THE ROLE OF IN-STORE SLACK AND MENTAL BUDGETS IN SHOPPER MARKETING

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

Building on my first essay, my second essay examines how the impact of promotions depends on whether the shopper still has in-store slack remaining in her mental budget. Specifically, I 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, I examine how these relationships vary depending on income. To achieve these goals, I 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. I 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. I conclude my dissertation with a discussion of future research opportunities within the field of shopper marketing.

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1.0 INTRODUCTION

Although economists have long assumed that consumers are rational beings with stable preferences, there is a large body of work that suggests that consumers' preferences are constructed at the time of choice (Bettman, Luce and Payne 1998; Lichtenstein and Slovic 2006; Payne, Bettman and Johnson 1992). The constructed nature of preferences means that consumers' choices are highly context dependent and are therefore influenced by dynamic factors such as the current amount of self-control (Hoch and Loewenstein 1991; Muraven and Baumeister 2000) or the source of funds (i.e., Arkes et al. 1994; Strahilevitz and Meyers 2001; Thaler and Shefrin 1981).

Self-control refers to the self's need to exert control over the affective system's desires that have negative long-term consequences (Baumeister, Heatherton and Tice 1994; Kanfer and Karoly 1972; Hoch and Loewenstein 1991; Muraven and Baumeister 2000). Accordingly, self-control depends on the interplay between desire and willpower (Hoch and Loewenstein 1991) with the ability to exert willpower varying both across individuals (i.e., Puri 1996; Shiv and Fedorikhin 1991) and over time depending on the availability of self-regulatory resources (Muraven and Baumeister 2000). Purchase decisions also depend on the source of funds with consumers' marginal propensity to consume being higher for current income accounts than savings accounts (i.e., Thaler and Shefrin 1981; Thaler 1985). Further, windfalls (gifts, lotteries, bonuses, etc) are even more readily spent, especially on hedonic items, because the windfall

assuages the guilt associated with the consumption of unneeded items (Arkes et al. 1994; Henderson and Peterson 1992; O'Curry and Strahilevitz 2001).

Consistent with the idea of preference construction, studies show that a large amount of decision making occurs dynamically while consumers are in-store (i.e., Kollat and Willet 1967; POPAI 1995). In-store decision making is a major component of the rapidly growing field of Shopper Marketing which is defined as "understanding how one's target consumers behave as shoppers, in different channels and formats, and leveraging this intelligence to the benefit of all stakeholders, defined as brands, consumers and retailers" (Shopper Marketing Magazine). The burgeoning interest in Shopper Marketing is evinced by increased industry investment of both dollars and time (GMA/Deloitte 2007).

To date however, only a limited amount of academic research has been conducted in in-store decision making – presumably due to the difficulty in executing this type of research. Most recently, Inman, Winer and Ferraro (2009) examine the interplay of shopper and category characteristics on in-store decision making, as well as apply a self-control perspective to studying shopping strategies for minimizing unplanned purchases. Prior to that, Vohs and Faber (2007) show that depletion of self-regulatory resources leads to greater impulse spending. Examining the source of funds, Heilman, Nakamato and Rao (2002) argue that coupon savings on a planned item are perceived as a psychological windfall and therefore lead to increased purchase of unplanned items. Building on this work, this dissertation introduces the construct of in-store slack and then examines the effect of in-store slack and numerous other independent variables on in-store dependent variables that are important for managers, but have received little attention in the literature.

At the highest level, retailers are interested in maximizing total consumer spending. Typically, research in this area has examined the number of unplanned purchases (i.e., Kollat and Willet 1967; Park, Iyer and Smith 1989), however this approach fails to consider that consumers may have mental budgets (i.e., Thaler 1985; Heath and Soll 1996). Therefore, it is also important to consider factors that influence budget deviations. In addition to broadly looking at budget deviations, retailers need to understand the effectiveness of different promotions in driving incremental sales as well as what types of incremental purchases will be driven by the promotions - if any. Although a significant amount of research has been conducted on promotions (i.e., Blattberg, Briesch and Fox 1995; Neslin 2002), there remains two significant gaps in this research. First, the majority of this research has been conducted at the item level (i.e., Bucklin, Gupta and Siddarth 1998; Chiang 1991; Gupta 1988) rather than the basket level. Second, research on promotions tends to employ scanner panel data sets and therefore does not examine transient trip-specific factors that characterize the volatility of in-store decision making.

To address these gaps in the research, this dissertation is comprised of two essays that provide insight into shopper behavior using a mental budgeting perspective and look at basket level spending. Essay 1 introduces the idea that consumers' mental budget have in-store slack and then examines consumer and trip characteristics which moderate the relationship between in-store slack and budget deviation. Essay 2 then applies in-store slack to examine in-store promotion effectiveness. I conclude with a discussion of future research opportunities in the area of shopper marketing. Specifically, I first highlight opportunities to further understand shoppers' mental budgets and then propose the study of additional factors that should impact the effectiveness of in-store programs.

1.1 SYNOPSIS OF ESSAY 1

In Essay 1, we first draw upon the mental budgeting literature to introduce the construct of in-store slack. Specifically, we propose that consumers' shopping trip mental budgets are typically comprised of both an *itemized budget* and *in-store slack*. We conceptualize the itemized budget as the amount of money that the consumer has allocated to spend on items planned to the brand or product level and the in-store slack as the portion of the mental budget that is not assigned to be spent on any particular product before the shopping trip begins. Instead, the funds remain available for in-store decisions. After providing support for the existence of this construct using both a secondary data set and a new field study, we then examine the factors that moderate the relationship between in-store slack and budget deviation. As a basis for my hypotheses, we draw upon Hoch and Loewenstein's (1991) conceptual model where self-control depends on the interplay between willpower and desire.

In support of our hypotheses, the results indicate that the relationship between in-store slack and budget deviation depends on consumer and trip factors relating to desire (aisles shopped) and willpower (impulsiveness and trip length). Specifically, I first find that the relationship between in-store slack and budget deviation jointly depends on the number of aisles shopped and the impulsiveness of the shopper. When only select aisles are shopped, there is a negative relationship between in-store slack regardless of impulsiveness. When most or all aisles are shopped however, there is a positive relationship between in-store slack and budget deviation for highly impulsive shoppers which suggests that shopping most aisles creates enough desire that they are unable to exert the necessary self-control to stay within the mental budget. The results also indicate that in-store slack attenuates the relationship between trip length (i.e., time spent in the store) and budget deviation, suggesting that making unplanned purchases using in-

store slack may attenuate the depletion of self-control resources that is likely to occur as the trip progresses.

1.2 SYNOPSIS OF ESSAY 2

Essay 2 builds upon the construct of in-store slack introduced in Essay 1. Going beyond individual differences, this paper examines the effectiveness of promotions in increasing spending while incorporating consumers' mental budgets. Specifically, we 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, 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.

2.0 ESSAY 1: PLANNING TO MAKE UNPLANNED PURCHASES? THE ROLE OF IN-STORE SLACK IN BUDGETION

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

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

Formally, we propose that consumers' shopping trip mental budgets are typically comprised of an itemized portion and in-store slack. We conceptualize the itemized portion as the amount of money that the consumer has allocated to spend on items planned to the brand or product level and the in-store slack is the portion of the mental budget that is not assigned to be spent on any particular product before the shopping trip begins. Instead, the funds remain available for in-store decisions. We first provide evidence of in-store slack. We then examine the question of whether consumers' strategy of allowing themselves in-store slack is an effective tactic for adhering to their overall total budget or whether having in-store slack leads to over or underspending. To accomplish this goal, we present and test a framework describing how the relationship between in-store slack and budget deviation depends on consumer (impulsiveness and income) and trip characteristics (aisles shopped and trip length).

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

We also make contributions to the dual process literature that depicts self-control as a battle between desire and willpower (Hoch and Loewenstein 1991; Shiv and Fedorikhin 1999; Vohs and Faber 2007). Specifically, we find that budget deviation depends on a three-way interaction between in-store slack, aisles shopped and impulsiveness. When only select aisles are shopped, our results indicate a negative relationship between slack and budget deviation and suggest that consumers are not spending all of the money in their in-store slack. When most aisles are shopped however, slack has no impact on budget deviation for shoppers low in impulsiveness, but leads to overspending for highly impulsive shoppers. This suggests that exposing a shopper to more environmental cues creates enough desire for items that she ultimately needs to exert self-control to stay within her mental budget, but that highly impulsive individuals have insufficient willpower to do so. We also show that in-store slack attenuates the relationship between trip length (i.e., time spent in the store) and budget deviation, suggesting that making unplanned purchases using the in-store slack may reduce the self-control depletion that is likely to occur as the trip progresses.

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

2.1 IN-STORE SLACK

While economists have traditionally assumed that money is fungible, research has shown that many consumers use a form of mental budgeting where they allocate money to different mental accounts (such as food, clothing and entertainment) and attempt to resist further purchases when the budget is depleted (Heath and Soll 1996; Thaler 1985). Thaler (1999) argues that consumers use mental budgets in order to "facilitate making rational trade-offs between competing uses for funds" (p. 11), and Thaler and Shefrin (1981) propose that consumers use mental budgets as a form of self-control to ensure that they stay within aggregate spending limits. Grocery shopping is an example of a consumer domain where budgeting is commonly found. While studies have found that consumers have mental budgets for groceries in general (Heath and Soll 1996; Heilman et al. 2002), we argue that consumers have a mental budget for the amount of money that they plan to spend on a specific grocery shopping trip and that this trip mental budget includes room for unplanned purchases.

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

spending expectations as is commonly done by organizations (Wildawsky 1964; Cyert and March 1963).

There is a large body of work which suggests that consumer decisions are made with regard to reference points and that expectations are a source of reference points (i.e., Kahneman and Tversky 1979; Thaler 1985, Tversky and Kahneman 1991). Just as consumers derive negative utility from paying more than their reference price for a specific item (i.e., Grewal, Monroe and Krishnan 1998; Kalyanaram and Winer 1995; Thaler 1985; Winer 1986), consumers should also derive negative utility from exceeding their spending expectation for the trip. In this paper, we refer to the trip spending expectation as a mental budget regardless of whether the spending expectation originates from explicit budgeting practices or is a more implicit budget based on prior spending behavior. This terminology is consistent with Hauser and Urban's (1986) basic notion that "in a single period the consumer faces a fixed budget that s/he must allocate..." and "…for some goods s/he plans explicitly, for others s/he does not." (p.446) and with Novemsky and Kahneman's (2005) definition of a mental budget as a "consumer's set of intentions for money." Additionally, in our field study, we examine whether budget deviation varies depending on whether the budget is explicit or implicit.

