EXAMINING PURCHASE AND NON-REDEMPTION OF MAIL-IN REBATES: THE IMPACT OF OFFER VARIABLES ON CONSUMERS' SUBJECTIVE AND OBJECTIVE PROBABILITY OF REDEEMING

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2004

This dissertation is dedicated to my parents.

ACKNOWLEDGMENTS

I am deeply indebted to my advisor, Chris Janiszewski, who committed himself to my development from the day I arrived in the program and supported me in pursuing the topics that excite me. I would also like thank my committee members Richard Lutz and Joe Alba for their extensive comments which contributed a great deal to the conceptual development of the dissertation, Alan Cooke for his conceptual guidance as well as his generous assistance in developing the website used in the experiments, and Mahendrara Nimalendran for his support and feedback at all stages of the dissertation. I am also indebted to Joel Cohen, who encouraged me throughout the course of my doctoral education. Finally, I would like to thank my family for their encouragement, particularly Alvin Silk for his guidance.

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May 2004

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Major Department: Marketing

Mail-in rebates are popular with retailers and manufacturers because they achieve attractive price points and increase sales while limiting the number of consumers that redeem the rebate to obtain the price discount. This research examines a phenomenon known as *breakage*, which occurs when consumers are enticed to purchase as a result of a rebate offer but subsequently fail to apply for the rebate.

Borrowing from research on overconfidence, procrastination and prospective forgetting, this research examines underlying psychological mechanisms that lead to breakage and how they exert influence via changes in offer characteristics. A series of experiments demonstrate that breakage can be attributed to the discrepancy between consumers' subjective probability of redeeming (i.e., redemption confidence) and their objective probability of redeeming (i.e., actual redemption behavior). Increasing redemption confidence increases the likelihood of purchasing a rebate offer. However, high redemption confidence does not necessarily translate into successful redemption.

The experiments produced five key results. First, increasing the rebate reward increases redemption confidence and the proportion of consumers that purchase the rebate offer, but has a weaker effect on the proportion of buyers that apply for the rebate. Second, increasing the length of the redemption period increases redemption confidence and the proportion of consumers that purchase the rebate offer, but also increases procrastination and breakage. Third, increasing the effort required to redeem the rebate results in a "backlash" effect where the redemption rate is marginally higher for consumers that experience a high-effort redemption process compared to those that experience a low-effort redemption process. Fourth, failing to redeem a rebate or experiencing a high-effort redemption process dramatically decreases the proportion of rebate buyers that purchase the offer again. Finally, structuring redemption procedures to encourage procrastination can have a greater impact on breakage than increasing the effort required to redeem the rebate.

These results have major implications for marketers in demonstrating that shorter redemption periods decrease sales and increase redemption applications. Results also suggest that excessively effortful redemption procedures should not be viewed as a minimum requirement for breakage and that firms may be over-attributing the role of effort in creating breakage.

CHAPTER 1
INTRODUCTION

Mail-in rebates (hereafter rebates) are one of the most popular pricing mechanisms used by manufacturers and retailers to increase sales and discriminate among consumers who vary in their price sensitivity (Blattberg and Neslin 1990; Jolson, Weiner, and Rosecky 1987; Soman and Gourville 2002). Rebates are frequently used in the consumer goods sector (Tat and Schwepker 1998) and are the most common promotion tactic used in consumer electronics (Lanctot 2002). Rebates are popular because they can be used to lower a product's price and increase sales while limiting the number of consumers that redeem the rebate to obtain the price discount (Lanctot 2002). As explained by one retailer, "Manufacturers love rebates because redemption rates are close to none … they get people into stores, but when it comes time to collect, few people follow through. And this is just what the manufacturer has in mind" (Greenman 1999, p. G1). This research examines this phenomenon, widely referred to as *breakage*, which occurs when consumers are enticed to purchase as a result of the rebate offer but subsequently fail to apply for the rebate (Jolson et al. 1987).

The Need for Research

The reasons for breakage are not well understood. Despite the attention rebates have received in the business and popular press (e.g., McGinn 2003; McLaughlin 2002), and despite calls for regulation to protect consumers (e.g., Shim 2002; Spencer 2002), research on consumer response to rebates is extremely limited. Most academic rebate research has relied on consumer surveys and economic models to address other important

rebate issues. For example, research has examined optimum rebate reward amounts (Ali, Jolson, and Darmon 1994), consumer perceptions of manufacturers' motives for offering rebates (Avila, Chapman, and Avila 1989; Tat, Cunningham, and Babakus 1988), consumer attributions of satisfaction with rebate shopping experiences (Hunt and Keaveney 1992; Hunt, Keaveney, and Lee 1995), consumer perceptions of the redemption process (Jolson, Weiner, and Rosecky 1987; Tat et al. 1988), and consumer motives toward rebate redemption (Tat 1994; Tat and Schwepker 1998). With the exception of the research on delayed incentives (Soman 1998) and correlates of rebate proneness (Jolson et al. 1987), there have been no investigations of the reasons for breakage.

Practitioner-driven research on breakage is also severely limited. Interviews with manufacturers and marketing service firms reveal that practitioner-driven research has been hindered by four factors.[1] First, as will be explained, marketers experience considerable difficulty in isolating and measuring breakage. Second, the use of rebate promotions is driven primarily by sales managers aiming to increase sales during promotion periods dictated by key account retailers. As one manager explained, "If your key account retailer gives you a promotion window and you are looking for a quick and easy way to increase sales during that window, you are going to put together a rebate promotion before you use a coupon or some other promotion tactic."[2] As a result, manufacturers are more concerned with meeting sales targets and maintaining downward pressure on redemption rates than investigating factors that influence breakage. Third,

[1] Source: BDS Marketing, Consumer Electronics Association, DDS Right Choice, GeigerDonnelly Marketing, Promotion Marketing Association, TCA Fulfillment Services.

[2] Source: BDS Marketing.

manufacturers are extremely reluctant to conduct market-based experiments that manipulate offer characteristics due to fears that doing so will adversely affect sales and/or increase redemption rates. Fourth, industry associations and the vast majority of manufactures do not maintain data on rebate promotions, limiting the availability of market data. In summary, trends in offer characteristics – such as decreasing the length of time consumers are given to redeem and increasing the effort required to redeem – have been guided primarily by industry intuition about effective strategy as opposed to formal research.

Goals of the Dissertation

Borrowing from research on overconfidence, procrastination and prospective forgetting, this research examines the underlying psychological mechanisms that lead to breakage. I will show that changes in offer characteristics have the potential to influence both purchase and redemption, and that these influences can be opposing or synergistic. As a consequence, understanding breakage requires an understanding of the behavioral processes that influence the expectation of redemption at the time of purchase and the initiation and completion of the redemption process. The dissertation proceeds as follows: Chapter 2 introduces a typology of rebate purchases to illustrate how breakage differs from other post-purchase outcomes and discusses managerial issues pertaining to the design, implementation, and evaluation of rebate promotions. Chapter 3 introduces psychological theory that predicts how rebate offer characteristics influence the purchase and redemption behaviors that contribute to breakage. Chapters 4 through 9 present a series of experiments that test the hypotheses by examining the purchase and post-purchase behavior of rebate buyers and investigating how and when breakage occurs. Finally, chapter 10 discusses the findings and implications for regulators and managers.

CHAPTER 2
TYPOLOGY OF REBATE PURCHASES

How Rebates Differ From Coupons

Rebates offer consumers an opportunity to receive a monetary reward for buying a promoted product, provided they expend some effort to receive the reward (Jolson et al. 1987; Rothschild 1987; Tat et al. 1988). Previous research has treated rebates and coupons as similar tactics for discriminating among consumers who differ in their price sensitivity (Blattberg and Neslin 1990; Rothschild 1987). Although rebates may be similar to coupons in their ability to price discriminate, the temporal arrangement of purchase, effort, and receipt of the reward differ for rebates and coupons (Soman and Gourville 2002). For example, consumers who use a typical coupon have already expended the effort needed to redeem it (e.g., obtaining the coupon from packaging or advertising), and will receive the reward at the time of purchase. In contrast, consumers whose choice is influenced by a rebate have not yet expended the effort required to obtain the reward, and will receive the reward only if they expend the necessary effort *after* purchase. Thus, rebates have the added features of a delay between purchase and completion of the effort, which I term *redemption delay*, and a delay between completion of the effort and receipt of the reward, which I term *reward delay*. The presence of these delays has resulted in rebates being referred to as *delayed incentives* (Soman 1998). The separation of purchase and redemption is an important distinguishing factor between rebates and coupons because it presents the opportunity for consumers to purchase a rebate offer but not redeem it (i.e., breakage).

Classifying Purchases

Classifying rebate purchases provides the starting point for understanding breakage. As shown in figure 1, rebate purchases can be classified into *rebate-dependent* purchases (i.e., incremental sales that occur due to the presence of the rebate), and *rebate-independent* purchases (i.e., baseline sales that occur even when the rebate is absent). Rebate-dependent purchases can be further segmented into purchases by buyers who estimate their probability of redeeming is sufficient to merit purchase (i.e., *probabilistic redeemers*) and purchases by buyers who are certain of redemption (i.e., *intended redeemers* that estimate their probability of redemption is 100%). Rebate-independent purchases can be further segmented into purchases by buyers who have no intention to redeem the rebate (i.e., *intended non-redeemers*) and purchases by buyers who will take advantage of the rebate if the opportunity becomes available (i.e., *opportunistic redeemers*).

Implications for Measuring Redemption Rates

The post-purchase outcomes of each purchase classification are important in understanding how redemption rates are calculated and how they can be non-diagnostic (and potentially misleading) as a measure of rebate program effectiveness. The rebate fulfillment industry relies on redemption rates (i.e., the number of redemptions divided by total units sold) to monitor the effectiveness of their rebate programs and to create guidelines for program implementation. Rebate promotions that achieve sales objectives and generate redemption rates below guidance are deemed successful, while promotions that generate redemption rates above guidance are deemed unsuccessful and tend to be

discontinued immediately.[1] For example, consumer electronics manufacturers are often told to expect redemption rates of 30% to 35% and hope for rates as low as 20% (Norr 2000), and to discontinue promotions that generate redemption rates above 50% (Norberg 2002).

