

**DEBT AVERSION AS SELF-CONTROL: CONSUMER SELF-  
MANAGEMENT OF LIQUIDITY CONSTRAINTS**

by

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## Debt Aversion as Self-Control: Consumer Self-Management of Liquidity Constraints

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## Debt Aversion as Self-Control: Consumer Self-Management of Liquidity Constraints

How do consumers make spending and financing decisions and how do they use consumer credit in the context of consumption self-control problems? We develop a multi-period mental budgeting model of consumer debt aversion as a self-control strategy. Financing current consumption is more likely to lead to total consumption (across periods) in excess of one's mental budget for hedonic than for utilitarian goods. That is because financing (or delaying payment for) current consumption artificially inflates the liquidity available for future consumption, and because it is easier to give in to the temptation to consume hedonic goods when there is additional liquidity. Therefore, consumers with a need for self-control avoid going into debt in an attempt to control their hedonic consumption. We show in four experiments and in field data from a consumer panel we created that consumers with a stronger situational or enduring (trait) need for self-control prefer not to finance current consumption or, alternatively, self-impose stricter payment terms. This paper sheds light not only on an important area of self-control but also on intertemporal spending preferences in the context of the life cycle hypothesis.

“Mr. Swan ... watches a lot of television and, beginning about four years ago, he began getting [credit] cards by dialing toll-free numbers offering plastic. He became an avid buyer of merchandise advertised on television and through telemarketers. The card issuers routinely bumped up his credit limits, as he paid a little more than the monthly minimum, until he was swamped by bills.”

*The Wall Street Journal* (1998)

## INTRODUCTION

The provision of consumer financing has become a pervasive and essential sales tool for marketers as consumer debt in the United States and elsewhere has soared to record levels in recent years (*Monthly Review* 2000).<sup>1</sup> Yet, many consumers get into debt over their heads as they increasingly shift consumption forward, depleting future consumption opportunities. Consequently, personal bankruptcies numbered 1.3 million in 1997, while 55-60 million U.S. households carried \$7,000 to \$8,000 of revolving credit card debt at exorbitant interest rates (*Chicago Tribune*, January 7, 1997). Mr. Swan in the above example suffers from a mental illness; however, his story is similar to that of many healthy consumers with unhealthy credit problems. In this paper, we develop a mental accounting model showing that financing can prompt overconsumption due to additional liquidity, and examine if consumers strategically make financing decisions in order to avoid the pitfalls associated with consumer credit.

*Consumer financing and overconsumption.* When can consumer financing be problematic? Barring strategic behavior, personal bankruptcy from consumer debt reflects an excessive reallocation of consumption to the present and dissaving for the future. This suggests that (at least some) consumers' preferences for current, relative to future, consumption are dynamically inconsistent (Kirby 1997; O'Donoghue and Rabin 1999; Strotz 1956). Without formal savings devices such as retirement plans, many consumers spend more on current consumption than their future income streams enable them to afford. They overconsume, perhaps even fully anticipating that at a later date they will wish that they had saved for future consumption. With liquidity from financing and an opportunity to spend, they consume now

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<sup>1</sup> We use the term “financing” to refer to the utilization of an external line of credit to fund present consumption opportunities. Examples include the use of credit cards, loans and store installment-payment schemes. We use the term “overconsumption” to refer to consumption in excess of a planned budget.

rather than later, reneging on optimal consumption plans that allocate current and future anticipated income across expected lifetime as described, for example, by Ando and Modigliani's (1963) "life cycle" hypothesis of saving. This effect of liquidity on spending was noted by Shefrin and Thaler (1988), whose "behavioral life cycle" hypothesis suggests that the propensity to spend on current consumption increases with the liquidity of the available funds, contrary to the normative rule (see also Soman and Cheema 2001).

*Liquidity effects on spending and consumption.* Consistent with Shefrin and Thaler's (1988) work, market researchers have found that credit availability and financing (e.g., in the form of credit cards) enhances consumer spending (cf. Ausubel 1991, Soman and Cheema 2001). Credit card financing, in particular, increases purchase likelihood (Soman 2001) and willingness to pay (Feinberg 1986; Prelec and Simester 2001; Soman 2001). Furniture retailers like Seaman's make ample use of extended credit terms to provide consumers with enough liquidity to enable purchases that might otherwise be prevented by budget constraints. Thaler (1999) observes that credit cards must facilitate spending simply because retailers are willing to pay some three percent of their revenues from credit card purchases to the card companies in fees. In sum, consumer credit temporarily removes liquidity constraints and reallocates consumption to the present (Soman and Cheema 2001). This stream of research, however, does not study if and when consumer credit induces overconsumption, and what consumers can do to prevent that.

In order to investigate this issue, we integrate the literature on consumer financing with that on self-control (e.g., Gul and Pesendorfer 1999; Hoch and Loewenstein 1991; Schelling 1984; Thaler and Shefrin 1981; Wertenbroch 1998). Thaler and Shefrin (1981), for example, suggested that tying up funds in (non interest-bearing) Christmas Club savings plans serves as protection against being tempted to overspend and overconsume. The forgone interest is the price paid by the consumer for that protection. Wertenbroch (1998) showed that the degree to which consumers *impose* such constraints on their own consumption behavior depends on how tempting the good is. Conversely, we believe that *relaxing* constraints on purchasing and consumption (e.g., by providing additional liquidity) is likely to lead to overconsumption of

tempting products. We focus on the effect of consumer financing on liquidity constraints.

Accordingly, this paper asks: Do consumers impose constraints on their borrowing to avoid a liquidity boost from financing? When would they be strategically debt-averse? We suggest that consumers who are aware of their own self-control problems strategically manage their liquidity to minimize the risk of overconsumption, especially in situations where they may be vulnerable to temptation. Examples of such strategies may include total debt aversion or the selection of short-duration payment schemes for the purchase of tempting products. However, such strategies may not be employed in situations where the need for self-control is low, and the additional liquidity from consumer financing may be used more liberally.

The rest of this paper is organized into three sections. First, we develop a mental budgeting model (Heath and Soll 1996; Thaler 1985, 1999) of liquidity self-management to control consumption. Second, we present the results of four laboratory experiments and one field study that test this model. Finally, we close with a discussion on theoretical implications and suggest practical implications for marketing managers, consumers, and public policy makers.

### **LIQUIDITY SELF-MANAGEMENT UNDER MENTAL BUDGETING**

Why does the additional spending encouraged by financing become a problem? To answer this question, we provide a mental budgeting model of the effect of financing current consumption on a consumer's total consumption. In particular, the model shows why financing the current consumption of hedonic goods can lead to overall overconsumption of these goods.

Research in a number of domains has shown that consumers allocate a proportion of their income to specific spending categories. In a sociological account of how people deal with money, Zelizer (1997) showed that many families apportioned their income towards the spending on both necessities and luxuries (see also Salmon 1909; Winslow 1916). In the decision-making literature, Heath and Soll (1996; Thaler 1985, 1999) show that consumers use budgets, and that the depletion of a budget dampens subsequent purchasing in that category. In a psychological account, Furnham and Argyle (1998) argue that while consumers may be naïve

about normative economic behavior, they have a good intuition about budgeting and that their money is typically allocated towards consumption that meets specific needs. A number of popular books and consumer guides show that consumers who make and adhere to budgets manage their money well and are happy (Burkett 1993).<sup>2</sup>

Based on this notion of budgeting, suppose that consumers allocate a portion  $0 < k_i < 1$  of their total consumption (or wealth)  $w$  to an individual consumption category  $i$  (with  $\sum_{i=1}^I k_i = 1$ ; for ease of exposition, we drop the subscript below), corresponding to an optimal consumption plan over some overall period such as their lifetime (Thaler and Shefrin 1981).<sup>3</sup> Without loss of generality, we also assume that consumption is allocated across multiple budgeting periods.

Hence, consumption in a specific category is limited to  $p(q_0 + \sum_{t=1}^T q_t) \leq kw$ , where  $p$  is (constant) unit price,  $q_0$  is the number of units consumed in the current period, and  $q_t$  is the number of units consumed in each subsequent period  $t$ .

More specifically, future consumption is limited by the budget available for the future. This available budget is the difference between the total lifetime allocation towards the category ( $kw$ ) and the amount that has already been spent in the present period. Specifically:

$$p \sum_{t=1}^T q_t \leq kw - \beta p q_0, \quad (1)$$

where  $0 \leq \beta \leq 1$  is a 'leverage' parameter that describes what proportion of consumption in the present period is fully paid for. That is,  $1 - \beta$  refers to the proportion of consumption that is

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<sup>2</sup> While the idea of separate mental budgets for different categories is well established and documented in these various streams of literature, we conducted pretests in the form of a focus group, a card sorting task and a paper and pencil survey (procedures borrowed from Soman 2001). Our results confirmed that our subject population had several category specific mental accounts. Importantly, consistent with the ideas of mental accounts as categories (Henderson and Peterson 1992) and goal-derived categories (Barsalou 1991), the pretest also suggested that products whose goal was to provide a utilitarian or practical benefit belonged to a separate mental account from products whose goal was to provide fun and affective and sensory experiences in the short run.

<sup>3</sup> As an extreme example of this idea, Zelizer (1997) showed that some families and organizations use the "envelope system" of accounting. When cash is withdrawn from a bank, allocations are made for various categories and the cash is put away in an envelope with the category name on it (p. 167). Examples of categories include rent, fuel, food, clothing, and even "good times" and "pleasure and fun" (p. 166).

financed in the current period. Eq. (1) implies that future consumption is constrained by the difference between the overall category budget and that portion of the budget that has been depleted by prior consumption, which has already been paid for. Thus, if  $\beta < 1$  (i.e. only a fraction of the prior consumption has been paid for), it is possible that future consumption may exceed the constraint prescribed by the consumer's mental budget:

$$kw/p - q_0 \leq \sum_{t=1}^T q_t \leq kw/p - \beta q_0 \quad (2)$$

Note that the presence of additional liquidity need not result in overconsumption if we assume a rational consumer who is cognizant of the fact that the additional liquidity has already been committed towards paying for previous consumption and should be suitably earmarked.