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

balancing act by leaving room in their mental budgets for unplanned purchases. We refer to this amount as the in-store slack. That is, we argue that consumers anticipate making unplanned purchases and allocate in-store slack for this purpose.

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

2.2 PRELIMINARY STUDY

To provide preliminary evidence of in-store slack, we employ data from the 1995 customer intercept study conducted by the Point of Purchase Advertising Institute (POPAI). In

that study, over 2000 customers were intercepted as they entered grocery stores located in fourteen cities across the United States (see Inman, Winer, and Ferraro 2009). Before they entered the store, respondents were asked what items they planned to purchase and how much they intended to spend. Planned items could be generally planned items like "vegetables" or specifically planned items like "Kellogg's Frosted Flakes." After consumers checked out, interviewers recorded information regarding the actual items purchased and the actual amount spent. Kollat and Willett (1967) have previously found that this research format does not impact the amount that consumers spend (we also provide evidence of this in our field study).

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

In lieu of a mental budget for the trip, one would expect that the number of unplanned purchases would increase as the number of planned purchases increases because larger trips are associated with greater amounts of unplanned purchasing (Kollat and Willet 1967). On the other hand, if consumers have fixed budgets but varying amounts of in-store slack, then the results should tell a different story. Individuals who planned fewer items but had the same total trip

budget (i.e., had more in-store slack) should make more unplanned purchases. Conversely, those who planned a greater number of items should make fewer unplanned purchases because they have less room in their budgets to do so. Therefore, we employ the POPAI data to estimate the effect of number of planned purchases on number of unplanned purchases both with and without the trip budget variable. In addition, we include demographic variables and the covariates of aisles shopped and trip length—which have been shown to be related to the likelihood of an unplanned purchase (Inman et al. 2009). The results are presented in Table 2.1.

Table 2.1: Number of Unplanned Purchases (POPAI Study)

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

*$p < .10$ ** $p < .05$ *** $p < .01$

As expected, there is a positive relationship between the number of planned items and the number of unplanned items (ß = .13, $p < .01$) when the trip budget is not included. However, this result reverses when the amount of the trip budget is included. There is a positive relationship between the trip budget and number of unplanned items (ß = .18, $p < .01$), but there is now a negative relationship (ß = -.35, $p < .01$) between the number of planned purchases and number of unplanned purchases. This result is consistent with our conceptualization of in-store

slack. Individuals who have the same trip budget but planned a fewer number of planned purchases made more unplanned purchases because they had more in-store slack. Additionally, the fact that including the trip budget variable increases the R^2 significantly from 30.7% to 59.9% indicates the importance of including the trip budget when examining in-store decision making behavior.

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

2.3 HYPOTHESES

In the mental budgeting literature, Heath and Soll (1996) argue that consumers will under-consume or over-consume in an effort to stick to their total mental budgets. This suggests that there will be no relationship between in-store slack and budget deviation, but other streams of literature provide conflicting predictions. On the one hand, shopping momentum (i.e., Dhar, Huber and Khan 2007) suggests that if the shopper allows herself to start making unplanned purchases, then momentum would take over and she would continue to make unplanned purchases (presumably to the point of exceeding the total mental budget). On the other hand, a self-control depletion argument (Muraven and Baumeister 2000) suggests a negative relationship between slack and budget deviation. Specifically, we posit that if the consumer tries to force herself to not make any unplanned purchases (i.e., has no in-store slack), she would become so

depleted by the end of trip that she would ultimately make unplanned purchases and exceed her total budget. Therefore, being able to make unplanned purchases using in-store slack should reduce depletion and decrease the tendency to exceed the total budget. Furthermore, shoppers with in-store slack may be expecting to have their needs and/or wants cued by in-store stimuli such as displays or aromas (i.e., Bettman 1979; Inman et al. 2009). If the shopper is not exposed to sufficient in-store stimuli or does not process the information, then the consumer may underspend relative to her total mental budget.

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

As the primary basis for our hypotheses, we draw upon the conceptual model proposed by Hoch and Loewenstein (1991), which asserts that self-control depends on the interplay between desire and willpower. As described in Hoch and Loewenstein (1991), proximity is a key aspect of desire (Faber and Vohs 2004; Mischel and Grusec 1967). Likewise, Laibson (2001) argues that exposure to environmental cues increases the perceived marginal utility of consumption. Further, environmental cues also aid in retrieval of forgotten needs (e.g., Lynch and Srull 1982; Tulving and Psotka 1971). In a grocery context, the number of aisles shopped will influence the shopper's proximity to items and therefore exposure to environmental cues. As a result, shopping more aisles should increase desire for a variety of items. Consistent with these arguments, Inman et al. (2009) find that the number of aisles shopped increased the probability of a given purchase being unplanned. Consequently, we expect that budget deviation will increase as more aisles are shopped.

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

> **H1:** There will be a positive interaction between in-store slack and number of aisles shopped such that in-store slack will be associated with greater budget deviation when most aisles are shopped than when only needed aisles are shopped.

As the shopper is exposed to more in-store cues, she may need to exert self-control to stay within her trip mental budget. Therefore, we also need to consider factors that influence willpower. Impulsiveness is an individual difference variable which is of obvious relevance in this regard. According to Puri (1996), impulsiveness is characterized by low availability of cognitive thoughts related to impulse behaviors, so the individual is more likely to engage in such behaviors. Consequently, impulsiveness has been shown to increase the tendency to make hedonic choices (Shiv and Fedorkhin 1999) and impulse purchases (Rook and Fisher 1995; Vohs and Faber 2007). Based on this prior research, we expect a positive relationship between impulsiveness and budget deviation, but we also posit that impulsiveness will qualify the

moderating effect of aisles shopped on the relationship between slack and budget deviation. As already discussed, shopping more aisles will lead to exposure to more environmental cues. If only select aisles are shopped, there may not be sufficient cue exposure to tempt the individual to make enough unplanned purchases to exceed her mental budget. As long as in-store slack is available for unplanned purchases, there will be no need to exert self-control to stay within the budget and consequently impulsiveness will play a lesser role. On the other hand, shopping all aisles may tempt the individual to make unplanned purchases beyond the amount of the in-store slack. In this case, the shopper will need to exert self-control to stay within her mental budget. Highly impulsive individuals will be less able to exert this control and therefore will be more likely to exceed their budget when shopping most aisles. Therefore,

> **H2:** There will be a positive three-way interaction between in-store slack, aisles shopped and impulsiveness for the dependent variable of budget deviation. Specifically, higher impulsiveness will be associated with a more positive relationship between slack and budget deviation when all aisles are shopped than when only needed aisles are shopped.

Another factor that influences willpower is depletion of self-regulatory resources, which are conceptualized as a global, general pool of resources (Baumeister et al. 1998; Muraven and Baumeister 2000; Vohs and Faber 2007). In laboratory studies, numerous manipulations have been shown to decrease self-control performance such as attention control, mental control and emotional-behavioral control (Wegner 1989; Muraven, Tice and Baumeister 1998; Vohs and Faber 2007). In addition, exposure to environmental factors such as noise (Cohen et al. 1980; Glass, Singer and Friedman 1969; Hartley 1973), crowding (Evans 1979; Sherrod 1974) and proximity to a tempting product (i.e., Vohs and Heatherton 2000) deplete self-regulatory resources and lead to decreased self-control performance (see Muraven and Baumeister 2000 for a review). In this research, we examine a naturally occurring behavior that is correlated with depletion – shopping trip length. The longer the individual spends in the store, the longer they

will be exposed to tempting products, as well as to noise and crowds. Therefore, self-regulatory depletion should increase as the trip length increases which will reduce the tendency to stay within the mental budget. Therefore, we posit that:

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

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

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

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

be less constraining for higher income individuals (Thaler 1999), which suggests that they will not be as motivated to stay within their mental budgets. Therefore, we predict that:

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

2.4 FIELD STUDY

While the POPAI data provided initial support for our thesis that a consumer's mental budget for the shopping trip includes in-store slack, an obvious limitation of this data set is that we did not have a measure of the consumer's in-store slack. Therefore, we conducted a field study to more directly assess the occurrence of in-store slack as well as to examine the relationship between in-store slack and budget deviation. In this study, we replicate the procedure of the POPAI study while addressing some of its limitations. In the fall of 2006, one hundred seventy-five customers were systematically intercepted as they entered three different grocery stores located in a Southwestern US city. We selected every tenth shopper or one every five minutes, whichever came first. Respondents were offered a $10 incentive, which was given to them at the end of the survey for use on future shopping trips to mitigate a windfall effect on the current trip (Heilman et al. 2002). As in the POPAI study, respondents were asked what items they planned to purchase before they entered the store. One key difference between this study and the POPAI study is that in addition to total planned spend, we also asked respondents to estimate the cost of the items they planned to purchase (i.e., the itemized portion of their budgets). The order of these two questions was counterbalanced. This approach allows us to measure the respondents' in-store slack by subtracting the itemized portion from the total planned spend. After the respondents checked out, they reported how many aisles they had shopped, indicated whether they had a grocery budget, answered demographic questions, and

responded to questions designed to measure their impulsiveness. Finally, the interviewer made a copy of the respondent's receipt so that we had a record of the items purchased, amount spent, and price of each item purchased. Respondents also provided their frequent shopper card number, which allows us to compare the amount spent on the present trip to other similar trips made by each individual. These data serve as a benchmark to examine whether our methodology influenced the amount spent.

2.4.1 Sample

Due to missing responses or missing receipts for 22 respondents, the usable sample was 153, 84% of which were female. The average household size was 3.11 people. Table 2.2 summarizes the sample statistics. The measures used for each construct in our model are summarized below and Table 2.3 provides the correlation matrix.

Table 2.2: Field Study Summary Statistics

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

Table 2.3: Correlation Matrix

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

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

2.4.2 Measures

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

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

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

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

Income (INC). During the exit interview, respondents were asked to indicate their annual household income. To increase the response to such a personally sensitive question, respondents were provided with 7 choices: <$20,000; $20-39,999; $40-59,999; $60-$79,999; $80-99,999,

$100-119,999 and $120,000+. Using this approach, we had a 95% response rate for the income question. A continuous income variable was then created by taking the midpoint income for each of the categories[1].

Aisles Shopped (MAISLES). Consistent with the measure employed by Inman et al. (2009), respondents were asked to indicate whether they shopped "only those aisles or sections where I planned to buy something," "most aisles or sections of the store" or "each aisle or section of the store." We then collapsed shoppers who responded that they "shopped each aisle" into the "most aisles shopped" category due to the fact that less than 10% of the respondents indicated that they shopped all aisles. The low percentage of respondents shopping all aisles was most likely due to the fact that this study was conducted at relatively large grocery stores with aisles devoted to specialty categories such as automotive accessories, baby accessories, and photo services. In our model, aisles shopped is measured using effects coding such that the variable is equal to 1 if most or all aisles were shopped and -1 if only needed aisles were shopped.