As illustrated in figure 1, intended redemption and opportunistic redemption are both included in the calculation of redemption rates, while breakage and intended non-redemption contribute to lower redemption rates. The inclusion of opportunistic redemption in the calculation of redemption rates reveals how redemption rates can be non-diagnostic and potentially misleading as a measure of rebate effectiveness. Consider the three rebate offers shown in figure 2. These offers generate incremental sales of 20%, 40%, and 60% as a percentage of total sales, and exhibit redemption rates of 30%, 30%, and 40% respectively. According to industry rules of thumb, offer C is least desirable due to its high redemption rate, while offers A and B are equally desirable since they yield equivalent redemption rates. Yet, these conclusions are incorrect. In fact, offer C is most desirable since it contributes the highest proportion of incremental sales and exhibits the lowest redemption rate on incremental purchases. Furthermore, in addition to having a lower redemption rate on incremental purchases, offer B is more desirable than offer A since it does not pay rebate rewards on base sales to opportunistic redeemers.

This example reveals that redemption rates can be a non-diagnostic and potentially misleading measure of rebate effectiveness whenever redemption rates are a) diluted by purchases by intended non-redeemers, and/or b) inflated by redemptions by opportunistic redeemers. Given that advertising effects and habitual purchases generate a substantial

[1] Source: BDS Marketing, DDS Right Choice, GeigerDonnelly Marketing, Promotion Marketing Association, TCA Fulfillment Services.

number of rebate-independent purchases (i.e., consumers purchasing due to influences other than the rebate itself), it is likely that redemption rates observed in the marketplace are affected by some degree of dilution and/or inflation.[2] Although these shortcomings are difficult to remedy, they are mentioned to emphasize that the typology of rebate purchases in figure 1 can aid managers in recognizing that the industry's preoccupation with redemption rates can be problematic.

Implications for Measuring Breakage

Breakage is an important outcome for marketers and the rebate fulfillment industry because it represents incremental sales revenue that does not require the payment of redemption rewards. It is also an important outcome for consumer protection advocates who wish to determine if breakage occurs on a scale that warrants regulation. However, research has yet to obtain accurate measures of breakage. Marketers currently use redemption rates as a proxy for breakage because aggregate sales data cannot distinguish rebate-dependent purchases from rebate-independent purchases. As discussed previously, redemption rates can be a non-diagnostic and potentially misleading measure of rebate effectiveness. Thus, one of the goals of this research is to experimentally isolate rebate-dependent purchases to obtain direct measures of breakage.

Influencing Breakage

From the perspective of the issuing firm, successful rebate programs should increase the number of rebate-dependent purchases (i.e., incremental sales) without encouraging redemptions by opportunistic redeemers. Successful rebate programs should also be structured in a manner that limits intended redemption (i.e., allow for breakage).

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[2] Redemption rates typically range from 2% to 40% depending on the product category.

Attempts to influence breakage usually involve manipulations of rebate redemption periods (i.e., the amount of time given to redeem the rebate), and redemption effort (i.e., the amount of effort required to redeem). For example, over the past 20 years, the rebate industry has shortened redemption periods from a mode of 60 days to a mode of 30 days in an effort to increase breakage.[3] This trend is continuing with 15-day and 7-day redemption periods becoming increasingly common. Another trend designed to increase breakage is increasing redemption effort (e.g., requiring multiple proofs of purchase, making redemption procedures more complex, etc.). As discussed previously, these trends have been guided primarily by industry intuition about effective strategy as opposed to formal research.

Research on Breakage

Although there has been no direct documentation of breakage, three pieces of evidence are consistent with breakage and highlight the need for additional research. First, Jolson et al. (1987) surveyed 294 consumers and report that 72 % of "light" rebate users (people who reported one or two rebate-triggered purchases during the past 12 months) and 39.5% of frequent rebate users (people who reported more than two rebate-triggered purchases during the past 12 months) admit to breakage on over 30% of their rebate-triggered purchases of small home appliances costing less than $100. The results suggest that breakage is a common and recurring problem among rebate buyers. However, given that these data are self-reported, memory biases (i.e., forgetting) and self-presentation biases (i.e., not wanting to admit to breakage) are likely to have created a downward bias in reporting breakage. Conversely, it is questionable whether

[3] Source: BDS Marketing, DDS Right Choice, GeigerDonnelly Marketing, Promotion Marketing Association, TCA Fulfillment Services.

respondents were capable of retrospectively separating rebate-triggered (i.e., rebate-dependent) purchases from rebate-independent purchases, which may have created an upward bias in reporting breakage.

Second, Dhar and Hoch (1996, Study 1), find that in-store coupons result in a 309% average increase in incremental sales across five product categories, but that coupon redemption averaged only 73% of the incremental sales. The implication is that there is a minimum of 27% breakage. However, the behaviors leading to breakage are fundamentally different for rebates and coupons due to the difference in the temporal order of effort and reward discussed earlier. Third, Soman (1998) finds that people are willing to forego a $1 payment for completing a survey in order to receive a larger delayed incentive payment (either $2 or $4 depending on the condition) for completing a second survey (either four or eight pages), yet fail to return the second survey at a later date (i.e., in exactly two weeks, exactly four weeks, or at any time within 4-weeks). Redemption rates ranged from a low of 23.5% for those who were offered $4 for completing an 8-page survey, to a high of 44.5% for those who were offered $4 for completing a 4-page survey. Soman (1998) proposed that people underweight the future effort required to redeem relative to the savings offered by the reward. However, two aspects of the study differ from most real-world rebate promotions. First, participants were aware of the effort requirements (i.e., the second survey) when deciding whether to choose the delayed incentive offer, whereas most rebate offers do not disclose the effort requirements until after purchase. This may have generated a downward bias in the proportion of participants that agreed to the delayed incentive offer, and raises questions about how and when effort influences breakage. Second, no financial investment was

required from participants who chose the delayed incentive offer (i.e., forgoing a $1 reward does not involve the same financial cost as purchasing a product offering a rebate). Thus, participants may not have had the same motivation to redeem as those who purchase real-world rebates. This may have generated a downward bias in the redemption rate and raises questions about how the cost/reward relationship influences breakage.

Based on the research conducted to date, the behaviors surrounding breakage are not well understood. Several explanations for breakage have been suggested in passing, including overconfidence, procrastination, and forgetting, yet research has yet to directly examine these explanations in detail. It is also unclear whether consumers repeatedly fall victim to breakage. Although there is some evidence to suggest that breakage is a recurring problem for some consumers (e.g., Jolson et al. 1987), the evidence implies that rebate buyers do not learn from past experience and/or minimize the relevance of failing to redeem previous offers when considering the purchase of a rebated product. The current research will address these issues.

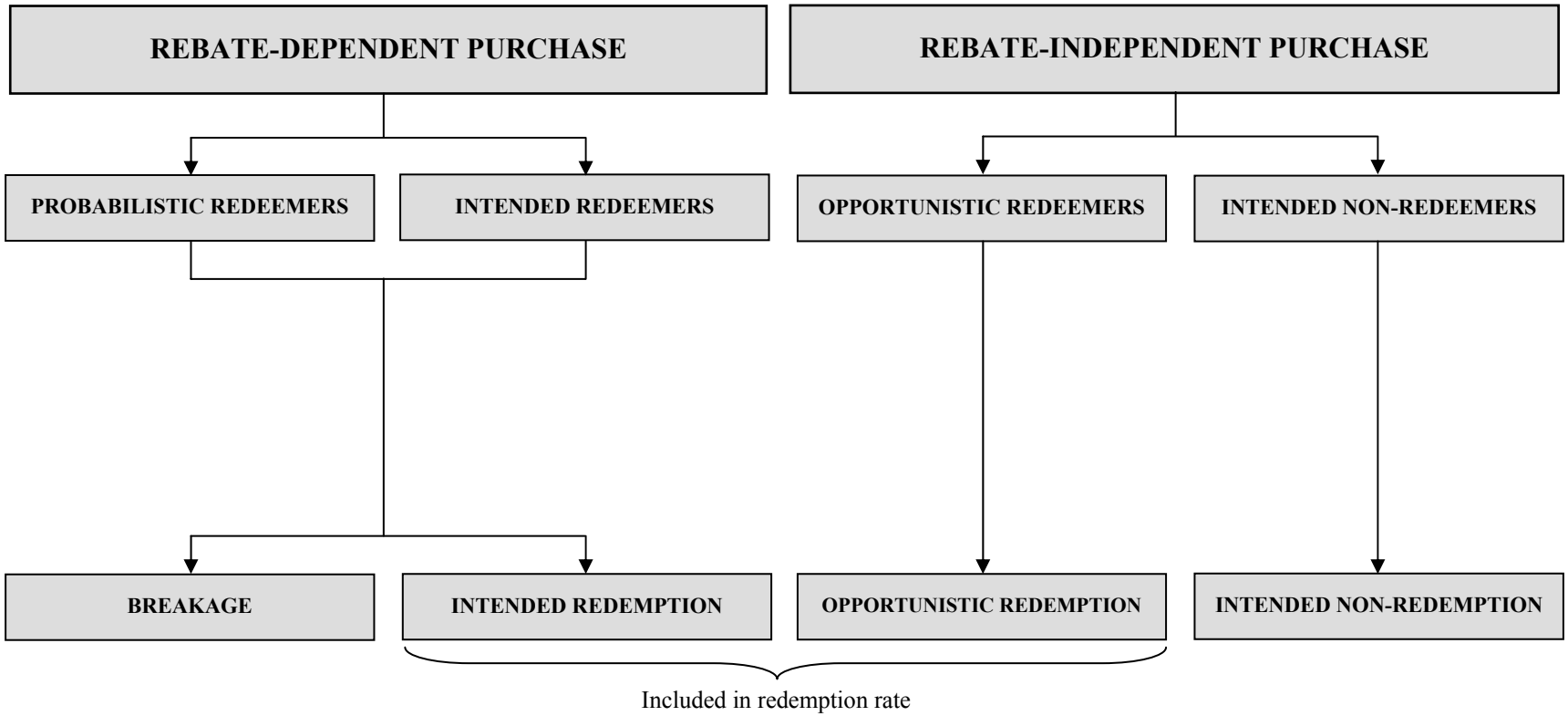

Figure 1. Typology of rebate purchases

Classification	Segment	Offer A PUR	Offer A RDN	Offer B PUR	Offer B RDN	Offer C PUR	Offer C RDN
Rebate-independent purchases (Base sales)	Intended Non-Redeemers	.7	.0	.6	.0	.4	.0
	Opportunistic Redeemers	.1	.1	.0	.0	.0	.0
Rebate-dependent purchases (Incremental sales)	Probabilistic Redeemers	.0	.0	.2	.1	.4	.2
	Intended Redeemers	.2	.2	.2	.2	.2	.2
Total		1.0	.0	1.0	.0	1.0	.0
	Incremental sales as a percentage of total sales	20%		40%		60%	
	Redemption rate	30%		30%		40%	
	Redemption rate on incremental sales	100%		75%		67%	
	Breakage	0%		25%		33%	

PUR represents each segment's contribution to total purchases.
RDN represents each segment's contribution to total redemptions

Figure 2. Impact of post-purchase outcomes on redemption rates

CHAPTER 3
CONCEPTUAL AND THEORETICAL FOUNDATIONS

One conceptual insight into understanding breakage is provided by Soman's (1998) assertion that the decision to purchase a product offering a delayed incentive can be independent of the decision to redeem the delayed incentive, and that the structure of a delayed incentive offer encourages people to overweight the benefits (i.e., the reward), and underweight the costs (i.e., the effort). Although it is questionable whether the behavioral decision theory perspective of "weighting" is central to explaining breakage, I adopt the perspective that purchase and redemption represent separate behaviors and consider psychological mechanisms that influence each of these behaviors.

