

**Spending on the Fly:  
Mental Budgets, Promotions, and Spending Behavior**

Karen M. Stilley

J. Jeffrey Inman

Kirk L. Wakefield

**FORTHCOMING AT THE *JOURNAL OF MARKETING***

**DO NOT QUOTE WITHOUT PERMISSION**

Karen M. Stilley is a doctoral student at the Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA 15260 (kstilley@katz.pitt.edu), J. Jeffrey Inman is the Albert Wesley Frey Professor of Marketing at the Katz Graduate School of Business, University of Pittsburgh, Pittsburgh, PA 15260 (jinman@katz.pitt.edu) and Kirk L. Wakefield is Professor of the Marketing Department at Hankamer School of Business, Baylor University, Waco, Texas (Kirk\_Wakefield@baylor.edu). The authors thank the Marketing Science Institute for funding this research.

## Spending on the Fly: Mental Budgets, Promotions, and Spending Behavior

### Abstract

Although a significant body of work indicates that promotions provide a substantial short term lift for the promoted item, less attention has been given to the basket level impact and the role of mental budgets. Recent research suggests that consumers have in-store slack for grocery trips – that is, they leave room in their mental budgets to make unplanned purchases. Drawing upon this work, this paper examines how the impact of promotions depends on whether the shopper still has in-store slack remaining in their mental budget. Specifically, we evaluate how the effect of promotional savings' for both planned and unplanned items on spending varies as a function of whether the item is purchased before or after the shopper's in-store slack is depleted. Additionally, we examine how these relationships vary depending on income. To achieve these goals, we conducted a field study in which respondents used a hand held scanner to record the order of purchases. The results suggest that savings on planned items lead to stockpiling by higher income shoppers when the savings occur before the in-store slack has been depleted, but lead to increased purchase of unplanned items when they occur after in-store slack is depleted. We also show that promotions on unplanned grocery items do generate incremental spending at the basket level which increases with income, but *only* when the item is purchased after the in-store slack is exceeded. Highlighting the importance of a mental budgeting perspective, our results suggest that many in-store promotions simply serve to influence what unplanned items shoppers buy rather than generate incremental spending. Implications for shopper marketing strategies are discussed.

Manufacturers and retailers are increasingly focusing on the importance of in-store decision making. Recently, Procter and Gamble coined the phrase the “first moment of truth” (FMOT) to describe the first three to seven seconds when a consumer sees a product on the shelf. The importance that P&G puts on in-store decision making is demonstrated by the fact that they have appointed a “Director of First Moment of Truth” and a supporting department. Other manufacturers and retailers are also increasingly investing in in-store decision making, as evinced by the projected growth rate of 21% for in-store marketing through 2010 (Neff 2007). Further, there are a growing number of joint promotions between marketers and retailers (Spethmann 2005).

Obviously, for FMOT to be of such interest, consumers need to be making a substantial number of decisions at the point of purchase. An encouraging statistic in this regard is that shoppers make the majority of their decisions in the store (e.g., Inman and Winer 1998). Specifically, only 30% of purchases are preplanned down to the brand level and a surprising 59% are totally unplanned before entering the store. However, does shopper marketing actually generate incremental sales at the basket level or does it simply serve to redirect which items consumers purchase? While Blattberg, Briesch and Fox (1995) indicate that it is an empirical generalization that temporary promotions increase sales of the promoted item, less attention has been paid to the basket level impact. To our knowledge, studies on the store or basket level impact of promotions have primarily been conducted outside the grocery domain (i.e., Ailawadi et al. 2006; Lam et al. 2001; Mulhern and Padgett 1995). One notable exception is Walters and MacKenzie (1988), who conclude that in-store price promotions do not influence overall store sales or profit. Given these limited findings, this paper seeks to provide further insight into the

basket level impact of promotions, which is important from a retailers' perspective due to their investment in joint promotions.

Research on promotions has incorporated various perspectives from behavioral decision theory such as transaction utility (i.e., Lichtenstein, Netemeyer and Burton 1990; Thaler 1985; Grewal, Monroe and Krishnan 1998), reference prices (i.e., Winer 1986; Kalyanaram and Winer 1995) and loss aversion (Hardie, Johnson and Fader 1993), but there is a dearth of research that considers the role of mental budgeting. 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 try to resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Recently, Stilley, Inman and Wakefield (2009) provide evidence that consumers have a mental budget, even if implicit, at the shopping trip level. Furthermore, they report that consumers have *in-store slack* in these budgets, which means that a portion of the total budget is not assigned to be spent on any particular product before the shopping trip begins. Instead, the funds remain available for in-store decisions – that is, consumers leave room in their trip budgets to make unplanned purchases.

Given these recent developments, the goal of this paper is to determine whether the impact of promotions depends on whether the shopper still has in-store slack remaining in her mental budget. Specifically, we argue that promotional savings' effect on spending varies depending on whether the item is purchased before or after the shopper's in-store slack is depleted. Additionally, we predict that these relationships vary depending on income. To test our theses, we report the results of a field study where we examine the relationship between promotional savings and spending. Our respondents used a hand held scanner to record the order

of purchases, which enables us to assess which items were purchased before and after the in-store slack was depleted.

This paper makes at least three important contributions. First, we find that the nature of the spending increase associated with savings on planned items depends on whether the consumer still has in-store slack remaining. Specifically, we find that savings on planned items are positively related to spending on planned items while there is in-store slack remaining, but positively related to spending on unplanned items after the in-store slack is exhausted. In doing so, we qualify Heilman, Nakamoto and Rao (2002) by showing that savings on planned items only increases spending on unplanned items after in-store slack is depleted. Second, we show that promotions on unplanned grocery items do generate incremental spending at the basket level (which differs from Walters and Mackenzie 1988), but only when the item is purchased after the in-store slack is exceeded. This suggests that although some promotions can be effective in encouraging incremental unplanned purchases, savings from other promotions are simply absorbed into the in-store slack. Third, in contrast to previous research (Bell, Chiang and Padmanabhan 1999; Neslin, Henderson and Quelch 1985), we find that the tendency to stockpile depends on income when the savings occur before in-store slack is depleted. These findings have implications for the placement of promotions in the store trip path (Hui, Fader, and Bradlow 2009) and the nature of promoted items.

The remainder of this paper is organized as follows. We first review the literature to develop our hypotheses regarding spending on planned and unplanned items. We then present our model and results using a field study of over 300 respondents. After presenting the main results, we conduct additional analysis to assess the implications of mental budget uncertainty. We close with a discussion of managerial implications.

## **BACKGROUND AND HYPOTHESES**

In contrast to the assumption that money is fungible, empirical evidence demonstrates that many consumers employ a system of mental budgeting where they allocate money to different mental accounts (such as food clothing and entertainment) and try to resist further purchases once 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” (page 11). Consumers can also use mental budgets as a form of self-control to ensure that they stay within aggregate spending limits (Thaler and Shefrin 1981).

Grocery shopping is an example of a consumer domain where budgeting is commonly found (i.e., Heath and Soll 1996; Heilman et al. 2002). More recently, Stilley et al. (2009) take the idea of mental budgets further by demonstrating that consumers have a mental budget for the amount of money that they plan to spend on a specific grocery shopping trip and by showing that this mental budget includes room for unplanned purchases. Although not all consumers have an explicit grocery budget, a consumer has 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, analogous to many organizations’ budgeting process (Wildawsky 1964; Cyert and March 1963).

There are at least two major reasons why a shopper anticipates the occurrence of unplanned purchases in her overall spending expectation. First, the routine nature of grocery shopping means that a shopper is aware that in-store stimuli will trigger forgotten needs (Bettman 1979; Lynch and Srull 1982). Second, a shopper has experience that she will get new ideas while in-store (Inman, Winer, and Ferraro 2009; Iyer 1989; Stern 1962) or that she may make impulse purchases. Drawing upon this research, Stilley et al. (2009) introduce the idea that

the trip mental budget consists of both an itemized portion and in-store slack. They define the itemized portion of the mental budget as the amount of money that is allocated to be spent on items that are planned at either the category or brand level (i.e., cereal or Cheerios). They define in-store slack as the portion of the mental budget that is not assigned to be spent on any particular product or category before the shopping trip begins. Instead, the funds remain available for in-store decisions. Interestingly, Stilley et al. (2009) find that the average shopper in their field study had in-store slack of \$17.35, yet only exceeded the average shopper's total mental budget of \$58.46 by \$0.47. In addition, they collected free response data where over half of the respondents with in-store slack indicated that the money was for "unplanned wants," while almost 40% indicated that the money was for "forgotten needs." They did not find a significant difference in the amount of slack or budget deviation between the forgotten needs and unplanned wants groups.

