Puri (1996), impulsiveness is characterized by low availability of cognitive thoughts related to impulse behaviors, so the individual is more likely to engage in such behaviors. Consequently, impulsiveness has been shown to increase the tendency to make hedonic choices (Shiv and Fedorkhin 1999) and impulse purchases (Rook and Fisher 1995; Vohs and Faber 2007). Based on this prior research, we expect a positive relationship between impulsiveness and budget deviation, but we also posit that impulsiveness will qualify the moderating effect of aisles shopped on the relationship between slack and budget deviation. As already discussed, shopping more aisles will lead to exposure to more environmental cues. If only select aisles are shopped, there may not be sufficient cue exposure to tempt the individual to make enough unplanned purchases to exceed her mental budget. As long as in-store slack is available for unplanned purchases, there will be no need to exert self-control to stay within the budget and consequently impulsiveness will play a lesser role. On the other hand, shopping all aisles may tempt the individual to make unplanned purchases beyond the amount of the in-store slack. In this case, the shopper will need to exert self-control to stay within her mental budget. Highly impulsive individuals will be less able to exert this control and therefore will be more likely to exceed their budget when shopping most aisles. Therefore,

**H2:** There will be a three-way interaction between in-store slack, aisles shopped and impulsiveness for the dependent variable of budget deviation. Specifically, impulsiveness will strengthen the relationship between slack and budget deviation to a greater degree when all aisles are shopped than when only select aisles are shopped.

Another factor that influences willpower is depletion of self-regulatory resources, which are conceptualized as a global, general pool of resources (Baumeister et al. 1998; Muraven and

Baumeister 2000; Vohs and Faber 2007). In laboratory studies, numerous manipulations have been shown to decrease self-control performance such as attention control, mental control and emotional-behavioral control (Wegner 1989; Muraven, Tice and Baumeister 1998; Vohs and Faber 2007). In addition, exposure to environmental factors such as noise (Cohen et al. 1980; Glass, Singer and Friedman 1969; Hartley 1973), crowding (Evans 1979; Sherrod 1974) and proximity to a tempting product (i.e., Vohs and Heatherton 2000) deplete self-regulatory resources and lead to decreased self-control performance (see Muraven and Baumeister 2000 for a review). In this research, we examine a naturally occurring behavior that is correlated with depletion – shopping trip length. The longer the individual spends in the store, the longer they will be exposed to tempting products, as well as to noise and crowds. Therefore, self-regulatory depletion should increase as the trip length increases which will reduce the tendency to stay within the mental budget. Therefore, we posit that:

**H3:** The longer the shopping trip, the greater the budget deviation.

Although prior research suggests that shoppers' self-regulatory resources will become more depleted as the trip progresses, we argue that having in-store slack should reduce the degree to which this occurs. According to Muraven and Baumeister (2002), acts of self-control deplete self-regulatory resources and therefore reduce the individual's subsequent ability to exert self-control. Therefore, we posit that if the consumer has no in-store slack and tries to force herself to not make any unplanned purchases, she will frequently have to exert self-control and will become so depleted by the end of trip that she will ultimately make unplanned purchases and exceed her mental budget. On the other hand, being able to make unplanned purchases using in-store slack should lessen the depletion of self-regulatory resources that will occur as the trip

progresses. As a result, the individual will have more willpower to stay within her budget.

Therefore,

**H4:** The relationship between trip length and budget deviation will be attenuated by in-store slack.

Finally, we consider the moderating role of income on the relationship between in-store slack and budget deviation. As discussed earlier, a shopper will have a high marginal propensity to consume using funds in her in-store slack. However, even if the shopper is mentally prepared to spend the money, the shopper will not buy an item if she perceives the price to be too high. Higher income households tend to be less price sensitive (Ainslie and Rossi 1998; Mulhern, Williams and Leone 1998; Wakefield and Inman 2003) and therefore should be less discriminating as to which items they purchase with their in-store slack. Further, budgets tend to be less constraining for higher income individuals (Thaler 1999), which suggests that they will not be as motivated to stay within their mental budgets. Therefore, we predict that:

**H5:** The greater the shopper's income, the stronger the relationship between in-store slack and budget deviation.

## **FIELD STUDY**

While the POPAI data provided initial support for our thesis that a consumer's mental budget for the shopping trip includes in-store slack, an obvious limitation of this data set is that we did not have a measure of the consumer's in-store slack. Therefore, we conducted a field study to more directly assess the occurrence of in-store slack as well as to examine the relationship between in-store slack and budget deviation. In this study, we replicate the procedure of the POPAI study while addressing some of its limitations. In the fall of 2006, one hundred seventy-five customers were systematically intercepted as they entered three different grocery stores located in a Southwestern US city. We selected every tenth shopper or one every

five minutes, whichever came first. Respondents were offered a \$10 incentive, which was given to them at the end of the survey for use on future shopping trips to mitigate a windfall effect on the current trip (Heilman et al. 2002). As in the POPAI study, respondents were asked what items they planned to purchase before they entered the store. One key difference between this study and the POPAI study is that in addition to total planned spend, we also asked respondents to estimate the cost of the items they planned to purchase (i.e., the itemized portion of their budgets). The order of these two questions was counterbalanced. This approach allows us to measure the respondents' in-store slack by subtracting the itemized portion from the total planned spend. After the respondents checked out, they reported how many aisles they had shopped, indicated whether they had a grocery budget, answered demographic questions, and responded to questions designed to measure their impulsiveness. Finally, the interviewer made a copy of the respondent's receipt so that we had a record of the items purchased, amount spent, and price of each item purchased. Respondents also provided their frequent shopper card number, which allows us to compare the amount spent on the present trip to other similar trips made by each individual. These data serve as a benchmark to examine whether our methodology influenced the amount spent.

### **Sample**

Due to missing responses or missing receipts for 22 respondents, the usable sample was 153, 84% of which were female. The average household size was 3.11 people. Table 2 summarizes the sample statistics. The measures used for each construct in our model are summarized below and table 3 provides the correlation matrix.

---Insert tables 2 and 3 about here---

## Measures

*Trip Mental Budget (TBUDGET)*. Respondents were asked to estimate how much they expected to spend on the trip.