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

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

Have Grocery Budget (GBUD). This variable is coded 1 if the respondent indicated that they have a grocery budget and -1 otherwise. This question was asked during the exit interview and

[1] The income variable equals $130,000 for the respondents who indicated their annual income was above 120K.

was designed to assess whether the shopper maintains an explicit grocery budget or whether the planned spend represents a more implicit mental budget.

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

2.4.3 Model

To test our hypotheses, we estimate equation 1 below using OLS regression. In addition to the variables indicated by our hypotheses, we also include household size and trip mental budget as covariates.[2] Further, we also include the variable which indicates whether the shopper has a grocery budget (GBUD). We include this variable to assess whether budget deviation depends on whether the shopper maintains an explicit grocery budget. All continuous variables, including income, are mean-centered so as to reduce multicollinearity (Aiken and West 1991) and to facilitate interpretation of main effects.

$$BUDDEV_i = ß_0 + ß_1*ISS_i + ß_2*MAISLES_i + ß_3*IMP_i + ß_4*TLENGTH_i + ß_5* INC_i + ß_6* ISS_i \text{ X } MAISLES_i + ß_7* ISS_i \text{ X } IMP_i + ß_8* MAISLES_i \text{ X } IMP_i + ß_9*ISS_i \text{ X } MAISLES_i \text{ X } IMP_i + ß_{10}*ISS_i \text{ X } TLENGTH_i + ß_{11}*ISS_i \text{ X } INC_i + ß_{12}*HH_i + ß_{13}*GBUD_i \; ß_{14}*TBUDGET_i + \varepsilon 1 \quad (1)$$

2.4.4 Results

Control Analysis. To assess whether our survey methodology influenced spending, we compare each individual's spending on the survey trip to that individual's previous spending behavior. To facilitate relevant comparisons, we compare each shopper's amount spent on the

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

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

Descriptive Results. Although the POPAI analysis provided indirect support for the existence of in-store slack, this study aims to provide more direct evidence. Therefore, we first examine whether consumers' mental budgets include room for unplanned purchases.[3] The average mental budget for the trip was $58.46. Of this amount, consumers expected to spend an average of $41.11 on the items planned to the brand or product level. Therefore, the average remaining amount of $17.35 represents in-store slack. Hence, consumers' mental budgets contain ample room to make unplanned purchases. Further, we find that the average amount spent was $58.93, so the average budget deviation was only $0.47.

Base Model. A key contribution of this paper is the introduction of the in-store slack construct. In order to provide empirical support for the usefulness of this construct in predicting budget deviation, we compare our proposed model to a base model. Specifically, we compare our proposed model to a model that includes all the variables specified in equation 1 except that

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

it does not include slack or any of the slack interactions. An incremental F-test indicates that the proposed model explains significantly more variance than the base model ($F(1, 139) = 7.67$, $p <$ .01). This test indicates the utility of in-store slack in predicting budget deviation.

Proposed Model. Having established that including the construct of in-store slack explains significant additional variance, we now present the results of our proposed model in Table 2.4. All VIF's are less than four, suggesting that multicollinearity is not a major concern (Stevens 2002). Before examining the results for hypotheses 1 - 5, we first assess whether having an explicit grocery budget influences budget deviation. We find that having an explicit grocery budget does not have an impact on budget deviation ($ß_{13} = -2.10$, $p > .10$), which suggests that individuals without an explicit grocery budget come just as close to their spending expectation as individuals with an explicit grocery budget. This provides further support for our argument that a consumer's spending expectation functions as a mental budget. The covariates of household size and trip budget are also not significant ($p > .10$).

Hypothesis 1 predicts that the relationship between in-store slack and budget deviation increases as more aisles are shopped. Interestingly, we find a significant, negative relationship between in-store slack and budget deviation ($ß_1 = -0.44$, $p < .01$). As predicted, we also find a main effect of aisles shopped ($ß_2 = 5.43$, $p < .01$) and a significant, positive interaction between slack and aisles shopped ($ß_6 = 0.57$, $p < .01$) which supports hypothesis 1. Recall that aisles shopped is coded using effects coding, while the remaining variables are mean centered. Therefore, the results indicate that when only needed aisles are shopped, the average relationship between in-store slack and budget deviation is -1.01 (-0.44 – 0.57). That is, for every dollar in her in-store slack, the average shopper underspends her total mental budget by approximately a dollar. On the other hand, the average relationship between slack and budget deviation is .13 (-

0.44 + 0.57) when most or all aisles are shopped. This slope is not significantly different than zero, which suggests that slack has no impact on budget deviation when most or all aisles are shopped. The shopper spends the money in her in-store slack but does not tend to exceed that amount.

Hypothesis 2 predicts that the two-way interaction between slack and aisles shopped will be further qualified by impulsiveness. Consistent with prior research which finds that impulsive individuals are more likely to make impulse purchases (Rook and Fisher 1995; Vohs and Faber 2007), we find a significant relationship between impulsiveness and budget deviation ($ß_3 = 6.41$, $p < .01$). We do not find a significant interaction between in-store slack and impulsiveness ($ß_7 = -.004$, $p > .10$), but do find a significant interaction between impulsiveness and aisles shopped ($ß_8 = 3.77$, $p < .05$). More importantly, we find a significant, positive three-way interaction between in-store slack, aisles shopped and impulsiveness ($ß_9 = .22$, $p < .05$) in support of hypothesis 2.

To further explore this interaction, we follow the post-hoc probing procedure recommended by Aiken and West (1991). Specifically, we first calculate high and low impulsiveness levels by adding or subtracting the standard deviation from the mean ($M = 3.02$, $SD = 0.95$). We then conduct simple slope analysis which examines the relationship between slack and budget deviation at the four possible combinations of impulsiveness (high vs. low) and aisles shopped (only needed vs. most). The results are depicted in Figure 2.1. When only needed aisles are shopped, the relationship between slack and budget deviation is -1.19 for highly impulsive shoppers and -0.95 for low impulsiveness shoppers. There is not a significant difference between these slopes ($p > .10$) which indicates that, regardless of the shopper's impulsiveness, slack leads to underspending when only needed aisles are shopped.

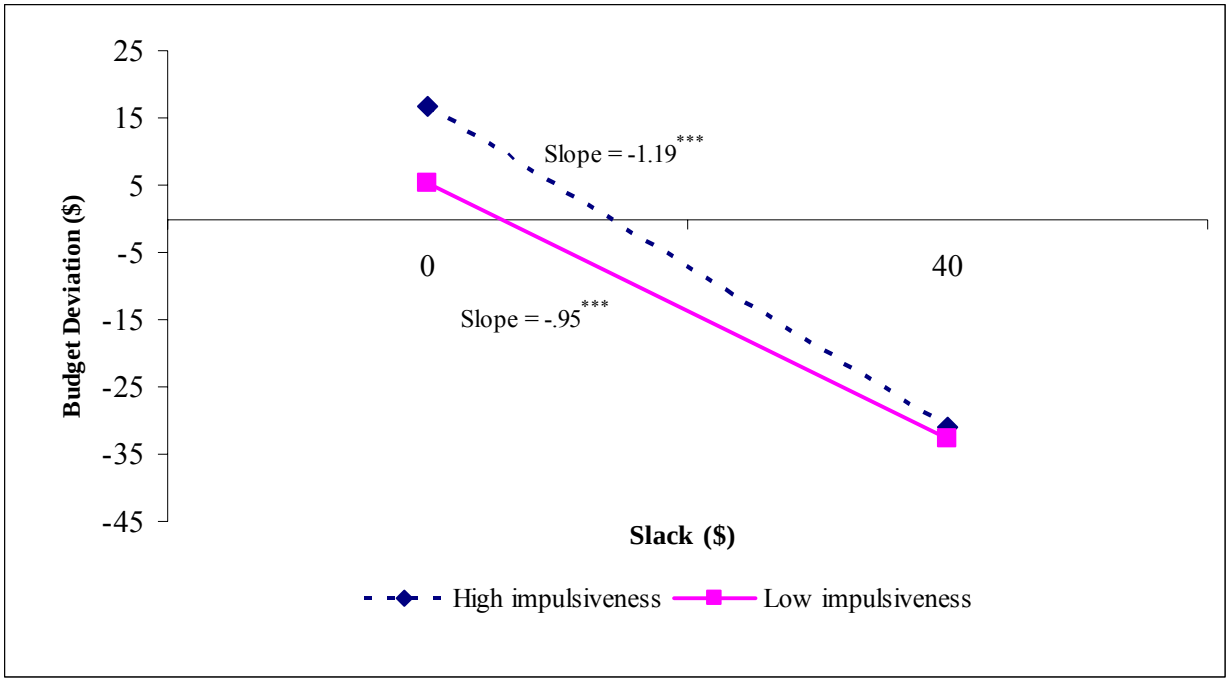
Table 2.4: Results for Equation 1 (DV=Budget Deviation)