We argue that the amount of in-store slack remaining at a given point during the trip has important implications regarding the impact of promotional savings. We first present Hypotheses 1 and 2 that deal with savings on planned items and then present Hypotheses 3 dealing with savings on unplanned items. Finally, we present Hypotheses 4 and 5, which make predictions regarding the moderating role of income. Figure 1 provides an overview of our hypotheses.

--Insert Figure 1 about here --

### **Savings on Planned Items**

We first consider the impact of savings on planned items on spending on *planned* items and on spending on *unplanned* items. We define a planned item as an item planned to at *least* the category level (i.e., the customer intends to buy cereal). Drawing upon the literature, Table 1 summarizes the four potential outcomes that can occur. Savings on planned items could either

have a negative relationship with *planned* item spending (buy planned brand and pocket the savings), no relationship (switch up to higher tier brand with same net price), or a positive relationship (stockpile). While behavior will vary across consumers, we expect that the net effect will be an increase in spending on planned items because of the strong literature support for stockpiling and brand switching (Bell et al. 1999). Savings on planned items can also increase purchases of *unplanned* items as well (Heilman et al. 2002) because the savings are perceived as a windfall gain and are therefore more readily spent than even current income (i.e., Arkes et al. 1994). Interestingly, Heilman et al. (2002) find that in addition to making more unplanned purchases, shoppers who received a coupon for a planned item sometimes purchased an increased quantity of the couponed item. The fact that the coupon led to both an increase in unplanned purchases and an increase in purchase quantity of the planned item (i.e., stockpiling) indicates that more information is needed on factors that influence the choice of items that the savings are used to purchase.

We argue that it is important to consider that most consumers anticipate the occurrence of unplanned purchases and incorporate these expectations into their mental budgets for the trip via in-store slack (Stilley et al. 2009). As with psychological windfalls, consumers should have a high marginal propensity to purchase unplanned items with their in-store slack because the mental account is intended for this purpose. Therefore, we argue that whether or not the shopper has in-store slack remaining will influence the degree to which promotional savings on planned items are perceived as a windfall. Consequently, we predict that individuals who currently have in-store slack remaining (and therefore already have the ability to make unplanned purchases without exceeding their mental budget) will be less sensitive to the psychological windfall associated with savings on planned items.

Our predictions address the findings from previous research by distinguishing between savings on planned items selected *before* the in-store slack is depleted versus those selected *after* the in-store slack is depleted.<sup>1</sup> When in-store slack remains, the shopper will have less motivation to use the perceived windfall from the planned item savings to justify the purchase of unplanned items. The funds are therefore available to purchase additional quantities of planned items. As a result, we predict that there will be a positive relationship between savings on planned items before the slack is depleted and planned item spending (stockpiling). In contrast, shoppers who have already depleted their slack are likely to seize the opportunity to make unplanned purchases instead of the more practical choice of stockpiling planned items. In sum, we posit that there will be a positive relationship between savings on planned items after the in-store slack is depleted and spending on unplanned purchases.

H1: There will be a positive relationship between planned item savings and spending on planned items when the savings are realized before the in-store slack is depleted. This relationship will not manifest once the in-store slack is depleted.

H2: There will be a positive relationship between planned item savings and spending on unplanned items when the savings are realized after the in-store slack is depleted. This relationship will not manifest before the in-store slack is depleted.

### **Savings on Unplanned Items**

Previously, it has been assumed that offering an item at a discount may spur shoppers to make unplanned purchases (i.e., Bucklin and Lattin 1991; Cobb and Hoyer 1986; Kahn and Schmittlein 1992; Lam et al. 2001; Stern 1962). The associated inference is that the unplanned purchase represents spending that is incremental to what would have occurred on the shopping trip in lieu of the promotion. We again argue, however, that it is important to consider whether the promotional savings occur before or after the in-store slack is depleted. As a result, we

---

<sup>1</sup> Prior to testing our hypotheses, we first demonstrate that parsing the savings into before and after the slack is depleted increases the variance explained by the model.

predict a differential impact of sales promotions that occur before the in-store slack is depleted versus those that occur after the in-store slack is depleted (as we did for savings on planned items).

Because the shopper is mentally prepared to spend the money allocated to in-store slack on unplanned items during the current trip, we argue that a sales promotion encountered before the in-store slack is depleted may simply serve to redirect what items or how many items the shopper purchases with the in-store slack. For example, imagine that Janice plans to spend a total of \$75 on her shopping trip, with \$30 of this amount being in-store slack. Therefore, we would predict that Janice will spend approximately \$30 on unplanned items. In Scenario A, Janice does not encounter any specials, so she buys 10 unplanned items at the average normal cost of \$3.00. In Scenario B, Janice encounters an in-store special where an item normally priced at \$3.50 is offered for \$3.00. Janice decides to purchase this unplanned item on promotion, but does not purchase one of the other unplanned items (offered at normal price of \$3.00) that she would have in Scenario A. In Scenario C, Janice encounters several in-store specials on items that she had not planned to purchase. In this situation, Janice buys 12 unplanned items at an average cost of \$2.50. In all three scenarios, Janice spends \$30 dollars on unplanned purchases. As illustrated by this example, we predict that, on average, there is no relationship between savings on unplanned items *before* the in-store slack is depleted and unplanned item spending.

Although a shopper may attempt to restrain spending once the mental budget is depleted (Heath and Soll 1996), this is not to say that consumers never exceed their mental budgets. Shoppers may ultimately exceed their mental budgets if they experience a self-control failure (i.e., Muraven and Baumeister 2000) or they may manipulate their mental budgets in order to justify decisions (Cheema and Soman 2006). For example, a consumer could justify exceeding a

mental budget if a good price on an item warrants borrowing from a future period budget.

Therefore, we expect that promotional savings may tempt individuals to purchase unplanned items after they exceed their in-store slack. In this case, savings on unplanned items would be positively related to unplanned item spending because the purchase would be incremental.

Therefore, we expect that there is a positive relationship between savings on unplanned items *after* the in-store slack is depleted and unplanned item spending.

H3: There will be a positive relationship between unplanned item savings after in-store slack is exceeded and unplanned item spending. This relationship will not manifest for unplanned item savings before the in-store slack is depleted.

#### *Moderating Effect of Income*

Hypotheses 1 through 3 consider how the impact of savings depends on whether the savings are realized before or after the in-store slack is depleted. However, these relationships may also vary across levels of household income. We therefore make predictions regarding the moderating role of income with regard to each of these hypotheses. First, Hypothesis 1 predicts that a positive relationship between savings on planned items and planned item spending will occur if the consumer is enticed to stockpile the promoted item. When considering the potential for stockpiling, however, it is important to consider that a mental budgeting perspective suggests that shoppers' ability to stock up may be constrained by their mental budget. This will be especially true for lower income shoppers for whom budgets tend to be more binding (Thaler 1999). Higher income households are more able to exceed their mental budgets because they can more easily dip into the larger amounts that they have allocated to other discretionary accounts such as eating out (Lee and Brown 1986), consumer durables (Mueller 1963) and savings (Dyner, Skinner and Zeldes 2004). Because of more flexible budget constraints, we expect that

higher income households will be more likely to take advantage of the promotion by exceeding their budgets and stockpiling. Lower income households, on the other hand, can take the opportunity to switch up to a higher tier brand (i.e., Blattberg and Wisinewski 1999; Heath et al. 2002; Kumar and Leone 1998) while still staying within their mental budget. Therefore,

**H4:** Prior to depletion of in-store slack, the impact of planned item savings on planned item spending will be greater for higher income households due to their greater likelihood of stockpiling.

It is less clear whether income will have the same moderating impact on the relationship between savings on planned items after the slack is depleted and unplanned item spending (Hypothesis 2). According to Heilman et al. (2002), the effect of planned item savings on unplanned item spending is due to the mood effects associated with a psychological windfall. Although higher income households could spend more because they are less constrained by their budgets, the fact that they have more money for discretionary purchases also suggests that they will be less excited about the windfall associated with the savings on planned items. Therefore, we do not formally hypothesize that income will moderate the relationship between planned item savings after slack is depleted and unplanned item spending, but do empirically investigate the relationship.

