



# Reports

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How Corporate Social Performance Influences Financial Performance: Cash Flow and Cost of Capital

Manoj K. Agarwal and Guido Berens (09-100)

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

Karen M. Stilley, J. Jeffrey Inman, and Kirk L. Wakefield (09-101)

How Important Are Brands? A Cross-category, Cross-country Study

Marc Fischer, Franziska Voelckner, and Henrik Sattler (09-102)

The Effect of Brand Acquisition and Disposal on Stock Returns

Michael A. Wiles, Neil A. Morgan, and Lopo L. Rego (09-103)

Boundaries of Self-Expression: Identity Saturation and Brand Preferences in Consumer Choice

Alexander Chernev and David Gal (09-104)

Marketing of the Life Sciences: A New Framework and Research Agenda for a Nascent Field

Stefan Stremersch and Walter Van Dyck (09-105)

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*MSI Reports* (ISSN 1545-5041) is published quarterly by the Marketing Science Institute. It is not to be reproduced or published, in any form or by any means, electronic or mechanical, without written permission.

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

Karen M. Stilley, J. Jeffrey Inman, and Kirk L. Wakefield

*Research suggests that grocery-shoppers leave mental “slack” for unplanned purchases. This field study of 300+ consumers examines how this mental budgeting—as well as income and payment method—affect purchase decisions. The results offer insight into how retailers might effectively deploy promotions to increase spending.*

## Report Summary

Although a significant body of research 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 allow room (in-store “slack”) in their mental budgets for unplanned purchases on grocery-shopping trips.

Here, Stilley, Inman, and Wakefield examine the effectiveness of promotional savings in increasing spending while incorporating consumers’ mental budgets. They evaluate how promotional savings’ effect on spending varies depending on whether the item is planned or unplanned and whether the item is purchased before or after the shopper’s in-store slack is depleted. Additionally, they study how these relationships vary depending on income and payment method.

The researchers conduct a field study in which more than 300 shoppers used handheld scanners 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 spent, but lead to increased

purchases of unplanned items when they occur *after* in-store slack is depleted.

The results also indicate that savings on unplanned items *before* the in-store slack is depleted have no impact on basket size except for high-income consumers who pay with a debit or credit card. Overall, many in-store promotions simply serve to influence what unplanned items the individual buys rather than generate incremental spending. Finally, the results show that savings on unplanned items *after* the in-store slack is depleted are positively related to unplanned item spending. This suggests that promotions on unplanned items can be effective at encouraging consumers to purchase additional unplanned items, but only when the savings occur *after* shoppers’ in-store slack is depleted.

These findings suggest that manufacturers and retailers might consider placing stockpiling-inducing promotions (“buy-one get-one free”) earlier in the store traffic pattern where consumers are more likely to have in-store slack remaining. They might also consider traffic flow so that promotions on unplanned items are encountered later in the trip, *after* the in-store slack is depleted.

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This research shows that while retailers tend to benefit from promotions on planned items, they should tread carefully when offering likely unplanned items at a discount. While the manufacturer may benefit from increased unplanned purchases, the retailer may not receive an overall sales lift. In fact, retailers may realize a decrease in net profits if a higher percentage of items are purchased at a lower margin. ■

## Introduction

Manufacturers and retailers are increasingly focused on the importance of in-store decision making. In 2005, Procter and Gamble (P&G) 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 places 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 evidenced by the 21% projected growth rate 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 is that shoppers make the majority of their decisions in the store (e.g., Inman and Winer 1998). Specifically, 30% of purchases are preplanned down to the brand level and a surprising 59% are totally unplanned before entering the store. However, does in-store marketing actually generate incremental sales at the basket level or does in-store marketing simply serve to redirect which items consumers purchase? Although Blattberg, Briesch, and Fox (1995) indicate that it is an empirical generalization that temporary promotions increase sales of the pro-

motored 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 been conducted primarily 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 store profit. Given these limited findings, this paper seeks to provide further insight into the basket-level impact of promotions, which is important from the perspective of retailers because of their investment in joint promotions.

Research on promotions has incorporated various theories from behavioral decision theory, including 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 lack of research that considers the role of mental budgeting. Although 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 resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Stille, Inman, and Wakefield (2008) provide evidence that consumers have a mental budget, even if implicit, at the shopping trip level. They also report that consumers have in-store slack in these budgets, which means that a portion of their 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 this recent research, the goal of this paper is to examine the effectiveness of promotional savings in increasing total spending, considering consumers’ mental budgets. Specifically, we evaluate how the promotional

savings' effect on total spending varies depending on whether the item is planned or unplanned, and depending on 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 the shopper's income level and payment method. To achieve these goals, we report the results of a field study where we examine the relationship between promotional savings and spending. Notably, our respondents used a handheld 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 four important contributions. First, we find that promotional savings on planned items before the in-store slack is exhausted are positively related to the amount spent on planned items, but that the amount of the increase depends on income level. In fact, we find that savings on planned items before the slack is depleted have *no* impact on spending for below-average income households. The results support our thesis that the underlying mechanism is that higher income enables increased purchase quantities of the planned items (i.e., stockpiling).

Second, we find that promotional savings on planned items are positively related to unplanned item spending (consistent with Heilman, Nakamoto, and Rao 2002), but that this relationship occurs only when the savings on planned items are realized after in-store slack is depleted.

Third, we show that savings on unplanned items that are purchased *before* the in-store slack is depleted have no impact on basket size except for high-income consumers paying with a debit or credit card.<sup>1</sup> This result suggests that, for most consumers, the savings are simply absorbed into the in-store slack. In other words, the consumer's use of a mental budget for unplanned purchases results in the savings on these unplanned

purchases being used to buy other unplanned purchases, still within the context of the in-store slack budget.