Explanations for breakage were obtained from the survey study conducted by Jolson et al. (1987), the delayed incentives experiments (Soman 1998), and the numerous cases of breakage reported in the popular press. A literature review was conducted to identify relevant psychological theory that could explain how rebate offer characteristics influence consumers' purchase and redemption behavior to create breakage. In accordance with the definition of breakage, and as illustrated in figure 3, changes in breakage rates may be attributed to three types of factors. First, there may be pre-purchase factors that encourage consumers to make rebate-dependent purchases by influencing consumers' subjective probability of redeeming the rebate (i.e., redemption confidence), but that have little influence on the objective (i.e., actual) probability of redeeming the rebate. Second, there may be post-purchase factors that directly affect the objective probability of redeeming a rebate by influencing the likelihood of initiating

and/or completing the redemption process. Third, there may be repeat-purchase factors that affect how past experience with rebate redemption influences the likelihood of making repeat rebate-dependent purchases.

Pre-Purchase Factors

Redemption Confidence

Research in psychology has demonstrated that people are often highly confident when assessing the extent of their own knowledge, when assessing their traits and abilities, and when making predictions about the future (see Alba and Hutchinson 2000 for a review of knowledge calibration). Most relevant for understanding rebate-dependent purchase behavior is the tendency for people to be highly confident about the likelihood of performing future tasks (e.g., Griffin, Dunning, and Ross 1990; Hoch 1985; Vallone, Griffin, Lin, and Ross 1990). For example, when people are asked to provide a subjective probability estimate (i.e., a confidence estimate) of performing a future task, the average subjective probability estimate of respondents is often considerably higher than the objective response rate (i.e., the proportion of respondents that actually perform the behavior). This difference between confidence and the objective response rate is overconfidence.

Two key findings in the overconfidence literature can inform us about rebate purchase and redemption behavior. First, people are often willing to use their subjective probability estimates (i.e., confidence) to support their decisions to engage in a future behavior (e.g., Vallone et al. 1990). This implies that influencing prospective buyers' subjective probability of redeeming a rebate (i.e., redemption confidence) may be an effective means of encouraging rebate-dependent purchases. Second, high confidence is often driven by contextual factors that increase people's confidence estimates above the

objective response rate. Put differently, contextual factors are capable of influencing confidence estimates while having little effect on the objective probability of performing the behavior (e.g., Griffin et al. 1990; Vallone et al. 1990). Stated formally,

H_1: Increasing a consumer's redemption confidence will increase the probability of rebate-dependent purchase.

H_2: Increasing a consumer's redemption confidence will result in a less than proportionate increase in the objective probability of redeeming the rebate.

A review of the overconfidence literature identified two contextual antecedents of overconfidence that correspond to rebate offer characteristics and may encourage rebate-dependent purchases: a) the desirability of future outcomes, and b) temporal distance.

Desirability

Studies in overconfidence have demonstrated that people become more confident in their personal forecasts as outcomes become more desirable (e.g., Pulford and Colman 1996). It is believed that the "wishful thinking" evoked by an optimistic bias toward a desirable outcome may restrict or interfere with one's ability to consider situational factors that could interfere with achieving the desired outcome (Griffin et al. 1990; Hoch 1985; Vallone et al. 1990). Applied to rebate-dependent purchase, desirability predicts that redemption confidence will vary as a function of the attractiveness of the rebate offer. Thus, as the size of reward increases (relative to the list price), so should the consumer's redemption confidence.

H_3: Increasing the size of the reward will increase

a. the consumer's redemption confidence.
b. the probability rebate-dependent purchase.

Temporal Distance

Overconfidence research has demonstrated that people become more confident in their personal forecasts as the temporal distance (i.e., delay) between their prediction and the occurrence of the predicted event increases (e.g., Gilovich, Kerr, and Medvec 1993; Milburn 1978; Wright and Ayton 1992). The influence of temporal distance may be a consequence of people's failure to consider potential barriers to future success. For example, research has shown that predictions made at a temporal distance generate more reasons for why one may succeed than for why one may fail, with the pattern reversing when people make predictions on the day of the task (Gilovich et al. 1993). This pattern is consistent with findings generated by research on temporal construal (Liberman and Trope 1998; Trope and Liberman 2000). Applied to rebate-dependent purchase, temporal distance predicts that redemption confidence will vary as a function of the amount of time between purchase and the deadline for redemption (i.e., the length of the redemption period). Thus, as the length of the redemption period increases, so should the consumer's redemption confidence.

H_4: Increasing the length of the redemption period will increase

a. the consumer's redemption confidence.
b. the probability of rebate-dependent purchase.

Post-Purchase Factors

Post-purchase factors influence the consumer's likelihood of initiating and/or completing the redemption process and directly influence the objective probability of redeeming. Post-purchase factors include procrastination, prospective forgetting, and redemption effort.

Procrastination

Procrastination occurs when individuals postpone tasks until tomorrow without foreseeing that when tomorrow comes, the required action will be delayed yet again (Akerlof 1991; Silver 1974). Procrastination has been reported to be pervasive within everyday activities (Ellis and Knaus 1977) and among normal adult populations (Harriott and Ferrari 1996). Furthermore, procrastination has been cited as a potential cause of breakage (e.g., Jolson et al. 1987; Soman 1998), although it has yet to be formally investigated in a rebate context. One explanation for task-induced procrastination is that people avoid tasks that are perceived as more aversive or less attractive than alternative uses of one's time (Sigall, Kruglanski, and Fyock 2000). Research has demonstrated that procrastinators make poor estimates about the amount of time needed to complete activities (Buehler, Griffin, and Ross 1994; Lay 1988), commence tasks later than non-procrastinators (Ferrari 1993; Pychyl, Morin, and Salmon 2000; Sigall et al. 2000), take longer to complete tasks (Holmes 2002; Lay 1988), and fail to act on their intentions to perform tasks (Lay and Burns 1991). Procrastination is believed to persist because people (a) have a desire to avoid the activity, (b) make a decision to delay, (c) promise themselves to get to it later, (d) engage in substitute diversionary activities, and (e) make excuses to justify delays and exonerate themselves from blame (Knaus 2000).

Research shows that deadlines help to mitigate procrastination by facilitating the completion of tasks. For example, Ariely and Wertenbroch (2002) observed that students were willing to self-impose deadlines to overcome procrastination, but that performance was higher when deadlines were externally imposed by the instructor than when self-imposed by students. Research has also demonstrated that the longer people are given to complete a task, the greater the likelihood of procrastination and failing to complete the

task. For example, Tversky and Shafir (1992) offered students $5 for answering and returning a questionnaire within 5 days, 3 weeks, or within no deadline and observed return rates of 60%, 42%, and 25% respectively. Applied to rebate redemption, these findings predict that imposing immediate redemption deadlines will mitigate procrastination and increase the objective probability of redeeming. Put differently, imposing less immediate deadlines (i.e., increasing the length of the redemption period) will foster procrastination and decrease the objective probability of redeeming.

H_5: Increasing the length of the redemption period will

a. increase procrastination.
b. decrease the objective probability of redeeming the rebate.

Prospective Forgetting

Prospective forgetting examines people's ability to retrieve and act on previously formed intentions (e.g., Krishnan and Shapiro 1999; Marsh, Hicks, and Watson 2002; Shapiro and Krishnan 1999). This research has shown that consumers frequently forget to act on previously formed intentions and that successful completion of intentions is contingent on a prospective memory component (i.e., remembering that an intention was formed) and a retrospective component (i.e., remembering the content of the intention).

This research is relevant to rebate redemption because it has shown that delays that separate the formation of an intention and an opportunity to act on the intention are likely to foster forgetting (Shapiro and Krishnan 1999). Thus, the delay that is imposed between the purchase and redemption of a rebate offer provides the opportunity for prospective forgetting to play a role in breakage. Research has shown that increasing the length of the delay can encourage forgetting (Scher and Ferrari 2000). Applied to rebate redemption, prospective forgetting predicts that increasing the delay between purchase and

redemption (i.e., increasing the length of the redemption period) will increase the likelihood of prospective forgetting and decrease the objective probability of redeeming.

H_6: Increasing the length of the redemption period will

a. increase prospective forgetting.
b. decrease the objective probability of redeeming the rebate.