Hypothesis 3 predicts that unplanned item savings after shoppers exceed their slack could entice increased spending if they justify transferring funds from another budget category, borrow from a future budget period, or simply succumb to impulse. Since higher income shoppers have more discretionary funds to dip into (Lee and Brown 1986; Mueller 1963), it is easier for them to justify exceeding the mental budget. Further, higher income shoppers have more savings (Dyanan et al. 2004), so they can more easily borrow from future spending periods. If individuals are acting purely on impulse without regard for their mental budgets, then income should not play a

moderating role. On the other hand, if individuals try to exert self-control to adhere to their budgets, higher income individuals will have less motivation to do so and therefore will be more likely to spend more. Therefore, we posit:

**H5:** The greater the household income, the greater the impact of unplanned item savings after the in-store slack is depleted on unplanned item spending.

## STUDY

To test our hypotheses, we conducted a field study where 400 customers were systematically intercepted as they entered three different grocery stores located in a southwestern city. We selected every tenth shopper or one every five minutes, whichever came first. Respondents were offered a \$10 incentive that was given to them at the end of the trip (for future use to mitigate a windfall effect). Before they entered the store, respondents were first asked what items they planned to purchase and asked to indicate the purchase quantity of each item. They were then asked to estimate how much they intended to spend in total and to estimate the cost of the items they planned to purchase (i.e., the itemized portion of the mental budget). This approach allows us to measure the respondents' in-store slack by subtracting the itemized portion from the total planned spend. Although previous research has demonstrated that this research format does not impact the amount that shoppers spend (Kollat and Willett 1967; Stillely et al. 2009), in order to be conservative, we assessed whether the survey methodology influenced spending. Specifically, we compare each individual's spending on the survey trip to spending on similar trips using the chain's frequent shopper data. To facilitate relevant comparisons, we compare the survey trip to the average amount spent on trips of the same type (major vs. fill-in) over the preceding six month period. 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.

Using frequent shopper records, adequate data was available for 297 respondents. For this set of respondents, the results of this analysis indicate that there is not a statistically significant difference between the amount spent on the day of the survey ( $M = \$70.21$ ) and the preceding six month mean ( $M = \$67.95$ ,  $F = 1.70$ ,  $p > .10$ ).

After completing the initial questions, respondents were then provided with a handheld scanner gun and instructed how to scan the barcode of each item as they placed it in their carts or baskets. This methodology enables us to record the order of purchases and therefore determine which items were purchased before and after the in-store slack was exceeded. A pre-test ( $N = 73$ ) indicated that use of the scanner did not have a significant impact on the amount spent ( $t = .32$ ,  $p > .10$ ). After the respondents checked out, they returned to the interviewer who then downloaded the scanner gun information. Respondents completed an exit interview which contained questions such as demographics. Finally, the interviewer made a copy of each 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 numbers, which allows us to access their shopping histories.

### **Sample**

Out of the 400 respondents, 83 respondents had missing responses, missing receipts or incomplete scanner files, leaving 317 respondents available for analysis (77% of whom were female). The average household size was 2.96 people. The measures used for each construct are described below. Table 2 provides the distribution of household income.

---Insert Table 2 about here---

## Measures

*Itemized Budget (ITZ)*. After reporting the items that they planned to purchase, respondents estimated how much they expected to spend on their list of planned items.

*In-Store Slack (ISS)*. This measure was calculated by subtracting the itemized portion from the total planned spend.

*Number in Household (HH)*. Respondents indicated the number of people in their household.

*Income (INC)*. During the exit interview, respondents indicated 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 97% response rate for the income question. To increase power, a continuous income variable was then created by taking the midpoint for each of the income categories.

*Spending on Planned Items (SPEND\_P)*. After respondents checked out, interviewers photocopied their receipt. The net sales price of all planned items was summed for each shopper.

*Spending on Unplanned Items (SPEND\_UP)*. Any items that had not been listed in the initial interview were coded as unplanned items. The net sales price of all unplanned items was summed for each shopper.

*Savings on Planned Items Before In-Store Slack Depleted (SPB)*. Frequent shopper data was used to determine which items were purchased at a promotional savings. Specifically, the purchase price of each item was compared to the price of the same item the week prior. If the item was not purchased by any individual in our data set during the prior week, then the purchase price was compared to the most recently purchased item. Previous research indicates that a consumer's reference price is best represented as a range (Kalyanaram and Little 1994) and that

a price reduction therefore needs to be of significant magnitude before the consumer perceives it to be a deal (Monroe and Lee 1999; Vanhuele and Dreze 2002). As we want to focus on promotions that the shopper would recognize as a deal, we classify an item as being on promotion only if the purchase price was at least 10% less than the prior price (cf., Alba, et.al. 1999, who suggest indifference for discounts less than 10% on grocery items). Savings per item were then calculated by subtracting the difference between the present purchase price and the prior price.

All items were then sorted in the order of purchase based on the handheld scanner records. A cumulative variable was then calculated to represent the amount of unplanned item spending that had occurred before the purchase of the item. If the cumulative variable had not yet exceeded the individual's in-store slack when the promoted item was purchased, then the savings were classified as occurring before the in-store slack was depleted. The variable, savings on planned items before the in-store slack was depleted (SPB), represents the sum of all such purchases by the respondent.

*Savings on Planned Items After In-Store Slack Depleted (SPA)*. This was calculated as above except that it is the sum of all the savings that the respondent realized on planned items that were purchased after she depleted her in-store slack.

*Savings on Unplanned Items Before In-Store Slack Depleted (SUB)*. Savings for each unplanned item was calculated as it was for savings for each planned item. As before, the items were then classified as being selected before or after the individual's in-store slack was depleted. The variable, savings on unplanned items before in-store slack depleted (SUB), represents the sum of all savings on unplanned items selected by a shopper before she depleted her in-store slack.

*Savings on Unplanned Items After In-Store Slack Depleted (SUA)*. This was calculated as above except that it is the sum of all the savings on unplanned items that were selected after the shopper depleted her in-store slack.

*Amount Spent on Extra Planned Items (EXTRA\_PLAN)*. During the initial interview, respondents were asked to list all of the items they planned to buy, including intended purchase quantity for each item. Respondents' receipts were used to identify whether the actual purchase quantity exceeded the intended purchase quantity. If so, those items were coded as extra planned items. The total amount spent on extra planned items was summed for each respondent.

## Model

To test our hypotheses, we specify a series of regression equations with the dependent variables of planned item spending and unplanned item spending.<sup>2</sup> Because the error terms ( $\epsilon_1$ ,  $\epsilon_2$ ) may be correlated with each other, we employ seemingly unrelated regression (SUR) which produces more efficient coefficients than traditional least squares estimation techniques (Johnston and DiNardo 1997; Zellner 1962).

$$\text{SPEND\_P} = \beta_0 + \beta_1 * \text{ITB} + \beta_2 * \text{SPB} + \beta_3 * \text{SPA} + \beta_4 * \text{SUB} + \beta_5 * \text{SUA} + \beta_6 * \text{HH} + \beta_7 * \text{INC} + \beta_8 * \text{SPB} \times \text{INC} + \beta_9 * \text{SPA} \times \text{INC} + \epsilon_1 \quad (1)$$

$$\text{SPEND\_UP} = \lambda_0 + \lambda_1 * \text{ISS} + \lambda_2 * \text{SPB} + \lambda_3 * \text{SPA} + \lambda_4 * \text{SUB} + \lambda_5 * \text{SUA} + \lambda_6 * \text{HH} + \lambda_7 * \text{INC} + \lambda_8 * \text{SPB} \times \text{INC} + \lambda_9 * \text{SPA} \times \text{INC} + \lambda_{10} * \text{SUB} \times \text{INC} + \lambda_{11} * \text{SUA} \times \text{INC} + \epsilon_2 \quad (2)$$

## Results

*Descriptive Results.* One key premise of this paper is that shoppers have in-store slack in their mental budgets, as demonstrated by Stilley et al. (2009). That is, we expect that consumers leave room in their trip budgets to make unplanned purchases. Therefore, we first examine the

---

<sup>2</sup> We assessed whether the residuals followed a normal distribution using normal q-q plots and did not find significant departures from normality for the residuals from either Equation 1 or Equation 2.

degree to which this holds in our sample. As shown in Table 3A, the average total trip budget is \$66.45. Of this amount, \$46.08 is accounted for by items planned to product or brand level (i.e., the itemized portion). Therefore, the average amount of in-store slack is the remaining \$20.37 (\$66.45 – \$46.08). Further, in support of our mental budgeting framework, we also find that the average shopper only exceeded her total mental budget by 5% (actual spend of \$69.84 versus planned spend of \$66.45). Table 3B provides the correlation between our measures, while Table 3C describes the number and type of promotions.