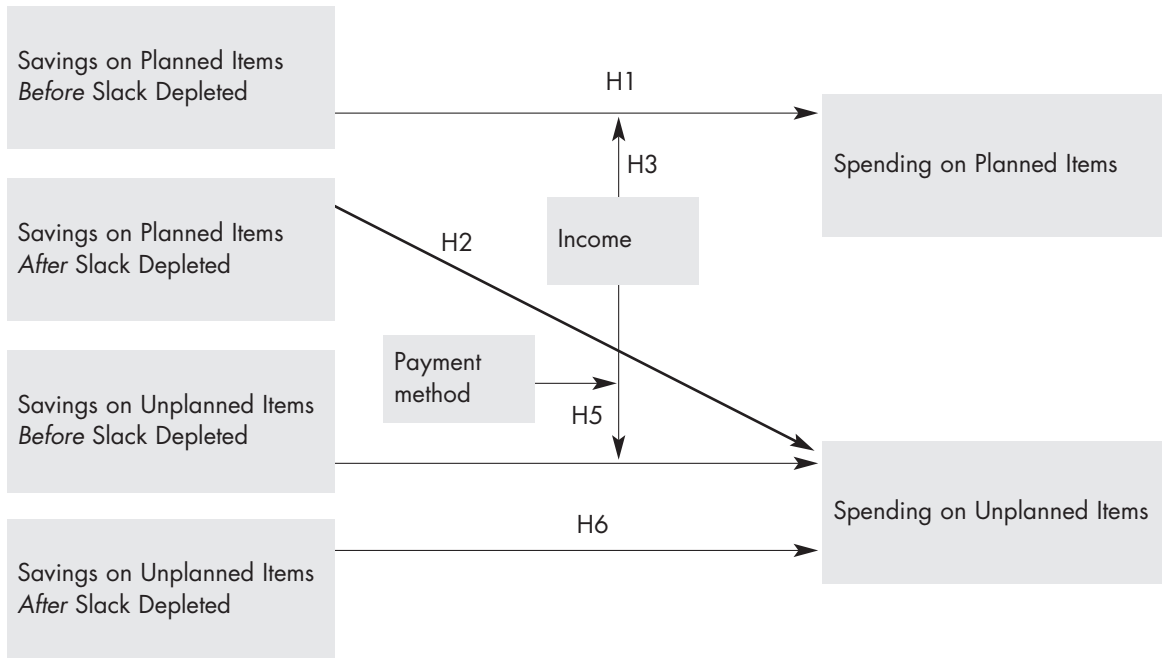
Fourth, savings on unplanned items that are purchased *after* the consumer's in-store slack is depleted are positively related to basket size for consumers regardless of income or payment method. This result suggests that promotions can be effective in encouraging incremental purchases if the promotion is encountered *after* the consumers' in-store slack is exceeded. This finding has implications for the placement of promotions in the store pattern 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 more than 300 respondents. After presenting the main results, we conduct additional analysis to gain further insight into our findings by differentiating between spending on unplanned hedonic and utilitarian items and assessing 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 resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Consumers use mental budgets in order to "facilitate making rational trade-offs between competing uses for funds" (Thaler 1999, p. 11). Consumers also use mental budgets as a form of self-control to ensure that they stay within aggregate spending limits (Thaler and Shefrin 1981).

Figure 1  
Conceptual Model



Grocery shopping is an example of a consumer domain where budgeting is commonly found (i.e., Heath and Soll 1996; Heilman et al. 2002). Stillely et al. (2008) 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. Specifically, Stillely et al. introduce the idea that the trip budget consists of both an itemized portion and in-store slack. They define the itemized portion of the budget as the money allocated to be spent on items that are planned at the product or brand level. 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. 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 through 4, which deal with savings on planned items and then present hypotheses 5 and 6, which make predictions regarding savings on unplanned items. Figure 1 summarizes our conceptual model.

### 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*. Currently, the literature primarily discusses the impact of sales promotions on when, what, and how much to buy (i.e., Bucklin, Gupta, and Siddarth 1998; Chiang 1991; Gupta 1988). For planned items, the question of “when” is irrelevant because the decision to purchase on the current trip has already been made. With regard to the questions of “what” and “how much,” there are three potential outcomes. First, a consumer could buy the brand intended and simply realize savings if the item is offered at a discount. Second, the consumer could switch brands (i.e., Bell, Chiang, and Padmanabhan 1999; Blattberg and Neslin

1993, Gupta 1988). Typically, higher-tier brands tend to draw more from lower-tier brands than the reverse (i.e., Blattberg and Wisinewski 1999; Heath et al. 2002; Kumar and Leone 1998). In the case of switching from a regularly priced low-tier brand to a high-tier brand offered at a discount, promotional savings should result in little to no net change to the total amount spent on planned items. Finally, promotions can encourage stockpiling (Chintagunta 1993; Nijs et al. 2001; Pauwels, Hanssens, and Siddarth 2002). In fact, Dellaert, Golounov, and Prabhu (2005) demonstrate that stocking up when items are discounted is an effective heuristic, which minimizes spending over time. Stockpiling implies that savings on planned items lead to greater spending on the planned items. Thus, savings on planned items could either have a negative relationship with planned item spending (buy planned brand and realize savings), no relationship (switch up to high-tier brand with same net price after savings), or a positive relationship (stockpile).

Although the above discussion considers the relationship between savings on planned items and planned item spending, it is also possible that savings on planned items impact purchases of unplanned items as well. Specifically, Heilman et al. (2002) report that a surprise coupon on a planned item increased unplanned-item spending. They argue that the savings are perceived as a windfall gain and therefore more readily spent than even current income (i.e., Arkes et al 1994). Further, they assert that unexpected savings may generate a positive mood, which leads to increased purchases (i.e., Donovan et al. 1994).

Heilman et al. (2002) also find that in addition to making more unplanned purchases, shoppers who received the coupon for a planned item sometimes purchased an increased quantity of the couponed item (cereal and paper towels, but not laundry detergent or spaghetti sauce). This result is

consistent with previous findings that promotions can lead to stockpiling (Chintagunta 1993; Nijs et al. 2001) and that consumers enjoy transaction utility from the perceived merits of the deal (Lichtenstein et al. 1990; Thaler 1985). 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. Why would consumers use the savings from planned items to purchase unplanned items rather than more of the promoted planned item? In doing so, they forgo the opportunity to realize transaction utility on a product that they must already use and value by virtue of its planned status.

Previous research sheds some insight into this issue. First, unplanned items tend to be more hedonic than planned items (Inman, Winer, and Ferraro 2007). Second, research shows that preference for hedonic goods is higher when the source of funds is a windfall rather than normal income (O'Curry and Strahilevitz 2001). The reason for this effect is that individuals tend to feel guilt during or after consuming hedonic goods (Lascu 1991; Strahilevitz and Meyers 1998) and this guilt seems to be assuaged if the source of funds is from a windfall such as a gift (Camerer 1998; Henderson and Peterson 1992) or lottery (O'Curry and Strahilevitz 2001).

Together, these findings suggest that the psychological windfall gains associated with savings on planned items are more likely to be used to purchase unplanned items than to purchase more of the (promoted) planned items. However, these studies did not 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. 2008). 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 (Heath and Soll 1996; Novemsky and Kahneman 2005). Therefore, we argue that whether 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 (they already have the ability to make unplanned purchases without exceeding their mental budget) will be less sensitive to the psychological windfall and mood effects associated with savings on planned items.