*Itemized Portion (ITZ)*. After reporting the items that they planned to purchase, respondents were asked to estimate how much they expected to spend on the list of planned items.

*In-Store Slack (ISS)*. This measure was calculated by subtracting the itemized portion from the trip mental budget.

*Number in Household (HH)*. Respondents were asked to indicate the number of people in their household.

*Income (INC)*. During the exit interview, respondents were asked to indicate their annual household income. To increase the response to such a personally sensitive question, respondents were provided with 7 choices: <\$20,000; \$20-39,999; \$40-59,999; \$60-\$79,999; \$80-99,999, \$100-119,999 and \$120,000+. Using this approach, we had a 95% response rate for the income question. To increase power, a continuous income variable was then created by taking the midpoint income for each of the categories.

*Aisles Shopped (MAISLES)*. Consistent with the measure employed by Inman et al. (2009), respondents were asked to indicate whether they shopped “only those aisles or sections where I planned to buy something,” “most aisles or sections of the store” or “each aisle or section of the store.” We then collapsed shoppers who responded that they “shopped each aisle” into the “most aisles shopped” category due to the fact that less than 10% of the respondents indicated that they shopped all aisles. The low percentage of respondents shopping all aisles was most likely due to the fact that this study was conducted at relatively large grocery stores with aisles devoted to specialty categories such as automotive accessories, baby accessories, and photo services. In our

model, aisles shopped is measured using effects coding such that the variable is equal to 1 if most or all aisles were shopped and -1 if only needed aisles were shopped.

*Impulsiveness (IMP)*. This was measured using a five-item, seven-point scale ( $\alpha = .63$ ) adapted from Puri (1996). Specifically, we asked respondents how frequently the following adjectives typically describe them: impulsive, extravagant, self-controlled, responsible and restrained on a scale where 1=seldom and 7=usually. The last three adjectives are reverse coded.

*Trip Length (TLENGTH)*. We determined the trip start time based on the time recorded at the end of the entry interview. We determined trip end time based on the check out time provided on the receipt. Trip length is the difference between the start time and end time and is measured in hours.

*Have Grocery Budget (GBUD)*. This variable is coded 1 if the respondent indicated that they have a grocery budget and -1 otherwise. This question was asked during the exit interview and was designed to assess whether the shopper maintains an explicit grocery budget or whether the planned spend represents a more implicit mental budget.

*Trip Spend (SPEND)*. Using the respondent's receipt, we determined her actual total spend.

## **Model**

To test our hypotheses, we estimate equation 1 below using OLS regression. In addition to the variables indicated by our hypotheses, we also include household size and trip mental budget as covariates.<sup>1</sup> Further, we also include the variable which indicates whether the shopper has a grocery budget (GBUD). We include this variable to assess whether budget deviation depends on whether the shopper maintains an explicit grocery budget. All continuous variables,

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<sup>1</sup> Given that BUDDEV and ISS are both a function of TBUDGET there is the possibility of a spurious negative correlation between BUDDEV and ISS. As suggested by Peter, Churchill and Brown (1993), we also estimated an alternate model where the dependent variable is total spend and trip mental budget is controlled for on the right hand side. The results are substantively identical to the results for equation 1. Therefore, we report the budget deviation results for consistency with our hypotheses.

including income, are mean-centered so as to reduce multicollinearity (Aiken and West 1991) and to facilitate interpretation of main effects.

$$\begin{aligned} \text{BUDDEV}_i = & \beta_0 + \beta_1 * \text{ISS}_i + \beta_2 * \text{MAISLES}_i + \beta_3 * \text{IMP}_i + \beta_4 * \text{TLENGTH}_i + \beta_5 * \text{INC}_i + \beta_6 * \\ & \text{ISS}_i \times \text{MAISLES}_i + \beta_7 * \text{ISS}_i \times \text{IMP}_i + \beta_8 * \text{MAISLES}_i \times \text{IMP}_i + \beta_9 * \text{ISS}_i \times \text{MAISLES}_i \times \\ & \text{IMP}_i + \beta_{10} * \text{ISS}_i \times \text{TLENGTH}_i + \beta_{11} * \text{ISS}_i \times \text{INC}_i + \beta_{12} * \text{HH}_i + \beta_{13} * \text{GBUD}_i \\ & \beta_{14} * \text{TBUDGET}_i + \varepsilon_i \end{aligned} \quad (1)$$

## Results

*Control Analysis.* To assess whether our survey methodology influenced spending, we compare each individual's spending on the survey trip to that individual's previous spending behavior. To facilitate relevant comparisons, we compare each shopper's amount spent on the survey trip to the average trip of the same type (major vs. fill-in) over the six months preceding our survey. Following Kahn and Schmittlein (1989, 1992), we characterize a trip as a major trip or a fill-in trip based on each individual's spending distribution. Due to the fact that we screened for shoppers to be picking up more than "a couple items," we eliminated any comparison shopping trips with less than 3 items or a basket size of less than \$10.00. After removing six respondents who had inadequate shopping records, we find no significant difference between the amount spent on the survey day ( $M = \$58.42$ ) and the six month mean ( $M = \$59.16$ ,  $t = .30$ ,  $p > .10$ ).

*Descriptive Results.* Although the POPAI analysis provided indirect support for the existence of in-store slack, this study aims to provide more direct evidence. Therefore, we first

examine whether consumers' mental budgets include room for unplanned purchases.<sup>2</sup> The average mental budget for the trip was \$58.46. Of this amount, consumers expected to spend an average of \$41.11 on the items planned to the brand or product level. Therefore, the average remaining amount of \$17.35 represents in-store slack. Hence, consumers' mental budgets contain ample room to make unplanned purchases. Further, we find that the average amount spent was \$58.93, so the average budget deviation was only \$0.47.

*Base Model.* A key contribution of this paper is the introduction of the in-store slack construct. In order to provide empirical support for the usefulness of this construct in predicting budget deviation, we compare our proposed model to a base model. Specifically, we compare our proposed model to a model that includes all the variables specified in equation 1 except that it does not include slack or any of the slack interactions. An incremental F-test indicates that the proposed model explains significantly more variance than the base model ( $F(1, 139) = 7.67, p < .01$ ). This test indicates the utility of in-store slack in predicting budget deviation.