--Insert Tables 3A – 3C about here --

*Base Model.* Our hypotheses are also based on the assumption that the impact of promotional savings varies depending on whether the savings occur before or after the shopper's slack is depleted. To first assess this overall assumption, we compare our proposed model to a base model. The base model includes all the variables and interactions specified in Equations 1 and 2 except that no distinction is made between before and after in-store slack is depleted. Incremental F-tests indicate that the proposed model explains significantly more variance than the base model for both the dependent variables of planned item spending ( $F(1, 309) = 4.83, p < .05$ ) and unplanned item spending ( $F(1, 305) = 8.03, p < .01$ ). This indicates that it is useful to distinguish between savings before and after the shopper's slack is depleted. Thus, while there is likely to be some heterogeneity in shoppers' price awareness and attentiveness to their in-store slack, this test suggests that shoppers on average do pay attention to their slack.

*Proposed Model.* The results of the analysis are presented in Table 4. Replicating Stilley et al. (2009), there is a positive, statistically significant relationship between the itemized budget and planned item spending ( $\beta_1 = 0.61, p < .01$ ) as well as between the in-store slack and

unplanned item spending ( $\lambda_1 = 0.92, p < .01$ ). We now present the results that test our hypotheses.

Hypothesis 1 predicts that there will be a positive relationship between planned item savings and spending on planned items only when the savings are realized before the shopper's in-store slack is depleted. Consistent with this hypothesis, we find a significant positive relationship between planned item savings before slack depletion and planned item spending ( $\beta_2 = 4.63, p < .01$ ), but no relationship between planned item savings after slack depletion and planned item spending ( $\beta_3 = -1.17, p > .10$ ). That is, each dollar saved on planned items purchased before the in-store slack is spent leads to an additional \$4.63 in additional planned item spending. In the next section, we test our thesis that this is driven by stockpiling (Hypothesis 4).

Turning to unplanned item spending, we find the pattern of results predicted by Hypothesis 2. Specifically, there is no relationship between planned item savings before slack depletion and unplanned item spending ( $\lambda_2 = -2.55, p > .10$ ), but a significant positive relationship between planned item savings after slack depletion and unplanned item spending ( $\lambda_3 = 10.03, p < .01$ ). Interestingly, this suggests that savings on planned items are absorbed into the in-store slack if the slack has not already been used up. Once the in-store slack has been spent, each dollar saved on planned items generates a \$10 average additional spend on unplanned items. Although the magnitude of this result may seem unusually large, it is in line with the \$7.68 increase per \$1.00 coupon found by Heilman et al. (2002). Although our result appears larger, Heilman et al. (2002) did not consider in-store slack. Therefore, their results are most likely tempered by savings on planned items that occurred before the shopper's in-store slack was depleted (which we find has no impact on unplanned item spending).

In summary, when savings on planned items are realized before the slack is depleted, it appears that those savings are solely used to increase planned item spending. As we will subsequently test, this result is consistent with a stockpiling explanation. Interestingly, there is no associated decrease in unplanned item spending, which suggests that the money used to stockpile planned items is not deducted from the in-store slack. In contrast, when savings on planned items are realized after the slack is depleted, the savings are used to purchase unplanned items which is consistent with a psychological windfall effect explanation (Arkes et al. 1994; O'Curry and Strahilevitz 2001). These results both generalize and qualify Heilman et al.'s (2002) findings. The Heilman et al. (2002) paper focused exclusively on in-store coupons for planned items, while our results generalize the findings to savings on planned items in general. Further, we provide insight that the windfall effects only occur once the shopper's in-store slack has been depleted.

Hypothesis 3 predicts that savings on unplanned items only increase unplanned item spending when those savings occur after the slack has been depleted. We also find support for this hypothesis. Savings before slack was depleted did not have a significant impact on unplanned item spending ( $\lambda_4 = -.06, p > .10$ ), but savings on unplanned items after the slack was depleted had a positive relationship with unplanned item spending ( $\lambda_5 = 5.94, p < .01$ ). This finding suggests that for every dollar saved on unplanned items after the in-store slack is depleted, unplanned item spending increases by \$5.94 on average. Interestingly, this increase in unplanned spending of \$5.94 is significantly less than the increase of \$10.03 associated with savings on planned items after the slack is exceeded ( $F = 9.46, p < .01$ ). These findings have important implications. First, our findings suggests that attractive promotions for products encountered later in the trip spur unplanned spending, while promotions on unplanned items

encountered early-on in the trip only serve to direct the use of the shopper's in-store slack.

Although we do not have access to cost data, the fact that promotions on unplanned items before the slack is depleted simply get absorbed into slack suggests that, given the discount, retailers' profits are most negatively impacted by promotions on unplanned items early in the typical trip path.

*Income Results.* Interestingly, income does not have a main effect on either planned item spending ( $\beta_7 = .03, p > .10$ ) or unplanned item spending ( $\lambda_7 = -.06, p > .10$ ). However, income is positively correlated with the itemized budget ( $\rho = .29, p < .01$ ), the amount of slack ( $\rho = .20, p < .01$ ) and total amount spent ( $\rho = .29, p < .01$ ). Therefore, on average, the greater amount spent by higher income individuals is already accounted for in their mental budgets. We argue, however, that certain promotions can entice shoppers to increase spending beyond their mental budgets and that these reactions depend on income.

Hypothesis 4 predicts that the relationship between planned item savings before slack depletion and planned item spending becomes stronger as household income increases. Consistent with this hypothesis, we find that the positive effect of planned item savings before slack depletion on planned item spending ( $\beta_2 = 4.63, p < .01$ ) is qualified by a positive, significant interaction between income and planned item savings before slack depletion ( $\beta_8 = .08, p < .05$ ). To further explore the significant interaction between planned item savings before slack depletion and income, we follow the post-hoc probing procedure recommended by Aiken and West (1991). Specifically, we first calculate high and low income levels by adding or subtracting the standard deviation from the mean. We then conduct simple slope analysis which examines the relationship between planned item savings before slack depletion and planned item spending at these different income levels. When income is low (Mean - 1 SD = \$17K), the slope is 1.75

(4.63-.08\*36), which is not significantly different from 0 ( $p > .10$ ). This result is consistent with the idea that a sales promotion on a planned item encourages consumers to switch up to a higher tier brand that they can now buy at the same net price (i.e., Blattberg and Wisniewski 1991; Heath et al. 2000; Kumar and Leone 1988). In contrast, when income is high (\$89K), the slope increases to 7.51 (4.63+.08\*36). This suggests that for every dollar saved on planned items, high income individuals spend \$7.51 more on planned items. This finding is consistent with our argument that promotional savings can drive increased purchase quantities of the promoted items (i.e., stockpiling), but that this effect is greater for higher income individuals because they are less constrained by their budgets.

We then conducted additional analysis to provide evidence that while lower income households were buying higher-tier brands than they otherwise would have, higher income households were stockpiling. First, we conducted a mixed model where the dependent variable was the natural log of the original price of the goods<sup>3</sup> and the independent variables were income, a dummy variable which equaled 1 if the product was on promotion and 0 otherwise, and the two-way interaction between income and the promotion variable. Our results indicate that there was a significant effect of income ( $\beta = .0016, p < .01$ ), promotion ( $\beta = .08, p < .05$ ) and the two-way interaction between income and promotion ( $\beta = -.0035, p < .01$ ). Using the Aiken and West (1991) procedure detailed earlier, we conducted additional tests indicating that for low income households the original price of items bought on promotion is higher than for items not on promotion ( $\beta = .20, p < .01$ ). However, for high income households there is not a significant difference from the original prices associated with promotions ( $\beta = -.05, p > .10$ ). This is

---

<sup>3</sup> Original price was calculated by adding the savings to the sales price. We then log transformed the variable to normalize the distribution.

consistent with our argument that lower income households are more likely to be encouraged to switch to a higher tier brand by a promotion.