Our predictions distinguish between savings on planned items selected *before* the in-store slack is depleted and those selected *after* the in-store slack is depleted.<sup>2</sup> When in-store slack remains, the shopper will have less motivation to use the windfall funds to justify the purchase of unplanned items. Therefore, the funds are 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 “guilt-free” unplanned purchases instead of the more practical choice of stockpiling planned items. 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.

Hypothesis 1: There will be a positive relationship between savings on planned items 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.

Hypothesis 2: There will be a positive relationship between savings on planned items 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.

Hypotheses 1 and 2 consider how the impact of savings on planned items will vary depending on whether the savings are realized before or after the in-store slack is depleted. However, these relationships may vary depending on income. As discussed earlier, 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 an individual’s ability to stock up may be constrained by their budget. This will be especially true for lower income individuals with budgets that are more constrained (Thaler 1999). Higher income households are more able to exceed their budget because they can dip into the 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 able to stockpile. Therefore,

Hypothesis 3: The greater the household income, the greater the impact of savings on planned items before the in-store slack is depleted on planned item spending.

Hypothesis 4: The interaction between planned item promotional savings and income on spending on planned items will be mediated by spending on extra quantities of planned items (i.e., stockpiling).

Hypothesis 3 predicts that income will moderate the relationship between savings on planned items before the in-store slack is depleted and planned item spending, but it is less clear whether income will have the same impact on the relationship between savings on planned items after the slack is depleted and



unplanned item spending. Savings on planned items after the in-store slack is depleted tend to occur later in the trip when the individual is more cognitively depleted (Muraven and Baumeister 2000), which limits the moderating role of income-driven budget constraints. Although we do not formally hypothesize that income will moderate the relationship between savings on planned items after slack is depleted and unplanned item spending, we empirically investigate the relationship.

### **Savings on unplanned items**

Previously, it has been assumed that offering an item at a discount may spur an individual to make an unplanned purchase (i.e., Bucklin and Lattin 1991; Cobb and Hoyer 1986; Kahn and Schmittlein 1992; Lam et al. 2001; Stern 1962). The inference is that the unplanned purchase represents spending that is incremental to what would have occurred on the shopping trip without the purchase of the discounted item. We 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 make different predictions regarding the purchasing impact of sales promotions that occur before the in-store slack is depleted versus those purchases that occur after the in-store slack is depleted (as we did for savings on planned items).

Because the consumer is mentally prepared to spend the money allocated to in-store slack on unplanned items during the current trip, we posit that the consumer is likely to spend the money from in-store slack even if no specials are offered by the retailer. Because of the mental budget constraint, 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 Betty plans to spend a total of \$75 on her shopping trip, with \$30 of this amount being in-store slack. We predict that Betty will spend approximately \$30 on unplanned items. In Scenario A, Betty does

not encounter any specials, so she buys 10 unplanned items at the average normal cost of \$3.00. In Scenario B, Betty encounters an in-store special where an item normally priced at \$3.50 is offered for \$3.00. Betty decides to purchase this unplanned item on promotion, but does *not* purchase one of the other unplanned items (offered at the normal price of \$3.00) that she would have in Scenario A. In Scenario C, Betty encounters several in-store specials on items that she had not planned to purchase. In this situation, Betty buys 12 unplanned items at an average cost of \$2.50. In all three scenarios, Betty 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.

We argue that this relationship will jointly depend on income and payment method, which has been shown to influence spending behavior (Feinberg 1986; Hirschman 1979). Several studies show that consumers who pay with credit cards spend more than those who pay with cash or check (Feinberg 1986; Hirschman 1979; Prelec and Simester 2001). More recently, the literature suggests that there are psychological drivers of this effect as well as more practical explanations (i.e., Prelec and Loewenstein 1998; Soman 2001, 2003). From a practical standpoint, a consumer may be able to spend more on a given trip with a credit card than cash purely from a liquidity perspective. From a more psychological perspective, credit cards have been shown to lessen the pain of paying because of looser coupling of payment with individual transactions (Prelec and Loewenstein 1998) and less payment transparency (Soman 2003). This pain of paying, however, may depend on income because of how credit card use varies with income. Specifically, lower income households tend to carry higher outstanding balances and have more difficulty paying off even the monthly minimum balance (Zhu and Meeks 1994). Consequently, lower income

households have more negative attitudes toward credit use (Chien and Devaney 2001; Mathews and Slocum 1972). The pain of paying with credit cards should increase as income decreases. Although the pain of paying with cash will most likely increase as income decreases because of less discretionary income (Dyanan et al. 2004; Lee and Brown 1986; Mueller 1963), we expect that the pain will increase at a slower rate than with use of credit cards because of the tight coupling of payment and purchase. Therefore, we posit that the difference in pain of paying between cash and credit will be smaller for lower income individuals than higher income individuals.

Hypothesis 5: There will be a three-way interaction between unplanned item promotional savings before the in-store slack is depleted, income, and payment method for spending on unplanned items. Specifically, income will strengthen the relationship between unplanned item promotional savings before in-store slack is depleted and unplanned items to a greater degree when paying with credit than with cash.

Less attention has been paid to debit cards, which are a relatively new form of payment. Two exceptions are Soman (2001; 2003) in which debit cards are shown to have similarities with both cash and credit cards. As a result, we do not make any hypotheses regarding the use of debit cards but instead empirically evaluate whether debit card spending behavior more closely mirrors use of cash, credit cards, or has its own unique pattern of results.

Although a consumer may attempt to restrain spending once the mental budget is depleted (Heath and Soll 1996), this does not imply that consumers never exceed their mental budgets. Consumers 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. We expect that there is a positive relationship between savings on unplanned items *after* the in-store slack is depleted and unplanned item spending.

Hypothesis 6: There will be a positive relationship between savings on unplanned items after in-store slack is exceeded and 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. 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., their itemized budget). This approach allowed us to measure the respondents' in-store slack by subtracting the itemized budget from the total planned spend. Previous research has demonstrated that this research format does not impact the amount that consumers spend (Kollat and Willett 1967; Stillew et al. 2008). After completing these initial questions, respondents were then provided with a handheld scanner gun and instructed on how to scan the barcode of each item as they placed it in their cart or basket. This methodology enabled us to record the order of purchases and determine which items were

Table 1  
Sample statistics

Income Level	
Less than \$20,000	18.6%
\$20,000–\$39,999	22.4%
\$40,000–\$59,999	22.4%
\$60,000–\$79,999	13.6%
\$80,000–\$99,999	10.1%
\$100,000–\$119,999	5.1%
\$120,000+	7.9%
Payment Method	
Credit	28.1%
Cash	24.9%
Debit	21.8%
Check	19.9%
Food Stamps	5.4%

purchased before and after the in-store slack was exceeded. A pretest (N = 73) indicated that use of the scanner did not have 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 and payment method. 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 access their shopping history.