Redemption Effort

Redemption effort (i.e., the effort required to successfully redeem a rebate) is often cited as a reason why consumers fail to redeem rebate offers (e.g., Jolson et al. 1987; McLaughlin 2002; Norr 2000; Shim 2002; Soman 1998; Spencer 2002). Redemption effort can contribute to breakage by causing consumers to give up before completing the redemption process and by preventing redemption when consumers make simple errors such as discarding packaging or sales receipts that are required to redeem. In addition to contributing to breakage, redemption effort can also lower redemption rates by increasing rejection rates on submitted applications[1] (i.e., failing to submit UPC codes). Interviews with marketing service firms confirm that increasing redemption effort is a popular strategy for encouraging breakage[2]. In fact, it is widely believed that redemption effort is the greatest contributing factor in creating breakage. As explained by a former marketing consultant, "If you have to take a knife and cut through heavy cardboard to get a bar code, redemption rates drop precipitously" (Norr 2000, p. 21). As stated by Federal Trade Commission Director J. Howard Beals, "Some companies are quick to offer attractive rebates, but often make them so difficult to redeem that consumers simply give up"

[1] Rejection rates typically range between 1% and 10% of submitted applications and can reach as high as 25%. Rejected rebate applications do not qualify as breakage because breakage is defined as failing to submit a rebate application. Rejected applications are subtracted from the total number of applications when calculating redemption rates.

[2] Source: BDS Marketing, DDS Right Choice, GeigerDonnelly Marketing, Promotion Marketing Association, TCA Fulfillment Services.

(Shim 2002, p.1). There is also experimental evidence showing that increasing redemption effort increases task aversiveness and breakage (Soman 1998).

H_7: Increasing redemption effort will decrease the objective probability of redeeming the rebate.

Repeat-Purchase Factors

Repeat-purchase factors influence how past experience with rebate redemption affect the likelihood of making repeat rebate-dependent purchases. Although there is evidence to suggest that breakage is a frequent and recurring problem for some consumers (e.g., Jolson et al. 1987), research has yet to examine whether people make repeat rebate-dependent purchases after failing to redeem a previous offer.

Past Redemption Behavior

One factor which may influence repeat purchase behavior is the extent to past redemption behavior (i.e., redeeming or failing to redeem a previous offer) influences a consumer's repeat purchase behavior. Successful redemption may encourage repeat rebate-dependent purchases. Conversely, failing to redeem may discourage repeat rebate-dependent purchases.

H_8: Failing to redeem a previous offer will decrease the probability of repeat rebate-dependent purchase.

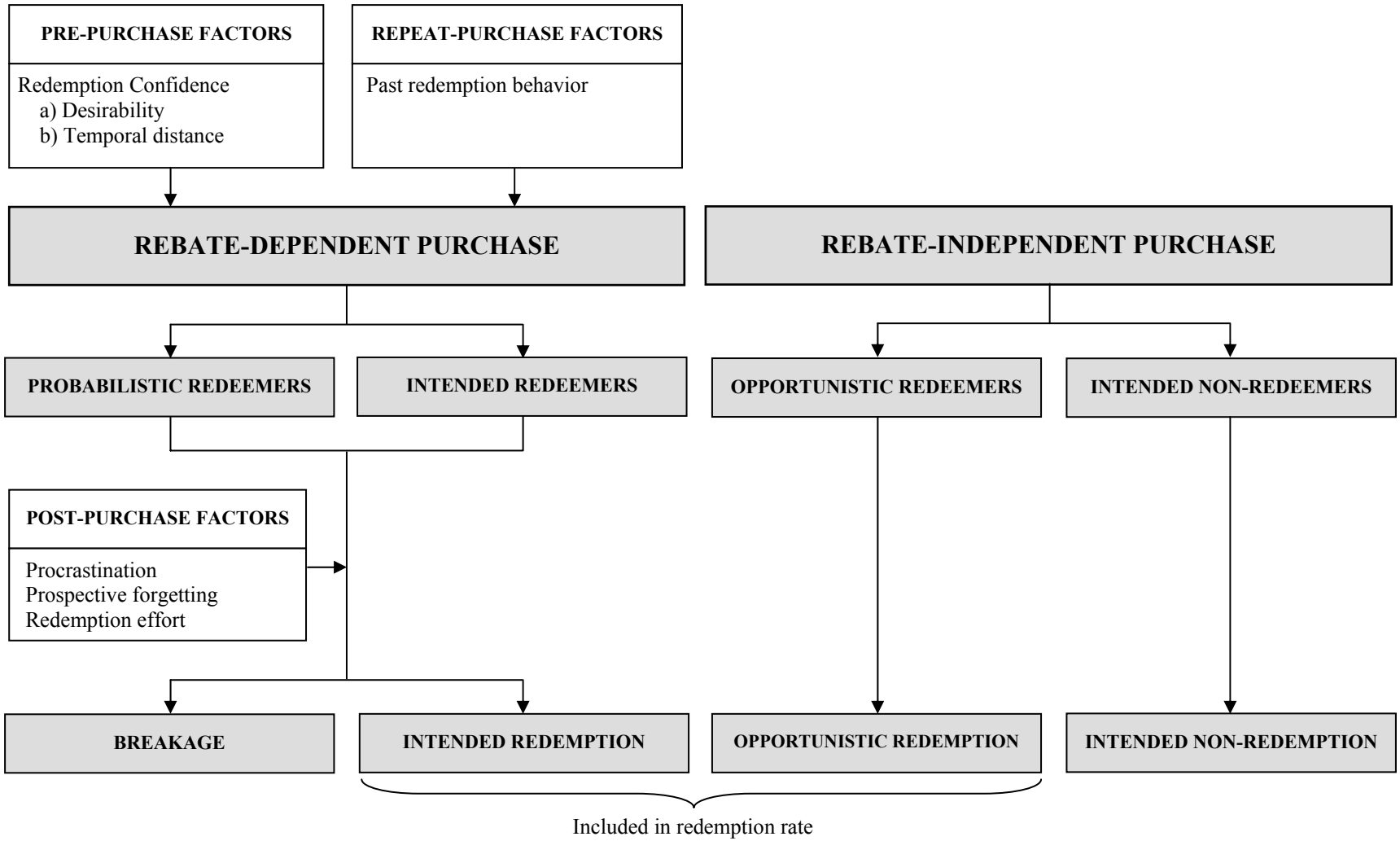

Figure 3. Factors that contribute to breakage

CHAPTER 4
INTRODUCTION TO EXPERIMENTS

Four experiments were conducted to examine consumers' purchase and post-purchase behavior with a real rebate offer and observe how reward, redemption period, and redemption effort influence purchase, procrastination, prospective forgetting, redemption and breakage. The experiments isolate rebate-dependent purchases and measure breakage by presenting consumers with an opportunity to purchase a rebate offer that is unattractive relative to other purchase alternatives unless the consumer redeems the rebate (i.e. the only reason to purchase the offer is to take advantage of the rebate, thus eliminating rebate-independent purchases).

Experiment 1 examined how manipulating offer characteristics (i.e., reward, redemption period and redemption effort) influences purchase, procrastination, breakage, and redemption. Experiment 2 examined the relationship between consumers' redemption confidence and the likelihood of purchase and redemption. Experiment 3 was conducted with rebate buyers from experiment 1 and examined how past experience with rebate redemption influences the likelihood of repeat rebate-dependent purchase. A post-test survey was administered to participants of experiments 1 and 3 to obtain descriptive data on rebate buyers' purchase and redemption behavior. Finally, experiment 4 was conducted to assess the direct effect of reward on redemption behavior.

CHAPTER 5
EXPERIMENT 1

Design

Experiment 1 consisted of an opportunity to make a rebate-dependent purchase and an opportunity to redeem the rebate. To maximize the external validity of the experiment, consumers were shown the same information as is shown with a typical in-store rebate promotion. The reward and redemption deadline were clearly indicated on the offer, but no information regarding the redemption process (i.e., redemption effort) was provided. As a result, the purchase phase of the experiment employed a two (reward: $6 or $9) by three (redemption period: 1-day, 7-days, or 21-days) between-subjects design, producing six experimental conditions. Consistent with typical rebate offers, consumers became aware of the effort required to redeem upon initiating the redemption process. Thus, the redemption phase of the experiment crossed the reward and redemption period factors with an additional between-subjects factor (redemption effort: low or high), resulting in 12 experimental conditions.

Procedure

Phase 1: Purchase

Twelve hundred and thirty-three students from an undergraduate subject pool participated in the experiment for course credit and were randomly assigned to one of the six purchase conditions, resulting in 205 or 206 participants per cell. A large sample size was required since it was expected that a relatively small proportion of participants would purchase the rebate offer, resulting in smaller sample sizes for the redemption analysis.

The purchase opportunity followed a bogus computer-administered market research questionnaire that was used to disguise the purpose of the experiment and prevent hypothesis guessing. Upon entering the experiment lab, participants were informed that a well-known Hollywood movie studio had experienced considerable financial losses due to movies that did poorly at the box office, and was conducting a pilot study to learn about people's movie preferences. A cover story that was developed to disguise the study and justify the need for some participants to return for a second and third session, which would serve as experiment 3 and the post-test respectively. The cover story read as follows:

> *"A well-known Hollywood movie studio is conducting this pilot study at five colleges across the country to get a better idea of the types of movies college audiences want to see. You will be asked a series of questions about your movie preferences, such as your favorite genres, actors, and movies. Your responses will be aggregated and used to develop 10 new movie concepts to be tested in two follow-up studies to take place later this semester. Fewer people are needed for the follow-up studies, so the computers will randomly select people at the end of today's study and ask them to participate in the follow-up studies. If you are asked to participate, please indicate whether or not you want to take part in the two follow-up studies. Remember that selection is random, so please do not feel badly if you are not selected.*
>
> *Finally, the studio is offering pairs of discounted movie tickets to all participants at the end of the study as a thank you for participating today. Simply indicate which ticket offer you wish to purchase, or choose "decline" if you do not wish to purchase tickets. The tickets are valid for one year, and are valid for any movie and show time at the local movie theatre. Please remember that purchase is optional and is completely up to you."*

After the completing the bogus market research study, participants were presented with the computer-administered purchase opportunity shown in figure 4. The choice set consisted of three options: a) purchase two movie tickets for a discounted price of $11, b) purchase two movie tickets for $13 less a $6 (or $9) mail-in rebate, or c) decline both offers and purchase no tickets. Purchasing the rebate offer represented a rebate-dependent

purchase since the offer was attractive only if redeemed (i.e., the $13 before-rebate price that one pays if the rebate offer is not redeemed is greater than the $11 non-rebated offer and the $12 regular price that students pay at the box office). Redemption period was manipulated as one, seven, or 21 days from the date of purchase by changing the "rebate must be redeemed by" date that was clearly marked on the rebate offer. The two ticket offers were presented on the top and the middle of the computer screen and the placement was randomized to guard against order effects.