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

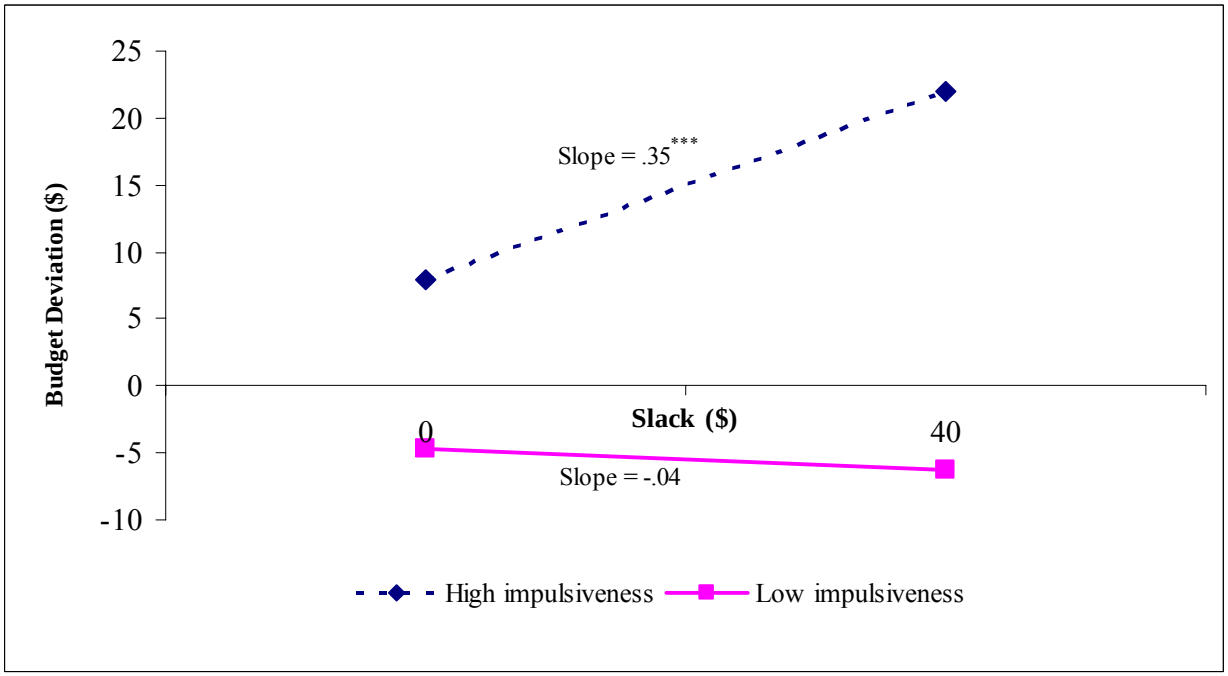
*$p < .10$ ** $p < .05$ *** $p < .01$

Figure 2.1: Interaction Between Slack, Aisles Shopped and Impulsiveness

A. Only Needed Aisles Shopped



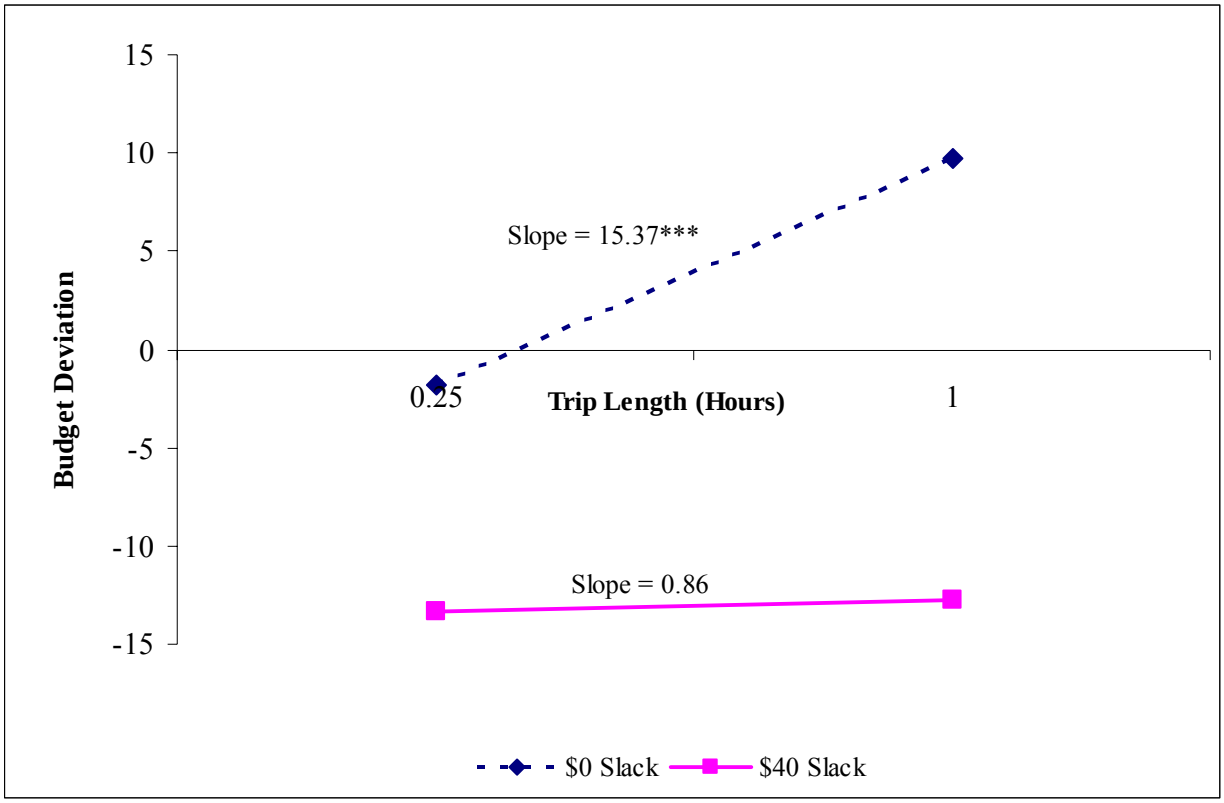
B. Most Aisles Shopped



As seen in Figure 2.1B, the relationship between slack and budget deviation is .35, which is significantly different than zero ($p < .05$) when most aisles are shopped and the individual is highly impulsive. When most aisles are shopped by low impulsiveness individuals, however, there is no relationship between slack and budget deviation (ß = -.04, $p > .10$). In summary, when the highly impulsive individual shops most aisles, then the slack creates a multiplier effect. For each dollar of slack, the shopper spends $1.35 dollars. This is consistent with a shopping momentum (Dhar et al. 2007) explanation, which argues that by allowing herself to look for some unplanned items, the impulsive shopper begins down a slippery slope. In contrast, our results suggest that an individual who is low in impulsiveness is able to exert enough self-control to refrain from making unplanned purchases that exceed her total budget regardless of the amount of slack or the increased purchase opportunity associated with shopping most aisles.

Hypothesis 3 predicts that trip length will be positively related to budget deviation based on previous research which indicates that depletion of cognitive or self-regulatory resources increases the tendency to make impulsive decisions (i.e., Shiv and Fedorikhin 1999; Vohs et al. 2007). While we find marginal support for this hypothesis ($ß_4 = 8.95$, $p < .10$), we also find that this result is qualified by a significant, negative interaction between trip length and slack ($ß_{10} = -.36$, $p < .01$), supporting hypothesis 4. This suggests that slack attenuates the impact of trip length on budget deviation. As before, we further explore this interaction using the approach advocated by Aiken and West (1991). As shown in Figure 2.2, we find that when slack is low ($0), trip length is significantly related to budget deviation (ß = 15.37, $p < .01$). This indicates that every additional 15 minutes spent in the store is associated with an additional $3.84 (15.37*.25 hours) in budget deviation. On the other hand, there is no significant relationship between trip length and budget deviation when slack is high ($40) (ß = 0.86, $p > .10$).

Figure 2.2: Interaction Between Slack and Trip Length



Hypothesis 5 predicts that the relationship between slack and budget deviation increases with income. Surprisingly, there is not a significant relationship between income and budget deviation ($ß_6 = .07$, $p > .10$),[4] but there is a positive interaction between slack and income ($ß_{11} = .01$, $p < .01$). Recall that income is mean centered in our model, so the relationship between slack and budget deviation is -0.44 for average income individuals (≈ $46 K). For high income individuals in our sample (≈ $75 K), this rate increases to approximately -0.15 (-0.44 + 29*.01). Although it is somewhat surprising that the relationship between slack and budget deviation is still negative for high income individuals, one needs to keep in mind the other additive effects in our model –

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

such as aisles shopped. For example, a high income individual who shops most aisles and has $40 in slack is predicted to spend $8.53 over her mental budget compared to a low income individual in the same situation, who is predicted to spend $1.81 under her mental budget.[5]

Free Response Analysis. So far, we have provided evidence of in-store slack and demonstrated that in-store slack differentially predicts budget deviation depending on consumer and trip characteristics, but we have not yet examined the reasons that shoppers have in-store slack. We addressed this issue by collecting open-ended responses from the last 65 respondents who had in-store slack. Specifically, we asked them the following question at the conclusion of the exit interview, "Before you began shopping, you told us that you expected to spend more than the cost of the items that you were planning on buying. Please explain why." Responses from two respondents were eliminated because they misunderstood the question. Two research assistants, who were blind to the hypotheses, coded the responses from the remaining 63 respondents. Interrater reliability was 0.94, with disagreements resolved by discussion. Table 2.5 provides a summary of responses to the open ended question.

Earlier we argued that consumer's have in-store slack for at least two reasons. First, the routine nature of grocery shopping means that shoppers are aware that in-store stimuli (i.e., merchandise, displays, signage, etc.) will trigger forgotten needs (Bettman 1979; Lynch and Srull 1982). Beyond forgotten needs, shoppers also have experience that they get new ideas while in-store (Iyer 1989; Stern 1962) or that they may make impulse purchases. Therefore, seven of the response categories were combined into two major categories: "forgotten needs" and "unplanned wants." Ninety percent of respondents indicated a response that fit into one of these categories, with 38.1% indicating that the in-store slack was for "forgotten needs" and 52.4% indicating that

[5] For exploratory purposes, we investigated whether there was a 3-way interaction between slack, number of aisles shopped and income. We did not find a significant interaction.

it was for an "unplanned want." For example, one respondent from the unplanned want category indicated that she had in-store slack because "you see other things you want, like the candy aisle and cookie aisle." Interestingly, some respondents actually used the term "impulse," despite the negative connotations typically associated with this term. While the explanation that the in-store slack was for "extra items" does not allow us to ascertain the degree to which individuals ultimately consider their purchase motives, clearly the in-store slack accounts for more than an inability to retrieve all *needed* items. Over half the respondents indicated that the in-store slack was available for any extra items that they saw while walking around the store, including impulse items.

Table 2.5: Reasons for Having In-Store Slack

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

*Note 7 respondents gave two reasons

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

In our first WLS analysis, we conducted weighted least squares analyses where the weight represents a shopper's budget certainty. Although one approach would be to have the respondents directly estimate how certain they were about their trip budgets, individuals tend to have difficulty calibrating confidence judgments (i.e., Fischer, Luce and Jia 2000; Lichenstein, Fischoff and Phillips 1982). Therefore, we instead estimate each respondent's mental budget uncertainty using variability in trip size based on the frequent shopper data from the six months preceding the survey. Specifically, we calculate the budget uncertainty to be the coefficient of variation of trips that match the individual's trip type (major vs. fill-in) on the day of the survey. As indicated in equation 2, we then subtract the coefficient of variation from 1 so as to place greater weight on those individuals with greater budget certainty.

$$W_i = 1 - \frac{\sigma_i}{\mu_i} \tag{2}$$

Where W_i is the weight placed on household i, and σ_i and μ_i are the standard deviation and mean of household i's spending for the previous six months, respectively. The results of this weighted analysis closely mirror the unweighted results presented in Table 2.4 with one exception. In the weighted analysis, the main effect of income becomes significant (b= .11, $p < .05$). It appears that under conditions of greater budget certainty, higher income individuals are generally more

likely to exceed budgets, consistent with our earlier discussion that budgets are less constraining for high income households.