### Sample

Of the 400 respondents, 83 respondents had missing responses, missing receipts, or incomplete scanner files. Therefore, 317 respondents were 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 1 summarizes the sample statistics.

### Measures

**Itemized Budget (ITB).** 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 budget 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 seven choices: <\$20,000; \$20,000–\$39,999; \$40,000–\$59,999; \$60,000–\$79,999; \$80,000–\$99,999; \$100,000–\$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 the respondent's receipt. The net sales price of all planned items was summed for each individual.

### 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 individual.

### Savings on Planned Items Before In-Store Slack Depleted (SPB).

Frequent shopper data were 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). We want to focus on promotions that the shopper would recognize as a deal, so 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 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.<sup>3</sup>

**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 the respondent depleted his or 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 the shopper depleted his or 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 his or her in-store slack.

**Payment Method (PAYMETH).** During the exit interview, respondents were asked to indicate which of the following payment methods they used: Cash, Check, Debit, Credit, or Other. All those choosing "Other" indicated that they were paying with Food Stamps. In the results section, we empirically test whether these payment methods should be coded as separate variables or whether some payment methods can be combined.

### 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>4</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).

$$\begin{aligned} \text{SPEND\_P} = & \beta_0 + \beta_1 \times \text{ITB} + \beta_2 \times \\ & \text{SPB} + \beta_3 \times \text{SPA} + \beta_4 \times \text{SUB} + \beta_5 \times \\ & \text{SUA} + \beta_6 \times \text{HH} + \beta_7 \times \text{INC} + \beta_8 \\ & \times \text{PAYMETH} + \beta_9 \times \text{SPB} \times \text{INC} + \\ & \beta_{10} \times \text{SPA} \times \text{INC} + \epsilon_1 \end{aligned} \quad (1)$$

$$\begin{aligned} \text{SPEND\_UP} = & \lambda_0 + \lambda_1 \times \text{ISS} + \lambda_2 \times \\ & \text{SPB} + \lambda_3 \times \text{SPA} + \lambda_4 \times \text{SUB} + \lambda_5 \times \\ & \text{SUA} + \lambda_6 \times \text{HH} + \lambda_7 \times \text{INC} + \lambda_8 \times \\ & \text{PAYMETH} + \lambda_9 \times \text{SPB} \times \text{INC} + \\ & \lambda_{10} \times \text{SPA} \times \text{INC} + \lambda_{11} \times \\ & \text{SUB} \times \text{INC} + \lambda_{12} \times \text{SUA} \times \text{INC} + \\ & \lambda_{13} \times \text{SUB} \times \text{PAYMETH} + \lambda_{14} \times \\ & \text{SUA} \times \text{PAYMETH} + \lambda_{15} \times \\ & \text{INC} \times \text{PAYMETH} + \lambda_{16} \times \\ & \text{SUB} \times \text{INC} \times \text{PAYMETH} + \lambda_{17} \times \\ & \text{SUA} \times \text{INC} \times \text{PAYMETH} + \epsilon_2 \end{aligned} \quad (2)$$

## Results

**Descriptive Results.** One key premise of this paper is that shoppers have in-store slack in their mental budgets, as demonstrated by Stillely et al. (2008). That is, we expect that consumers leave room in their trip budgets to make unplanned purchases. Therefore, we first examine the degree to which this holds in our sample. As shown in Table 2A, 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 2B provides the correlation between our measures, while Table 2C describes the number and type of promotions.

Table 2A  
**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)

**Base Model.** Our hypotheses are also based on the assumption that the impact of 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

Table 2B  
**Correlation Matrix**

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

All correlations greater (less) than +/- .11 are significant at  $p < .05$   
N=317

Table 2C  
**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.

explains significantly more variance than the base model for both the dependent variables of planned item spending ( $F(1, 308) = 4.35, p < .05$ ) and unplanned item spending ( $F(1, 299) = 4.83, p < .05$ ). This indicates that it is useful to distinguish between savings before and after the shopper's slack is depleted.

To assess the similarity of different payment methods, we ran a regression with unplanned item spending as the dependent variable and individual dummy variables for check, debit, credit, and food stamps. Cash served as the base case. The frequency of these payment methods are summarized in Table 1. Additionally, all possible two- and three-way interactions were included for savings on unplanned items, income, and each payment method dummy variable.

The results indicate that neither the main effect nor any of the interactions approached significance for either check or food stamps (all  $p$  values  $> .30$ ). This suggests that paying with check or food stamps functions similarly to paying with cash across income levels. Therefore, those who paid by check or food stamps were combined with those who paid with cash and the model was rerun. The revised model shows a similar pattern of results for debit and credit. Specifically, the results indicate a significant, positive three-way interaction between savings on unplanned items, income and debit ( $\beta = .21, p < .01$ ) as well as a significant, positive three-way interaction between savings on unplanned items, income and credit ( $\beta = .18, p < .01$ ). Further, an  $F$ -test indicates that combining these payment methods does not significantly reduce the amount of variance explained by the model ( $F(1, 293) = 1.53; p > .10$ ). Therefore, the final coding of payment method was such that the variable equaled 0 if the shopper used cash, check, or food stamps and 1 if the shopper used debit or credit. We discuss the implications of these results when we examine Hypothesis 5, which considers the role of payment method.

**Proposed Model.** The results of the analysis are presented in Table 3. Replicating Stilley et al. (2008), 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 savings on planned items 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 ( $\beta_2 = 4.84, p < .01$ ), but no relationship between planned item savings after slack depletion and planned item spending ( $\beta_3 = -1.36, p > .10$ ). *That is, each dollar saved on planned items purchased before the in-store slack is spent leads to an additional \$4.84 in additional planned item spending.* In the next section we test our thesis that this is driven by stockpiling.

When we turn 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 ( $\lambda_2 = -1.52, p > .10$ ), but a significant positive relationship between planned item savings after slack depletion and unplanned item spending ( $\lambda_3 = 10.00, p < .01$ ). 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

Table 3  
Model Results

	Equation 1: Spending on Planned Purchases		Equation 2: Spending on Unplanned Purchases	
	Parameter Estimate	t-value	Parameter Estimate	t-value
Intercept	4.61**	2.77	12.83**	6.06
Itemized Budget (ITB)	0.61**	23.44	—	—
In-Store Slack (ISS)	—	—	.92**	19.32
Savings on Planned Items Before Slack Depleted (SPB)	4.84**	3.16	-1.52	-.64
Savings on Planned Items After Slack Depleted (SPA)	-1.36	-.81	10.00**	3.94
Savings on Unplanned Items Before Slack Depleted (SUB)	—	—	-1.70	-.87
Savings on Unplanned Items After Slack Depleted (SUA)	—	—	5.96**	2.89
Household Size (HH)	1.10	1.90	.69	.79
Income (INC)	-.03	-1.27	-.01	-.14
Payment Method (PAYMETH)	3.01	1.76	.08	.03
SPB X INC	.08*	1.99	-.01	-.16
SPA X INC	.08	1.40	.04	.41
SUB X INC	—	—	-.06	-1.30
SUA X INC	—	—	.09	1.58
SUB X PAYMETH	—	—	3.65	1.49
SUA X PAYMETH	—	—	-1.08	-.34
PAYMETH X INC	—	—	.09	1.17
SUB X PAYMETH X INC	—	—	.20**	2.98
SUA X PAYMETH X INC	—	—	.04	.47

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

planned items that occur before the shopper's in-store slack is depleted (which we find has no impact on unplanned item spending).