However, past research suggests that consumers might not display such rationality. Building on previous research in household budgeting (e.g. Zelizer 1997), mental accounting (e.g. Thaler 1999) and dynamic decision making (e.g. Sterman 1989), Soman (2001) showed that consumers faced with a purchase decision lack the cognitive apparatus to suitably earmark funds towards past dues. Specifically, he demonstrated that past consumption constrains future spending relatively more when the actual payment has been completed and that spending decisions are highly sensitive to the amount of available liquidity but not to commitments to pay for past consumption. In other words, financing  $1 - \beta$  of current consumption provides added liquidity that enables excessive future consumption. So the possibility of category-specific consumption in excess of one's budget increases with an increase in leverage,  $1 - \beta$ .

*Conditions causing overconsumption.* Is the added liquidity due to financing always a cause for concern? We propose that the added liquidity is likely to lead to overconsumption under two conditions, the first being a characteristic of the consumption opportunity and the second a characteristic of the individual. First, certain goods that are more tempting to consume are more likely to stimulate overconsumption. To characterize goods as more or less tempting, we distinguish between hedonic and utilitarian goods (Hirschman and Holbrook 1982). Hedonic goods are goods whose consumption is primarily characterized by an affective and sensory



experience of aesthetic or sensual pleasure, fantasy, and fun, whereas utilitarian goods are ones whose consumption is more cognitively driven, goal-oriented, and accomplishes a functional or practical task (Dhar and Wertenbroch 2000). As a result, the costs and benefits of consuming hedonic and utilitarian goods follow opposite patterns over time. Hedonic goods (e.g., video clubs) provide early benefits (e.g., entertainment) and often delayed costs (e.g., opportunity costs), whereas utilitarian goods (e.g., health clubs) provide early costs (e.g., effort) and delayed benefits (e.g., better health). So consumers with dynamically inconsistent preferences will find hedonic goods more tempting to overconsume than utilitarian goods (cf. Wertenbroch 1998).

Second, research by Puri (1996) shows that consumers differ in terms of a chronic tendency to act impulsively. Puri developed and validated a 12-item Consumer Impulsiveness Scale (CIS) that measures such trait impulsiveness. In several experiments, she found that consumers with high impulsiveness scores (hedonics) are more likely to act impulsively than consumers with low impulsiveness scores (prudents). Hedonics are thus faced with a greater potential need than prudents to self-impose external constraints on their consumption because they are more easily tempted, whereas prudents are intrinsically controlled (Wertenbroch 1998).

In addition to these two “need for self-control” conditions, two other factors influence the likelihood of overconsumption. First, the risk of overconsumption persists as long as  $\beta < 1$ , that is, for as long as the financed purchase is not paid for. The greater the delay in payment, the longer this added liquidity is available to be potentially spent on future purchase temptations. For example, the American Express Optima Card and other credit cards extend credit to consumers for an unlimited duration, while the classic American Express Card requires consumers to pay off any balance in full upon receipt of their monthly statement. All else equal, we predict that the risk of overspending is higher for the Optima card. Second, eq. (2) shows that the size of the leverage  $(1 - \beta)$  affects the severity of the self-control problem. The greater the share of current consumption that is financed, the greater is the additional liquidity available to be spent on future temptation. Note that both these factors could arise endogenously due to a consumer’s decision (e.g. when paying by credit card, the consumer decides on both these

factors) or could be exogenously set by a marketer (e.g. retailers like Sears and Fingerhut offer a limited menu of financing plans that the consumer must choose from).

In sum, the risk of consuming in excess of one's category-specific mental budget due to financing current consumption, and hence the need for self-control by debt aversion, is given by the following probability of overspending:

$$\Pr \left( \sum_{t=1}^T q_t > kw/p - q_0 \mid \beta < 1 \right) = f(H, I, H \times D, H \times A, I \times D, I \times A). \quad (3)$$

where  $H$  = category hedonicity,  $I$  = consumer impulsiveness,  $D$  = duration of the financing term, and  $A$  = amount of financing  $(1-\beta)$ .

We propose that these four factors accelerate the liquidity effect of consumer financing on consumption and hence the need for self-control by debt aversion. First, additional liquidity is more likely to translate to overconsumption in the mental account of a hedonic good (as compared to a utilitarian good) as the consumer is more vulnerable to temptation.<sup>4</sup> Second, hedonics (as compared to prudents) are faced with a greater risk of overconsumption in the face of additional liquidity because of their impulsiveness. These effects of category hedonicity and consumer impulsiveness will be enhanced by the duration and the size of the additional liquidity.

Prior research on consumer self-control suggests that consumers are sophisticated, yet dynamically inconsistent (O'Donoghue and Rabin 1999). Their sophistication allows them to anticipate their inconsistent preferences and realize that unless they impose constraints on their own consumption, they may be tempted into making dynamically inconsistent preferences (see also Gul and Pesendorfer 1999; Hoch and Loewenstein 1991; Schelling 1984; Thaler and Shefrin 1981; Wertenbroch 1998). Consumers who realize that they may overspend their income and will not have money left over at the end of the year might set aside a monthly amount in non-interest-bearing Christmas Clubs. Cigarette smokers might purchase cigarettes in small

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<sup>4</sup> Note that consumers are just as likely to give in to temptation to buy and overconsume a hedonic good if the liquidity boost comes from having financed a previous utilitarian purchase or a previous hedonic purchase. However, if they have already financed a hedonic purchase, they are even more likely to overconsume hedonic goods overall, in excess of their category-specific budget constraint.

quantities (and hence forego volume discounts) in order to control their consumption rate. In all these cases, consumers anticipate future tempting situations and strategically restrict the choice sets, which they will face in these situations, to control how they respond to temptation. In some cases, this self-control even comes at an expense (i.e. foregone interest and discounts).

We propose that consumers may anticipate the relationships suggested by Eq. (3) and hence strategically control their liquidity to prevent overconsumption especially in situations where the likelihood of overconsumption is high. Note that we do not claim that consumers actually formalize these relationships in the level of detail as in Eq. (3). Our claim is merely that consumers have good intuition about what would happen as a consequence of additional liquidity. In such situations, we propose that consumers anticipate falling prey to temptation and overconsuming. Hence, they are less likely to finance current consumption because this strategy will prevent additional future liquidity and thus help them control overconsumption. Our expectations are captured in the following hypotheses:

- H1:** Consumers prefer more restrictive payment terms when paying for current consumption (e.g., by paying for current consumption in full instead of financing it) when
- a) buying a relatively hedonic (rather than utilitarian) product;
  - b) their enduring need for external self-control is high.
- H2:** The effect of product hedonicity and need for external self-control on the preference for restrictive payment terms for current consumption will be stronger
- a) the longer the duration of the available financing term;
  - b) the larger the amount (or share of current consumption) to be financed.

These hypotheses are tested in four experiments and a field study. The goal of the experiments was to test H1 and H2 using decision scenarios posed to subjects, while the goal of the field study was to search for the consequences of our framework in the selection of payment mechanisms by actual consumers making real purchases.

## **STUDY 1: PRODUCT HEDONICITY AND THE DURATION OF FINANCING**

As a first test of our hypothesis that consumers self-impose liquidity constraints, we examine preferences between payments by check (paying in full) versus credit card (financing).

To address H1a, we manipulate whether a good is consumed for purposes that provide either immediate gratification (framing it as more hedonic) or instrumental longer-term benefits (framing it as more utilitarian). In addition, we manipulate the length of the financing terms to address H2a. We predict that consumers' preferences for paying by check instead of financing will strengthen for hedonic purchases but not for utilitarian purchases as the length of the financing term increases, that is, as payment terms become less restrictive. We test the robustness of the effect across two products.

### *Method*

*Subjects and procedure.* One hundred and twenty undergraduate students were recruited as subjects at a student center at a large Western university. They filled out a short questionnaire, which took approximately five minutes and were compensated with a snack. In two scenarios, subjects were put in a situation where they had decided on purchasing a product and had to choose how to pay for it.

*Stimuli and design.* We used a 2 (**Product**: Modem or Suit)  $\times$  2 (**Hedonicity**: Hedonic or Utilitarian Frame)  $\times$  2 (**Duration of Financing**: 30 days or unrestricted) mixed design in which **Product** was the within-subjects factor while the other two factors were between subjects. The order of presentation of the two products was counterbalanced. The **Hedonicity** factor manipulated the intended usage of the product to be either for hedonic or utilitarian purposes. The former frame makes salient to subjects that consumption will provide relatively immediate gratification, whereas the latter makes salient that consumption will provide more delayed gratification. Thus, the manipulation casts the products in each scenario as relatively hedonic (a modem to surf the Internet for fun, a suit to wear when socializing at night) or relatively utilitarian (a modem to surf the Internet to enable better term papers and grades, a suit to wear at work to manage one's impression on superiors). The two levels of the **Duration of Financing** factor were modeled on the American Express charge card that needs to be paid off in 30 days and a regular credit card that can be paid at any time (unrestricted). The dependent variable was

the relative preference between paying immediately (by check) or financing the purchase.