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

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

The results of the weighted analysis indicate support for our hypotheses that is generally consistent with the results reported in Table 2.4. One exception is that the relationship between trip length and budget deviation (hypothesis 3) shifts from being marginally significant ($p < .10$) to be not significant ($p > .10$) in the weighted model. Importantly, hypothesis 4 (which posited an interaction between trip length and slack) continues to receive support. An additional difference between the weighted and unweighted results is that the effect of having an explicit grocery budget shifts from being not significant to marginally significant ($p < .10$). While it is not surprising that those who are high in estimation accuracy and have explicit grocery budgets would spend less than those without explicit grocery budgets, the effect appears to be somewhat weak. Interestingly, spending expectations function similarly regardless of whether there is an explicit budget or not. More importantly, the overall consistency of the weighted results rules out the possibility that forecasting or estimation errors are driving our results.

2.5 DISCUSSION

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

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

spending expectations (i.e., reference prices), our findings suggest that more aggregate level spending expectations are also strongly predictive of behavior.

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

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

and transportation. For the retailer, consumers forgetting to buy items on the current trip results in lost sales if the consumer purchases the forgotten item at an alternative retail outlet.

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

2.5.1 Implications

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

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

For retailers, this research suggests that consumers who shop only needed aisles are <u>not spending money that they are mentally prepared to spend</u> on the current trip. In addition to highlighting the importance of encouraging consumers to shop more aisles, this paper also affirms practices that retailers employ to encourage consumers to spend all of their mental budgets, such as offer samples (increase desire) or reminder placards as they approach the checkout lines (cue forgotten needs). On the other hand, our mental budgeting perspective suggests that brands may be vying for a fixed amount of money consumers have allocated to be spent on unplanned purchases. The fact that most consumers do not exceed their mental budgets despite making unplanned purchases suggests that different product categories function as substitutes (i.e., Should I spend my in-store slack on ice cream or parmesan cheese?). Therefore, future research should further examine whether in-store stimuli may simply serve to redirect what items consumers purchase rather than generate incremental spending. This would suggest

that while manufacturers, like P&G, can benefit from in-store initiatives like First Moment of Truth (Nelson and Ellison 2005) by attracting consumers to their specific product, grocery retailers need to carefully evaluate whether in-store stimuli are actually generating incremental sales at the store level. Retailers need to ensure that they are not evaluating the success of in-store marketing by narrowly focusing on the promoted product category, because sales in other product categories may have declined. Nielsen's recent in-store marketing measurement initiative should provide valuable guidance in this regard (*Progressive Grocer* 2007). Retailers should also consider how mental budgeting activities manifest across different categories because shopping behavior varies significantly across product categories in terms of planned vs. impulse purchasing and consumer price sensitivity.

2.5.2 Limitations and Future Research

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

understand pre-shopping processes and their impact on budget deviation, researchers could conduct qualitative interviews. Shoppers may also vary in the precision with which they track spending while in-store. To quantify this, future research could intercept shoppers during the shopping trip or in the checkout line and ask them to estimate spending.

While our field study offers strong external validity, there are some inherent limitations in our measures due to the survey nature of our data. Our dichotomous measure of aisles shopped, although consistent with Inman et al. (2009), is limited in its descriptive ability. The emerging technology of radio frequency identification (RFID) which was recently employed by Hui, Bradlow and Faber (2009) offers significant opportunity for increased granularity and clarity. As with any measured variable, there is also the possibility that the aisles shopped measure may be correlated with other variables that are not included in our model. While it is possible that aisles shopped is influenced by the amount of one's self-regulation, we largely control for this relationship by the inclusion of impulsiveness in our model. While one might also expect shoppers unfamiliar with the store to shop more aisles, we find no correlation between store familiarity and aisles shopped in our data. An explanation for this finding may be that this study was conducted at a retailer who enjoys high market share and thus most consumers are highly familiar with the store (M= 7.81 on a 10 point scale). Store familiarity may play a role in markets where consumers do more cross shopping. Future research should further explore this and other factors (both shopper and store driven) that may influence how many aisles the shoppers visit.

While our results are consistent with self-control theory, it is possible that there are several mechanisms at work here. For example, there may also be differences in the amount of in-store information processing that occurred. We assert, however, that this explanation fails to

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

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

because they visit them less routinely than supermarkets. While this paper offers initial insight into the role that in-store slack plays in grocery shopping behavior, there is clearly significant opportunity to explore the occurrence and impact of in-store slack in other domains.

3.0 ESSAY 2: SPENDING ON THE FLY: MENTAL BUDGETS, PROMOTIONS AND IN-STORE BEHAVIOR

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 an important topic for retailers 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.

3.1 BACKGROUND AND HYPOTHESES

In contrast to the assumption that money is fungible, empirical evidence demonstrates that many consumers use a system of mental budgeting where they allocate money to different mental accounts (such as food or entertainment) and try to resist further spending in that category once the budget is depleted (Heath and Soll 1996; Thaler 1985). Consumers use mental budgets to facilitate rational trade-offs between competing funds (Thaler 1999), as a self-control device to ensure they stay within overall spending limits (Thaler and Shefrin 1981) and sometimes as a way of mentally "pre-paying" so as to reduce mental costs at the time of purchase (Prelec and Loewenstein 1998).

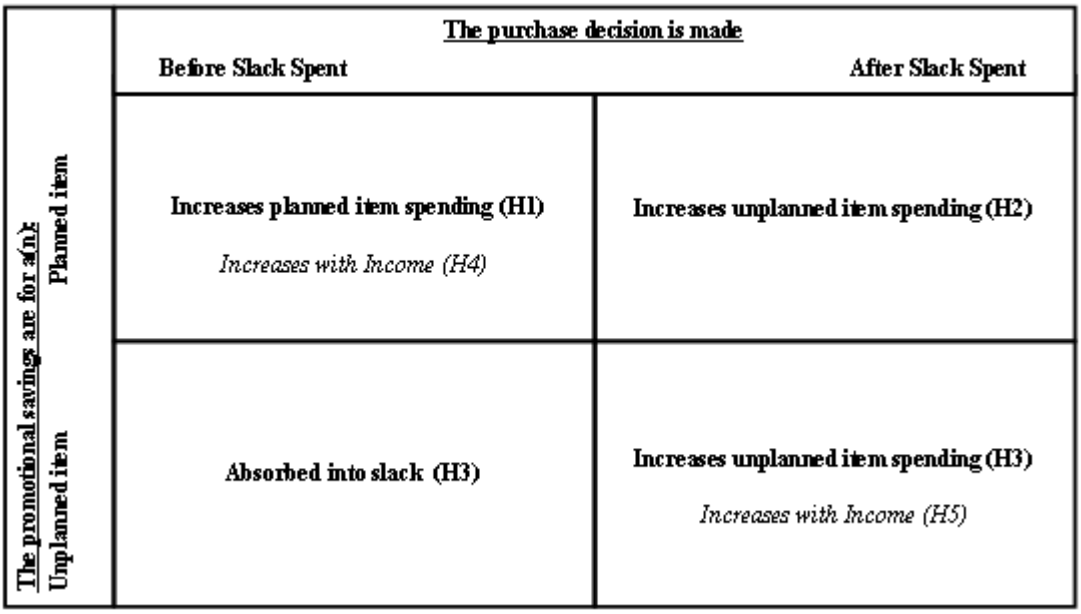
Recently, Stilley et al. (2009) take the idea of mental budgets further by demonstrating that consumers have mental budgets for grocery shopping trips which include room for unplanned purchases. Even though not all consumers have explicit grocery budgets, shoppers have experience with the amount they spend on typical trips due to the fact that grocery shopping patterns tend to display a weekly cycle (Kahn and Schmittlein 1989). These past spending levels serve as a basis for the shopper's future spending expectations, as they do in many organizations' budgeting processes (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 3.1 provides an overview of our hypotheses.

Figure 3.1: Overview of Hypotheses



3.1.1 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 3.1 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.

Table 3.1: 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 *planned items*	• Discounts on planned purchases may function as a reward for current customers without increasing sales (Taylor and Long-Tolbert 2002). • Promotions to customers already planning to purchase decreases overall revenue for product/service (Matosian 1982).
Switch to discounted higher tier brand with no change in spending on *planned items*	• Promotions can entice consumers to switch brands (i.e., Bell, Chiang and Padmanabhan 1999; Blattberg and Neslin 1993, Gupta 1988). • 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).
Increased spending on *planned items* because of stockpiling	• Promotions can encourage stockpiling (Chintagunta 1993; Nijs et al. 2001; Pauwels, Hanssens and Siddarth 2002; Heilman et al. 2002). • Stocking up when items are discounted is an effective heuristic to minimize costs (Dellaert, Golounov and Prabhu 2005)
Increased spending on *unplanned items* because of a perceived windfall.	• 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) • Windfall gains are more readily spent than even current income (i.e., Arkes et al 1994). • Positive mood leads to increased purchases (i.e., Donovan et al. 1994).

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.[6] 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.

[6] 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.

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.

3.1.2 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 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.

3.1.3 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 (Dynan, 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 (Dynan 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.

3.2 STUDY

To test our hypotheses, we conducted a field study where 400 customers were systematically intercepted as they entered two 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; Stilley 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.

3.2.1 Sample

Out of the 400 respondents, 83 respondents had missing responses, missing receipts or incomplete scanner files, leaving 317 respondents available for analysis (78% of whom were female). The average household size was 2.96 people. The measures used for each construct are described below. Table 3.2 provides the distribution of household income.

Table 3.2: Income Distribution

Household Income Level	Percentage of Sample
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%

3.2.2 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. 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 when each item was selected. If the cumulative variable had not yet exceeded the individual's in-store slack when the promoted item was selected, 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.

3.2.3 Model

To test our hypotheses, we specify a series of regression equations with the dependent variables of planned item spending and unplanned item spending.[7] Because the error terms (ε1, ε2) 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).

$$SPEND\_P = ß_0 + ß_1*ITZ + ß_2*SPB + ß_3*SPA + ß_4*HH + ß_5*INC + ß_6*SPB\ X\ INC + ß_7*SPA\ X\ INC + ε1 \quad (1)$$

$$SPEND\_UP = \lambda_0 + \lambda_1*ISS + \lambda_2*SPB + \lambda_3*SPA + \lambda_4*SUB + \lambda_5*SUA + \lambda_6*HH + \lambda_7*INC + \lambda_8*SPB\ X\ INC + \lambda_9*SPA\ X\ INC + \lambda_{10}*SUB\ X\ INC + \lambda_{11}*SUA\ X\ INC + ε2 \quad (2)$$

3.2.4 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 degree to which this holds in our sample. As shown in Table 3.3A, 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)[8]. Further, in support of our mental budgeting framework, we also find

[7] 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.