*Proposed Model.* Having established that including the construct of in-store slack explains significant additional variance, we now present the results of our proposed model in table 4. All VIF's are less than four, suggesting that multicollinearity is not a major concern (Stevens 2002). Before examining the results for hypotheses 1 - 5, we first assess whether having an explicit grocery budget influences budget deviation. We find that having an explicit grocery budget does not have an impact on budget deviation ( $\beta_{13} = -2.10, p > .10$ ), which suggests that individuals without an explicit grocery budget come just as close to their spending expectation as

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<sup>2</sup> Our survey question asked respondents to estimate their spending expectations for the trip. To support our claim that this planned spend functions as a mental budget, we leverage data from a related study which had a similar procedure but also had respondents scan the order of their purchases. Using this data, we estimate a hierarchical model (Raudenbush and Bryk 2002) where the dependent variable is the probability of shopper  $j$  making *another* purchase after purchase  $i$ . In contrast to what would be expected if the planned spend functions as a "mere expectation," we find that a shopper is significantly *less* likely to make another purchase after exceeding her planned spend even when controlling for total spending at that point. Results are available from the authors upon request.

individuals with an explicit grocery budget. This provides further support for our argument that a consumer's spending expectation functions as a mental budget. The covariates of household size and trip budget are also not significant ( $p > .10$ ).

--Insert table 4 about here--

Hypothesis 1 predicts that the relationship between in-store slack and budget deviation increases as more aisles are shopped. Interestingly, we find a significant, negative relationship between in-store slack and budget deviation ( $\beta_1 = -0.44, p < .01$ ). As predicted, we also find a main effect of aisles shopped ( $\beta_2 = 5.43, p < .01$ ) and a significant, positive interaction between slack and aisles shopped ( $\beta_6 = 0.57, p < .01$ ) which supports hypothesis 1. Recall that aisles shopped is coded using effects coding, while the remaining variables are mean centered.

Therefore, the results indicate that when only select aisles are shopped, the average relationship between in-store slack and budget deviation is -1.01 ( $-0.44 - 0.57$ ). That is, for every dollar in her in-store slack, the average shopper underspends her total mental budget by a little more than a dollar. On the other hand, the average relationship between slack and budget deviation is .13 ( $-0.44 + 0.57$ ) when most or all aisles are shopped. This slope is not significantly different than zero, which suggests that slack has no impact on budget deviation when most or all aisles are shopped. The shopper spends the money in her in-store slack but does not tend to exceed that amount.

Hypothesis 2 predicts that the two-way interaction between slack and aisles shopped will be further qualified by impulsiveness. Consistent with prior research which finds that impulsive individuals are more likely to make impulse purchases (Rook and Fisher 1995; Vohs and Faber 2007), we find a significant relationship between impulsiveness and budget deviation ( $\beta_3 = 6.41, p < .01$ ). We do not find a significant interaction between in-store slack and impulsiveness ( $\beta_7 =$

-0.004,  $p > .10$ ), but do find a significant interaction between impulsiveness and aisles shopped ( $\beta_8 = 3.77, p < .05$ ). More importantly, we find a significant, positive three-way interaction between in-store slack, aisles shopped and impulsiveness ( $\beta_9 = .22, p < .05$ ) in support of hypothesis 2.

To further explore this interaction, we follow the post-hoc probing procedure recommended by Aiken and West (1991). Specifically, we first calculate high and low impulsiveness levels by adding or subtracting the standard deviation from the mean ( $M = 3.02, SD = 0.95$ ). We then conduct simple slope analysis which examines the relationship between slack and budget deviation at the four possible combinations of impulsiveness (high vs. low) and aisles shopped (select vs. most). The results for select aisles are depicted in figure 2A. When only select aisles are shopped, the relationship between slack and budget deviation is -1.19 for highly impulsive shoppers and -0.95 for low impulsiveness shoppers. There is not a significant difference between these slopes ( $p > .10$ ) which indicates that, regardless of the shopper's impulsiveness, slack leads to underspending when only select aisles are shopped.

As seen in figure 2B, the relationship between slack and budget deviation is .35, which is significantly different than zero ( $p < .05$ ) when most aisles are shopped and the individual is highly impulsive. When most aisles are shopped by low impulsiveness individuals, however, there is no relationship between slack and budget deviation ( $\beta = -.04, p > .10$ ). In summary, when the highly impulsive individual shops most aisles, then the slack creates a multiplier effect. For each dollar of slack, the shopper spends \$1.35 dollars. This is consistent with a shopping momentum (Dhar et al. 2007) explanation, which argues that by allowing herself to look for some unplanned items, the impulsive shopper begins down a slippery slope. In contrast, our results suggest that an individual who is low in impulsiveness is able to exert enough self-control

to refrain from making unplanned purchases that exceed her total budget regardless of the amount of slack or the increased purchase opportunity associated with shopping most aisles.

--Insert figure 2 about here --

Hypothesis 3 predicts that trip length will be positively related to budget deviation based on previous research which indicates that depletion of cognitive or self-regulatory resources increases the tendency to make impulsive decisions (i.e., Shiv and Fedorikhin 1999; Vohs et al. 2007). While we find marginal support for this hypothesis ( $\beta_4 = 8.95, p < .10$ ), we also find that this result is qualified by a significant, negative interaction between trip length and slack ( $\beta_{10} = -.36, p < .01$ ), supporting hypothesis 4. This suggests that slack attenuates the impact of trip length on budget deviation. As before, we further explore this interaction using the approach advocated by Aiken and West (1991). As shown in figure 3, we find that when slack is low (\$0), trip length is significantly related to budget deviation ( $\beta = 15.37, p < .01$ ). This indicates that every additional 15 minutes spent in the store is associated with an additional \$3.84 ( $15.37 * .25$  hours) in budget deviation. On the other hand, there is no significant relationship between trip length and budget deviation when slack is high (\$40) ( $\beta = 0.86, p > .10$ ).