Subjects read the following scenarios, with the different conditions in italics and brackets:

#### COMPUTER MODEM

Imagine the following. You want to take advantage of a great mail order offer for a computer modem that allows you to connect to the Internet. Surfing the Internet *is a lot of fun for you* [helps you find crucial information for your term papers]. The price of the modem is about 20% of your monthly after tax income. You wonder how you should pay for it. You have a credit card, which allows you to charge the purchase. Charges on this particular card *have to be paid off within 30 days* [can be paid off whenever you want to]. Alternatively, you can write a check now. How will you pay for the item?

charge it      1 - 2 - 3 - 4 - 5 - 6 - 7      write check

#### DRESS SUIT

Imagine the following. On your next shopping trip you come across a great two-piece suit that you know would be absolutely great for you *to wear when you go out at night* [to wear at work]. The price of the suit is about 40% of your monthly after tax income. You wonder how you should pay for it. You have your store credit card on you, which allows you to charge the purchase. Charges on this particular card *have to be paid off within 30 days* [can be paid off whenever you want to]. Alternatively, you can write a check now. How will you pay for the item?

charge it      1 - 2 - 3 - 4 - 5 - 6 - 7      write check

*Manipulation checks.* As a check for the **Hedonicity** manipulation, we adapted a pretest from Dhar and Wertenbroch (2000). A separate sample of subjects drawn from the same population were given the product descriptions (as they appeared in the scenarios above) and were also given Dhar and Wertenbroch's (2000) above description of "hedonic" and "utilitarian" products. They were then asked "Based on these descriptions, please circle the appropriate number on the scale below to indicate how hedonic or utilitarian you think [the product] is." [1=Completely Hedonic, 5=Equally Hedonic and Utilitarian, 9=Completely Utilitarian]. The rating of both products in the hedonic frame ( $M=3.43$  for modem, 4.14 for suit) was significantly lower than in the utilitarian frame ( $M=6.00$  for modem, 5.67 for suit;  $t(40)=5.92$ ,  $p<.001$  for modem,  $t(40)=3.87$ ,  $p<.001$  for suit), suggesting a successful manipulation.

#### *Results and discussion*

We analyzed preferences for debt aversion (i.e. paying off in full, by check) with a

repeated-measures ANOVA. The mean preference for paying in full is plotted in Figure 1. As predicted by H2a, the results show that subjects' preferences for paying by check increased under the hedonic frame but not under the utilitarian frame when payment terms were less restrictive (a **Hedonicity**  $\times$  **Duration of Financing** interaction,  $F(1,239)=17.28$ ;  $p<.0001$ ). Specifically, the mean rating under the hedonic frame increased from  $M_{\text{hed}}=4.05$  when the credit card payment had restrictive terms (pay off after 30 days) to  $M_{\text{hed}}=5.07$  when the credit card payment had unrestrictive terms (pay off at any time). The respective mean ratings under the utilitarian frame were  $M_{\text{util}}=4.17$  (pay off after 30 days) and  $M_{\text{util}}=3.28$  (pay off at any time).

[Insert Figure 1 about here]

As predicted by H1a, a main effect indicated that subjects had stronger preferences for paying by check for the hedonic purchase ( $M_{\text{hed}}=4.56$ ) than for the utilitarian purchase ( $M_{\text{util}}=3.73$ ;  $F(1,239)=13.3$ ;  $p<.001$ ). Moreover, subjects also had stronger preferences for paying by check for the suit ( $M=4.59$ ) than for the modem ( $M=3.69$ ;  $F(1,239)=15.51$ ;  $p<.0001$ ), although the suit was described as twice as expensive as the modem (as a percentage of monthly after-tax income). This may indicate that subjects viewed suits as generally more hedonic than modems, leading them to prefer to pay suits off right away, in line with our hypotheses. No other main or interaction effects approached statistical significance.

These results show that subjects' financing preferences are consistent with the predictions of our mental budgeting model of liquidity self-management. Consumers with a higher need for self-control are more likely not to finance current consumption. Specifically, those faced with more tempting pleasure-oriented consumption opportunities and more immediate gratification prefer to pay by check, while those faced with less tempting and more instrumentally oriented consumption opportunities and more delayed gratification prefer to pay by credit card.

## **STUDY 2: PRODUCT HEDONICITY AND THE AMOUNT OF FINANCING**

To explore further whether consumers engage in liquidity self-management, we relax the sharp distinction of whether consumers do or do not finance current consumption. Thus, it is

often necessary for consumers to borrow when they do not have sufficient liquidity for important purchases, although it may be possible for them to self-select into different payment terms. Consumers who want to minimize the risk of overconsumption due to current financing should prefer relatively strict payment terms. All else equal, they should precommit to paying off a loan earlier than consumers who have less of a need for self-control, but only when the financed amount is large. To test this prediction, we extend our design to two new product categories and manipulate the need for self-control by systematically varying the purchase price of a hedonic and a utilitarian good.

This design follows directly from our model and hypothesis 2b. Eq. (2) implies that the sooner the added liquidity provided by the financing of current hedonic consumption is eliminated (i.e., the sooner consumers reset  $\beta=1$ ), the sooner hedonic consumption is 'safe' again and in line with the optimal budget  $k$ . Eq. (2) also shows that the bigger the share of current consumption that is financed the lower the budget available for future consumption and the greater the risk of exceeding the optimal budget by financing current hedonic consumption. Thus, buying hedonic goods on credit becomes more problematic as the financed amount increases. The financing of current utilitarian consumption is less likely to cause self-control problems because utilitarian goods are not as tempting to overconsume.

### *Method*

*Subjects and procedure.* One hundred and twenty undergraduate students were recruited as subjects at a student center at a large Western university. Subjects took about five minutes to respond to the two consumer scenarios shown below and were compensated with a token gift. In each scenario, subjects were put in a situation where they had decided on purchasing a product and had to decide how to pay for it.

*Stimuli and design.* We used a 2 (**Product**: Brakes or VCR)  $\times$  2 (**Hedonicity**: Hedonic or Utilitarian Frame)  $\times$  2 (**Amount of Financing**: 15% or 30% of income) mixed design in which the Product was within-subjects while the other two factors were between subjects. The order of

the two products was counterbalanced and had no effect. As in the previous experiment, the **Hedonicity** factor manipulated the intended usage of the product. Subjects were asked to imagine that they were planning to buy a VCR in order to watch foreign movies for fun (hedonic frame) or to boost their foreign language skills (utilitarian frame) and a set of new brakes for their car, which they used primarily for pleasure rides (hedonic frame) or primarily to drive to school (utilitarian frame). Subjects stated how much time they would like to take to pay off a loan (measured in months as the dependent variable) incurred for a purchase in each of two different product categories. The size of the expenditure to be financed (**Amount of Financing**) was either 15% or 30% of subjects' monthly after-tax income.

As the dependent measure, we asked subjects for their preferred duration of the payment plan. They read the following scenarios, with the different conditions in italics and brackets:

#### BRAKES

Imagine the following. You live *only a short walk from school so that you normally use your car only for pleasure rides* [a long drive from school so that you normally use your car primarily to get to school]. Now you need new brakes. The price of the brakes is about 30% [15%] of your monthly after tax income. The repair shop offers you a payment plan under which you can choose for how long you want to finance the payment. How long a payment plan do you prefer? Please fill in the appropriate number of months.

My preferred payment plan length would be [\_\_\_\_] months.

#### VCR

Imagine the following. You are planning to buy a VCR so you can watch foreign movies *in order to boost your foreign language skills* [for fun]. The price of the VCR is about 30% [15%] of your monthly after tax income. The store offers you a payment plan under which you can choose for how long you want to finance the payment. How long a payment plan do you prefer? Please fill in the appropriate number of months.

My preferred payment plan length would be [\_\_\_\_] months.

*Manipulation check.* The manipulation check for **Hedonicity** was done using the same procedure as in Study 1. The rating of both products in the hedonic frame ( $M=5.90$  for brakes, 3.09 for VCR) was significantly lower than in the utilitarian frame ( $M=7.14$  for brake, 4.17 for VCR;  $t(40)=2.90, p<.005$  for modem,  $t(40)=2.23, p<.02$  for suit) suggesting that our manipulation was successful.



### *Results and discussion*

The preferred duration of the payment plan was analyzed using a repeated-measures ANOVA. The mean length for all experimental conditions is plotted in Figure 2. Note that shorter payment plans indicate a relatively greater degree of debt aversion. Results show a significant **Hedonicity** × **Amount of Financing** interaction ( $F(1,239)=6.03$ ;  $p<.05$ ). Subjects preferred less restrictive payment terms in the higher expenditure condition ( $M_{30\%}=8.19$  months) than in the lower expenditure condition ( $M_{15\%}=5.43$  months) only under the utilitarian frame where extended financing would not cause potential self-control problems. In contrast, under the hedonic frame where, according to our model, extended financing is more likely to lead to overconsumption subjects preferred to pay off their loans equally fast in the higher expenditure condition ( $M_{30\%}=4.32$  months) and the lower expenditure condition ( $M_{15\%}=4.3$  months). Also as predicted, the significant main effect of **Hedonicity** ( $F(1,239)=20.19$ ;  $p<.0001$ ) arose because the hedonic frame generally led subjects to prefer shorter payment terms ( $M_{hed}=4.31$  months) than the utilitarian frame ( $M_{util}=6.81$  months). Third, subjects in the higher **Amount of Financing** conditions ( $M_{15\%}=6.25$  months) preferred to pay off the loan sooner than subjects in the lower **Amount of Financing** conditions ( $M_{30\%}=4.87$  months;  $F_{AMOUNT}(1,239)=6.18$ ;  $p<.05$ ). Finally, there was a marginally significant main effect of product category ( $F(1,239)=3.79$ ;  $p<.10$ ). Subjects wanted to finance the purchase of brakes longer ( $M_{brakes}=6.1$  months) than the purchase of VCRs ( $M_{VCR}=5.02$  months). This result, too, is consistent with our model because VCRs are generally more hedonic than brakes. No other effects approached statistical significance.