After making their choice, participants were presented with a confirmation screen that emphasized the financial consequences of their decision and allowed them to choose a different option. For example, those who chose the rebate offer were shown the offer a second time, accompanied by the message "You have chosen the rebate offer. You will pay $13 today. Please confirm your choice." Following the choice confirmation, participants who declined to purchase tickets or who chose the $11 non-rebated offer completed a short computer-administered filler task while the computer asked participants who chose the rebate offer to participate in the follow up studies to be conducted later that semester. Once completed, participants who declined to purchase tickets exited the room and those who chose the $11 offer paid for and received their tickets and exited the room. Those who chose the $13 rebate offer paid for and received their tickets. After making their payment, rebate buyers in each condition were randomly assigned to either the low-effort or high-effort redemption effort condition and were given a rebate purchase receipt that was required to redeem the rebate. This produced a balanced number of rebate buyers in the high-effort and low-effort cells of each purchase condition.

Phase 2: Redemption

The redemption procedure was designed to measure redemption, breakage, and the extent to which rebate buyers procrastinated at each stage of the redemption process. This was achieved by using a rebate redemption website which, unbeknownst to participants, tracked each buyer's progress with the redemption process. To maintain external validity, the rebate redemption website and redemption requirements were modeled after the rebate redemption website of a well-known national electronics retailer. The purchase receipt given to each rebate buyer listed the expiry date for mailing the rebate application[1] and instructed the buyer to visit the rebate website listed on the receipt to obtain the redemption form.

To redeem the rebate, rebate buyers were required to access the rebate website and enter their receipt code. Participants in the low-effort condition were required to complete five steps: 1) complete the form by typing their name, address, ticket numbers, receipt code, and purchase date, 2) print the completed form, 3) complete the on-line customer service survey, which served as a manipulation check of redemption effort, 4) photocopy the UPC code on the back of both movie tickets, and 5) mail the redemption form, original receipt and photocopies to the address listed on the redemption form prior to the expiry date indicated on their purchase receipt (i.e., either 1, 7, or 21 days from the date of purchase). Participants in the high-effort condition were required to complete the same five steps as those in the low-effort condition, but were also required to read a terms and conditions agreement and re-enter the information in step 1 for verification purposes, effectively requiring step one to be completed twice.

[1] The expiry date printed on the purchase receipt matched the "must be redeemed on or before" date of the rebate offer shown in the choice set.

Phase 3: Responding to Rebate Applications

All rebate applications were examined to ensure that they conformed to the redemption requirements listed on the website. Applicants who successfully redeemed prior to the deadline were accepted and received a rebate check ($6 or $9) with a brief letter stating that their application had been accepted. All acceptance letters were mailed five business days after the postmark date of the application to standardize the response time across participants. Applicants who submitted their application prior to the deadline but who failed to include either the original purchase receipt or the photocopy of the UPC code received a letter informing them that they had been rejected and inviting them to re-apply with the required materials prior to the deadline indicated on their purchase receipt. All rejection letters were mailed two business days after the postmark date of their application to standardize the response time and maximize participants' chances for re-application. Applicants who submitted their requests after the deadline received a letter indicating that their request had been rejected since it was postmarked after the deadline.

Dependent Measures

Purchase

Consumers' choice of ticket offer (rebate offer / non-rebated offer / decline) was recorded and analyzed using multinomial logistic regression.

Breakage and Redemption

Login (yes / no) measured whether rebate buyers initiated the redemption process by logging on to the website and provided a means of measuring the degree of breakage attributable to failing to initiate the redemption process. *Applied* (yes / no) measured whether rebate buyers completed the redemption process by mailing a rebate application and provided a means of measuring the degree of breakage attributable to failing to

complete the redemption process. A third measure, a*ccepted* (yes / no), measured whether the rebate application conformed to the redemption requirements and provided a means of measuring the overall redemption rate as well as the rejection rate on rebate applications.[2] *Login* and *applied* are of most interest since breakage is defined as failing to apply for the rebate. There are no a-priori hypotheses regarding errors in rebate applications that could affect redemption and rejection rates. *Login*, *applied* and *accepted* were analyzed using binary logistic regression.

Procrastination

Login delay measured procrastination associated with initiating the redemption process by measuring the delay (in days) between the purchase date and the date on which the buyer logged on to the rebate website. *Mail delay* measured procrastination associated with completing the redemption process by measuring the delay (in days) between logging on to the website and the postmark date of the mailed rebate application. *Login delay* and *mail delay* were analyzed using ANOVA.

Redemption Effort Manipulation Check

Three measures of redemption effort were obtained to determine the efficacy of the redemption effort manipulation. After completing and printing the redemption form on the rebate website, rebate buyers responded to two "customer service" questions on a seven-point semantic differential scale: "Using this website was": 1 = easy / 7=difficult; and 1 = not at all effortful / 7 = extremely effortful. A third measure was obtained by tracking the elapsed time each participant spent on the website. A MANOVA revealed a significant effect of redemption effort on the difficulty rating ($M_{low\ effort} = 2.08$, $M_{high\ effort}$

[2] The discrepancy between "applied" and "accepted" is caused by rejected (late or incomplete) rebate applications.

= 3.65) (F (1, 137) = 21.34, $p < .001$), effort rating ($M_{low\ effort}$ = 2.86, $M_{high\ effort}$ = 4.75) (F (1, 137) = 29.92, $p < .001$), and time spent on the website ($M_{low\ effort}$ = 4.9 minutes, $M_{high\ effort}$ = 9.0 minutes) (F (1, 137) = 59.33, $p < .001$). Reward, redemption period and all interactions were not significant for all three measures (all p's >.40), confirming that the reward and redemption period manipulations did not influence perceptions of redemption effort.

Results

Purchase

The purchase results for experiment 1 are shown in figure 5. A higher proportion of consumers purchased the rebate offer when the reward increased from $6 to $9 and when the redemption period increased from 7 to 21 days. Multinomial logistic regression[3] indicated that the reward by redemption period interaction was not significant ($\chi^2 = 1.40$, $p > .80$). Further analysis revealed significant main effects of reward ($\chi^2 = 15.11$, $p < .001$) and redemption period ($\chi^2 = 12.82$, $p < .05$). The odds ratio for reward indicates that the estimated odds of purchasing the rebate offer are 1.9 times higher when the rebate is $9 than when it is $6. Similarly, the odds ratio for redemption period indicates that the estimated odds of purchasing the rebate offer are 2.0 times higher when the redemption period is 21 days than when it is either seven days or one day.

[3] In accordance with the MNL model specification guidelines proposed by Ben-Akiva and Lerman (1985), a nested logit model was specified before graduating to a MNL model to ensure that the MNL model was a better predictor of purchase compared to the nested model, and to ensure that the error terms of the three purchase alternatives satisfied the IID (independent and identically distributed) assumption. The nested model specified "purchase" and "no purchase" as discrete alternatives, with the rebate and non-rebate offers nested under "purchase."

Redemption

Redemption analyses were conducted on the 184 consumers who purchased the rebate offer. Sixty-seven percent of rebate buyers applied for the rebate, resulting in a breakage rate of 33%. Eleven percent of the applications (8% of rebate buyers) had their rebate applications rejected, resulting in a redemption rate of 59%. The proportion of rebate buyers in each condition that applied for the rebate is shown in figure 6. Logit analyses found no significant two-way or three-way interactions on the proportion of buyers that logged on to the website, applied for the rebate, or were accepted. As predicted, increasing the length of the redemption period decreased the proportion of rebate buyers that applied for the rebate ($\chi^2 = 5.12$, $p < .05$). Thus, increasing the length of the redemption period has a positive influence on purchase behavior and a negative influence on redemption behavior. Unexpectedly, increasing redemption effort generated a marginally significant increase in the proportion of rebate buyers that applied for the rebate ($\chi^2 = 3.03$, $p < .08$). As predicted, increasing the reward did not have a significant effect on the proportion of rebate buyers that logged on to the website ($\chi^2 = 0.14$, $p > .70$), applied for the rebate ($\chi^2 = 0.01$, $p > .90$), or were accepted ($\chi^2 = 0.50$, $p > .40$). The estimated odds of applying for the rebate are 2.4 times higher when the redemption period is one day compared to 21 days, and 1.8 times higher when the redemption period is seven days compared to 21 days, and 1.7 times higher when consumers experience the high-effort redemption process compared to the low-effort redemption process.

Procrastination

Procrastination analyses were conducted on the 149 rebate buyers that initiated the redemption process by logging on to the website and the 123 rebate buyers that completed the redemption process by mailing a rebate application. The results for *login*

delay and *mail delay* are shown in figures 7 and 8 respectively. As predicted, increasing the length of the redemption period significantly increased the extent to which rebate buyers procrastinated before logging on to the website (F (2, 137) = 20.07, $p < .001$). Planned contrasts revealed a significant difference between all levels of redemption period (all p's < .01). As predicted, increasing the reward had no effect on *login delay* (F (1, 137) = 0.23, $p > .60$). The effect of redemption effort on *login delay* was also non-significant (F (1, 137) = 0.05, $p > .80$), which was expected since effort was not manipulated until after rebate buyers logged on to the website.

With regard to *mail delay*, the ANOVA revealed a significant redemption period by redemption effort interaction (F (2, 111) = 49.16, $p < .001$). As shown in figure 8, increasing the redemption period increased the extent to which rebate buyers in the low-effort condition procrastinated before mailing the rebate application. In contrast, rebate buyers in the high-effort condition tended to mail the rebate application within a few of days of visiting the website, regardless of the amount of time that was left before the redemption deadline. As with *login delay*, size of reward did not have a significant effect on *mail delay* (F (1, 111) = 0.07, $p > .80$).

Discussion

Purchase and Redemption

Increasing the reward increased the number of rebate-dependent purchases, supporting H3b, but did not influence redemption, consistent with H2. Increasing the length of the redemption period from 7 days to 21 days also increased the number of rebate-dependent purchases, supporting H4b, and any increase in the redemption period increased procrastination and decreased the proportion of buyers that applied for the rebate, supporting H5. It appears that shorter redemption deadlines mitigate

procrastination and decrease breakage by facilitating the completion of redemption applications that would otherwise go unfinished.