--Insert figure 3 about here --

Hypothesis 5 predicts that the relationship between slack and budget deviation increases with income. Surprisingly, there is not a significant relationship between income and budget deviation ( $\beta_6 = .07, p > .10$ ),<sup>3</sup> but there is a positive interaction between slack and income ( $\beta_{11} = .01, p < .01$ ). Recall that income is mean centered in our model, so the relationship between slack and budget deviation is -0.44 for average income individuals ( $\approx$  \$46 K). For high income

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<sup>3</sup> One potential explanation is that since income and in-store slack are weakly correlated ( $\rho = .19$ ), income may have an indirect effect on budget deviation via in-store slack. To investigate this issue, we first regressed in-store slack on income and then used the resulting residuals as the measure of in-store slack in equation 1. These results mirror the results reported in table 4 and are therefore not discussed further.

individuals in our sample ( $\approx$  \$75 K), this rate increases to approximately  $-0.15$  ( $-0.44 + 29 \cdot .01$ ). Although it is somewhat surprising that the relationship between slack and budget deviation is still negative for high income individuals, one needs to keep in mind the other additive effects in our model – such as aisles shopped. For example, a high income individual who shops most aisles and has \$40 in slack is predicted to spend \$8.53 over her mental budget compared to a low income individual in the same situation, who is predicted to spend \$1.81 under her mental budget.<sup>4</sup>

*Free Response Analysis.* So far, we have provided evidence of in-store slack and demonstrated that in-store slack differentially predicts budget deviation depending on consumer and trip characteristics, but we have not yet examined the reasons that shoppers have in-store slack. We addressed this issue by collecting open-ended responses from the last 65 respondents who had in-store slack. Specifically, we asked them the following question at the conclusion of the exit interview, “Before you began shopping, you told us that you expected to spend more than the cost of the items that you were planning on buying. Please explain why.” Responses from two respondents were eliminated because they misunderstood the question. Two research assistants, who were blind to the hypotheses, coded the responses from the remaining 63 respondents. Interrater reliability was 0.94, with disagreements resolved by discussion. Table 5 provides a summary of responses to the open ended question.

-- Insert table 5 here --

Earlier we argued that consumer’s have in-store slack for at least two reasons. First, the routine nature of grocery shopping means that shoppers are aware that in-store stimuli (i.e., merchandise, displays, signage, etc.) will trigger forgotten needs (Bettman 1979; Lynch and Srull

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<sup>4</sup> For exploratory purposes, we investigated whether there was a 3-way interaction between slack, number of aisles shopped and income. We did not find a significant interaction.

1982). Beyond forgotten needs, shoppers also have experience that they get new ideas while in-store (Iyer 1989; Stern 1962) or that they may make impulse purchases. Therefore, seven of the response categories were combined into two major categories: “forgotten needs” and “unplanned wants.” Ninety percent of respondents indicated a response that fit into one of these categories, with 38.1% indicating that the in-store slack was for “forgotten needs” and 52.4% indicating that it was for an “unplanned want.” For example, one respondent from the unplanned want category indicated that she had in-store slack because “you see other things you want, like the candy aisle and cookie aisle.” Interestingly, some respondents actually used the term “impulse,” despite the negative connotations typically associated with this term. While the explanation that the in-store slack was for “extra items” does not allow us to ascertain the degree to which individuals ultimately consider their purchase motives, clearly the in-store slack accounts for more than an inability to retrieve all *needed* items. Over half the respondents indicated that the in-store slack was available for any extra items that they saw while walking around the store, including impulse items.

*Weighted Analysis.* The explicitness of mental budgets tends to vary across individuals (Thaler 1985), so it may be important to consider that individuals vary in their degree of certainty regarding their mental budgets for the trip. Additionally, shoppers may differ in their ability to accurately estimate costs of planned items. To rule out the possibility that either budget uncertainty or estimation error drove our results, we conducted two weighted least squares (WLS) analyses.

In our first WLS analysis, we conducted weighted least squares analyses where the weight represents a shopper’s budget certainty. Although one approach would be to have the respondents directly estimate how certain they were about their trip budgets, individuals tend to

have difficulty calibrating confidence judgments (i.e., Fischer, Luce and Jia 2000; Lichtenstein, Fischhoff and Phillips 1982). Therefore, we instead estimate each respondent's mental budget uncertainty using variability in trip size based on the frequent shopper data from the six months preceding the survey. Specifically, we calculate the budget uncertainty to be the coefficient of variation of trips that match the individual's trip type (major vs. fill-in) on the day of the survey. As indicated in equation 2, we then subtract the coefficient of variation from 1 so as to place greater weight on those individuals with greater budget certainty.

$$W_i = 1 - \frac{\sigma_i}{\mu_i} \quad (2)$$

Where  $W_i$  is the weight placed on household  $i$ , and  $\sigma_i$  and  $\mu_i$  are the standard deviation and mean of household  $i$ 's spending for the previous six months, respectively. The results of this weighted analysis closely mirror the unweighted results presented in table 4 with one exception. In the weighted analysis, the main effect of income becomes significant ( $b = .11, p < .05$ ). It appears that under conditions of greater budget certainty, higher income individuals are generally more likely to exceed budgets, consistent with our earlier discussion that budgets are less constraining for high income households.

In our second WLS analysis, the weight represents a shopper's accuracy in estimating the cost of her itemized budget. More specifically, we calculate the weight as specified in equation 3 with  $SPEND\_P_i$  representing the amount spent on planned items by shopper  $i$  and  $ITZ_i$  representing the size of the itemized portion of the mental budget for shopper  $i$ . Using this weight, the WLS places greater weight ( $W_i$ ) on individuals with greater estimation accuracy.

$$W_i = 1 - \left| \left( \frac{SPEND\_P_i - ITZ_i}{ITZ_i} \right) \right| \quad (3)$$

The results of the weighted analysis indicate support for our hypotheses that is generally consistent with the results reported in table 4. One exception is that the relationship between trip length and budget deviation (hypothesis 3) shifts from being marginally significant ( $p < .10$ ) to be not significant ( $p > .10$ ) in the weighted model. Importantly, hypothesis 4 (which posited an interaction between trip length and slack) continues to receive support. An additional difference between the weighted and unweighted results is that the effect of having an explicit grocery budget shifts from being not significant to marginally significant ( $p < .10$ ). While it is not surprising that those who are high in estimation accuracy and have explicit grocery budgets would spend less than those without explicit grocery budgets, the effect appears to be somewhat weak. Interestingly, spending expectations function similarly regardless of whether there is an explicit budget or not. More importantly, the overall consistency of the weighted results rules out the possibility that forecasting or estimation errors are driving our results.