[Insert Figure 2 about here]

These results confirm that consumers self-impose stricter payment terms in order to finance current hedonic consumption when financing may lead to excessive overall consumption according to our model (H1a). Specifically, when the need to finance current consumption was heightened due to the more severe liquidity constraints in the higher expenditure condition, consumers took advantage of the longer payment terms that were available to them only when

the need for consumption self-control was low (H2b). When extended payment terms posed a potential self-control problem, consumers preferred terms that required them to pay off the loan sooner. Thus, they self-managed their liquidity constraints in order to control overall consumption.

### **STUDY 3: PRODUCT HEDONICITY AND CONSUMER IMPULSIVENESS**

The first two experiments show that consumers are averse to financing purchases of hedonic goods. The results are consistent with our mental budgeting model that shows that debt aversion is instrumental in achieving self-control. However, limits to the extent to which consumers finance purchases of hedonic goods are also consistent with other explanations.

First, Prelec and Loewenstein (1998) have suggested that debt aversion is the result of hedonic interactions between payment and consumption streams. Thus, consumers are averse to having to pay for consumption episodes after these have ended (e.g., financing vacations and paying them off after one has returned home). Presumably, such post-consumption payments are unpleasant to make when the benefits have already been consumed. Also, consumption is more pleasant if it is unencumbered by thoughts of having to make subsequent payments. Instead, consumers prefer to prepay for products and services, except for those whose consumption is distributed over time so that the displeasure of making payments can be cushioned by concurrent consumption benefits (e.g., for household appliances, time share arrangements). Differences in the length of consumption streams may thus lead to differences in preferences for loan durations. For that reason, we used identical target products to match the length of consumption streams across both the hedonic and the utilitarian conditions in Experiments 1 and 2. Nonetheless, one may argue that the hedonic benefits occur before the utilitarian benefits. Thus, Experiments 1 and 2 cannot fully rule out the unencumbered-consumption hypothesis.

Second, it can be argued that consumers prefer to avoid hedonic debt or prefer to pay it off faster than utilitarian debt because it may be more difficult to justify financing hedonic consumption than utilitarian consumption (cf. Shafir, Simonson, and Tversky 1993). Consumers

may see utilitarian goods as necessities, while hedonic goods are more like luxuries that can only be afforded when liquidity is sufficient. Thus, consumers may follow a heuristic decision rule only to finance utilitarian consumption. This may be exacerbated by a precautionary motive that has been suggested to characterize consumer spending and savings decisions (Wärneryd 1999). In order to provide for possible future contingencies, consumers may not want to overly leverage themselves, especially not in financing hedonic consumption if they regard hedonic goods as indulgences rather than necessities.

Experiment 3 again varies the need for self-control by manipulating category hedonicity, i.e., the temptation inherent in the product category itself, in order to test the robustness of the effects found in the first two studies (H1a). In addition, Experiment 3 is designed to provide a test of liquidity self-management for the purpose of self-control that cannot be explained by arguing that debt aversion for hedonic goods merely stems from hedonic interactions between payment and consumption streams, from a lack of justifiability of financing hedonic goods, from confounding of utilitarian goods with necessities, and from a precautionary motive. We now employ a measure of the need for self-control. We measure subjects' individual responsiveness to temptation by including subjects' scores on Puri's (1996) consumer impulsiveness scale (CIS). The more impulsive consumers are, the greater their need to control their consumption (Wertebroch 1998). Because impulsiveness is conceptually unrelated to the rival hypotheses (unencumbered consumption, justification, precaution), it should have an effect on financing preferences only if these are motivated by self-control.

None of the rival hypotheses predict an effect of impulsiveness. Specifically, we do not expect less impulsive (prudents in Puri's terminology) and more impulsive consumers (hedonics) to differ in their desire to keep current consumption unencumbered by thoughts of having to make future payments. Similarly, prudents should find it at least as hard as hedonics to justify financing a given purchase. Finally, prudents should have at least as strong a precautionary motive as hedonics when making spending decisions. We predict that hedonics will prefer more restrictive (shorter) payment terms (H1b), because hedonic consumers have a higher need to

control their consumption than the less impulsive prudents (Puri 1996).

### *Method*

*Subjects and procedure.* One hundred eighty unpaid undergraduate students were recruited as subjects at a student center at a large Western university. They filled out a short questionnaire that asked them to imagine that they were going to attend a film festival (consisting of eight movies) on campus and asked them when they would like to pay the \$50 admission fee. They learned that they could either pay right away or wait up to eight months to make their payment in full at any time before the end of the academic year. In addition, subjects filled out Puri's (1996) CSI scale which consists of a hedonic subscale (items are 'impulsive', 'careless', 'extravagant', 'easily tempted', 'enjoy spending') and a prudent subscale (items are 'self-controlled', 'farsighted', 'responsible', 'restrained', 'rational', 'methodical', 'a planner'). Subjects stated for each item on a 7-point scale how accurately it described them (1="usually would describe me"; 7="seldom would describe me").

*Stimuli and design.* The design was 2 (**Hedonicity**: Hedonic vs. utilitarian)  $\times$  2 (consumer impulsiveness **CIS**: Hedonics vs. Prudents) between-subjects. The **Hedonicity** factor described the movies in the film festival either as comedy and light entertainment classics that provided a nice break from studying (hedonic frame) or as feature film length documentaries on different aspects of business management that were not very entertaining but helpful to one's studies and career (utilitarian frame). Specifically, subjects read the following scenario:

#### CAMPUS FILM FESTIVAL

Imagine that the university movie theater on campus is running a film festival. The festival will feature a series of *comedy and light entertainment classics* [feature film length documentaries that cover different aspects of business management]. You have heard that each of these movies is *entertaining, and they would provide a nice break from the routine of classes and studies* [educational, and watching these would provide you with a lot of helpful information and tips for your studies and your career]. A ticket for the festival costs \$50. The theater accepts cash or checks, and they also offer a delayed payment option so that you can choose to pay immediately or at any time before the end of the academic year (8 months from now). After reviewing the movies and the schedule, you decide to purchase a festival ticket. Before buying your ticket, you need to decide when to pay.

The second factor (CIS) was subjects' median-split impulsiveness score. The dependent variable was subjects' preferred payment terms, which they indicated in months.

*Manipulation check.* The manipulation check for **Hedonicity** was done using the same procedure as in Study 1. The rating of the movies in the hedonic frame ( $M=4.32$ ) was significantly lower than in the utilitarian frame ( $M=5.86$ ;  $t(42)=3.44$ ,  $p<.001$ ) suggesting that our manipulation was successful.

### *Results and discussion*

The individual CIS items were scaled such that lower values on each item implied greater impulsiveness and consequently a greater need for self-imposed constraints. Cronbach's  $\alpha=.93$  so that we simply summed up the individual scale values to derive an overall impulsiveness score with mean=46.42, std. dev.=13.96, min.=15, max.=74, and median=48. Subjects below the median were classified as 'hedonics' or more impulsive with a higher need for self-control, subjects above as 'prudents' or less impulsive with a lower need for self-control (cf. Puri 1996; Wertenbroch 1998). Subjects' preferred payment terms ranged from zero to eight months (mean=1.93 months, standard deviation=1.97 months).

As predicted, there were significant main effects of **Hedonicity** and of **CIS**, both of which independently varied the need for self-control. Figure 3 shows that the preferred financing term was shorter under the hedonic than under the utilitarian frame ( $M_{hed}=1.24$  versus  $M_{util}=2.76$  months;  $F_{HEDONICITY}(1,178)= 30.8$ ,  $p<.0001$ ) and for hedonics than for prudents ( $M_{hedonics}=1.57$  versus  $M_{prudents}=2.43$  months;  $F_{CIS}(1,178)= 8.79$ ,  $p<.01$ ). The interaction effect did not approach statistical significance.

[Insert Figure 3 about here]

These results not only replicate the effect of category hedonicity found in Experiments 1 and 2, they also show that the other factor that we have hypothesized to induce a need for self-control by debt aversion, consumer impulsiveness, leads consumers to self-impose constraints on their borrowing. Specifically, the more impulsive hedonics who have a stronger need for self-

control appear more debt averse than the less impulsive prudents and want to pay off their current debt sooner. This decreases the liquidity available to them for future impulsive purchases and consequently prevents excessive overall consumption.

This result provides not only additional evidence of self-management of liquidity constraints, the main effect of consumer impulsiveness (the prudent-hedonic distinction) also cannot be explained by the rival hypotheses implied by Prelec and Loewenstein's (1998) work as well as the justification-based and precaution-based alternative explanations for the findings in Experiments 1 and 2. Moreover, including the main effect and interaction term of consumer impulsiveness in the ANOVA model controls for the effect of interindividual differences on the effect of category hedonicity on debt aversion. Thus, it cannot be argued that greater debt aversion for hedonic than utilitarian purchases is simply due to a potentially greater tendency on the part of hedonics than of prudents to feel guilty about making hedonic purchases. The main effect of category hedonicity occurs even when interindividual differences are controlled for. Lastly, however, note that the scenarios used in Experiments 1, 2, and 3 suggested to subjects only implicitly that there were no financing charges, i.e., that longer financing presented a dominating payment option. So it is possible that subjects may have imputed interest charges on their own and that these costs appeared to them less justifiable when making hedonic purchases. The next study rules this out by making financing costs explicit.

#### **STUDY 4: STRATEGIC DEBT AVERSION**

Studies 1, 2, and 3 have shown that consumers are debt-averse when the need for self-control is high. But without being able to observe actual overconsumption under the added liquidity from financing, can we determine empirically if consumers are debt-averse because they are afraid that financing would tempt them into overconsumption? Research on self-control has shown that consumers guard against their dynamically inconsistent preferences for overconsumption by constraining their own future behavior. Consumers provide evidence that such self-constrained behavior reflects strategic precommitment rather than just their underlying

intertemporal preferences if they incur an additional cost to impose these constraints on themselves (O'Donoghue and Rabin 1999; Wertenbroch 1998). Accordingly, we examine if consumers are willing to pay a premium for self-imposing more restrictive financing terms, holding the interest rate constant.