Next, we performed mediational analyses (Baron and Kenny 1986) to empirically test whether stockpiling mediates the interaction between savings on planned items before slack depletion and income. The results of the mediation are summarized in Figure 2. As indicated previously, there is a significant main effect of planned item savings before slack depletion ( $\beta = 4.63, p < .01$ ) and a significant interaction of planned item savings before slack depletion and income ( $\beta = .08, p < .05$ ) for the dependent variable of planned item spending. Furthermore, there is also a significant main effect of planned item savings before slack depletion ( $\beta = 3.29, p < .01$ ) and a significant interaction of planned item savings before slack depletion and income ( $\beta = .04, p < .05$ ) on the mediating variable of spending on extra quantities of planned items. We then included spending on extra quantities of planned items (the proposed mediator) as a predictor of planned item spending. Importantly, this model indicates that spending on extra quantities of planned items is a significant predictor ( $\beta = 1.09, p < .01$ ), but both the main effect of SPB ( $\beta = .77, p > .10$ ) and the interaction between SPB and income ( $\beta = .05, p > .10$ ) become non-significant. The Sobel's Z confirms that the mediation by spending on extra quantities of planned items is significant ( $Z=2.26, p<.05$ ). These results indicate that promotional savings on planned items lead to stockpiling of planned items, but that the effect only obtains for households with above-average income.

--Insert Figure 2 about here --

In support of Hypothesis 5, we find a positive significant interaction between income and unplanned item savings after the slack is exceeded on unplanned item spending ( $\lambda_{11} = .09, p < .05$ ). To further explore this interaction, we again follow the post-hoc probing procedure

recommended by Aiken and West (1991). When income is low (Mean - 1 SD = \$17K), the slope is 2.70 (5.94-.09\*36) which is only marginally greater than 0 ( $p < .10$ ). This means that, for low income individuals, there is only directional evidence that savings on unplanned items can entice them to make an additional purchase once slack is exceeded. In contrast, when income is high (\$89K) the slope increases to 9.18 (5.94+.09\*36), indicating that these shoppers are spending \$9.18 for every dollar saved. This suggests that higher income households are more easily enticed to exceed their mental budgets and buy more unplanned items because their budgets are less constraining.

In addition to the above hypothesized interactions, we also included interactions between all the other savings variables and income. None of these other interactions were significant (all  $p > .10$ ). Two of the null results are particularly notable. First, we did not find evidence that income moderates the relationship between planned item savings after slack depletion and unplanned item spending posited in hypothesis 2 ( $\lambda_9 = .03, p > .10$ ), which indicates that the magnitude of this increase in unplanned item spending does not vary significantly with income. As discussed earlier, there may be two conflicting forces operating here. On one hand, budgets are generally less constraining for higher income individuals (Thaler 1999), while on the other hand higher income households are less likely to be as susceptible to the windfall effect associated with savings on planned items (Heilman et al. 2002). Also notable is the lack of a significant interaction between income and unplanned item savings before slack is depleted and unplanned item spending ( $\lambda_{10} = -.03, p > .10$ ) which indicates that savings on unplanned items are simply absorbed into the slack regardless of income.

## Additional Analysis

*Mental Budget Uncertainty.* Even though the average shopper stays very close to her mental budget, it may be important to consider that individuals vary in the degree of uncertainty about spending expectations for a given trip. One approach would be to have the respondents directly estimate their uncertainty, but 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. To account for the fact that shoppers make different types of grocery trips (Kahn and Schmittlein 1989, 1992), we first classify each shopping trip as either a major trip or a fill-in trip based on whether the amount spent on each trip is above or below the midpoint of the individual's spending distribution.<sup>4</sup> For our measure of budget uncertainty, we then calculate the coefficient of variation (sd/mean) for trips that match the individual's trip type on the day of the survey. For example, if a respondent was on a major trip on the day of the survey her budget uncertainty is the coefficient of variation of the amount she spent on major trips over the last six months.

We then re-estimate Equations 1 and 2 using weighted least squares regression where the weight is the reciprocal of the budget uncertainty. This approach places greater weight on observations with greater budget certainty<sup>5</sup>. The results of this weighted analysis mirror the

---

<sup>4</sup> 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 a basket size of less than \$10.00. Pharmacy and gasoline purchases were also removed from the spending distribution because they would not be relevant to respondents' grocery spending expectations.

<sup>5</sup> One might expect that larger variation (more uncertainty) would be associated with a larger slack. However, the coefficient of variation is only marginally correlated with slack ( $\rho = .11, p < .10$ ). This supports the notion that shoppers have adopted the use of slack as a routine approach for allowing for unplanned purchases while sticking to a budget and that it does not necessarily mean that they have uncertainty regarding the amount they will spend.

unweighted results presented in Table 3 with one exception: the two-way interaction between savings on unplanned items after in-store slack depleted and income becomes only marginally significant ( $b = .08, p < .10$ ) instead of significant at the .05 level as it was in the unweighted model ( $b = .09, p < .05$ ). While a potential explanation is that budget certainty is related to income, there is not a significant correlation between budget certainty and income ( $p > .10$ ). Instead, our results suggest that higher income individuals with low budget certainty are partially driving the interaction between savings and income. The intuition here is clear. Individuals with greater budget certainty are more likely to resist making additional purchases after they exceed their budget.

## DISCUSSION

While a significant body of research has examined the impact of promotions on brand choice within a category (i.e., Bell et al. 1999; Blattberg and Neslin 1993, Gupta 1988, Narasimhan, Neslin and Sen 1996), less attention has been paid to the basket level impact of promotional savings, a topic of particular interest to retailers. Using a field study, we address this gap in the literature and show that the impact of savings depends on whether they occur before or after the shopper's in-store slack is depleted, as well as on item type (planned or unplanned) and household income. To our knowledge, we are the first to employ a handheld scanner to record the order in which purchases are selected. Combining this methodology with a mental budgeting perspective provides several key contributions with implications for researchers and managers.

We find that the impact of savings on planned items and unplanned items depends on whether the savings are encountered before or after the shopper's in-store slack is depleted. When slack remains, savings on planned items are associated with increased planned item

spending as a function of income. We show that the underlying mechanism is stockpiling of the promoted planned item by higher income households, while lower income households appear to switch to a higher tier brand with no net impact on spending. This stockpiling behavior is a rational process on the part of the consumer (Dallaert et al. 2005). Once the slack is depleted, our results indicate that unplanned item spending increases by \$10.00 for every dollar saved on planned items irrespective of income. Consistent with Heilman et al. (2002), it appears that savings on planned items can create a psychological windfall effect leading to an increased purchase of unplanned items greater than the amount of the windfall. Our findings suggest, however, that this windfall effect may be attenuated (or even eliminated) if the shopper already has funds earmarked for miscellaneous unplanned purchases.

Similarly, we find that savings on unplanned items can lead to higher spending on unplanned items, increasing with income, but only when those savings occur after the slack is exceeded. These findings are consistent with the idea that promotions on unplanned items before the in-store slack is exceeded simply serve to redirect which items the in-store slack is used to purchase rather than increase the total amount spent. We find that our results are robust to variations in budget certainty with the exception of the increased spending on unplanned items by higher income households. This suggests that under conditions of high budget certainty, high income shoppers are still more likely to exceed their budgets for easily justifiable purchases like stockpiling planned items, but are equally likely to exceed their budgets for unplanned items.

Our finding that higher income households have a greater tendency to stockpile differs from previous research which found no significant effect of income on stockpiling behavior (Bell, Chiang and Padmanabhan 1999; Neslin, Henderson and Quelch 1985). There are several potential explanations for why we find significant results when previous research failed to do so.

First, Neslin et al. (1985)'s analysis was limited to two product categories and stockpiling tendencies have been shown to vary across product categories (Bell et al. 1999). Second, Bell et al. (1999) conducted their study at the brand level rather than the individual level, so income was coded as the modal income of consumers who purchase the brand. Third, our analysis differentiates between planned and unplanned items, while Neslin et al. (1985) and Bell et al. (1999) simply examine purchase quantities in general. Finally, our handheld scanner methodology enables us to demonstrate that the incidence of stockpiling depends on whether or not the savings occur before the in-store slack has been spent.

### **Implications for Managers**

Our findings offer several insights to guide shopper marketing strategies. Table 5 summarizes the implications of each of our findings. In general, we show that the impact of promotional savings depend on whether the item is purchased before or after the shopper's slack is exceeded. While it will be difficult for retailers to ascertain exactly where the slack becomes depleted for each shopper, one proxy is position in the store. Promotions should be placed early in a typical store pattern to target consumers with slack remaining and later to target consumers who have depleted their slack. Since our findings also depend on whether items are planned or unplanned, managers need to familiarize themselves with which items tend to be of which type. Accordingly, Tables 6A and 6B provide lists of the categories with the highest percentage planned and unplanned, respectively (see also POPAI 1995).