## DISCUSSION

Using an existing study (POPAI) and a field study, we provide compelling evidence for our thesis that consumers have in-store slack. That is, consumers' spending expectations for the shopping trip include room for unplanned purchases. In the POPAI data, we infer the existence of the in-store slack based on the negative relationship between number of planned purchases and number of unplanned purchases when accounting for the trip budget. A benefit of this approach is that the notion of in-store slack is not made salient to the consumer. Additionally, the POPAI study was conducted in 14 different cities, evincing the robustness of this phenomenon. In our field study, we use more direct measures of the itemized portion and in-store slack by asking respondents to estimate both the total amount that they plan to spend and the expected

cost of the planned items. This approach improves the face validity of our measures and also indicates that shoppers realize that they plan to spend more than the expected cost of the planned items.

Further, both the POPAI study and the new field study show that the amount shoppers actually spend on grocery trips is surprisingly close to their spending expectations for the trip. Additionally, we show that, on average, this lack of a difference between actual spend and planned spend does not depend on whether the shopper has an explicit grocery budget - shoppers without explicit grocery budgets come just as close to their spending expectations for the trip. Jointly, these findings provide strong support for our argument that spending expectations function as an implicit mental budget for the trip. Using real field data, this paper improves the external validity of mental budgeting theory typically studied using hypothetical lab studies (i.e., Heath and Soll 1996; Chema and Soman 2006). These findings also contribute more broadly to the existing literature on mental accounting. While much attention has been paid to item level spending expectations (i.e., reference prices), our findings suggest that more aggregate level spending expectations are also strongly predictive of behavior.

Our field study provides strong evidence that the amount of in-store slack influences an individual's tendency to over or underspend relative to one's total mental budget. Therefore, we also contribute to the mental budgeting literature by showing that the nature of the mental budget is related to budget deviation. While the mental budgeting literature argues that consumers will generally over-consume or under-consume in an effort to stick to their mental budgets (i.e., Heath and Soll 1996), we show that the nature of the trip budget (i.e., amount of in-store slack) influences budget deviation even when controlling for the trip budget. By then examining how the impact of slack on budget deviation varies depending on consumer (impulsiveness and

income) and trip characteristics (aisles shopped and trip length), we contribute to the shopper marketing literature as well as to the self-control literature.

First, we find that when only needed aisles were shopped, the average consumer had a negative relationship between in-store slack and budget deviation. This indicates that when consumers shop only needed aisles, there is money that consumers are mentally prepared to spend on the shopping trip that they are not ultimately spending. At first glance, underspending appears to be advantageous for the consumer, but this result could also suggest negative consequences for the consumer. The free response analysis data suggests that one major reason for having in-store slack is to have funds available to purchase forgotten items. Therefore, individuals who shop only those aisles where they realize they need something may in fact be forgetting to purchase needed items. Further research should explore whether this failure to spend the in-store slack contributes to the consumer making an additional fill-in trip. For consumers, having to make additional trips will result in increased transaction costs such as time and transportation. For the retailer, consumers forgetting to buy items on the current trip results in lost sales if the consumer purchases the forgotten item at an alternative retail outlet.

In contrast, there is not a significant relationship between in-store slack and budget deviation when most aisles are shopped. The positive interaction between in-store slack and aisles shopped provides support for the idea that proximity to items increases desire (i.e., Hoch and Loewenstein 1991; Mischel and Grusec 1967; Faber and Vohs 2004) using field data. This interaction is further qualified by impulsiveness, identifying the only condition in which in-store slack is positively related to budget deviation. Specifically, we find that in-store slack is positively related to budget deviation when a highly impulsive individual shops most aisles. In all other cases, we find either no relationship or a negative relationship between in-store slack

and budget deviation. This suggests that although most consumers are able to exert sufficient self-control to stay within their mental budgets, impulsive individuals are unable to do so.

This research has implications for both consumers and retailers. For the majority of consumers, having in-store slack appears to be a rational way to use the store to cue needs and preserve self-control. One clear exception appears to be for highly impulsive individuals. For these individuals, in-store slack appears to create shopping momentum (Dhar et al. 2007) that leads to overspending. Therefore, our research suggests that these individuals should minimize in-store slack and should then try to avoid shopping most aisles. A more nuanced exception is the fact that shoppers are not spending in-store slack when they shop only select aisles. As discussed earlier, additional research is needed to assess the normative implications of whether underspending the mental budget is advantageous for consumers or leads to additional fill-in shopping trips for forgotten items.

The implications of in-store slack for consumers are interesting. While most consumers have small budget deviations, having in-store slack may also create a self-fulfilling prophecy where consumers buy unplanned items that they do not really need. Even if people subconsciously intend to use their slack for “forgotten essentials,” many consumers are susceptible to temporary visceral urges such as hunger that may result in behaviors that are inconsistent with self-interests (Loewenstein 1996). As a result, they may ultimately spend in-store slack on unneeded or unhealthy items. If in-store slack leads to the purchase of more unhealthy items this would suggest that individuals trying to restrict their eating should consider making the effort to fully plan every item that they intend to purchase before going to the grocery store. Conversely, mental budget constraints could prevent consumers from taking advantage of specials, such as volume discounts, that would result in savings over the long term.