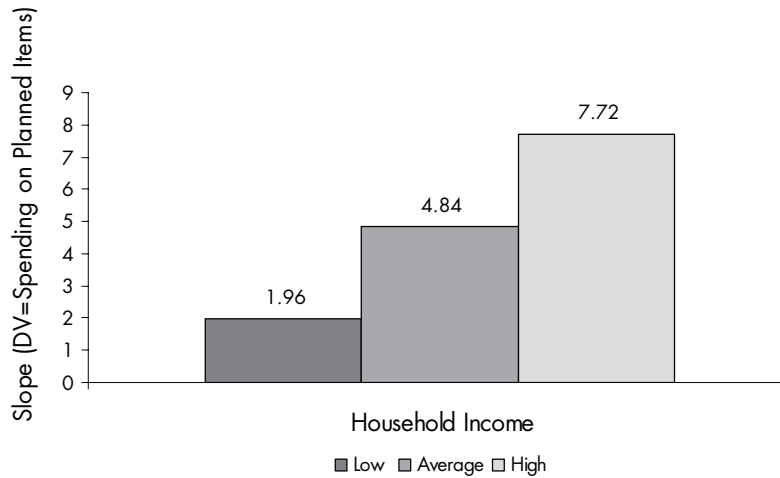
In summary, when savings on planned items are realized before the slack is depleted, it appears that those savings are solely used to increase planned item spending. As we will subsequently test, this result is consistent with a stockpiling explanation. There is no associated decrease in unplanned item 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, then the savings are used to purchase

unplanned items, which is a finding consistent with the psychological windfall (Arkes et al. 1994; O'Curry and Strahilevitz 2001) and mood effects (Donovan et al. 1994) described by Heilman et al. (2002). These results both generalize and refine 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 occur only after the shopper's in-store slack has been depleted.

Hypothesis 3 predicts that the relationship between planned item savings before slack

Figure 2

Moderating Effect of Income on Relationship Between Savings on Unplanned Items Before In-store Slack Depleted and Planned Item Spending



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 ( $\beta_2 = 4.84, p < .01$ ) is qualified by a positive, significant interaction between income and planned item savings before slack depletion ( $\beta_9 = .08, p < .05$ ). We also tested whether income moderates the relationship between planned item savings after slack depletion and unplanned item spending. We did not find a significant interaction ( $\lambda_{10} = .04, p > .10$ ). We speculate about this null result in the general discussion.

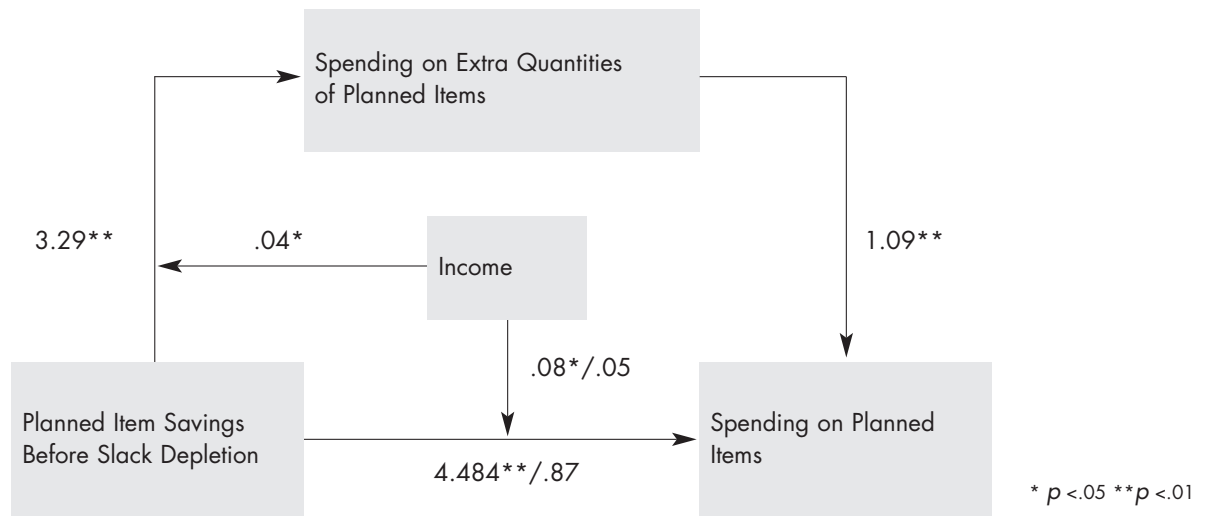
To further explore the significant interaction between planned item savings before slack depletion and income, we follow the post-hoc probing procedure recommended by Aiken and West (1991). Specifically, we first calculate high- and low-income levels by adding or subtracting the standard deviation from 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. The moderating effect of income on the relationship between planned

item savings before slack depletion and planned item spending is visually depicted in Figure 2. When income is low (Mean - 1 SD = \$17K), the slope is 1.96 ( $4.84 - .08 \times 36$ ), which is not significantly different than 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 7.72 ( $4.84 + .08 \times 36$ ). *This suggests that for every dollar saved on planned items, high-income individuals spend \$7.72 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. Hypothesis 4 predicts that the interaction between income and planned item savings before slack depletion will be mediated by spending on extra quantities of planned items.

We first describe how we measured spending on extra quantities of planned items and then



Figure 3  
Results of Mediation



test Hypothesis 4 using the procedure suggested by Baron and Kenny (1986). During the initial interview, respondents were asked to list all of the items they planned to buy, including the 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. This amount is used as the mediating variable.