Our findings suggest that offering promotions on planned items are effective in generating incremental sales, however the nature of the incremental items, as well as quantity purchased, varies depending on whether the savings are realized before or after the consumer's in-store slack is depleted. Stockpiling occurs primarily among higher income shoppers when the

item is encountered before their slack is depleted. Under these same conditions, lower income shoppers tend to switch up to a higher tier brand but do not spend additional funds. Therefore, manufacturers and retailers should try to place stockpiling-inducing promotions of higher tier brands, such as buy-one-get one free promotions, earlier in the typical store traffic pattern where shoppers are more likely to have in-store slack remaining. Managers should also explore messaging that helps lower income households think long term and encourages them to stockpile<sup>6</sup>. On the other hand, stockpiling is less desirable for deep discount (“loss leader”) promotions which are offered to drive store traffic (so the item would presumably be a planned item). These promotions might be best placed later in the trip path to discourage stockpiling.

Although these guideline may be useful in developing more successful stockpiling promotions, our results also suggest that retailers may want to only selectively employ these types of promotions. Instead, they should focus more on promotions on planned items that would be selected after the in-store slack is depleted because our results show that these types of promotions have a greater impact on average (~\$10 vs. ~\$5) and this effect manifests in terms of the purchase of unplanned items. To take advantage of the windfall effect associated with savings on planned items, retailers should consider placing full-price displays of items that tend to be unplanned (see Table 6A) near the promoted item.

The results for savings on unplanned items also offer shopper marketing implications. We show that promotions on unplanned items are positively related to spending at the basket level when the item is purchased after the in-store slack is exceeded, but are otherwise absorbed into in-store slack. This suggests that although manufacturers may benefit from promotions on unplanned items before in-store slack is depleted, retailers may not fare as well by promoting

---

<sup>6</sup> Although one might speculate that lower income households simply do not have funds to exceed their budget, we do find a positive relationship between planned item savings after slack is exceeded and spending on unplanned items. This suggests that their budget constraints are not so strict as to rule out any additional spending.

unplanned items early in the store trip path. Although we do not have cost data, the lack of an increase in sales associated with price promotion suggests a decrease in retailer profit. Therefore, retailers should consider displays of full price, high margin unplanned items early in the store trip path. They should then promote items that tend to be unplanned later in the store trip path. When possible, these promotions should be targeted at above average income households, as they appear to be less resistant to exceeding their mental budgets.

### **Limitations and Future Research**

There is significant opportunity for future research regarding how these results would vary across consumer segments, promotion types, product categories, and retailers. First, a future study could explore whether consumers whose slack is spent primarily on “forgotten needs” are differentially influenced by promotional savings than those whose slack is spent primarily on “unplanned wants.” Relatedly, researchers should consider moderators beyond income, such as payment method. Second, a limitation of our data set is that it does not include a measure of whether the items bought were associated with non-price promotions such as displays and features. Future research could consider whether such displays affect the magnitude of the spending increases observed here. Third, more insight is needed into what types of promoted categories are most likely to induce shoppers to exceed their mental budgets. For example, while hedonic categories may be more tempting (Shiv and Fedorikhin 1999), promotions on more utilitarian categories may also be effective because they justify manipulation of mental budgets (i.e., Soman and Cheema 2006). Finally, although our study was conducted at three different stores, all of the stores are operated by the same grocer in the same southwestern city. Further research is needed to generalize these results to other grocery retailers and other types of retailers. For example, we would not expect a consumer who seeks to purchase a TV to have

slack, while we could foresee that a shopper may have slack for routine apparel shopping trips such as when they are stocking up for back to school.

Looking forward, there is a likely possible effect on market share for chains that are more effective at implementing these practices. We suggest that more effective promotion planning should result in increasing total average basket revenue. If so, would such an increase come at the expense of competing stores or perhaps reduce fill-in shopping at the same or other stores? Of particular importance to the grocery chain we studied (which maintains a dominant market share) is the ability to reduce what was referred to as customers “cheating on them” by shopping at other stores for fill-in purchases. Future research may be able to determine whether implementing practices suggested here leads to increased market share among selected shopper segments.

## REFERENCES

- Aiken, Leona S. and Stephen G. West (1991), *Multiple Regression: Testing and Interpreting Interactions*, Newbury Park, CA: Sage.
- Ailawadi, Kusum L. Bari A. Harlam, Jacques Cesar and David Trounce (2006), "Promotion Profitability for a Retailer: The Role of Promotion, Brand, Category and Store Characteristics," *Journal of Marketing Research*, 43 (November), 518-35.
- Alba, Joseph W., Carl F. Mela, Terence A. Shimp, and Joel E. Urbany (1999), "The Effect of Discount Frequency and Depth on Consumer Price Judgments," *Journal of Consumer Research*, 26 (September), 99-115.
- Arkes, Hal R., Cynthia A. Joyner, Mark V. Pessa and Jane Gradwohl Nash (1994), "The Psychology of Windfall Gains," *Organizational Behavior and Human Decision Processes*, 59 (3), 331-47.
- Baron, Reuben M. and David A. Kenny (1986), "The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations," *Journal of Personality and Social Psychology*, 51 (December), 1173-82.
- Bell, David R. Jeongwen Chiang and V. Padmanabhan (1999), "The Decomposition of Promotional Response: An Empirical Generalization," *Marketing Science*, 18 (4), 504-26.
- Bettman, James R. (1979), "Memory Factors in Consumer Choice: A Review," *Journal of Marketing*, 43 (Spring), 37-53.
- Blattberg, Robert C., Richard Briesch and Edward J. Fox (1995), "How Promotions Work," *Marketing Science*, 14 (3), 116-29.
- Blattberg, Robert C. and Scott A. Neslin (1990), *Sales Promotions, Concepts, Methods and Strategies*, Englewood Cliffs NJ, Prentice-Hall, Inc.
- and ---- (1993), "Sales Promotion Models," in *Handbooks in Operations Research and Management Science: Marketing*, ed. J. Eliashberg and Gary L. Lilien. Amsterdam, The Netherlands: North Holland.
- Blattberg, Robert C. and Kenneth J. Wisniewski (1989), Price-Induced Patterns of Competition, "*Marketing Science*, 8 (4), 291-309.
- Bucklin, Randolph E. and James M. Lattin (1991), "A Two-State Model of Purchase Incidence and Brand Choice," *Marketing Science*, 10 (1), 24-39.

- Cheema, Amar and Dilip Soman (2006), "Malleable Mental Accounting: The Effect of Flexibility on the Justification of Attractive Spending and Consumption Decisions," *Journal of Consumer Psychology*, 16 (1), 33-44.
- Chintagunta, Pradeep K. (1993), "Investigating Purchase Incidence, Brand Choice and Purchase Quantity Decisions of Households," *Marketing Science*, 12 (2), 184-208.
- Cobb, Cathy J. and Wayne D. Hoyer (1986), "Planned versus Impulse Purchase Behavior," *Journal of Retailing*, 62 (4), 384-409.
- Cyert, Richard M. and James G. March (1963), *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.
- Dellaert, Benedict G.C., Vladislav Y. Golounov and Jaideep Prabhu (2005), "The Impact of Price Disclosure on Dynamic Shopping Decisions," *Marketing Letters*, 16 (1), 37-52.
- Donovan, Robert J., John R. Rossiter, Gilian Marcolyn and Andrew Nesdale (1994), "Store Atmosphere and Purchasing Behavior," *Journal of Retailing*, 70 (3), 283-94.
- Dynan, Karen E., Jonathan Skinner and Stephen P. Zeldes (2004), "Do the Rich Save More?" *Journal of Political Economy*, 112 (2), 397-443.
- Fischer, Gregory W., Mary Frances Luce and Jianmin Jia (2000), "Attribute Conflict and Preference Uncertainty: Effects on Judgment Time and Error," *Management Science*, 46 (1), 88-103.
- Grewal, Dhruv, Kent B. Monroe and R. Krishnan (1998), "The Effects of Price Comparison Advertising on Buyers' Perceptions of Acquisition Value, Transaction Value and Behavioral Intentions," *Journal of Marketing*, 62 (2), 46-59.
- Gupta, Sunil (1988), "Impact of Sales Promotions on When, What and How Much to Buy," *Journal of Marketing Research*, 25 (November), 342-55.
- Hardie, Bruce G.S, Eric J. Johnson and Peter S. Fader (1993), "Modeling Loss Aversion and Reference Dependence Effects on Brand Choice," *Marketing Science*, 12 (4), 378-94.
- Heath, Chip and Jack B. Soll (1996), "Mental Budgeting and Consumer Decisions," *Journal of Consumer Research*, 23 (June), 40-52.
- Heath, Timothy B., Gangseog Ryu, Subimal Chatterjee, Michael S. McCarthy, David L. Mothersbaugh, Sandra Milberg, and Gary J. Gaeth (2000), "Asymmetric Competition in Choice and the Leveraging of Competitive Disadvantages," *Journal of Consumer Research*, 27 (December), 291-308.
- Heilman, M. Carrie., Kent Nakamoto and Ambar G. Rao (2002), "Pleasant Surprises: Consumer Response to Unexpected In-Store Coupons," *Journal of Marketing Research*, 34 (May), 242-52.