For retailers, this research suggests that consumers who shop only select aisles are not spending money that they are mentally prepared to spend on the current trip. In addition to highlighting the importance of encouraging consumers to shop more aisles, this paper also affirms practices that retailers employ to encourage consumers to spend all of their mental budgets, such as offer samples (increase desire) or reminder placards as they approach the checkout lines (cue forgotten needs). On the other hand, our mental budgeting perspective suggests that brands may be vying for a fixed amount of money consumers have allocated to be spent on unplanned purchases. The fact that most consumers do not exceed their mental budgets despite making unplanned purchases suggests that different product categories function as substitutes (i.e., Should I spend my in-store slack on ice cream or parmesan cheese?). Therefore, future research should further examine whether in-store stimuli may simply serve to redirect what items consumers purchase rather than generate incremental spending. This would suggest that while manufacturers, like P&G, can benefit from in-store initiatives like First Moment of Truth (Nelson and Ellison 2005) by attracting consumers to their specific product, grocery retailers need to carefully evaluate whether in-store stimuli are actually generating incremental sales at the store level. Retailers need to ensure that they are not evaluating the success of in-store marketing by narrowly focusing on the promoted product category, because sales in other product categories may have declined. Nielsen's recent in-store marketing measurement initiative should provide valuable guidance in this regard (*Progressive Grocer* 2007). Retailers should also consider how mental budgeting activities manifest across different categories because shopping behavior varies significantly across product categories in terms of planned vs. impulse purchasing and consumer price sensitivity.

*Limitations and Future Research.*

In this research, we provide evidence that shoppers have mental budgets for grocery trips that include slack and that the amount of slack is related to budget deviation. As with any consumer process, however, there is likely to be heterogeneity in behavior. First, shoppers may have varying degrees of certainty about their trip budget. While our WLS analysis shows that our results are not driven by those individuals who have high budget uncertainty, future research should further investigate how shopping behavior varies with budget certainty. Second, while our field study shows that shoppers are aware of slack when prompted (i.e., they realize that they plan to spend more the cost of the planned items), there may be variation in the accuracy of the shopper's slack estimate and in the degree to which shoppers explicitly calculate the amount of slack in their budget prior to the shopping trip. Although some shoppers may only have a more general sense of the amount of slack, our results show that the amount of slack does influence budget deviation and that these results are not driven by estimation error. To more fully understand pre-shopping processes and their impact on budget deviation, researchers could conduct qualitative interviews. Shoppers may also vary in the precision with which they track spending while in-store. To quantify this, future research could intercept shoppers during the shopping trip or in the checkout line and ask them to estimate spending.

While our field study offers strong external validity, there are some inherent limitations in our measures due to the survey nature of our data. Our dichotomous measure of aisles shopped, although consistent with Inman et al. (2009), is limited in its descriptive ability. The emerging technology of radio frequency identification (RFID) which was recently employed by Hui, Bradlow and Faber (2009) offers significant opportunity for increased granularity and clarity. As with any measured variable, there is also the possibility that the aisles shopped

measure may be correlated with other variables that are not included in our model. While it is possible that aisles shopped is influenced by the amount of one's self-regulation, we largely control for this relationship by the inclusion of impulsiveness in our model. While one might also expect shoppers unfamiliar with the store to shop more aisles, we find no correlation between store familiarity and aisles shopped in our data. An explanation for this finding may be that this study was conducted at a retailer who enjoys high market share and thus most consumers are highly familiar with the store ( $M= 7.81$  on a 10 point scale). Store familiarity may play a role in markets where consumers do more cross shopping. Future research should further explore this and other factors (both shopper and store driven) that may influence how many aisles the shoppers visit.

While our results are consistent with self-control theory, it is possible that there are several mechanisms at work here. For example, there may also be differences in the amount of in-store information processing that occurred. We assert, however, that this explanation fails to fully explain our results. We argue that shoppers on longer trips tend to become depleted of self-regulatory resources but that this effect is attenuated by being able to make unplanned purchases using in-store slack. If the explanation was simply that shoppers with longer trip times took more time to engage in in-store information processing (and thus recognize more forgotten needs or wants) then we would expect to find greater budget deviation associated with trip length under conditions of high slack as well. Instead, we find that there is no relationship between shopping trip length and budget deviation when slack is high. To provide more direct evidence that shoppers with low slack become depleted of self-control as the trip progresses, future research could intercept shoppers at varying times during their trip and offer them a choice that would assess the amount of self control (e.g., choice between a hedonic and utilitarian product).

Finally, since both of the studies in this paper were in the supermarket domain, future research should also explore how the amount and impact of in-store slack varies depending on the product category and retail format. On one hand, the forward looking anticipation of unplanned purchases may be specific to grocery shopping due to its uniquely routine nature. On the other hand, it is easy to see how a consumer who is shopping for back-to-school clothes would have a mental budget for the trip which includes both an itemized portion and in-store slack. For example, the shopper may have a mental budget of \$150 for the shopping trip. They know that they need to purchase a new pair of jeans and a new pair of sneakers (itemized portion), but otherwise they will wait until they are in-store to decide what to purchase. This suggests that items that are typically perceived to be complements (i.e., shirt and skirt) could function as substitutes that are competing for a fixed amount of in-store slack. Differences may also exist within the grocery category depending on retail format. For example, consumers may not have developed the same expectation of unplanned purchases at club or discount stores because they visit them less routinely than supermarkets. While this paper offers initial insight into the role that in-store slack plays in grocery shopping behavior, there is clearly significant opportunity to explore the occurrence and impact of in-store slack in other domains.

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**TABLE 1**  
**NUMBER OF UNPLANNED PURCHASES**  
**POPAI STUDY**

	Without Trip Budget		With Trip Budget	
	Parameter Estimate	t-value	Parameter Estimate	t-value
Intercept	-1.17 ***	-2.09	-0.69 ***	-1.60
Number of Planned Items	0.13 ***	2.63	-0.35 ***	-8.79
Trip Budget	-----	-----	0.18 ***	39.92
Aisles Shopped (MAISLES)	2.18 ***	12.58	1.44 ***	10.81
Trip Length (TLENGTH)	0.18 ***	20.06	0.09 ***	12.53
Income (INC)	0.04 ***	5.91	0.01	1.54
Household Size (HH)	1.28 ***	10.17	0.48	4.87
Model R <sup>2</sup>	0.307		0.599	
Model p-value	<.001		<.001	
F statistic	F(5,2191)=194.50		F(6,2190)=545.48	
* <i>p</i> < .10 ** <i>p</i> < .05 *** <i>p</i> < .01				