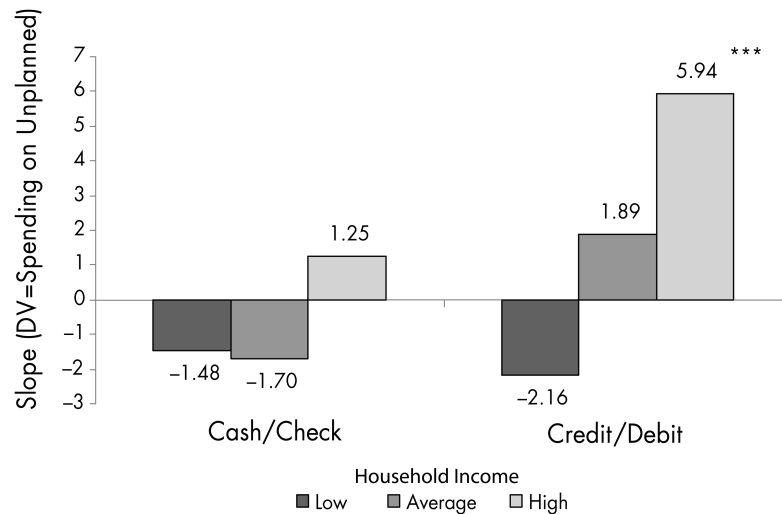
The results of the mediation are summarized in Figure 3. As indicated previously, there is a significant main effect of planned item savings before slack depletion ( $\beta = 4.84, p < .01$ ) and a significant interaction of planned item savings before slack depletion and income level ( $\beta = .08, p < .05$ ) for the dependent variable of planned item spending. 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 ( $\beta = .87, p > .10$ ) and the interaction between SPB and income ( $\beta = .05, p > .10$ ) become insignificant. The Sobel's  $Z$  confirms that the mediation by spending on extra quantities of planned items is significant ( $Z = 2.03, p < .05$ ). These results indicate that promotional savings on planned items lead to stockpiling of planned items, but that the effect occurs only for households with above-average income.

Hypothesis 5 predicts that income level strengthens the relationship between unplanned item savings before slack depletion and unplanned item spending to a greater degree when paying with credit than with cash. Recall that payment method is coded as 0 when paying with cash, check, or food stamps and 1 when paying with debit or credit. Therefore, the fact that the simple effect of unplanned item savings before slack depletion is not significant ( $\lambda_4 = -1.70, p > .10$ ) and the two-way interaction between

Figure 4

Three-way Interaction between Savings on Unplanned Items Before In-store Slack Depleted, Income and Payment Method



income and unplanned item savings before slack depletion is not significant ( $\lambda_{11} = -.06$ ,  $p > .10$ ) indicates that, when paying with cash, check, or food stamps, there is no relationship between unplanned item savings before slack depletion and unplanned item spending regardless of income. However, we find a significant three-way interaction between unplanned item savings before slack depletion, income, and payment method ( $\lambda_{16} = .20$ ,  $p < .01$ ).

To explicate this interaction, we again used the post-hoc simple slope procedure as recommended by Aiken and West (1991). These results are visually depicted in Figure 4 to assess whether the pattern of results matches the prediction of Hypothesis 5. When debit or credit is used, the slope of the relationship between unplanned item savings before slack depletion and unplanned item spending increases from  $-2.16$  to  $5.94$  as income increases. The only slope that is statistically different from zero is the  $5.94$  for high-income individuals. When savings are encountered before the in-store slack is depleted, there is a positive relationship with unplanned

item spending only for high-income households paying with debit or credit. Otherwise, there is no significant effect on unplanned item spending. This provides strong support for our argument that most in-store promotions simply serve to influence *what* unplanned items the individual buys rather than generate incremental spending. These findings suggest that these sales promotions have a positive impact only when the pain of paying is sufficiently low (i.e., high income paying with credit or debit).

Earlier we suggested that there are both financial (i.e., liquidity) and psychological mechanisms (i.e., pain of paying; Prelec and Loewenstein 1998) that may be driving the payment method results. Although we cannot directly provide insight into the degree to which each mechanism plays a role, our analysis of which payment methods to group together sheds some insight. Specifically, we find that shoppers using debit cards behave equivalent to those using credit cards, while shoppers using checks behave equivalent to those using cash. In terms of liquidity, debit cards are similar to checks. However, Soman

(2003) argues that debit and credit are similar in terms of payment transparency and therefore result in similar pain of paying (i.e., Prelec and Loewenstein 1998). Accordingly, the statistical equivalence of debit cards and credit cards suggests that the increased unplanned item spending should be attributed to the psychological pain of paying explanation rather than the liquidity explanation.

In contrast to when savings are realized before in-store slack is depleted, Hypothesis 6 predicts that savings on unplanned items after slack is depleted have a positive effect on unplanned item spending. We find support for this hypothesis ( $\lambda_5 = 5.96, p < .01$ ). Our findings suggest that for every dollar saved on unplanned items after the in-store slack is depleted, unplanned item spending increases by \$5.96 on average.<sup>5</sup> This 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.

### Additional analysis

**Hedonic vs. Utilitarian Items.** To gain further insight into what *types* of unplanned items consumers are buying as a result of promotional savings, we conduct exploratory analysis where unplanned item spending is split into spending on unplanned *hedonic items* and spending on unplanned *utilitarian items*. In this analysis, we employ survey data from Wakefield and Inman (2003) where respondents rated the hedonicity of product categories on a seven-point scale. Specifically, we categorize products with a hedonicity rating at or above the scale midpoint of 3.5 as “hedonic” items and those products with a rating below 3.5 as “utilitarian” items. Categorizing purchases based on the item's hedonicity rating, we find that approximately 80% of the items bought with promotional savings are classified as hedonic items and that this percentage does not vary significantly based on whether the item was planned or unplanned.

We use this more detailed analysis to further investigate our findings related to unplanned item spending. First, recall that we found that savings on planned items after the in-store slack is depleted are positively related to unplanned item spending ( $\beta = 10.00, p < .01$ ), which is consistent with the psychological windfall explanation advanced by Heilman et al. (2002). Even though windfalls tend to be used for more hedonic purposes (O'Curry and Strahilevitz 2001), we find that the increase in unplanned item spending is equally ( $F = .03, p > .10$ ) driven by increased spending on both hedonic ( $\beta = 5.23, p < .01$ ) and utilitarian items ( $\beta = 4.81, p < .01$ ). We address a potential explanation in the general discussion.