Insights Regarding Breakage

As discussed earlier, the challenges associated with isolating rebate-dependent purchases has made it difficult to determine the extent to which breakage occurs and how it is influenced by offer characteristics. The breakage rate of 33% indicates that breakage is a common post-purchase outcome that can lower redemption rates in a significant manner. As illustrated in figure 9, 19% of rebate buyers failed to log on to the website and an additional 14% failed to mail their applications. Thus, failing to initiate the redemption process accounts for about 58% of breakage. This finding is important because increasing redemption effort does not influence this form of breakage (i.e., rebate buyers did not become aware of the effort required until after logging on to the website). In fact, in opposition to H7, increasing redemption effort caused rebate buyers to complete the redemption process more quickly and generated a marginal increase in rebate applications. This suggests buyers in the high effort condition may have been more motivated to apply for the rebate in response to the high-effort redemption requirements.

Failing to mail redemption applications is also a significant problem for consumers, and the breakage rate would have been greatly reduced had consumers been given the option of completing the entire redemption process on-line (i.e., no mail-in requirement).

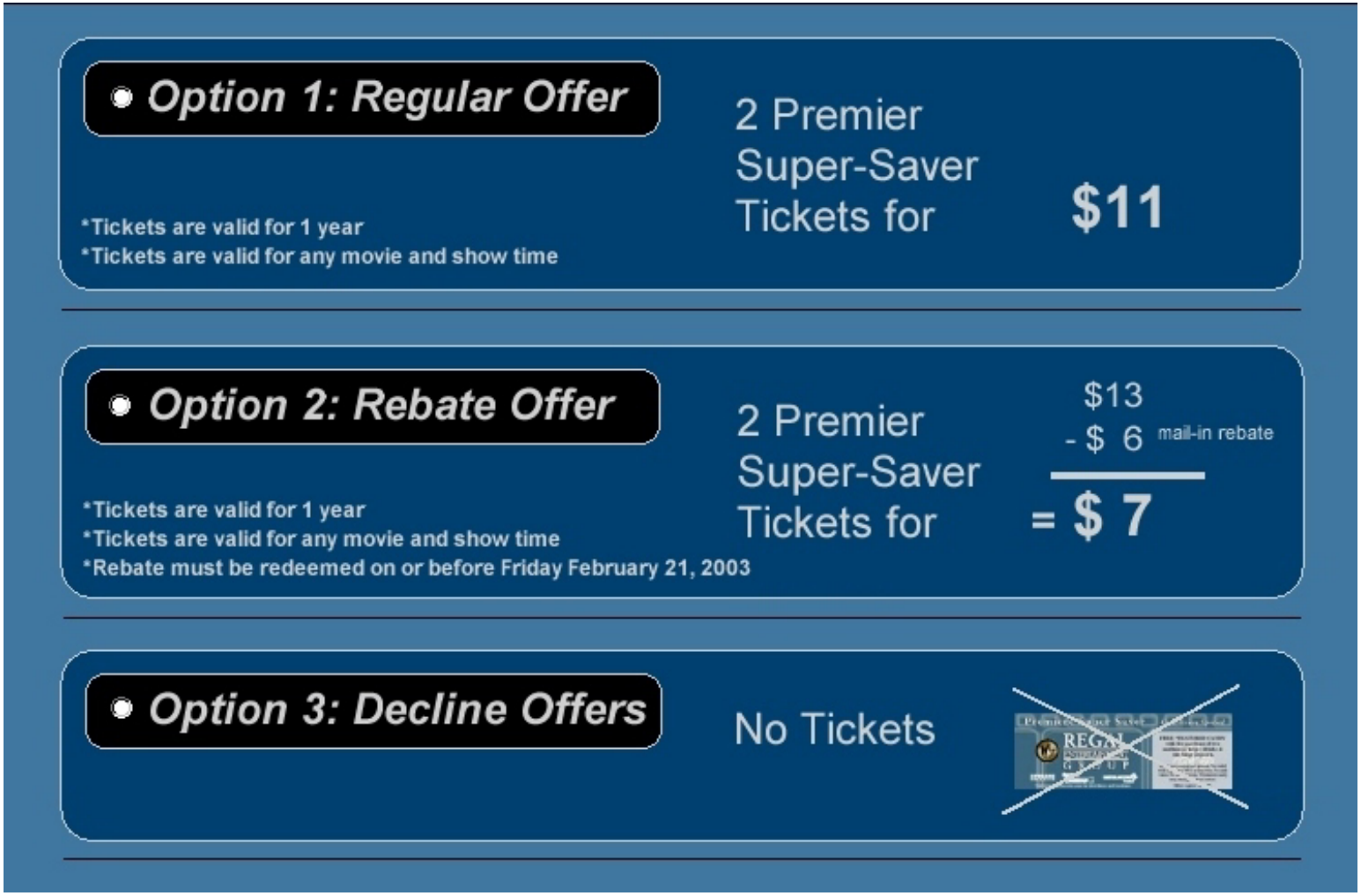

Figure 4. Purchase opportunity choice set[4]

[4] Reward was manipulated as either $6 (as shown) or $9, resulting in an after-rebate price of either $7 (as shown) or $4. Redemption period was manipulated by setting the "must be redeemed by" date to 1, 7, or 21 days after the date of purchase.

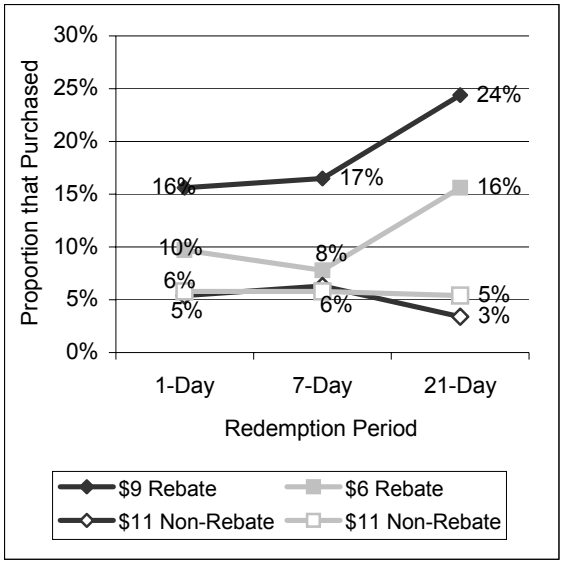

Figure 5. Proportion of experiment 1 participants purchasing rebate and non-rebate offers by condition

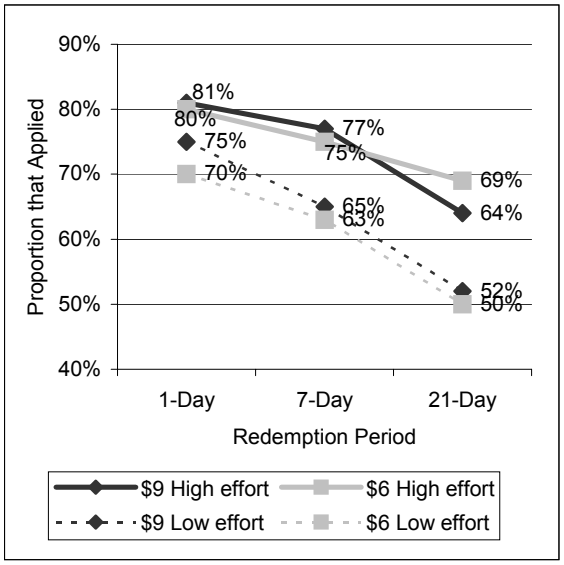

Figure 6. Proportion of experiment 1 rebate buyers that applied for the rebate by condition