[8] As with any consumer behavior, there is heterogeneity with regard to the practice of having slack. Twenty-seven percent (N=87) of the respondents in our study had no slack with an additional six respondents having less than $5 slack. Rerunning the analysis without these individuals yields the same pattern of results.

that the average shopper only exceeded her total mental budget by 5% (actual spend of $69.84 versus planned spend of $66.45). Table 3.3B provides the correlation between our measures, while Table 3.3C describes the number and type of promotions.

Table 3.3A: 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 3.3B: 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	1.0

All correlations greater (less) than +/- 0.11 are significant at $p<.05$; N = 317

Table 3.3C: 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

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 (i.e., we sum planned item savings before and after slack is exceeded as well as sum unplanned item savings before and after slack is exceeded). The results of the base model are reported in Table 3.4. 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 (2, 309) = 4.83, $p < .01$) and unplanned item spending (F (4, 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.

Table 3.4: Base Model Results

	Spending on Planned Purchases		Spending on Unplanned Purchases	
	Parameter Estimate	t-value	Parameter Estimate	t-value
Intercept	6.46 ***	4.48	15.05 ***	8.88
Itemized Budget (ITZ)	0.61 ***	23.14	---	---
In-Store Slack (ISS)	---	---	.83 ***	17.69
Savings on Planned Items (SP)	1.20 *	1.89	3.18 *	-1.94
Savings on Unplanned Items (SU)	---	---	2.28 **	2.31
Household Size (HH)	0.79	1.41	0.99	1.13
Income (INC)	-.03	-1.09	.08 **	1.97
SP X INC	.09 ***	2.95	-.03	-.55
SU X INC	---	---	.02	.81

* $p < .10$ ** $p<.05$ ***$p<.01$

Proposed Model. The results of the analysis are presented in Table 3.5. Consistent with Stilley et al. (2009), there is a positive, statistically significant relationship between the itemized budget and planned item spending ($ß_1 = 0.61$, $p < .01$) 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 ($ß_2 = 4.63$, $p < .01$), but no relationship between planned item savings after slack depletion and planned item spending ($ß_3 = -1.17$, $p > .10$). 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.

Table 3.5: 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 (ITZ)	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	---	---	-.06	-.04
Savings on Unplanned Items After Slack Depleted	---	---	5.94 ***	4.10
Household Size (HH)	.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

Income Results. Interestingly, income does not have a main effect on either planned item spending ($ß_5 = .03$, $p > .10$) or unplanned item spending ($\lambda_7 = .06$, $p > .10$). However, income is positively correlated with the itemized portion of the budget 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 ($ß_2 = 4.63$, $p < .01$) is qualified by a positive, significant interaction between income and planned item savings before slack depletion ($ß_6 = .08$, $p < .05$). 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.

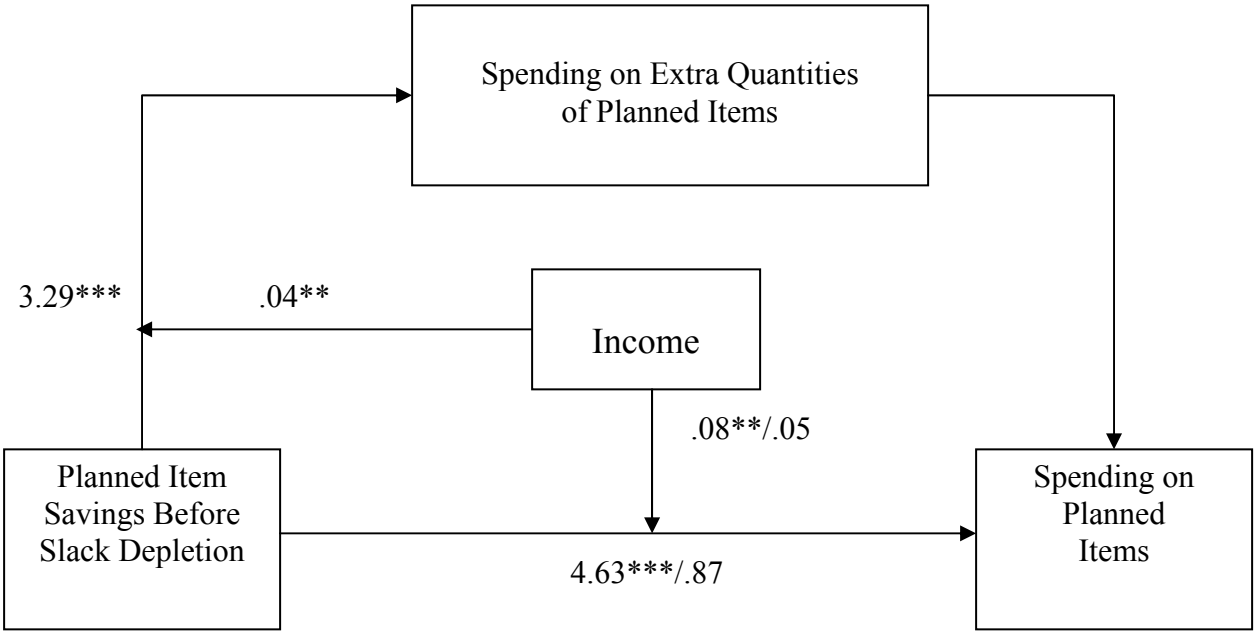
We then conducted additional analysis to provide evidence that while lower income households were buying higher-tier brands than they otherwise would have, higher income households were stockpiling. First, we conducted a mixed model where the dependent variable was the natural log of the original price of the goods[9] 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 (ß = .0016, $p < .01$), promotion (ß = .08, $p < .05$) and the two-way interaction between income and promotion (ß = -.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 (ß = .20, $p < .01$). However, for high income households there is not a significant difference from the original prices associated with promotions (ß = -.05, $p > .10$). This is 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 3.2. As indicated previously, there is a significant main effect of planned item savings before slack depletion (ß =

[9] Original price was calculated by adding the savings to the sales price. We then log transformed the variable to normalize the distribution.

4.63, $p < .01$) and a significant interaction of planned item savings before slack depletion and income (ß = .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 (ß = 3.29, $p < .01$) and a significant interaction of planned item savings before slack depletion and income (ß = .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 (ß = 1.09, $p < .01$), but both the main effect of SPB (ß = .77, $p > .10$) and the interaction between SPB and income (ß = .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.

Figure 3.2: Results of Mediation



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 ($\lambda_7 = .03$, $p > .10$), 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 (λ_{10} = -.03, p > .10) which indicates that savings on unplanned items are simply absorbed into the slack regardless of income.

3.2.5 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; Lichenstein, Fischoff 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.[10] 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

[10] 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.

observations with greater budget certainty[11]. The results of this weighted analysis mirror the unweighted results presented in Table 3.5 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.

3.3 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.

[11] 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.

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 at 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.

3.3.1 Implications for Managers

Our findings offer several insights to guide shopper marketing strategies. Table 3.6 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 3.7A and 3.7B provide lists of the categories with the highest percentage planned and unplanned, respectively (see also POPAI 1995).

Table 3.6: Shopper Marketing Implications

Finding	Shopper Marketing Strategy
H1: Savings on planned items increase planned item spending before slack is depleted but not after. ($1≈$5)	• Place stockpiling-inducing promotions (such as buy-one-get one free promotions) earlier in the typical store traffic pattern • Focus these promotions on items that tend to be planned like yogurt or bottled water
H2: Savings on planned items increase unplanned item spending after slack is depleted but not before. ($1≈$10)	• Offer promotions on planned items later in the store pattern • Place displays of products that tend to be unplanned near promotions of these planned items
H3: Savings on unplanned items increase unplanned item spending after slack is depleted but not before. ($1≈$6)	• Avoid offering promotions on unplanned items early in the store pattern. Instead, consider "reminder" displays of full price, high margin items. • Promote items that tend to be unplanned later in the store pattern.
H4: Higher income households stockpile planned items before slack depleted while lower income households switch to higher tier brand	• Promote top tier brands that appeal to higher income households • Lower tier brands should consider marketing messages that help lower income households think longer term so they will stockpile
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.	• 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.

Table 3.7A: Categories with Highest Percentage of 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 3.7B: 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

Our findings suggest that offering promotions on planned items is 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[12]. 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

[12] 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.

savings on planned items, retailers should consider placing full-price displays of items that tend to be unplanned (see Table 3.7A) 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 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.

3.3.2 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 non-price marketing factors that can impact sales such as amount of shelf space, displays and features (i.e., Bemmaor and Mouchoux 1991; Chandon et al. 2009; Inman et al. 2009). Future research could consider whether and how these non-price promotions 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 two 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.

4.0 FUTURE RESEARCH OPPORTUNITIES

While my essays primarily studied shopper marketing using a mental budgeting perspective, there are numerous other theoretical domains in the marketing literature which can inform us on the topic. As such, I will now highlight some emerging consumer behavior perspectives which have the potential to offer novel insights. These future research opportunities fall into two main categories which stem from my dissertation research. Both essays 1 and 2 illustrated that the size and nature of shoppers' mental budgets impact their spending behavior, but did not examine antecedents of their mental budgets. Therefore, I first present factors that may impact shoppers' mental budgets in advance of the shopping trip. Next, I seek to continue the study of in-store program effectiveness, which I began in essay 2, by proposing factors beyond mental budgeting that should influence shoppers' reactions to in-store programs.

4.1 FACTORS INFLUENCING MENTAL BUDGETS

While shopper marketing research largely focuses on in-store behavior, practitioners are also recognizing that a shopper's "pathway to purchase" influences her behavior while in-store. Currently, pathway to purchase discussions are concentrating on brand level factors such as exposure to advertising or internet information search prior to visiting a store, but this perspective neglects the importance of considering mental budgets or trip spending expectations - as is illustrated in this dissertation. In my two essays, I demonstrate that a shopper's mental budget and amount of slack influences her spending behavior, but there remains a need to

examine how shoppers' set these spending expectations in advance of the shopping trip and what factors influence this.