- Hui, Sam K., Peter S. Fader, and Eric T. Bradlow (2009), Path Data in Marketing: An Integrative Framework and Prospectus for Model Building,” *Marketing Science*, 28 (2), 320-335.
- Inman, J. Jeffrey and Russell S. Winer (1998), “Where the Rubber Meets the Road: A Model of In-Store Consumer Decision Making,” *Marketing Science Institute Report*, #98-122.
- Inman, J. Jeffrey, Russell S. Winer and Rosellina Ferraro (2009), “The Interplay Between Category Characteristics, Customer Characteristics, And Customer Activities on In-Store Decision Making,” forthcoming in *Journal of Marketing*.
- Iyer, Easwar S., (1989), “Unplanned Purchasing: Knowledge of Shopping Environment and Time Pressure,” *Journal of Retailing*, 65 (Spring), 40-57.
- Johnston, Jack and John DiNardo (1997), *Econometric Methods*, 4<sup>th</sup> ed. New York: McGraw-Hill Publishers.
- Kahn, Barbara E. and David C. Schmittlein (1989), “Shopping Trip Behavior: An Empirical Investigation,” *Marketing Letters*, 1 (December), 55-69.
- Kahn, Barbara E. and David C. Schmittlein (1992), “The Relationship Between Purchases Made on Promotion and Shopping Trip Behavior,” *Journal of Retailing*, 68 (3), 294-315.
- Kalyanaram, Gurusurthy and John D.C. Little (1994), “An Empirical Analysis of Latitude of Price Acceptance in Consumer Packaged Goods,” *Journal of Consumer Research*, 21 (December), 408-18.
- Kalyanaram, Gurusurthy and Russell S. Winer (1995), “Empirical Generalizations from Reference Price Research,” *Marketing Science*, 13 (3), 161-9.
- Kollat, David T. and Ronald P. Willett (1967), “Customer Impulse Purchasing Behavior,” *Journal of Marketing Research*, 4, 21-31.
- Kumar, V. and Robert P. Leone (1988), “Measuring the Effect of Retail Store Promotions on Brand and Store Substitution Behavior,” *Journal of Marketing Research*, 25 (May), 178-85.
- Lam, Shun Yin, Mark Vandenbosch, John Hulland and Michael Pearce (2001), “Evaluating Promotions in Shopping Environments: Decomposing Sales Response into Attraction, Conversion and Spending Effects,” *Marketing Science*, 20 (2), 194-215.
- Lee, Jonq-Ying and Mark G. Brown (1986), “Food Expenditures At Home and Away From Home in the United States: A Switching Regression Analysis,” *The Review of Economics and Statistics*, 68 (February), 142-47.
- Lichtenstein, Donald R. Richard G. Netemeyer and Scot Burton (1990), “Distinguishing Coupon Proneness from Value Consciousness: An Acquisition-Transaction Utility Theory Perspective,” *Journal of Marketing*, 54 (July), 54-67.

- Lichtenstein, Sarah, Baruch Fischhoff and Lawrence D. Phillips (1982), "Calibration of Probabilities: the State of the Art to 1980," in *Judgment Under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Paul Slovic. Cambridge University Press, Cambridge, England.
- Lynch, John G. Jr. and Thomas K. Srull (1982), "Memory and Attentional Factors in Consumer Choice: Concepts and Research Methods," *Journal of Consumer Research*, 9 (June), 18-36.
- Matosian, Jackline (1982), "Effectiveness of Different Coupon Delivery Methods in Building Mass Transit Ridership," *Journal of Advertising Research*, 22 (June/July), 54-56.
- Monroe, Kent B. and Angela Y. Lee (1999), "Remembering Versus Knowing: Issues in Buyers' Processing of Price Information," *Journal of the Academy of Marketing Science*, 27 (2), 207-55.
- Mulhern, Francis J. and Daniel T. Padgett (1995), "The Relationship Between Retail Price Promotions and Regular Price Purchases," *Journal of Marketing*, 59 (October), 83-90.
- Mueller, Eva (1963), "Ten Years of Consumer Attitude Surveys: Their Forecasting Record," *Journal of American Statistical Association*, 58 (December), 899-917.
- Muraven, Mark and Roy F. Baumeister (2000), "Self-Regulation and Depletion of Limited Resources: Does Self-Control Resemble a Muscle?," *Psychological Bulletin*, 126 (2), 247-59.
- Narasimhan, Chakravarthi, Scott A. Neslin and Subrata K. Sen (1996), "Promotion Elasticities and Category Characteristics," *Journal of Marketing*, 60 (2), 17-30.
- Neff, Jack (2007), "What's In Store: The Rise of Shopper Marketing," *Advertising Age*, 78 (October), 1-2.
- Nijs, Vincent R., Marnik G. Dekimpe, Jan-Benedict E.M. Steenkamp and Dominique M. Hanssens (2001), "The Category-Demand Effects of Price Promotions," *Marketing Science*, 20 (1), 1-22.
- Neslin, Scott A., Caroline Henderson and John Quelch (1985), "Consumer Promotions and the Acceleration of Product Purchases," *Marketing Science*, 4 (2), 147-65.
- O'Curry, Suzanne and Michal Strahilevitz (2001), "Probability and Mode of Acquisition Effects on Choices Between Utilitarian and Hedonic Choices," *Marketing Letters*, 12 (1), 37-49.
- Pauwels, Koen, Dominique M. Hanssens and S. Siddarth (2002), "The Long-Term Effects of Price Promotions on Category Incidence, Brand Choice and Purchase Quantity," *Journal of Marketing Research*, 39 (November), 421-39.
- Point of Purchase Advertising Institute (1995), *The 1995 POPAI Buying Consumer Habits Study*. Englewood, NJ: Point of Purchase Advertising Institute.

- Shiv, Baba and Sasha Fedorikhin (1999), "Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making," *Journal of Consumer Research*, 26 (Dec), 278-92.
- Stern, Hawkins (1962), "The Significance of Impulse Buying Today," *Journal of Marketing*, April, 59-62.
- Stilley, Karen M., J. Jeffrey Inman and Kirk L. Wakefield (2009), "Planning to Make Unplanned Purchases? The Role of In-Store Slack in Budget Deviation," working paper, University of Pittsburgh, Pittsburgh, PA.
- Spethmann, Betsey (2005), "Tuning in at the Shelf," *Promo*, 18 (April), AR29.
- Taylor, Gail A. and Sylvia Long-Tolbert (2002), "Coupon Promotions in Quick-Service Restaurants: Preaching to the Converted?" *Cornell Hotel and Restaurant Administration Quarterly*, 43 (August), 41-46.
- Thaler, Richard (1985), "Mental Accounting and Consumer Choice," *Marketing Science*, 4 (3), 199-214.
- (1999), "Mental Accounting Matters," *Journal of Behavioral Decision Making*, 12, 183-206.
- Thaler, Richard and H.M. Shefrin (1981), "An Economic Theory of Self-Control," *Journal of Political Economy*, 39 (April), 392-406.
- Vanhuele, Marc and Xavier Dreze (2002), "Measuring the Price Knowledge Shoppers Bring to the Store," *Journal of Marketing*, 66 (October), 72-85.
- Walters, Rockney G. and Scott B. MacKenzie (1988), "A Structural Equations Analysis of the Impact of Price Promotions on Store Performance," *Journal of Marketing Research*, 25 (February), 51-63.
- Winer, Russell S. (1986), "A Reference Price Model of Brand Choice for Frequently Purchased Products," *Journal of Consumer Research*, 13 (September), 250-6.
- Zellner, Arnold (1962), "An Efficient Method of Estimating Seemingly Unrelated Regression and Tests for Aggregation Bias," *Journal of the American Statisticians Association*, 57 (298), 346-68.