Second, we found that savings on unplanned items before the slack is depleted do not have a significant impact on unplanned item spending ( $\beta = -1.70, p > .10$ ). This result is consistent with our thesis that most promotions on unplanned items simply serve to change what items the in-store slack is used to purchase rather than increase the amount spent. In partial support of this argument, we find that savings on unplanned items before the slack is depleted are associated with a significant decrease in spending on unplanned utilitarian items ( $\beta = -2.72, p < .05$ ) and a directional, but not significant, increase in spending on unplanned hedonic items ( $\beta = 1.06, p > .10$ ). Therefore, these results suggest that buying an unplanned item on promotion before the in-store slack is depleted shifts unplanned purchases away from utilitarian items without a significant increase in spending on unplanned hedonic items. This highlights the potential risk that many promotions on unplanned items may not be generating incremental sales. Qualifying this result, we find that the three-way interaction between unplanned item savings after slack depletion, income and credit leads to an increase in spending on unplanned hedonic items ( $b = .16, p < .01$ ), but has no significant impact on spending on unplanned utilitarian items ( $b = -.01, p > .10$ ). Therefore, high-income individuals paying with credit or

debit have a high enough increase in spending on hedonic items to yield a net increase in spending.

Finally, in contrast to savings on unplanned items that occur before the in-store slack is exhausted, we find that savings on unplanned items *after* the slack is exhausted are positively related to unplanned item spending ( $b = 5.96$ ,  $p < .01$ ). Further analysis indicates that this increase is driven by spending on hedonic items ( $b = 4.68$ ,  $p < .01$ ), but not unplanned utilitarian items ( $b = 1.53$ ,  $p > .10$ ). Jointly, the above results suggest that when savings are encountered before the in-store slack is depleted, the consumer has the opportunity to spend less on other unplanned items as the trip progresses. When the savings occur after the slack is depleted however, the consumer is enticed to buy the additional unplanned hedonic item(s). Although the consumer could potentially put items back, it does not appear that they do so.

**Mental Budget Uncertainty.** Even though the average shopper stays very close to his or her mental budget, we also need to consider that individuals may have varying amounts of uncertainty about their spending expectations for the trip. One approach would be to have the respondents directly estimate their uncertainty, but individuals tend to have difficulty calibrating confidence judgments (i.e., Fisher, 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 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>6</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 his or 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 less budget uncertainty. The results of this weighted analysis closely mirror the unweighted results presented in Table 3 with one key exception: the three-way interaction between savings on unplanned items before in-store slack is depleted, income and credit is not significant ( $b = .09$ ,  $p > .10$ ) as it was in the unweighted model ( $b = .20$ ,  $p < .01$ ). Recall that there is no significant main effect of savings on unplanned items before slack is depleted. Therefore, our results indicate that when budget uncertainty is taken into account, savings on unplanned items before the slack is depleted have no impact on unplanned item spending regardless of income or payment method.

One potential explanation is that budget uncertainty depends on income and payment method, but regressing budget uncertainty on income, payment method, and the two-way interaction yields no significant effects (all  $p > .10$ ). Instead, our results suggest that individuals with high-budget certainty are driving the interaction between savings, income and payment method. These results provide further support for our argument that the increased unplanned item spending by high-income households paying with credit or debit is due to differences in pain of paying rather than liquidity. As the individual's uncertainty regarding the amount of his or her mental budget increases, the mental pain associated with exceeding that amount should decrease. Therefore, the results suggest that even though high-income individuals paying with credit or debit may have less pain of paying than other shoppers, they will still not increase unplanned

item spending (due to savings on unplanned items before the in-store slack is depleted) unless their mental budget uncertainty is great enough to sufficiently lower the pain of paying.

## 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 research 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 income and payment method. 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 managers.

First, we find that the impact of savings on planned items depends on whether the savings are encountered before or after the shopper's in-store slack is depleted. When slack remains, the savings on planned items are associated with increased planned item spending as a function of income. We then show that the underlying mechanism is increased purchase of extra quantities of the promoted planned item. This stockpiling behavior appears to be a rational process on the part of the consumer (Dallaert et al. 2005). Consumers purchase a greater quantity of an item that they have already planned to buy because of a lower price. As long as the item can be stored for future consumption (i.e., Bell et al. 1999; Narasimhan et al. 1996; Raju 1992), and the consumer does not have to incur credit card interest payments to finance the purchase, their long-run costs should decrease.

In contrast, there is not a clear rational explanation for the positive relationship between savings on planned items that occur after the in-store slack is depleted and unplanned item spending. Regardless of income, our results indicate that unplanned item spending increases by \$10.00 for every dollar saved on a planned item after the slack is depleted. Given that the average price of an unplanned item is \$2.14, these results strongly suggest that the shopper is purchasing several additional unplanned items. Consistent with Heilman et al. (2002), it appears that savings on planned items can create a psychological windfall effect, which leads to an increased purchase of unplanned items that is greater than the amount of the windfall. Surprisingly, we show that the increase in spending is driven by both hedonic and utilitarian unplanned items. Jointly, these results suggest that the stockpiling results are being driven by a cognitive process, while the windfall results are being driven by an affective process where less attention is paid to the mental budget due to the suppressed cognitive capacity associated with a positive mood (i.e., Mackie and Worth 1989). Additional research is needed to delve into this intriguing possibility. Our findings also provide insight into previous work reporting that windfalls have a higher marginal propensity of consumption (Arkes et al. 1994; Henderson and Peterson 1992). Our findings suggest that the windfall effect may be attenuated (or even eliminated) if the individual already has funds earmarked for miscellaneous purposes.

The results for savings on planned items offer several implications for retailers. First, these results suggest that offering promotions on *planned* items can be effective in generating incremental sales. Therefore, retailers should first try to familiarize themselves with which items tend to be planned in advance of the trip (see POPAI 1995). Second, the nature of the incremental items, as well as amount, 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. Although it will be difficult for retailers to ascertain exactly where the slack becomes depleted, one proxy is position in the store. Therefore, manufacturers and retailers should try to place stockpiling-inducing promotions, such as buy-one get-one free promotions, earlier in the typical store traffic pattern where consumers are more likely to have in-store slack remaining.

Although these guidelines may be useful to developing more successful stockpiling promotions, our results also suggest that retailers may want to only selectively employ these types of promotions. Instead, they should consider increasing discounts 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. \$4.84). As shown in Table 2B, planned items selected after the slack is depleted constitute only 22.5% of the items purchased on promotion compared to 31.6% for planned items selected before the slack is depleted.

Our second key contribution is that the tendency to purchase additional quantities of promoted planned items increases with income. These results differ from previous research, which failed to find a significant effect of income on stockpiling behavior (Bell, Chiang and Padmanabhan 1999; Neslin, Henderson and Quelch 1985). In this prior work, the authors speculate that the lack of significant results may be due to two counteracting effects. On one hand, higher income households would be less likely to stockpile because they are less price sensitive (Ainslie and Rossi 1998) and therefore the savings would matter less to them. On the other hand, higher income households have greater ability to stockpile. There are several potential explanations for why we find significant results when previous research failed to do so. First, Neslin et al.'s (1985) 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, more than 80% of the promotions in our study were on hedonic items, which may differ from the promotion strategy implemented by retailers in other studies. Higher income households may find it easier to justify stockpiling hedonic items than lower income households.<sup>7</sup> Additionally, 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.