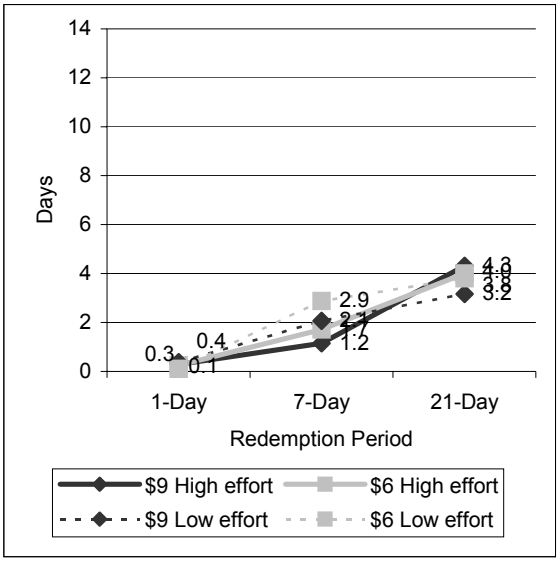

Figure 7. Experiment 1 login delay by condition

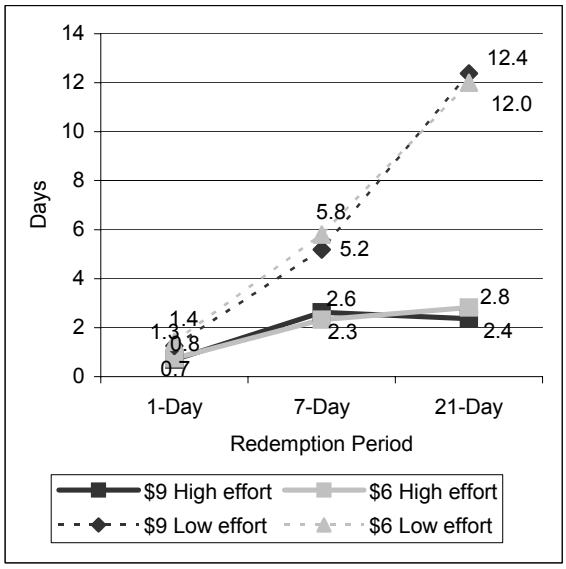

Figure 8. Experiment 1 mail delay by condition

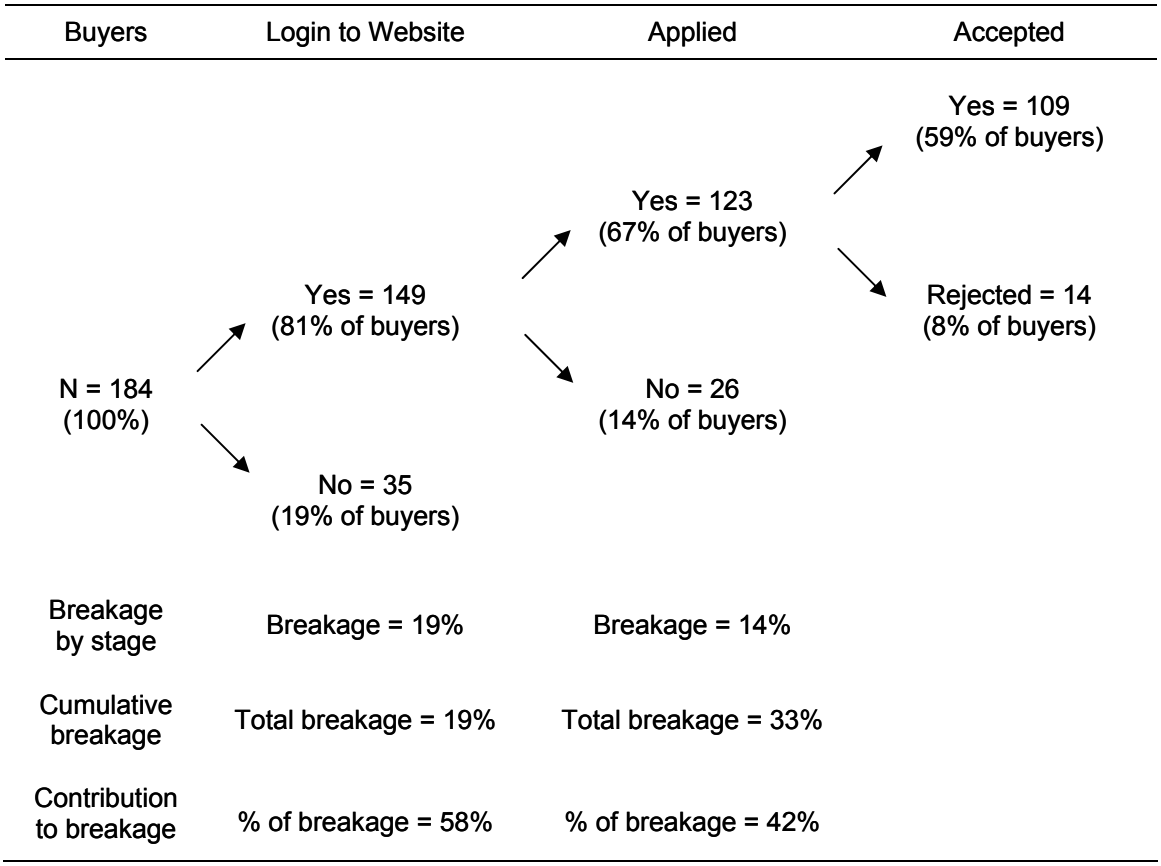

Figure 9. Experiment 1 breakage by stage of redemption (n=184)

CHAPTER 6
EXPERIMENT 2

Although experiment 1 demonstrated how rebate offer characteristics influence purchase, procrastination and redemption, it did not directly test the relationship between consumers' subjective probability of redeeming and the likelihood of purchase and redemption as outlined in hypotheses H1-H4. Experiment 2 was designed to test this relationship by replicating the procedure used in experiment 1 and measuring consumers' subjective probability of redemption[1]. In doing so, experiment 2 will determine the extent to which consumers making rebate-dependent purchases are confident of redeeming, and whether manipulating reward and redemption period influence redemption confidence. Most importantly, experiment 2 will determine how the redemption confidence of rebate buyers relates to their redemption behavior (testing H2), and whether redeemers are any more or less confident of redeeming at the time of purchase than non-redeemers.

Experiment 2 was also designed to obtain consumers' base rate estimates of successful rebate redemption (i.e., objective probability estimates). Although H1 predicts that redemption confidence (i.e., the subjective probability of redeeming) drives rebate-dependent purchases, it would be informative to learn how consumers' redemption confidence compares to their base rate estimates of successful redemption. In particular, it would be understandable for consumers to be highly confident of redeeming if they believe the base rate of redemption is high as well (i.e., a false consensus effect).

[1] Subjective probability estimates were not obtained in experiment 1 because doing so would have compromised the external validity of the procedure.

However, if consumers' base rate estimates are relatively accurate, it would suggest that high levels of redemption confidence stem from an overly optimistic view of one's personal probability of redeeming rather than inaccurate perceptions of the base rate of redemption.

Design and Procedure

Experiment 2 used a design and procedure identical to that used in experiment 1 with two exceptions. First, the 7-day redemption period conditions were excluded from the design in an effort to reduce the number of subjects required for the study. This change was considered minor since retaining the 1-day and 21-day redemption period conditions would accommodate the full range of effects observed in experiment 1. This resulted in a two (reward: $6 / $9) by two (redemption period: 1-day / 21-day) by two (redemption effort: low / high) between-subjects design. As in experiment one, the redemption effort manipulation was delayed until rebate buyers logged on to the website, resulting in four purchase conditions. Four hundred subjects were randomly assigned to one of the four purchase conditions resulting in 100 subjects per cell. The redemption procedure used in experiment 2 was identical to that used in experiment 1.

The second exception to the experiment 1 design was the addition of two measures administered to participants immediately following their purchase decision. The first additional measure was a subjective probability estimate adapted from Vallone et al. (1990). Those purchasing the rebate offer were asked, "How confident are you that you will redeem the rebate offer?" while those not purchasing the rebate offer were asked, "How confident are you that you would redeem the rebate if you had purchased the rebate offer?" Participants recorded their responses on a probability scale anchored by "0%: I am completely certain that I will (would) not redeem the rebate" and "100%: I am

completely certain that I will (would) redeem the rebate." The second measure was a base rate estimate. Participants were asked, "Please estimate the percentage of rebate buyers that you think will redeem the rebate." Participants recorded their responses on a probability scale anchored by "0%: None of the rebate buyers will redeem the rebate" and "100%: All of the rebate buyers will redeem the rebate."

Results

Purchase

As illustrated in figure 10, the purchase results replicated the effects observed in experiment 1. Multinomial logistic regression indicated that the reward by redemption period interaction was not significant ($\chi^2 = 1.29$, $p > .50$). Further analysis revealed a significant main effect of reward ($\chi^2 = 7.30$, $p < .05$) and a marginally significant main effect of redemption period ($\chi^2 = 4.52$, $p < .10$). The estimated odds of purchasing the rebate offer are 2.8 times higher when the rebate is $9 than when it is $6, and 2.4 times higher when the redemption period is 21 days than when it is one day.

Redemption

Redemption analyses were conducted on the 54 participants who purchased the rebate offer. The results replicated the effects observed in experiment 1. Seventy-four percent of rebate buyers applied for the rebate, resulting in a breakage rate of 26%. Eight percent of the applications (6% of rebate buyers) had their rebate applications rejected, resulting in a redemption rate of 69%. The proportion of rebate buyers in each condition that applied for the rebate is shown in figure 11. Logit analyses found no significant two-way or three-way interactions on the proportion of buyers that logged on to the website, applied for the rebate, or were accepted. As in experiment 1, increasing the length of the redemption period resulted in a significant decrease in the proportion of rebate buyers

that applied for the rebate ($\chi^2 = 3.93$, $p < .05$), and increasing redemption effort resulted in a marginally significant increase in the proportion of rebate buyers that applied for the rebate ($\chi^2 = 3.55$, $p < .06$). Increasing the reward did not have a significant effect on the proportion of rebate buyers that logged on to the website ($\chi^2 = 0.17$, $p > .60$), applied for the rebate ($\chi^2 = 0.14$, $p > .90$), or were accepted ($\chi^2 = 0.03$, $p > .80$). The estimated odds of applying for the rebate are 5.9 times higher when the redemption period is one day compared to 21 days, and 3.8 times higher when consumers experience the high-effort redemption process compared to the low-effort redemption process.

Procrastination

Procrastination analyses were conducted on the 47 rebate buyers that logged on to the website and the 40 rebate buyers that mailed a rebate application. The results for *login delay* and *mail delay* are shown in figures 12 and 13 respectively. As in experiment 1, increasing the length of the redemption period significantly increased the extent to which rebate buyers procrastinated before logging on to the website (F (1, 39) = 21.53, $p <$ .001). As expected, the effects of reward (F (1, 39) = 0.01, $p > .90$) and redemption effort (F (1, 39) = 0.02, $p > .80$) on *login delay* were not significant. As in experiment 1, a significant redemption period by redemption effort interaction (F (1, 32) = 14.01, $p <$ .001) was observed for *mail delay*. As shown in figure 13, increasing the redemption period reduced procrastination in the high-effort condition relative to the low-effort condition. Size of reward did not have a significant effect on *mail delay* (F (1, 32) = 0.59, $p > .40$).

Probability Estimates

Subjective probability (i.e., confidence) and base rate estimates for experiment 2 are shown in figure 14. Results indicate that rebate buyers are highly confident of

redeeming at the time of purchase despite generating rather accurate estimates of the base rate of redemption. Rebate buyers' confidence estimates (M = 93.5%) ranged from 50% to 100%, and over 60% of rebate buyers reported being 100% confident of redeeming the rebate.[2] The mean base rate estimate of rebate buyers (M = 53.7%) was close to the 60% redemption rate observed in experiment 1, and did not differ significantly from the base rate estimates of decliners (M = 51.0%) or of those who purchased the non-rebated offer (M = 55.6%), (F (2, 397) = 0.62, p > .50).

As shown in figure 15, increasing the size of reward significantly increased consumers' subjective probability of redeeming from a mean of 51.8% to a mean of 58.5%, (F (1, 396) = 4.28, p < .05), supporting H1 and H3. As shown in figure 16, increasing the length of redemption period also significantly increased consumers' subjective probability of redeeming from a mean of 51.5% to a mean of 58.8%, (F (1, 396) = 5.10, p < .05), supporting H1 and H4. Increasing reward (F (1, 396) = 3.50, p < .06) and redemption period (F (1, 396) = 3.21, p < .08) resulted in marginally significant increases in consumers' base rate estimates.