TABLE 1  
INSIGHTS FROM PROMOTIONS LITERATURE

Potential Outcomes of Savings on a Planned Item	Insights from Literature
Buy item at discounted price for a decrease in spending on <i>planned items</i>	<ul style="list-style-type: none"> <li>• Discounts on planned purchases may function as a reward for current customers without increasing sales (Taylor and Long-Tolbert 2002).</li> <li>• Promotions to customers already planning to purchase decreases overall revenue for product/service (Matosian 1982).</li> </ul>
Switch to discounted higher tier brand with no change in spending on <i>planned items</i>	<ul style="list-style-type: none"> <li>• Promotions can entice consumers to switch brands (i.e., Bell, Chiang and Padmanabhan 1999; Blattberg and Neslin 1993, Gupta 1988).</li> <li>• Higher-tier brands tend to draw more from low-tier brands than the reverse (i.e., Blattberg and Wisinewski 1999; Heath et al. 2000; Kumar and Leone 1998).</li> </ul>
Increased spending on <i>planned items</i> because of stockpiling	<ul style="list-style-type: none"> <li>• Promotions can encourage stockpiling (Chintagunta 1993; Nijs et al. 2001; Pauwels, Hanssens and Siddarth 2002; Heilman et al. 2002).</li> <li>• Stocking up when items are discounted is an effective heuristic to minimize costs (Dellaert, Golounov and Prabhu 2005)</li> </ul>
Increased spending on <i>unplanned items</i> because of a perceived windfall.	<ul style="list-style-type: none"> <li>• A surprise coupon on a planned item increased unplanned item spending because savings are perceived as a windfall gain and generate a positive mood (Heilman et al. 2002)</li> <li>• Windfall gains are more readily spent than even current income (i.e., Arkes et al 1994).</li> <li>• Positive mood leads to increased purchases (i.e., Donovan et al. 1994).</li> </ul>

TABLE 2  
INCOME DISTRIBUTION

<b>Household Income Level</b>	<b>Percentage of Sample</b>
Less than \$20,000	18.6%
\$20-39,999	22.4%
\$40-59,999	22.4%
\$60-\$79,999	13.6%
\$80-\$99,999	10.1%
\$100-119,999	5.1%
\$120,000+.	7.9%

TABLE 3A  
DESCRIPTIVE STATISTICS

	Mean (SD)
Total Trip Budget	\$66.45 (49.09)
Itemized Budget	\$46.08 (33.56)
In-Store Slack	\$20.37 (28.72)
Total Amount Spent	\$69.84 (49.22)
Amount Spent on Planned Purchases	\$35.25 (25.24)
Amount Spent on Unplanned Purchases	\$34.59 (34.35)

TABLE 3B  
CORRELATION MATRIX

	1.	2.	3.	4.	5.	6.	7.
1. Itemized Budget	1.00						
2. In-Store Slack	0.24	1.00					
3. Income	0.29	0.20	1.00				
4. SPB	0.12	0.15	0.05	1.00			
5. SPA	0.24	-0.14	0.01	0.11	1.00		
6. SUB	0.17	0.44	0.10	0.23	-0.05	1.00	
7. SUA	0.09	-0.13	-0.04	-0.03	0.20	-0.06	1.00

All correlations greater (less) than +/- 0.11 are significant at  $p < .05$

N=317

TABLE 3C  
PERCENTAGE OF ITEMS BOUGHT ON PROMOTION

Position of Savings Relative to Slack	Planned Items	Unplanned Items
Before Slack Depleted	31.6%	24.2%
After Slack Depleted	22.5%	21.8%

N=522 items on promotions which represents 5.33% of the total number of items purchased

TABLE 4  
MODEL RESULTS

	Equation 1: Spending on Planned Purchases		Equation 2: Spending on Unplanned Purchases	
	Parameter Estimate	t-value	Parameter Estimate	t-value
Intercept	6.29 ***	4.36	13.17 ***	7.89
Itemized Budget (ITB)	0.61 ***	23.17	---	---
In-Store Slack (ISS)	---	---	.92 ***	18.90
Savings on Planned Items Before Slack Depleted (SPB)	4.63 ***	3.03	-2.55	-1.06
Savings on Planned Items After Slack Depleted (SPA)	-1.17	-.69	10.03 ***	3.97
Savings on Unplanned Items Before Slack Depleted (SUB)	---	---	-.06	-.04
Savings on Unplanned Items After Slack Depleted (SUA)	---	---	5.94 ***	4.10
Household Size (HH)	0.81	1.46	1.01	1.19
Income (INC)	-.03	-1.11	.06	1.51
SPB X INC	.08 **	2.01	-.03	-.56
SPA X INC	.08	1.42	.03	.37
SUB X INC	---	---	-.02	-.48
SUA X INC	---	---	.09 **	2.25

\*\* p<.05 \*\*\*p<.01

TABLE 5  
SHOPPER MARKETING IMPLICATIONS

<b>Finding</b>	<b>Shopper Marketing Strategy</b>
<p>H1: Savings on planned items increase planned item spending before slack is depleted but not after. (\$1≈\$5)</p>	<ul style="list-style-type: none"> <li>• Place stockpiling-inducing promotions (such as buy-one-get one free promotions) earlier in the typical store traffic pattern</li> <li>• Focus these promotions on items that tend to be planned like yogurt or bottled water</li> <li>•</li> </ul>
<p>H2: Savings on planned items increase unplanned item spending after slack is depleted but not before. (\$1≈\$10)</p>	<ul style="list-style-type: none"> <li>• Offer promotions on planned items later in the store pattern</li> <li>• Place displays of products that tend to be unplanned near promotions of these planned items</li> </ul>
<p>H3: Savings on unplanned items increase unplanned item spending after slack is depleted but not before. (\$1≈\$6)</p>	<ul style="list-style-type: none"> <li>• Avoid offering promotions on unplanned items early in the store pattern. Instead, consider “reminder” displays of full price, high margin items.</li> <li>• Promote items that tend to be unplanned later in the store pattern.</li> </ul>
<p>H4: Higher income households stockpile planned items before slack depleted while lower income households switch to higher tier brand</p>	<ul style="list-style-type: none"> <li>• Promote top tier brands that appeal to higher income households</li> <li>• Lower tier brands should consider marketing messages that help lower income households think longer term so they will stockpile</li> </ul>
<p>H5: The greater the household income, the greater the impact of unplanned item savings after the in-store slack is depleted on unplanned item spending.</p>	<ul style="list-style-type: none"> <li>• Use FSP data to identify categories/brands with a higher penetration of higher income households and add a secondary location later in the typical trip path.</li> </ul>

TABLE 6A  
CATEGORIES WITH HIGHEST PERCENTAGE UNPLANNED \*

Category	% Unplanned	N
1. Candy and Gum	87%	168
2. Ice Cream, Frozen Yogurt and Other Frozen Desserts	74%	149
3. Cookies	73%	79
4. Shelf Stable Juices and Ready to Drink Juice Boxes	73%	171
5. Packaged bread, Rolls, Bagels and Muffins	73%	70
6. Crackers	73%	99
7. Baking Mixes for Cake, Cookies, Brownies, etc	70%	101
8. Ketchup, Mustard, BBQ and Other Condiments	69%	143
9. Salad Dressing and Mayonnaise	68%	90
10. Canned fish such as tuna and sardines	64%	74

\* Of categories purchased by at least 20% of respondents

TABLE 6B  
CATEGORIES WITH HIGHEST PERCENTAGE PLANNED \*

Category	% Planned	Items Purchased
1. Pet foods	77%	177
2. Fresh Milk	75%	178
3. Fresh Meat and Seafood	73%	111
4. Eggs	69%	90
5. Soft Drinks (Includes Soda and Ice Tea)	66%	351
6. Laundry Detergent	63%	80
7. Yogurt	61%	181
8. Paper goods	60%	120
9. Sparkling and non-sparkling bottled waters	59%	94
10. Fresh baked goods from in-store bakery	58%	406

\* Of categories purchased by at least 20% of respondents

FIGURE 1  
OVERVIEW OF HYPOTHESES

	<u>The purchase decision is made</u>	
	Before Slack Spent	After Slack Spent
<u>The promotional savings are for a(n):</u> Planned item	<p><b>Increases planned item spending (H1)</b> <i>Increases with Income (H4)</i></p>	<p><b>Increases unplanned item spending (H2)</b></p>
Unplanned item	<p><b>Absorbed into slack (H3)</b></p>	<p><b>Increases unplanned item spending (H3)</b> <i>Increases with Income (H5)</i></p>

FIGURE 2  
RESULTS OF MEDIATION