We look for evidence of such a precommitment strategy by testing H1a in yet another product domain, automobiles. Specifically, we propose that consumers who finance the purchase of hedonic cars prefer shorter but more expensive financing terms than buyers of more utilitarian cars. To strengthen the case that consumers not only choose a dominated option (a shorter loan) but also pay an deliberate premium for it (higher finance charges), we provide subjects with a choice of different payment terms instead of a preference rating.

### *Method*

*Subjects, design, and procedure.* Respondents were 100 adult U.S. consumers who were intercepted in a shopping mall and received a candy bar for their participation. They indicated whether or not they would buy a specific car described in a scenario and, if so, how they would pay for it. In a two-level between-subjects design we manipulated the hedonicity of the car by selectively describing some of its hedonic or utilitarian features, holding everything else about the vehicle itself constant. The scenario read as follows, with the hedonic features in italics and the utilitarian features in brackets:

Imagine that your financial situation is as follows. You can typically pay for all of your ongoing expenses from you monthly income in your checking account and also save a little bit every month on top of that. You have \$20,000 in your savings account and no exceptional purchases planned, except for a new car. Your favorite manufacturer just introduced a new model that really interests you. Relative to other models you have considered, the new model has the following superior features: *power-operated sun roof, hand-stitched leather seats, changeable CD player with 6-way surround-sound speakers, power-operated seat adjustments (recline, position, height)* [high fuel efficiency, anti-lock brakes and anti-skid tires, child safety locks on rear doors, spacious trunk and storage areas].

As the dependent variable, subjects chose whether to buy the car at all, pay its cash price, or finance the purchase under different terms and durations. Included in the effective price of the car was the cost of the financing options, calculated as the net present value of the payment

streams at a fixed annual interest rate of 6.5%. The cheaper loan (NPV= \$18,000, 60 monthly payments) would be financed over twice the duration as the more expensive loan (NPV= \$19,450, 30 monthly payments). Economically, the cheaper, longer loan dominates the more expensive, shorter one as consumers can always pay off the longer loan early. Subjects were asked one of the following options:

1.  Postpone the purchase and keep looking.
2.  Buy the car and pay the cash price of **\$18,000** right now.
3.  Buy the car and finance the purchase over five years at an effective price of **\$18,000**, with **60** monthly payments of \$350 at an annual interest rate of 6.5%.
4.  Buy the car and finance the purchase over two-and-a-half years at an effective price of **\$19,450**, with **30** monthly payments of \$700 at an annual interest rate of 6.5%.

*Manipulation check.* The manipulation check for **Hedonicity** was done by asking subjects to agree with two statements: “I may be tempted to spend more on this car than I can afford” and “This car is fun and sporty” (1=Strongly Agree, 9=Strongly Disagree). Note that these scales are set up so that lower numbers indicate a greater hedonicity. Responses to these two questions were highly correlated ( $r = .81$ ) and hence their average was taken. Results showed that the mean rating in the hedonic frame ( $M = 4.84$ ) was significantly lower than in the utilitarian frame ( $M = 5.64$ ;  $t(198) = 2.74$ ,  $p < .001$ ), suggesting that our manipulation was successful. We also asked subjects to agree or disagree with the following statement: “I am an expert in buying and financing cars.” There was no significant difference in self-rated expertise, suggesting that differences in financing choices were not due to differences in knowledge about auto financing.

### *Results and discussion*

The results were as predicted by H1a. Of those who wanted to buy the car, whether they wanted to pay cash or finance the purchase, 28 percent (23 out of 83) chose the shorter, more expensive (i.e., economically dominated) loan in the hedonic condition, compared to only 14 percent (11 out of 76) in the utilitarian condition ( $\chi^2 = 4.02$ ,  $p < .05$ ). Similarly, of those who wanted to buy the car by financing the purchase, 44 percent (23 out of 52) chose



the shorter, more expensive loan in the hedonic condition, compared 22 percent (11 out of 50) in the utilitarian condition ( $\chi^2=5.5, p<.05$ ). There was no difference in the proportion of buyers in the hedonic (37 percent, 31 out of 83) and utilitarian (34 percent, 26 out of 76) conditions, who wanted to pay cash ( $\chi^2=.17, p<1$ ). This may have been a ceiling effect; the expenditure (\$18,000) was so large that buyers in the hedonic condition felt that avoiding a loan altogether was too costly as the cash payment would have consumed almost their entire savings. Overall, 17 respondents in the hedonic condition and 24 respondents in the utilitarian condition chose to postpone the purchase ( $\chi^2=1.49, p<1$ ).

Buyers of a more hedonic car were more likely than buyers of a more utilitarian car to impose more restrictive financing terms on themselves than necessary. Because these more restrictive terms were economically dominated, those who chose them implied that they would pay a premium to force themselves to limit the duration during which they would have the added liquidity from financing available. This constitutes strong evidence in favor our hypothesis that consumers' debt aversion reflects self-control of hedonic consumption, i.e., strategic precommitment.

The design of this experiment controlled for the three rival explanations raised above. Specifically, because the underlying make and model of the vehicle were held constant, the length of the consumption stream was the same in both conditions. Hedonic and utilitarian benefits were described so that they would accrue at the same time, per driving occasion. Therefore, differences in preferences for the duration of financing cannot be explained by a desire to match benefit and payment streams (Prelec and Loewenstein 1998). Moreover, neither a justification motive (Shafir et al. 1993) nor precautionary motive (Wärneryd 1999) can explain the choice of the dominated financing option. To the contrary, if subjects had found it more difficult to justify a hedonic car purchase than a utilitarian car purchase, or if they had wanted to be more cautious when making a hedonic purchase, then they should have preferred the longer, cheaper loan with monthly payments of \$350 instead of \$700, providing them with extra liquidity. This would have given them the option of saving an additional

\$350 every month, earning interest on it, and paying off the loan before the end of the 60-month term anyway, in order to reduce their real cost of financing. Our results show that subjects' willingness to pay an otherwise unnecessary premium in financing costs reflects strategic precommitment to limit their own liquidity, i.e., debt aversion as self-control.

### **STUDY 5: A FIELD TEST**

Self-imposing constraints on borrowing as a self-control mechanism is manifested by how consumers pay for purchases in mental budgeting categories, in which the added liquidity from financing may prompt impulsive overconsumption. Consumers, we have shown, prefer to pay for hedonic purchases under more restrictive financing terms or with cash, which is inherently limited by their liquidity at the time, in order to avoid being tempted to overconsume.

We test the ecological validity of our experimental findings in a study of consumers' actual payment choices in the field. As in the experiments, we expect consumer preferences for payment vehicles (how quickly a payment vehicle affects or drains their liquidity) to be affected by the relative nature of the goods they are purchasing (hedonic versus utilitarian). More specifically, H1a predicts that consumers prefer to pay cash for hedonic items (or, equivalently, pay by debit card so that the payment is debited directly to the consumer's bank account). Our model suggests that such cash payments tighten consumers' liquidity constraints in line with their mental budget constraints – a deliberate act of self-control. Conversely, consumers are more likely to pay by credit card, which extends credit to consumers for an unlimited duration and leaves their liquidity unchanged, for purchases they as more utilitarian. The less utilitarian (i.e., relatively more hedonic), the less likely they are to use a credit card. Charge cards (e.g., the classic American Express Card) and checks provide short-term credit by affecting the liquidity in a matter of days or weeks. So we also expect that the probability of using a charge card should increase as the purchase is viewed as more hedonic. This is because self-controlling consumers will at least want to put a fixed term on when they must pay off their hedonic purchases if they do not wish to drain their liquidity immediately. Finally, H1b predicts that preferences for more

restrictive payment methods strengthen with consumers' inherent need for self-control. We test these predictions with data on actual purchases from a panel of real consumers.

### *Method*

*Subjects and procedure.* Thirty-four non-academic staff members of a large university in Hong Kong recorded all of their purchases for approximately one month. Participants were selected on the basis of a self-report indicating that they had a credit card and a debit and/or charge card, and used them routinely. Participants were compensated with HK\$150 and two gifts to keep a diary of all of their purchases during the period in question, as well as collect and turn over all of their receipts to the experimenters. This resulted in a data set including 2,434 purchases on 2,286 separate receipts or purchase records (in the event a receipt was either not received from the vendor or was lost).

For each receipt/record, participants described every individual item purchased (e.g., a potted plant, a skin care product, a hair dryer) and then rated each item on an 11-point scale, indicating how "utilitarian" (=1) or "hedonic" (=11) they perceived it to be, similar to the pretests for Studies 1, 2, and 3. The scale anchors were again described according to Dhar and Wertenbroch's (2000) description of hedonic and utilitarian items. We collapsed these ratings within receipts, such that each receipt had an average hedonic-utilitarian score<sup>5</sup>. We assumed this rating was a valid indicator of how hedonic consumers viewed the basket of items purchased on a single receipt, on average. Participants also recorded their method of payment for each receipt, which was either "cash," "debit card," "charge card," "check" or "credit card." Finally, each subject filled out Puri's (1996) CIS scale, which we used to control for individual differences in impulsiveness. The individual CIS items were scaled such that higher values on each item implied greater impulsiveness and consequently a greater need for self-control. To summarize, for each receipt we had a description of each item purchased, its price, the receipt

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<sup>5</sup> We also ran a second analysis at the level of the individual purchase item. The results of this analysis are substantively no different from the one reported here.

total, a composite rating for the hedonicity of those items bought, the method of payment and a CSI score for the individual making the purchase. The higher the rating or score, the more hedonic the purchase, or the more impulsive the person.