The lack of stockpiling by lower income households has implications for managers, for which there are two potential budget-based explanations. One explanation is that the lower income household budgets are so tight that they simply do not have the funds available to purchase additional quantities. Alternatively, one could argue that they are simply more averse to exceeding their mental budgets. The fact that lower income households still demonstrated a positive relationship between savings on planned items and unplanned item spending suggests that their budget constraints are not so strict as to rule out any unplanned spending. The associated implication is that lower income individuals are simply psychologically averse to exceeding their mental budgets, even if it means paying more over the long run. Research on psychological myopia, consumers' tendency to focus on short-term consequences rather than long-term impact, has dealt primarily with a tendency to act on short-term impulses (Soman 1998; Zauberger 2003). This research suggests that consumers may also be forgoing current positive purchases because of a present

bias. Future research should examine marketing messages that can help lower-income households think longer term.

Third, we show that the impact of savings on unplanned items also varies depending on whether the savings are encountered before or after the shopper's in-store slack is depleted. One key aspect of this result is that we show that savings on unplanned items that are purchased *before* the consumers' in-store slack is depleted *have no impact* on unplanned item spending except for high-income consumers paying with a debit or credit card. Further, we show that savings on unplanned items shift spending away from unplanned *utilitarian* items and toward unplanned *hedonic* items. Only for high-income consumers paying with credit or debit is the increase in hedonic items substantial enough to result in a net increase to unplanned item spending. In subsequent analysis, we then show that there is no net impact for even these high-income credit card consumers when individuals with high mental budget uncertainty are downweighted. These results suggest that retailers should tread very carefully when offering likely unplanned items at a discount. Because consumers have in-store slack in their mental budget for the trip, most promotions on unplanned items will simply alter what items the individual buys with in-store slack rather than generating incremental purchases. While the manufacturer may still benefit because of increased purchases of their specific brand, the retailer will not receive an overall sales lift. In fact, retailers may realize a decrease in net profits if a higher percentage of items are purchased at a lower margin. Unfortunately, we are unable to examine the effect on profits because we do not have access to cost information.

There is the possibility that there is something about the individuals who realized savings on planned items after their in-store slack was depleted that also contributed to the increased unplanned item spending. Although this is a possibility, Heilman et al. (2002) showed simi-

lar results using a random experiment. Furthermore, we ran additional models where we included two variables that could potentially be confounding factors: impulsiveness (i.e., Puri 1996; Shiv and Fedorikhin 1999) and deal proneness (i.e., Blattberg and Neslin 1990). Neither of these variables changed the pattern of results, which provides additional support for the processes discussed in this paper. Even more importantly, one of our major findings is that the relationship between savings on unplanned items and unplanned item spending depends on whether the savings occur before the in-store slack is depleted. This relationship occurs only after deletion of the in-store slack. It is difficult to generate an alternative explanation for this finding other than that the savings on unplanned items purchased before the slack is depleted are simply absorbed into the mental budget.

Finally, our results show that savings on unplanned items after the in-store slack is depleted are positively related to unplanned item spending at the rate of \$5.96 per dollar saved. This suggests that promotions on unplanned items can be effective at encouraging consumers to purchase items after their in-store slack is depleted. As will be discussed in the next section, more research is needed on what specific types of promotions and what types of items are most successful in encouraging consumers to exceed their in-store slack.

### Limitations and future research

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 retailers outside the grocery industry). It is possible that these results may be influenced by the nature of the chain's clientele, layout, or promotional activities. For example, these results may vary depending on whether the grocer is a Hi-Lo retailer or an every-day-low-price retailer (EDLP).

Our findings provide directions for future research that would aid in better understanding the underlying process of the results. First, additional research is needed on the impact of positive mood on spending. Our results suggest that a positive mood, as would be induced by a psychological windfall effect (Arkes et al. 1994; Heilman et al. 2002), leads to increased purchase of unplanned items. Although this finding is consistent with other field studies on the relationship between positive mood and impulse purchases/unplanned spending (Beatty and Ferrell 1998; Donovan et al. 1994), it differs from other studies that examine the relationship between mood and self-control (Garg, Wansink and Inman 2007; Tice, Bratlavsky and Baumeister 2001). Resolving these conflicting findings is important to retailers because retailers are increasingly offering in-store events or sampling that could result in an elevated mood. It is important to understand whether these activities lead to more or less unplanned spending and whether this effect is influenced by managerially actionable moderating factors. To further analyze this issue, field or lab experiments could be conducted where mood is first manipulated and participants are then asked to make purchase choices.

A second area where more research is needed regards the lack of stockpiling by low-income individuals. One interesting potential implication is that resistance to exceed a mental budget is actually causing low-income individuals to pay more for goods over time. This hypothesis could be tested using a longitudinal purchasing game where respondents are assigned income and mental budgets and then make a series of purchases. Scanner data sets could also be used to examine how the average price paid for a brand over time varies depending on income.

Third, our findings suggest that encountering savings on unplanned items after the in-store slack is depleted can encourage consumers to exceed their in-store slack. More insight is needed into what types of promotions and items are most likely to induce shoppers to exceed their mental budget. In our data set, the respondents primarily bought hedonic items on promotion. While hedonic items may be more tempting (Shiv and Fedorikhin 1999), promotions on more utilitarian items may also be effective because they justify manipulation of mental budgets (i.e., Soman and Cheema 2006).<sup>8</sup>

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## Notes

1. We find that weighting individuals based on mental budget uncertainty eliminates this interaction.
2. Prior to testing our hypotheses, we first tested whether parsing the savings before and after the slack is depleted increases the variance explained by the model.
3. Another option would be to categorize savings on planned items depending on whether the selection was made before or after the *itemized* portion of the budget was exceeded. All planned items on which there were promotions were purchased before the itemized budget was exceeded; therefore we do not make this distinction.
4. 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.
5. Although no interaction with income or payment

method was hypothesized for post-slack savings on unplanned items, we included the three-way interaction and all two-way interactions. None of these effects were significant ( $p > .10$ ).

6. We screened for shoppers who were picking up more than “a couple items,” so 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 these purchases were not relevant to respondents’ grocery spending expectations.

7. We examined whether the stockpiling results differed depending on whether the promotion was on a hedonic or utilitarian planned item. We found significant results for hedonic items, but not utilitarian items. We feel, however, that we cannot rule out that the null result for utilitarian items is due to the scarcity of data in this condition.



8. Again, we attempted to examine the varying impact of savings on hedonic versus utilitarian items but felt that

the results were limited by the low occurrence of savings on utilitarian items.

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**Report No. 09-101**

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