**TABLE 2**  
**FIELD STUDY SUMMARY STATISTICS**

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Income Level	
Less than \$20,000	20.9%
\$20-39,999	31.4%
\$40-59,999	22.9%
\$60-\$79,999	9.8%
\$80-\$99,999	9.2%
\$100-119,999	2.6%
\$120,000+.	3.3%
Shopping Pattern	
Select Aisles	52.9%
Most Aisles	37.3%
All Aisles	9.8%
Have (Explicit) Grocery Budget	30.7%

---

**TABLE 3**  
**CORRELATION MATRIX**

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Budget Deviation	1.00								
2. In-Store Slack	-0.27	1.00							
3. Aisles Shopped	0.18	0.17	1.00						
4. Impulsiveness	0.28	-0.07	0.17	1.00					
5. Trip Length	0.05	0.42	0.28	0.03	1.00				
6. Income	0.03	0.19	-0.04	-0.02	0.02	1.00			
7. HH	0.05	0.03	0.06	0.01	-0.13	0.00	1.00		
8. Trip Budget	-0.24	0.73	0.17	-0.01	0.45	0.18	0.08	1.00	
9. Have Grocery Budget	-0.04	0.09	-0.03	-0.01	-0.07	-0.19	0.08	0.01	1.00

N = 153; All correlations above 0.16 or below -0.16 are statistically significant at  $p < .05$

**TABLE 4**  
**RESULTS FOR PROPOSED MODEL (EQUATION 1)**  
**DV=BUDGET DEVIATION**

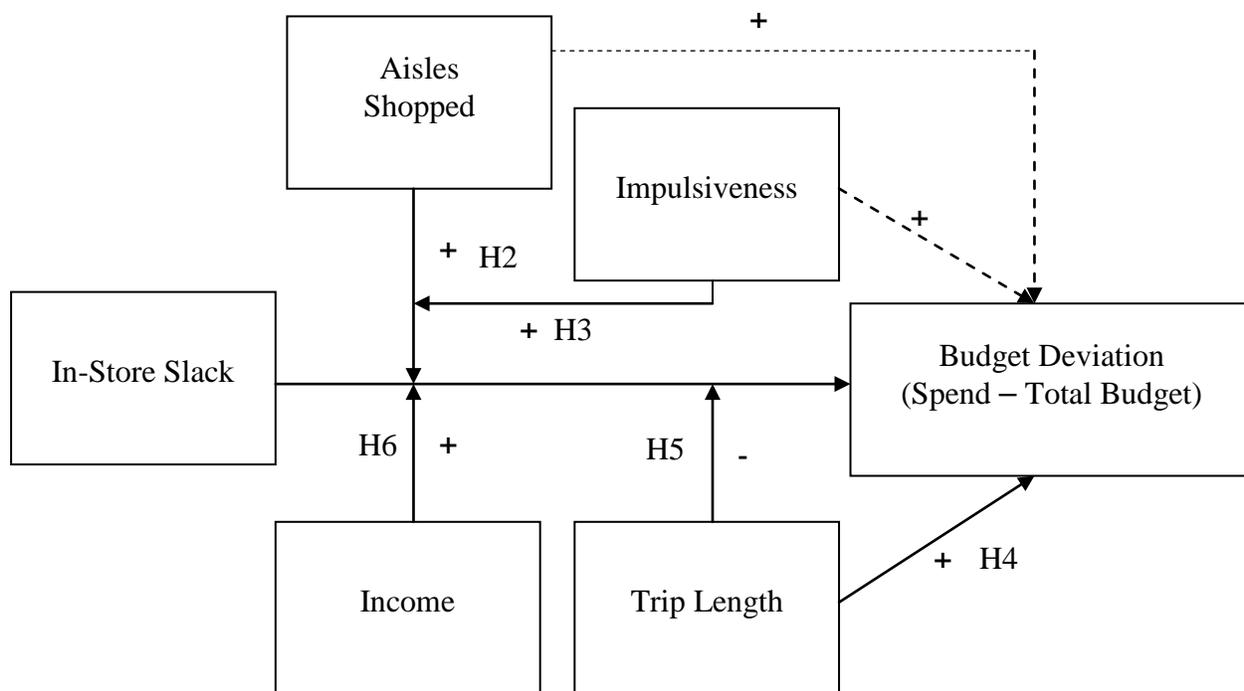
	Parameter Estimate	t-value	VIF
Intercept	-3.25 *	-1.96	0
In-Store Slack (ISS)	-0.44 ***	-4.24	3.73
Aisles Shopped (MAISLES)	5.43 ***	3.56	1.23
Impulsiveness (IMP)	6.41 ***	4.01	1.22
Trip Length (TLENGTH)	8.95 *	1.68	1.45
Income (INC)	0.07	1.44	1.17
Household Size (HH)	1.01	1.02	1.13
Trip Budget (TBUDGET)	-0.03	-0.60	2.71
Grocery Budget (GBUD)	-2.10	-1.33	1.12
ISS X MAISLES	0.57 ***	6.65	2.47
ISS X IMP	0.00	-0.04	2.46
IMP X MAISLES	3.77 **	2.35	1.20
ISS X MAISLES X IMP	0.22 **	2.51	2.14
ISS X TLENGTH	-0.36 ***	-3.44	3.08
ISS X INC	0.01 ***	3.15	2.22
Model R <sup>2</sup>		0.456	
Model p-value		<.001	
F statistic		F(14,138)=8.27	
* $p < .10$ ** $p < .05$ *** $p < .01$			

**TABLE 5**  
**REASONS FOR HAVING IN-STORE SLACK**

	# of respondents	Percentage
<b>Forgotten Items</b>	<b>24</b>	<b>38.1%</b>
See things you forgot	12	19.0%
List wasn't complete	10	15.9%
See things you need	2	3.2%
<b>Wants</b>	<b>33</b>	<b>52.4%</b>
See Extra Items	19	30.2%
Impulse Items	6	9.5%
See things you want	5	7.9%
Browse	3	4.8%
<b>Price Oriented</b>	<b>7</b>	<b>11.1%</b>
Take Advantage of Sales	4	6.3%
Uncertain Prices	3	4.8%
<b>Don't Know</b>	<b>3</b>	<b>4.8%</b>
<b>Miscellaneous</b>	<b>3</b>	<b>4.8%</b>
	<b>63</b>	