*Data Analysis.* We wanted to test whether the perceived hedonicity of a purchased item or bundle of items had a systematic effect on the choice of payment method or, more specifically, on the time period within which consumers allowed themselves to pay for the purchase. A priori, we hypothesized that as items were seen as more hedonic (i.e., pleasurable and consumed for their own sake), our respondents would be more reluctant to extend the time frame for payment; therefore, they would be less inclined to pay with a credit card. The probability of using a credit card (indefinite payment terms) should therefore decrease with the average perceived item hedonicity rating for each receipt (HED) and increase with the person's impulsiveness (CIS). In addition, the probability should increase with the total amount paid (AMOUNT). The different payment methods were classified into three categories based on when they impact the consumer's liquidity: immediate (cash and debit card), short-term (charge card and check) and indefinite (credit card). The choice of payment method (immediate, short-term, and indefinite) was the dependent variable and the effects of item hedonicity, the shopper's impulsiveness, and the amount paid were modeled with a multinomial logit model utilizing the CATMOD procedure in SAS.

### *Results and discussion*

The panel members averaged 72 purchase occasions (i.e., receipts or records) during the test period with an average purchase price of HK\$201 per item. The average receipt amount was HK\$213, only slightly higher as most receipts included only one item (the mean number of items per receipt was 1.06). The averages were inflated by some large purchases; the mode for both item and receipt was HK\$20, and the medians were HK\$52 and HK\$57, respectively. Of the 2,286 records, consumers used a debit card or paid cash (immediate) for 67% of the purchases, used a credit card (indefinite) for 27%, and a charge card or check (short-term) for only 6%.

The coefficient estimates and associated statistics from estimating the multinomial logit model are shown in Table 1. The parameter  $\beta_1^{\text{cash}}$  is the coefficient for HED,  $\beta_2^{\text{cash}}$  is the coefficient for AMOUNT,  $\beta_3^{\text{cash}}$  is the coefficient for CIS, and  $\beta_4^{\text{cash}}$  is the coefficient for the interaction between CIS and HED in estimating the likelihood of preferring to pay cash or by debit card (immediate) over paying by credit card (indefinite). As predicted, the coefficient for  $\beta_1^{\text{cash}}$  is positive ( $\beta_1^{\text{cash}}=0.4107, p<.01$ ) suggesting that the likelihood of paying via an immediate rather than an indefinite payment vehicle increases as an item is seen as relatively more hedonic. Similarly,  $\beta_1^{\text{charge}}, \beta_2^{\text{charge}}, \beta_3^{\text{charge}}$  and  $\beta_4^{\text{charge}}$  are the coefficients in estimating the likelihood of preferring a charge card or check (short-term) over a credit card (indefinite). Also as predicted, the coefficient for  $\beta_1^{\text{charge}}$  is positive ( $\beta_1^{\text{charge}}=1.0855, p<.0001$ ) suggesting that the likelihood of paying via a short-term rather than an indefinite payment vehicle increases with an item's perceived hedonicity. Finally,  $\beta_1^{\text{cash}2}, \beta_2^{\text{cash}2}, \beta_3^{\text{cash}2}$  and  $\beta_4^{\text{cash}2}$  are the coefficients in estimating the likelihood of preferring to pay cash or by debit card (immediate) over paying by charge card or check (short-term). Again as predicted, the coefficient for  $\beta_1^{\text{cash}2}$  is positive ( $\beta_1^{\text{cash}2}=0.6749, p<.01$ ) suggesting that the likelihood of paying via an immediate rather than a short-term payment vehicle increases with an item's perceived hedonicity. Examining Table 1, we see that none of the estimates for the effects of consumer impulsiveness (CIS,  $\beta_3$ ) and the interaction between perceived hedonicity and impulsiveness (HED×CIS) are significant. We also ran the model without the interaction terms (Table 2). The results suggest that, as predicted, the probability of paying cash grows at a faster rate than the probability of paying by charge card as impulsiveness increases ( $\beta_3^{\text{cash}2}=.8296, p<.0001$ ).

[Insert Tables 1 & 2 about here]

The probability that a person will prefer each payment vehicle based on the nature of the items bought (HED), the amount spent (AMOUNT), and their individual impulsiveness (CIS) is:

$$P_{it}(\text{immediate}) = \frac{e^{\alpha^{\text{cash}} + \beta_1^{\text{cash}} HED_{it} + \beta_2^{\text{cash}} AMOUNT_{it} + \beta_3^{\text{cash}} CIS_{it}}}{1 + e^{\alpha^{\text{cash}} + \beta_1^{\text{cash}} HED_{it} + \beta_2^{\text{cash}} AMOUNT_{it} + \beta_3^{\text{cash}} CIS_{it}} + e^{\alpha^{\text{charge}} + \beta_1^{\text{charge}} HED_{it} + \beta_2^{\text{charge}} AMOUNT_{it} + \beta_3^{\text{charge}} CIS_{it}}}$$

$$P_{it}(\text{short-term}) = \frac{e^{\alpha^{ch\ arg\ e} + \beta_1^{ch\ arg\ e} HED_{it} + \beta_2^{ch\ arg\ e} AMOUNT_{it} + \beta_3^{ch\ arg\ e} CIS_{it}}}{1 + e^{\alpha^{cash} + \beta_1^{cash} HED_{it} + \beta_2^{cash} AMOUNT_{it} + \beta_3^{cash} CIS_{it}} + e^{\alpha^{ch\ arg\ e} + \beta_1^{ch\ arg\ e} HED_{it} + \beta_2^{ch\ arg\ e} AMOUNT_{it} + \beta_3^{ch\ arg\ e} CIS_{it}}}$$

$$P_{it}(\text{indefinite}) = \frac{1}{1 + e^{\alpha^{cash} + \beta_1^{cash} HED_{it} + \beta_2^{cash} AMOUNT_{it} + \beta_3^{cash} CIS_{it}} + e^{\alpha^{ch\ arg\ e} + \beta_1^{ch\ arg\ e} HED_{it} + \beta_2^{ch\ arg\ e} AMOUNT_{it} + \beta_3^{ch\ arg\ e} CIS_{it}}}$$

where  $i$  denotes the individual and  $t$  indicates the purchase occasion. Plotting the corresponding probabilities of using a particular payment method (see Figure 4), we see that the probability of using a credit card decreases as item hedonicity increases (holding all else constant). Conversely, as a purchase becomes more hedonic the likelihood of paying cash increases. The likelihood of using a charge card or check appears to increase at an increasing rate, though this is likely an artifact of the small percentage of items bought with these payment methods.

[Insert Figure 4 about here]

Overall, the results reveal distinct differences in people's choice of payment vehicles (with differences in how restrictive the respective financing terms are) based on whether they perceive the item(s) purchased as more or less hedonic. In general, our panel participants preferred to pay off goods they deemed hedonic (i.e., receipts rated as relatively more hedonic) earlier. This is evident from the increased propensity for paying cash or using a debit card (i.e., immediately reducing their liquidity) as item hedonicity increases, while the probability of using a credit card decreases. The results of this study are fully consistent with H1a and with our prediction that consumers avoid financing hedonic purchases because extended payment terms impede self-control by providing additional short-term liquidity. While our results on the effect of consumer impulsiveness on choice of payment vehicles are mixed, they do suggest that more impulsive consumers who face a greater need for self-control strategically avoid financing their purchases indefinitely. They tend not to pay cash, providing suggestive evidence in line with H1b.

## GENERAL DISCUSSION AND CONCLUSIONS

*Summary of Research.* This paper shows in five different studies that consumers self-impose restrictions on how they pay for goods that may be subject to dynamically inconsistent preferences. We have presented a mental budgeting model that shows that financing provides consumers with a liquidity boost that enables them to give in to future consumption impulses. Under our model, this may cause overall consumption in excess of consumers' mental budgets for hedonic consumption. Hence, self-controlling consumers will want to avoid going into debt for hedonic purchases, preferring financing vehicles that limit the amount and duration of the liquidity boost. Our studies test the effects of two main factors, category hedonicity and consumer impulsiveness, on the resulting consumer choices between different financing vehicles. Both of these factors enhance the need for self-control; hedonic products are more likely to be consumed impulsively than utilitarian products, and impulsive consumers have an inherently greater need for self-control than non-impulsive consumers. The effect of these two main variables on need for self-control is enhanced when financing provides consumers with a greater amount of added liquidity and when the liquidity boost lasts for a longer duration. To ensure the robustness of the findings, our studies test the effects of these factors in a variety of ways, with different independent (hedonicity, impulsiveness, loan amount and duration) and dependent variables (preference ratings and choices of payment vehicles and loan duration), and with samples from different subject populations (students as well as consumers from the U.S. and Hong Kong).

Specifically, Study 1 shows that debt aversion (i.e., preference for paying by check) is greater for hedonic than for utilitarian consumption (H1a), but this self-imposition of liquidity constraints occurs only when the terms for repaying a consumer loan are not restrictive (i.e., when the liquidity boost from financing may last indefinitely; H2a). Similarly, Study 2 shows that consumers prefer more restrictive, shorter loans for hedonic than for utilitarian items (H1a) but only when the added liquidity from financing is large, which enhances the need for self-control according to our model (H2b). Study 3 replicates the effect of category hedonicity (H1a)

and also shows the effect of consumer impulsiveness, i.e., of the inherent need for self-control, on preference for self-imposing restrictive financing terms (H1b, H2a). Importantly, this effect of consumer impulsiveness on preferences for payment terms cannot be explained by any of the three rival explanations raised concerning Studies 1 and 2, the unencumbered-consumption hypothesis (Prelec and Loewenstein 1998) and justification (Shafir et al. 1993) and precautionary (Wärneryd 1999) motives. These rivals are ruled out in Study 4, which provides strong evidence that consumers self-impose restrictive financing terms in order to limit their hedonic consumption. Consumers exhibit stronger preferences for a shorter, more expensive loan over a longer, less expensive one when evaluating a hedonic purchases (i.e., when the situational need for self-control is high); they not only choose a more restrictive, dominated financing method, they are even willing to pay a premium for it, in line with similar evidence by Wertenbroch (1998) on self-rationing and with O'Donoghue and Rabin's (1999) work on procrastination. Finally, Study 5 illustrates the ecological validity of our experimental findings with panel data on actual purchases. It shows that real consumers use more restrictive payment methods for hedonic purchases than for utilitarian ones, controlling for the size of the expenditure.