4.1.1 Memory Biases

As I discuss in essay 1, shoppers' spending expectations for grocery shopping trips are based on similar past trips due to the routine nature of grocery shopping, yet prior research tells us that consumers' memory and decision making processes are subject to numerous biases and influences (Pocheptsova and Novemsky 2010; Zauberman, Ratner and Kim 2009) and that consumers frequently fail to adjust future expectations based on past experiences (Buehler, Griffin and Ross 1994; Novemsky and Ratner 2003). While we found that the average consumer spent very close to the amount of her mental budget in essays 1 and 2, there was heterogeneity in this behavior – as there is with most consumer behavior. We also found that budget uncertainty did not influence our results, but it is possible that some shoppers have biased recall of past spending which consistently influences their spending expectations.

Accordingly, future research should first examine shoppers' accuracy in estimating prior spending and what factors, such as shopping trip frequency, influence this accuracy. Then, research could examine how shoppers incorporate their memory of past spending into their current spending expectations. Individuals tend to rely less on past experiences when they can provide attributions for those experiences and convince themselves that the past behavior was unique and is unlikely to recur (Buehler, Griffin and Ross 1994). Therefore, individuals whose past spending is characterized by a large number of hedonic purchases or high priced items may be less likely to update future spending expectations based on past behavior.

4.1.2 Social Comparison Information

While shopper's mental budgets are clearly influenced by their own prior spending behavior, bounded rationality suggests that individuals have difficulty determining the optimal amount for each category. For this reason, I posit that consumers' mental budget allocations have the potential to be influenced by social comparison information. Social comparison theory (Festinger 1954) suggests that individuals try to infer what behavior is correct by comparing themselves with others and that the tendency to rely on this information is particularly strong when the situation is ambiguous (Buunk and Meissweiler 2001; Suls, Martin and Wheeler 2002).

Social influence has been widely studied in the marketing literature, however, these studies focus on the choice of a particular brand or product rather than spending levels (i.e., Ariely and Levav 2000; Burnkrant and Cousineau 1975; Herr, Kardes and Kim 1991). Additionally, these studies suggest that the effects of social influence occur primarily when the good is chosen or consumed in public (i.e., Ariely and Levav 2000; Bearden and Etzel 1982 and Ratner and Kahn 2002). My thesis is that overall monetary allocations to spending categories may be influenced by social comparison information even for private consumption categories such as groceries.

Social comparison is most commonly applied in contexts where there is a clear direction that is normatively preferred (i.e., test score or wealth). Therefore, the literature discusses downward comparisons where the individual performed better than her peers versus upward comparisons which occur when the individual performed worse (Wills 1981; Argo, White and Dahl 2006). In the context of spending categories like groceries, however, it is unclear whether it is better or worse to spend more than your peers. Therefore, the effects of spending social comparisons will depend on the perceived valence of spending. On one hand, spending less on

groceries may be ideal because it could lead to increased savings. On the other hand, it may be better for consumers to spend more at the grocery store, but less on eating out. In situations where the correct behavior is unclear and information regarding prevalent behavior is available, individuals tend to conform to the behavior of referent others (i.e., Asch 1956; Bernheim 1994). Therefore, I posit that simply giving social comparison information on grocery spending (i.e, providing average spending) will increase spending by below-average spenders, but decrease spending by above-average spenders. In contrast, I posit that if individuals are primed to focus on the positive aspects of spending then all individuals will increase spending instead of conforming to the median. Grocery retailers could facilitate social comparisons of grocery spending through direct mail or email campaigns which emphasize the health advantages of spending more at the grocery store versus eating out.

4.2 IN-STORE PROGRAM EFFECTIVENESS

After gaining a greater understanding into the pathway to shoppers' spending expectations, the next important issue in shopper marketing is identifying parameters for successful in-store programs. Practitioners are still evaluating the relative importance of more upstream metrics (i.e., brand awareness and brand attitude) in the context of shopper marketing, but it is clear that in-store programs should ultimately aim to create incremental profits over the long term. Essay 2 focused on the impact of in-store slack depletion on basket level spending, but the results offer broader contributions that suggest several future research directions. I will now provide an overview of four potential research directions that stem from essay 2.

One more general implication of essay 2 is that promotions can either encourage shoppers to make rational, cognitive decisions such as stockpiling a planned item offered on

promotion or can elicit more affective reactions such as those associated with the perceived windfall effect. These findings align with research on dual process models where consumers engage in two types of processing (i.e., Chaiken, Liberman and Eagly 1989; Kahneman and Frederick 2002; Petty and Cacioppo 1986; Shiv and Fedorikhin 1999). System I is automatic, heuristic and affective, while System II is slow, systematic and cognitive (Kahneman and Frederick 2002). Further invoking the dual process model perspective suggests that greater research is needed on the relative role of System I versus System II as is manifested in either the use of default choice strategies or reliance on affective appeals. Therefore, I first consider the role of default choice strategies in in-store decision making and propose moderating factors that could be leveraged by retailers. Second, I propose research opportunities with regard to gaining greater understanding into the relative importance of affective appeals, which should be favored by System I versus cognitive appeals to System II.

Essay 2 also suggests that, for low income shoppers, mental budgets may create a short term time horizon which artificially constrains spending, at the expense of long term savings. Accordingly, my third proposed research avenue is to examine the impact of abstract versus concrete mindsets on shoppers' reactions to in-store promotions. Fourth and finally, I propose opportunities for studying how prior choices within the trip can influence shopper's purchase decisions through mechanisms other than depleting in-store slack.

4.2.1 Disrupting or Leveraging Default Choices

Extant research indicates that shoppers only spend a minimal amount of time making decisions in-store (Hoyer 1984) and often use heuristic decision strategies (Hoyer and Brown 1990; Inman, McAlister and Hoyer1990). Therefore, shopper marketers are faced with the

challenge of quickly and effectively influencing a consumer's choice while in-store. Recognizing this dilemma, Proctor and Gamble coined the term "the first moment of truth" which refers to the first three to seven seconds when a consumer sees a product on the shelf.

A relevant insight in this regard is that consumers frequently tend to choose the status quo or default alternative (Kahneman, Knetsch and Thaler 1991; Samuelson and Zeckhauser) under conditions of time pressure (Dhar and Nowlis 1999) or decision difficulty (Dhar 1997; Dhar and Simonson 2003; Luce 1998). Until relatively recently, it was commonly assumed that consumers were cold-cognitive beings who could trade-offs attributes in an effort to maximize the value of their choice, but Garbarino and Edell (1997) demonstrated that making difficult trade-offs can result in negative affect. This task-induced affect was further examined by Luce (1998) who found that negative affect associated with a trade-off caused consumers to choose the status quo choice. Luce's finding is surprisingly attenuated by cognitive load (Drolet and Luce 2004) and is also influenced by negative incidental emotions (Garg, Inman and Mittal 2005).

While many grocery or retail purchases may not be characterized by the morally difficult trade-offs examined by Luce (1998), shoppers do face time pressure (Iyer et al. 1989) and decision difficulty due to the vast number of choices and options offered by retailers (Iyengar and Lepper 2000). This implies that even though shoppers tend to make brand decisions in-store (Inman, Winer and Ferraro 2009) they are likely to rely on default choice strategies when selecting a brand from a product category. These default strategies may vary jointly across product categories and consumers. For example, some shoppers may use the brand they purchased most recently as the default alternative, while other shoppers always default to purchasing the store brand. In product categories that tend to be characterized by variety seeking, shoppers may default to purchasing the most dominantly promoted product (i.e., Inman et al.

1990) or the brand with the most shelf space (i.e., Chandon et al. 2009). Future research should further examine consumer default choice strategies across product categories and identify moderating factors that impact a shopper's tendency to rely on the use of these default choice strategies. I will now highlight two such potential moderating factors that offer promising research opportunities: cognitive load and assortment size.

In product categories where shoppers tend to use the most recently purchased brand as the default choice, low market share brands should look for ways to disrupt shopper's tendency to rely on their default choice while high market share brands should implement programs that maintain the default tendency. Even though Drolet and Luce (2004) found that cognitive load reduced the tendency to rely on the default alternative when confronted with trading off attributes relevant to goals high in self-importance, it seems intuitive that cognitive load should increase the tendency to rely on default decision strategies for less emotion laden decisions. It is not clear, however, what the boundary conditions are for this effect. For example, trying to diet is a goal that may be high in self-importance for many individuals. Does cognitive load reduce or increase a consumer tendency's to choose the default alternative when selecting a snack?

One potential way to examine the impact of cognitive load on default brand choice in a naturalistic setting would be to combine the data from essay 2 with the frequent shopper data to model the probability of a shopper selecting her most recently purchased brand as a function of the point in the trip at which the item is purchased. As I discuss in essay 1, shoppers should become depleted of cognitive resources as the trip progresses. Therefore, I assert that there will be a relationship between selecting the default brand and item order within the trip which depends on product characteristics such as the degree of hedonicity. I further posit that this tendency will be moderated by the shopper's product recency for that category. The longer it has

been since the consumer purchased from that product category, the less accessible the default brand will be in the shopper's memory. Therefore, more cognitive resources will be required to recall the default brand and the shopper will be less likely to use this strategy under cognitive load. To complement the analysis of the ordered field data from essay 2, cognitive load could then be manipulated in an experiment to provide more evidence of the underlying process. I could employ either traditional laboratory methods of manipulating cognitive load or could potentially play an attention getting television commercial, such as those increasingly played in-stores, which would detract attention away from the purchase decision.

Within default decision strategies, a second potential avenue for future research is understanding how to create new default choices using shopper marketing. In categories characterized by variety seeking, I posit that retailers may be able to leverage the decision difficulty associated with large assortments to direct consumers to default alternatives created by shopper marketing. Research has shown that larger choice sets increase decision difficulty (Iyengar and Lepper 2000) and can actually reduce the probability of making a purchase (Chernev 2003; Iyengar and Lepper 2000). Despite the apparent cognitive disadvantages of choosing from an extensive choice set, research has shown that consumers still tend to be attracted to larger assortments (Broniarcyzk, Hoyer and McAlister 1998; Chernev 2006; Kahn and Lehman 1991). These conflicting forces have yielded mixed findings regarding the net impact of assortment size on sales (Borle et al. 2005; Broniarcyzk, Hoyer and McAlister 1998; Nunes and Boatwright 2001).

I posit that retailers may be able to reduce the tendency to defer purchases from large assortments by creating clear "default" alternatives. Most interestingly, I propose that retailers should offer default alternatives that encourage shoppers to buy multiple brands or flavors. The

underlying premise for this idea is that purchasing more than one item should reduce the anticipated regret of foregoing other options. One approach for encouraging consumers to "default" to purchasing multiple items would be to create a display where the most dominant item is a variety pack. Alternatively, retailers could offer price promotions that encourage the purchase of multiple items (like 2 for $5). Future research should evaluate whether offering these types of default alternatives will increase sales from extensive assortments.