\*Note 7 respondents gave two reasons

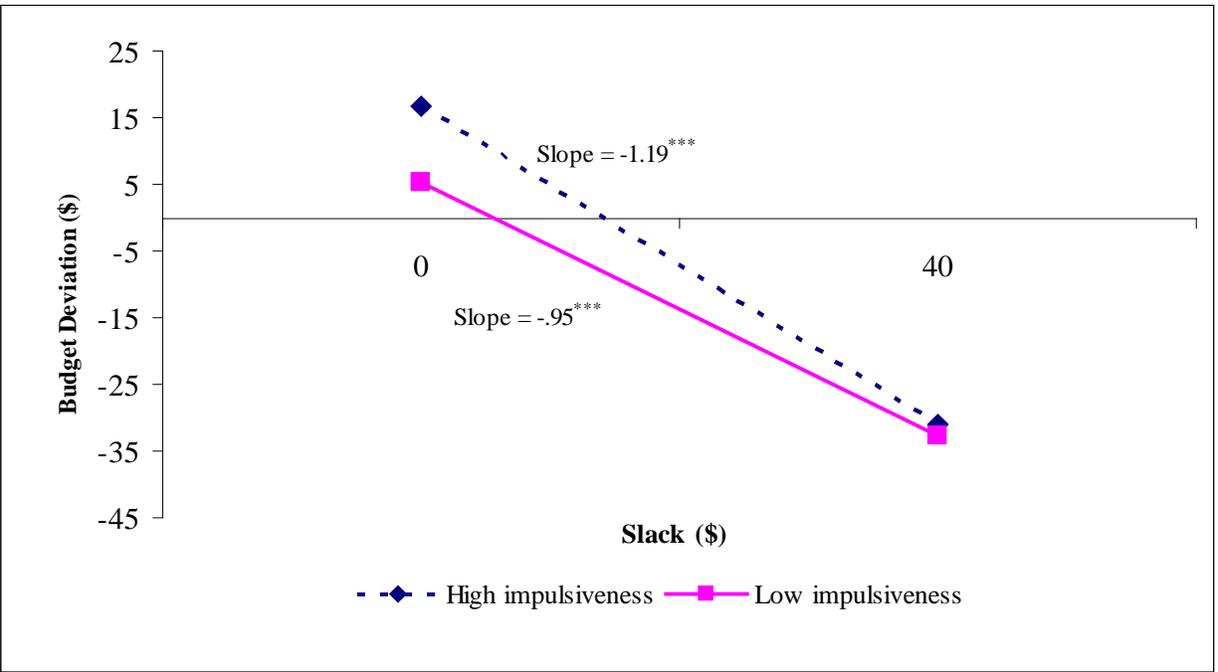
**FIGURE 1**  
**CONCEPTUAL MODEL**



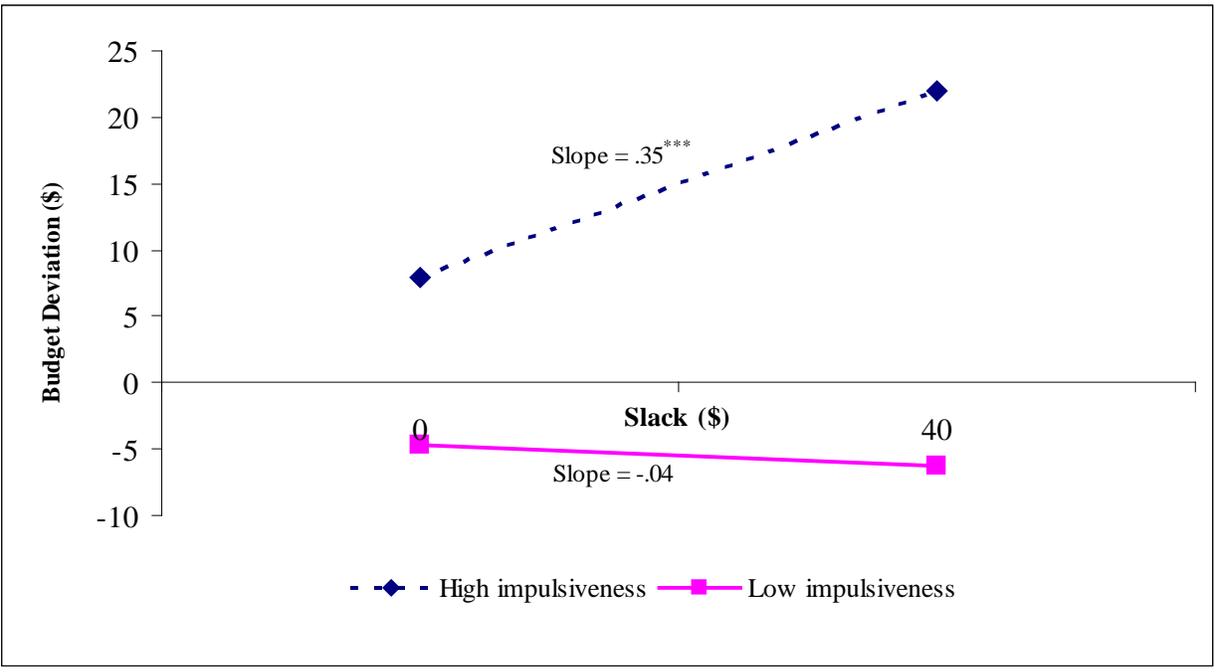
\*Note: The main effects of aisles shopped and impulsiveness are clearly indicated by prior research. Therefore, we indicate the expected effect in this conceptual model, but do not formally hypothesize these relationships.

**FIGURE 2**  
**INTERACTION BETWEEN SLACK, AISLES SHOPPED AND IMPULSIVENESS**

**A. SELECT AISLES SHOPPED**



**B. MOST AISLES SHOPPED**



**FIGURE 3**  
**INTERACTION BETWEEN SLACK AND TRIP LENGTH**