*Limitations.* It is important to note an important limitation to our conclusions. Our results on the effect of consumer impulsiveness show that consumers differ in the degree to which they employ self-control strategies such as debt aversion. O'Donoghue and Rabin's (1999) work suggests that the extent, to which consumers have dynamically inconsistent preferences and employ self-control strategies to curb these, may well differ across consumers. Some consumers may have dynamically consistent preferences, as suggested by the traditional discounted utility model, and hence do not engage in impulsive behavior; they do not need precommitment devices. A second group of consumers, whom O'Donoghue and Rabin (1999) call naïfs, may suffer from dynamic inconsistency and impulsive behavior but may not be aware of their preference inconsistencies and of strategies to control these. It is only the third group, a segment of sophisticated consumers, who are aware not only of their dynamic inconsistencies but also of a set of self-control strategies such as debt aversion, which we have illustrated here.



*Theoretical and managerial implications.* Our model and results extend current theoretical and empirical findings on debt aversion (Prelec and Loewenstein 1998) and self-control (Werthenbroch 1998). We show that consumers constrain their own liquidity in order to prevent consumption self-control problems. Specifically, they are less likely to finance consumption in hedonic categories than in utilitarian categories because buying hedonic goods on credit (i.e., avoiding a cash outlay to fund current hedonic consumption) relaxes constraints on future hedonic consumption. Until they pay off the loan, consumers keep added liquidity in their pocketbooks to buy more hedonic goods in the future, which may ultimately lead to hedonic consumption above the level prescribed by an overall mental budgeting consumption plan. Our findings also shed more general light on how consumers make intertemporal financing and consumption decisions (Ando and Modigliani 1963). Consumers anticipate and self-impose restrictions on liquidity effects, which have been noted in the behavioral life-cycle literature (Shefrin and Thaler 1988; Soman 2001).

From a practical perspective, our findings have implications for marketers, consumers, and public policy makers alike. Marketers can tailor financing options and terms according to consumers' need to control their consumption. For example, American Express promises consumers both financial flexibility and control in positioning its consumer cards according to usage and credit terms. The classic American Express Card is positioned for use primarily for travel and entertainment purposes and requires consumers to pay off any balance in full upon receipt. Thus, it facilitates the *controlled* consumption of hedonic goods and services by imposing restrictive payment terms that ensure that prior consumption is paid off in full before credit is restored and more hedonic items can be bought. Moreover, a consumer's credit line is determined based on his or her historical consumption rate, which ensures that "consumption excesses" during any one period will not be financed. In this way, marketers could position charge cards as providing responsible credit. The annual fee that American Express charges for this classic card may thus be seen not just as a signal of the user's privileged status in life but also as the price of self-control. In contrast, the American Express Optima Card is positioned as a

typical credit card to finance the purchase of a much wider variety of goods and services with no annual fee and much less restrictive payment terms, including, for instance, interest charges for payment extensions.

Consumers may also derive insights into their own spending patterns from our analysis. They may become more likely to develop self-control problems and (be tempted to) overconsume hedonic goods if they tend to finance much of their current hedonic consumption. Hence, they should be advised to “always leave home without it” (Prelec and Simester 2001) when faced with opportunities to buy hedonic goods. For example, particularly impulsive consumers (i.e., hedonics; Puri 1996) may want to prepay vacations and lock up their credit cards in the hotel safe. Similarly, public policy makers should be aware of how consumer financing facilitates excessive overall consumption of hedonic goods more than — unfortunately — that of utilitarian goods. The excessive credit lines and easily available credit cards and home equity loans promoted by lenders, accompanied by record personal bankruptcy rates, are highly suggestive of what is causing overconsumption — insufficient self-management of consumer liquidity constraints. Our opening example illustrates the case of a consumer who lacks sufficient self-control of the sort we have demonstrated in this paper.

## REFERENCES

- Ando, Albert and Franco Modigliani (1963), "The Life Cycle Model: Aggregate Implications and Tests," *American Economic Review*, 63.
- Ausubel, Lawrence M. (1991), "The Failure of Competition in the Credit Card Market," *American Economic Review*, 81, 50-81.
- Barsalou, Lawrence W. (1991), "Deriving Categories to Achieve Goal," in *The Psychology of Learning and Motivation: Advances in Research and Theory*, Vol. 27, ed. Gordon H. Bower, New York: Academic Press, 1-64.
- Burkett, Larry (1993), *The Family Budget Workbook*, New York: Northfield Publishers.
- Dhar, Ravi and Klaus Wertenbroch (2000), "Consumer Choice between Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 37 (February), 60-71.
- Feinberg, Richard A. (1986), "Credit Cards as Spending Facilitating Stimuli: A Conditioning Interpretation," *Journal of Consumer Research*, 12, 304-356.
- Furnham, Adrian and Michael Argyle (1998), *The Psychology of Money*, New York, NY: Routledge.
- Gul, Faruk and Wolfgang Pesendorfer (1999), "Temptation and Self-Control," *Econometrica*, forthcoming.
- Heath, Chip and Jack Soll (1996), "Mental Budgeting and Consumer Decisions," *Journal of Consumer Research*, 23, 40-52.
- Henderson, Pamela W. and Robert A. Peterson (1992), "Mental Accounting and Categorization," *Organizational Behavior & Human Decision Processes*, 51 (February), 92-117.
- Hirschman, Elizabeth C., and Morris B. Holbrook (1982), "Hedonic Consumption: Emerging Concepts, Methods and Propositions," *Journal of Marketing*, 46 (Summer), 92-101.
- Hoch, Stephen J. and George F. Loewenstein (1991), "Time-inconsistent Preferences and Consumer Self-Control," *Journal of Consumer Research*, 17 (March), 492-507.
- Kirby, Kris N. (1997), "Bidding on the Future: Evidence against Normative Discounting of Delayed Rewards," *Journal of Experimental Psychology: General*, 126, 54-70.
- Monthly Review (2000), Working-Class Households and the Burden of Debt," *Monthly Review*, 52 (1), 1-11.
- O'Donoghue, Ted, and Matthew Rabin (1999), "Doing It Now or Later," *American Economic Review*, 89 (March), 103-124.

- Prelec, Drazen and George F. Loewenstein (1998), "The Red and the Black: Mental Accounting of Savings and Debt," *Marketing Science*, 17, 4-28.
- \_\_\_\_\_ and Duncan Simester (2001), "Always Leave Home Without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay," *Marketing Letters*, 12 (February), 5-12.
- Puri, Radhika (1996), "Measuring and Modifying Consumer Impulsiveness: A Cost-Benefit Accessibility Framework," *Journal of Consumer Psychology*, 5, 87-113.
- Salmon, Lucy M. (1909), "The Economics of Spending," *Outlook*, 91, 889.
- Schelling, Thomas C. (1984), "Self-Command in Practice, in Policy and in a Theory of Rational Choice," *American Economic Review*, 74 (May), 1-11.
- Shafir, Eldar, Itamar Simonson, and Amos Tversky (1993), "Reason-Based Choice," *Cognition*, 49 (October-November), 11-36.
- Shefrin, Hersh M. and Richard H. Thaler (1988), "The Behavioral Life-Cycle Hypothesis," *Economic Inquiry*, 26 (October), 609-643.
- Soman, Dilip (2001), "Effects of Payment Mechanism on Spending Behavior: The Role of Rehearsal and Immediacy of Payments," *Journal of Consumer Research*, 27 (March), forthcoming.
- \_\_\_\_\_ and Amar Cheema (2001), "The Effect of Credit on Spending Decisions: The Role of the Credit Limit and Credibility," working paper, HKUST, Hong Kong.
- Sterman, John (1989), "Misperceptions of Feedback in Dynamic Decision Making," *Organizational Behavior & Human Decision Processes*, 43 (3), Jun 1989. 301-335.
- Strotz, Robert H. (1956), "Myopia and Inconsistency in Dynamic Utility Maximization," *Review of Economic Studies*, 23, 165-180.
- Thaler, Richard H. (1985), "Mental Accounting and Consumer Choice," *Marketing Science*, 4, 199-214.
- \_\_\_\_\_ (1999), "Mental Accounting Matters," *Journal of Behavioral Decision Making*, 12 (September), 183-206.
- \_\_\_\_\_ and Hersh M. Shefrin (1981), "An Economic Theory of Self-Control," *Journal of Political Economy*, 89, 392-406.
- The Wall Street Journal* (1998), "Charged up: Credit Cards Invade a New Niche Market: The Mentally Disabled," p. A1, November 10.

Wärneryd, Karl-Erik (1999), *The Psychology of Saving: A Study of Economic Psychology*, Northampton, MA: Edward Elgar.

Wertebroch, Klaus (1998), "Consumption Self-Control via Purchase Quantity Rationing of Virtue and Vice," *Marketing Science*, 17, 317-337.

Winslow, Emma (1916), "Food, Shelter and Clothing," *The Survey*, 37 (October), 45.

Zelizer, Viviana (1994), *The Social Meaning of Money: Pin Money, Paychecks, Poor Relief, and Other Currencies*, New York: Basic Books.