4.2.2 Affective versus Cognitive Appeals

While traditional research on consumer choice has focused on cognitive, rational evaluations of concrete attributes (i.e., Anderson 1981; Fishbein and Azjen 1975), more recent research emphasizes that affective information can be a source of information in decisions (i.e., Pham 1998; Schwarz and Clore 1983; 1988). Likewise, the branding community is also increasingly shifting focus from communicating concrete, substantive attributes towards more abstract, affective attributes (Gobe 2001; Keller 2003). Because much of the research on emotional branding has been qualitative however (i.e., Fournier 1998; Thompson, Rindfleish and Arsel 2006), there is a dearth of empirical knowledge on the relative importance of using cognitive versus more affective appeals. A consumer packaged goods executive recently echoed this sentiment and expressed the need to understand the conditions under which in-store programs should utilize emotional versus cognitive appeals.

Consequently, a significant future research opportunity is to develop an overarching framework which identifies which product categories, brands and target consumers are best suited for leveraging emotional appeals. This research would ideally be conducted by running experiments in a lab store and by obtaining access to a large data set with in-store programs and

associated sales data. These programs would then be coded for emotional and cognitive content. Extant research suggests that potential factors for the framework include: hedonic nature of products (i.e., Pham 1998), gender (Fisher and Dube 2005), consumer goal orientation (Pham and Avnet 2004) and various constructs related to the amount of System I versus System II processing (Rottenstreich, Sood and Brenner 2007) such as product purchase frequency (reliance on memory) or position of the product in the store pattern (less cognitive or time resources available).

Beyond these factors, this dissertation suggests that the amount of monetary slack (i.e., in-store slack) may also impact reactions to cognitive versus emotional appeals. Future research should consider the differing impact of monetary slack versus time slack (Zauberman and Lynch 2005) on the effectiveness of emotional versus cognitive appeals. I posit that time slack will decrease a shopper's tendency to rely on emotional appeals, while monetary slack will increase a shopper's tendency to do so. Time slack will operate through an increased *ability* to engage in System II processing while monetary slack will reduce *motivation* to engage in System II processing. Affective appeals are processed by the more automatic System I, while substantive appeals are evaluated by the slower, more deliberate System II (i.e., Kahneman and Frederick 2002; Shiv and Fedorikhin 1999). As a result, feelings based judgments have higher immediacy than reason based evaluations (Pham et al. 2001). Thus, more time slack (i.e., less time pressure) should lead to greater System II processing and greater importance placed on cognitive appeals.

On the other hand, the time and effort required to engage in System II processing suggests that individuals may be reluctant to engage in such processing under conditions of low importance. I posit that a shortage of monetary slack will cue the individual to pay more attention to the decision than would occur if monetary slack was high. This will invoke more

System II processing which will increase a preference for cognitive appeals relative to affective appeals. Future research should also examine whether time and money slack interact such that low time slack impedes the degree to which lack of monetary slack cues a heightened need for System II processing.

4.2.3 Abstract vs. Concrete Mindsets

Construal Level Theory (CLT) is a topic that has been gaining prominence in the literature (Dhar and Kim 2007; Liberman, Trope and Wakslak 2007) and offers insights for shopper marketing. According to CLT, individuals can construe objects at a low level which focuses on concrete details or at a high level which focuses on abstract concepts. Construal level depends on perceived psychological distance such as time, space or social distance. Construal level can also be manipulated by priming either an abstract or concrete mindset (Freitas et al. 2004).

Priming an abstract mindset is a promising potential intervention to reverse one of the surprising findings in essay 2. Specifically, we find that lower income households are less likely to use promotions to stockpile planned items, but instead utilize promotions to enable themselves to switch up to a higher tier brand. As we speculated in the discussion section of essay 2, lower income households tend to be more constrained by their budgets and therefore may be more hesitant to exceed their mental budgets, even for a practical purpose such as stockpiling planned items. In a surprising reversal of the typical present bias situation where individuals overweight current benefits at the expense of long term costs (i.e., eating chocolate cake – Shiv and Fedorikhin 1999), shoppers in this situation seem to overly focus on the present day cost (i.e., spending more than expected) instead of the long term benefit of saving over time. The welfare

implications of this phenomenon are that lower income households, the very individuals who need to be saving money, may actually be paying more on average for the same items. If priming an abstract mindset could succeed in increasing the tendency of low income individuals to stockpile, there are benefits for both manufacturers and consumers.

In the above stockpiling scenario, priming an abstract mindset leads to a more positive long-term outcome for the shopper because the long term net price is lower but the same process could also lead to a surprising, negative outcome. Abstract mindsets have been shown to improve self-control (Fujita et al. 2006) which suggests that individuals in an abstract mindset will tend to spend less in the present and save more for the future than those in a concrete mindset. However, I posit that priming an abstract mindset can also increase spending, even when framed at the expense of savings, if the purchase offers long term benefits such as would be associated with a durable good such as a sound system. Therefore, research should evaluate whether priming an abstract mindset actually increases spending when a purchase is framed as a long term investment. One potential way to prime an abstract mindset in a shopping setting would be to ask respondents to provide post-choice rationalizations.

4.2.4 Prior Choices Within the Trip

Essay 2 demonstrates that the effect of in-store promotions depends on when the promotion occurs relative to the depletion of in-store slack. In other words, the impact of promotions depends on the number and type of products that the shopper has already selected. Recent work in sequential choice suggests that there are several other mechanisms through which earlier choices in the shopping trip can influence purchase decisions. For example, how does choosing a hedonic item (versus a utilitarian item) influence the subsequent purchase decision? How does

deciding to splurge on a premium brand influence the next purchase decision? Understanding how prior purchases affect both the nature of subsequent categories and brand choices is important for designing in-store programs.

Several different literature streams offer insight into the impact of past choices on future choices. These different streams converge to predict that the purchase of a relative virtue will increase the likelihood of purchasing a relative vice on a subsequent purchase. According to the licensing effect (Khan and Dhar 2006), making a virtuous decision licenses the individual to subsequently make a more indulgent choice by boosting their self-concept. Likewise, Fishbach and Dhar (2005) find that when a consumer has conflicting goals that they pursue over time, even perceived progress on the focal goal (such as eating healthy) can lead to disengagement from the focal goal. Applying a self-control depletion argument suggests the same outcome, but with a different underlying mechanism. A consumer who exerts self-control in the process of making a virtuous choice will deplete self-control (Muraven and Baumeister 2000) and therefore be more likely to choose a vice on the next choice. While there is strong literature support for this phenomenon, it is not clear how robust this effect is. Future research should examine the duration of the licensing effect. Does it only last only until the next purchase or does it last longer?

The literature converges with regard to expectations of what would happen following the selection of a virtue, but the impact of selecting a vice on subsequent purchases is less clear. Drawing upon Cochran and Tesser's (1996) "what the hell effect," Soman and Cheema (2004) find that violation of a goal causes subsequent deterioration of goal-related performance. This suggests that selecting a relative vice would increase the likelihood of choosing a subsequent vice. On the other hand, Dhar and Simonson (1999) find that consumers tend to balance goals

when trading off between two conflicting goals (eating healthy vs. good tasting) which suggests that deciding to purchase a good tasting but unhealthy alternative should lead to increased subsequent likelihood of selecting a more virtuous item. Future research should examine the conditions under which each of these effects will occur.

There is also the potential that making a hedonic purchase could influence subsequent purchases by replenishing self-control. In essay 1, we find that in-store slack attenuated the negative effect of shopping trip length on budget deviation. This finding is consistent with our argument that being able to make an unplanned purchase within the confines of slack should attenuate the degree to which a shopper becomes depleted of self-control as the trip progresses. I posit that this topic is worth further exploration and that being able to purchase a hedonic unplanned item using in-store slack may serve to at least partially replenish an individual's self-control and increase the subsequent likelihood of purchasing a more virtuous item. This thesis stems from Tice et al.'s (2007) finding that positive affect helps to restore depleted resources. One source of positive affect is making an unplanned purchase, although the feeling of happiness tends to be tempered with guilt due to the conflicting goal of not wanting to spend money (Mukhopadhyay and Johar 2007). If the shopper is mentally prepared to spend her in-store slack to make unplanned purchases, the emotion associated with purchases made using the in-store slack will primarily be happiness. Therefore, being able to make these unplanned purchases should serve to at least partially replenish the depletion of self-regulatory resources that increasingly occur as the trip progresses.

While most sequential choice research to date has focused on the impact on the *type* of product category that will be selected, Mukhopadhyay and Johar (2007) also find that deciding to make (or not make) an unplanned purchase can influence a consumer's reaction to affective

advertising appeals (happiness vs. pride). Therefore, I posit that prior purchases in the shopping trip can also have implications for subsequent *brand* selections. Based on this finding, there are two main areas where I see opportunity for future research. First, there is opportunity to extend Mukhopadhyay and Johar (2007)'s work by examining how prior purchase decisions influence reaction to existing brand associations or affective messages used in-store programs by examining other specific emotions. Second, there is opportunity to consider how Dhar and Simonson's (1999) findings regarding highlighting apply to shopping contexts. Specifically, Dhar and Simonson (1999) find that consumers tend to highlight when they are trading off between a resource (like money) and a goal (such as pleasure or good health). This would suggest that, controlling for prior tastes, a consumer who decides to purchase a premium brand (i.e., more expensive, but more high quality) should be subsequently more likely to purchase another premium brand. It is unknown, however, whether a consumer's tendency to highlight applies to shopping contexts when the items being purchased may be consumed in different consumption occasions.

As is evident from the above discussion, a consumer's pre-shopping and shopping behavior is subject to the temptations, stresses, cognitive depletions, emotions and biases that characterize everyday life. Thus, research in shopper marketing can be advanced by a variety of topics drawn from the rich tapestry of consumer behavior literature. The preceding discussion has highlighted just a few potential research avenues. Building on the importance of shopper's mental budgets that was emphasized in my two essays, I suggested future opportunities for examining precursors to the shopper's spending expectation. I then turned my attention to identifying new prospects for studying in-store program effectiveness. My second essay demonstrated the effect of in-store slack depletion on reaction to in-store price promotions. I

have built directly on this research by identifying additional moderators of in-store slack and have also used this research has a stepping stone to related research in the effectiveness of in-store programs. Research of some of these topics, such as sequential choices, is likely to be complicated, but will be essential for gaining useful insights into consumers' actual decisions in complex shopping environments. In closing, this dissertation has advanced our knowledge of shopper behavior by providing insight into the role of a previously unconsidered factor in shopping behavior (in-store slack), but there remains a lot to learn.

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