**TABLE 1**

STUDY 5: PARAMETER ESTIMATES: INTERACTION INCLUDED

Factor	Parameter Estimate	Standard Error	Chi-Square	Prob	
HED	$\alpha^{\text{cash}}$	-0.3469	0.6487	0.29	0.5928
	$\alpha^{\text{charge}}$	-3.9525	1.6673	5.62	0.0178
	$\alpha^{\text{cash2}}$	-3.6056	1.5982	5.09	0.0241
	$\beta_1^{\text{cash}}$	0.4107	0.1536	7.15	0.0075
	$\beta_1^{\text{charge}}$	1.0855	0.2587	17.61	<0.0001
	$\beta_1^{\text{cash2}}$	0.6749	0.2219	9.25	0.0024
AMOUNT	$\beta_2^{\text{cash}}$	-0.0018	0.0002	71.95	<0.0001
	$\beta_2^{\text{charge}}$	0.0002	0.0000	11.99	0.0005
	$\beta_2^{\text{cash2}}$	0.0020	0.0002	85.74	<0.0001
CIS	$\beta_3^{\text{cash}}$	0.0382	0.1312	0.08	0.7710
	$\beta_3^{\text{charge}}$	-0.1654	0.3655	0.20	0.6508
	$\beta_3^{\text{cash2}}$	-0.2036	0.3533	0.33	0.5644
HED×CIS	$\beta_4^{\text{cash}}$	-0.0157	0.0311	0.26	0.6126
	$\beta_4^{\text{charge}}$	-0.1069	0.0554	3.72	0.0538
	$\beta_4^{\text{cash2}}$	-0.0912	0.0488	3.49	0.0618

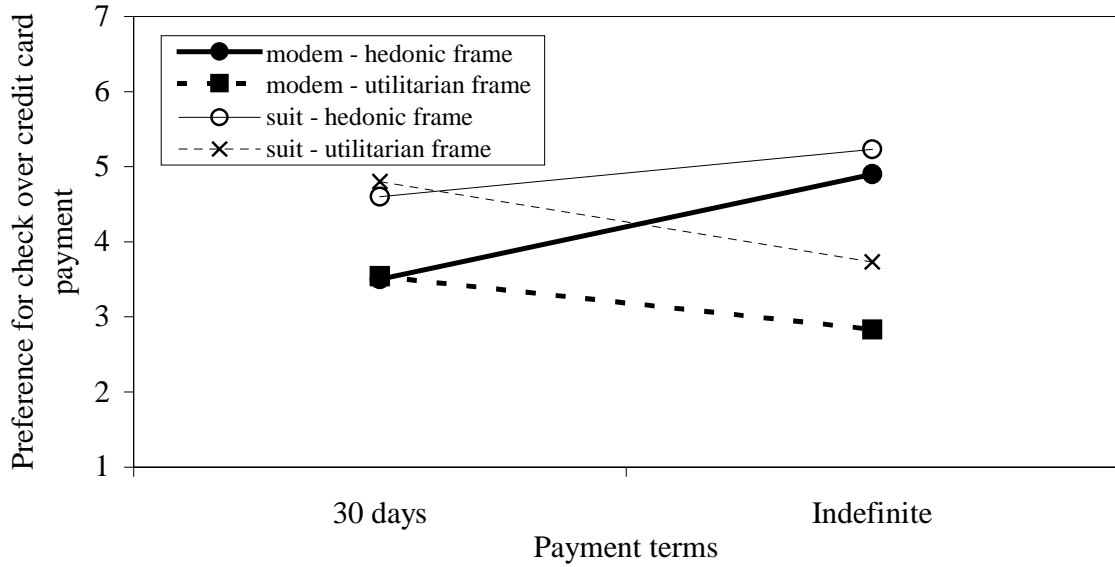
**TABLE 2**

STUDY 5: PARAMETER ESTIMATES WITHOUT INTERACTION TERMS

Factor	Parameter Estimate	Standard Error	Chi-Square	Prob	
HED	$\alpha^{\text{cash}}$	-0.0899	0.3253	0.0800	0.7822
	$\alpha^{\text{charge}}$	-0.9467	0.6373	2.2100	0.1374
	$\alpha^{\text{cash2}}$	-0.8568	0.5906	2.1000	0.1469
	$\beta_1^{\text{cash}}$	0.3320	0.0231	206.7700	<0.0001
	$\beta_1^{\text{charge}}$	0.6041	0.0423	204.2000	<0.0001
	$\beta_1^{\text{cash2}}$	0.2721	0.0387	49.4400	<0.0001
AMOUNT	$\beta_2^{\text{cash}}$	-0.0018	0.0002	71.1300	<0.0001
	$\beta_2^{\text{charge}}$	0.0002	0.0001	14.2000	0.0002
	$\beta_2^{\text{cash2}}$	0.0020	0.0002	85.7000	<0.0001
CIS	$\beta_3^{\text{cash}}$	-0.0135	0.0644	0.0400	0.8339
	$\beta_3^{\text{charge}}$	-0.8431	0.1392	36.6700	<0.0001
	$\beta_3^{\text{cash2}}$	0.8296	0.1300	40.7400	<0.0001

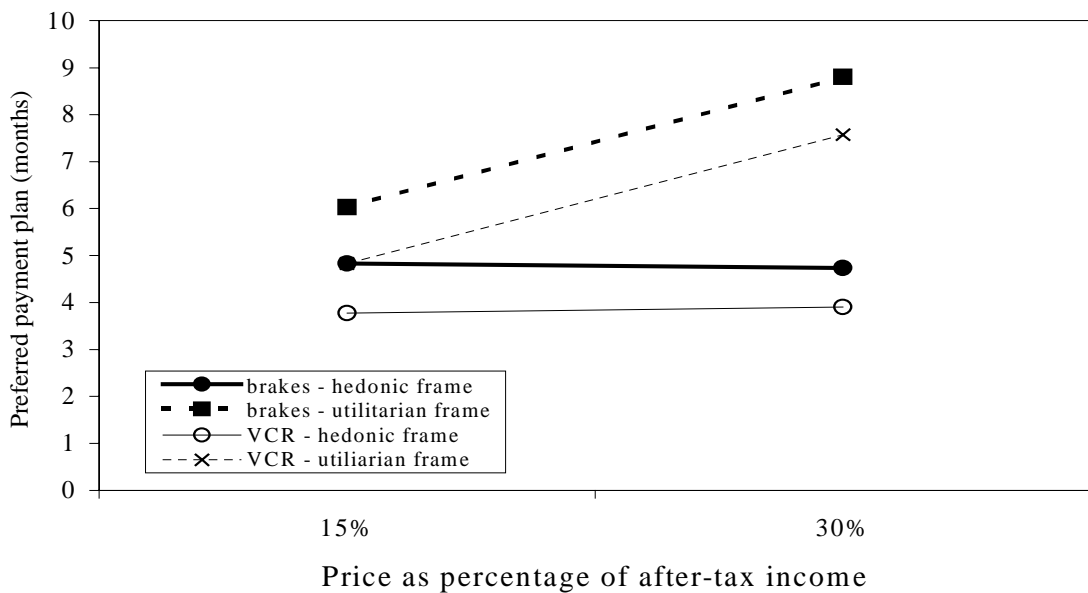
**FIGURE 1**

EXPERIMENT 1: MEAN RATINGS OF PREFERENCES FOR PAYING BY CHECK RATHER THAN CREDIT CARD.



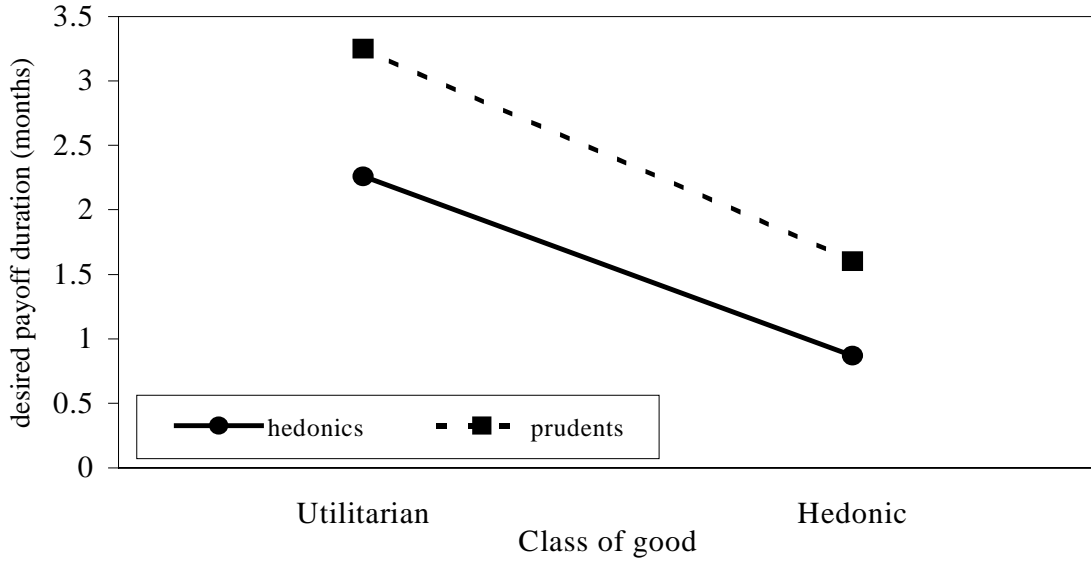
**FIGURE 2**

EXPERIMENT 2: MEAN RATINGS OF PREFERRED PAYMENT PLAN LENGTH.



**FIGURE 3**

EXPERIMENT 3: MEAN DESIRED PAYOFF DURATION AS A FUNCTION OF IMPULSIVENESS AND CLASS OF GOOD



**FIGURE 4**

STUDY 5: EFFECT OF HEDONICITY ON PAYMENT TERMS