With regard to the relationship between redemption confidence and redemption, binary logistic regression revealed that redemption confidence did not have a significant effect on whether rebate buyers logged in, (β = -.02, χ^2 = 0.14, p > .70), applied (β = -.08, χ^2 = 2.08, p > .10) or were accepted (β = -.10, χ^2 = 0.10, p > .70), supporting H2. In fact, as shown in figure 17, non-redeemers were just as confident at the time of purchase (M = 94.1%) as redeemers (M = 93.2%), (F (1, 52) = 0.09, p > .70). Base rate estimates were

[2] The mean confidence estimate of rebate buyers (M = 93.5%) was significantly higher than that of those who declined the offer (M = 49.6%) and who purchased the non-rebated offer (M = 38.5%), (F (2, 397) = 55.00, both p's < .001), and multinomial logistic regression confirmed that confidence has a significant positive effect on the likelihood of purchasing the rebate offer (β = .10, χ^2 = 36.94, p < .001).

also similar of redeemers (M = 54.0%) and non-redeemers (M = 53.1%), (F (1, 52) = 0.04, $p > .80$). Finally, a median split of rebate buyers based on their confidence estimates revealed similar redemption rates for the higher-confidence (67%) and lower-confidence (70%) groups ($\chi^2 = 0.09$, $p > .70$).

Discussion

In addition to replicating the results of experiment 1, experiment 2 provides direct evidence of the relationship between consumers' redemption confidence and their purchase and redemption behavior. As predicted by H1, H3 and H4, increasing reward and redemption period increases redemption confidence and the probability of rebate-dependent purchase. However, as predicted by H2, increasing redemption confidence does not generate a proportionate increase in the objective probability of redeeming. Non-redeemers were just as confident of redeeming as redeemers, revealing that some poorly calibrated consumers fall victim to redemption overconfidence by making rebate-dependent purchases that they are unlikely to redeem. Interestingly, buyers are highly confident despite rather accurate base rate estimates. Although it is questionable whether consumers consider base rates during purchase, the results at least suggests that high redemption confidence does not stem from a false consensus effect. Thus, it is possible that rebate buyers exhibit a "better than average" effect in believing that their personal probability of redeeming is greater than that of others.

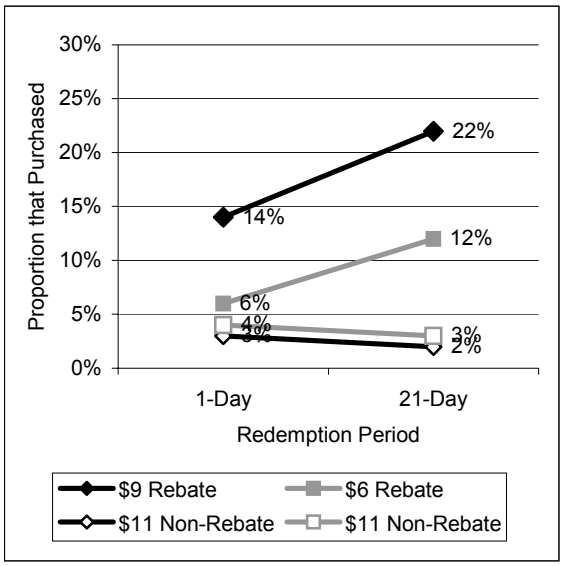

Figure 10. Proportion of experiment 2 participants purchasing rebate and non-rebate offers by condition

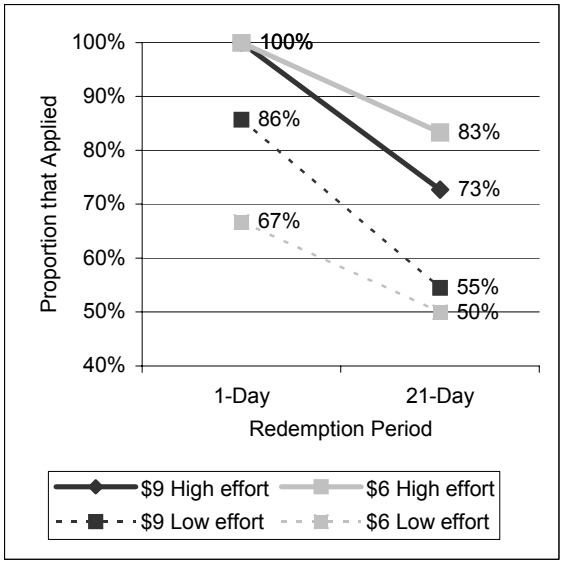

Figure 11. Proportion of experiment 2 rebate buyers that applied for the rebate by condition

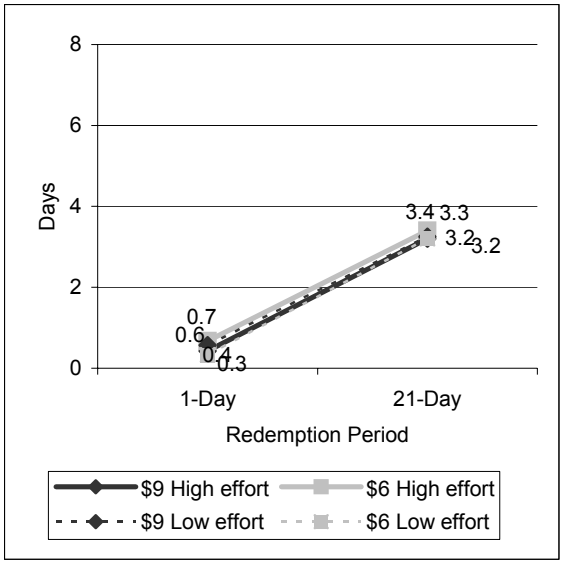

Figure 12. Experiment 2 login delay by condition

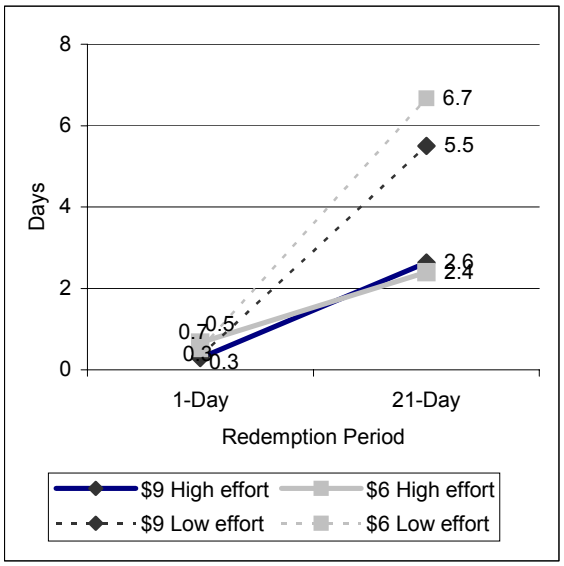

Figure 13. Experiment 2 mail delay by condition

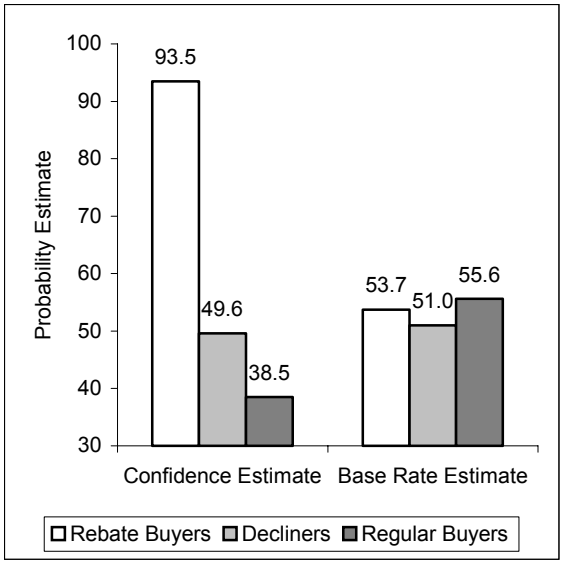

Figure 14. Experiment 2 confidence and base rate estimates by choice

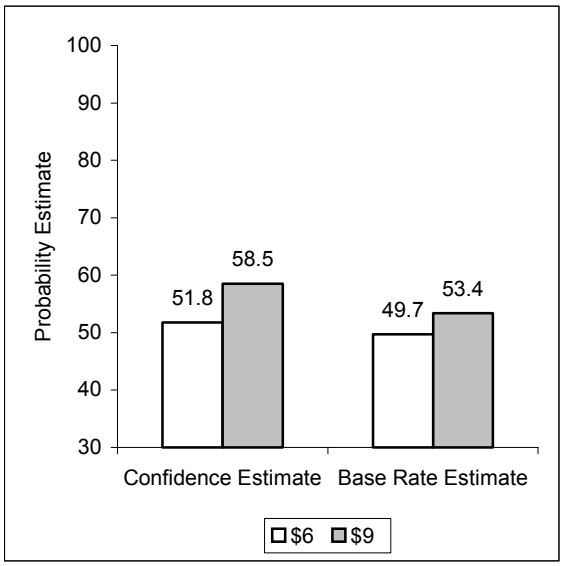

Figure 15. Experiment 2 confidence and base rate estimates by reward

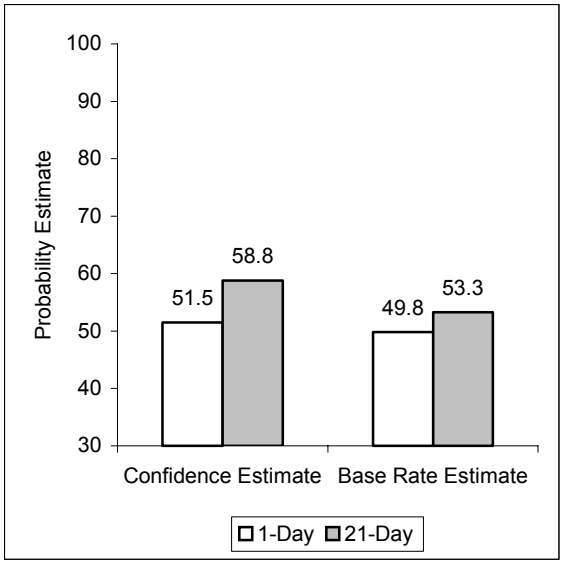

Figure 16. Experiment 2 confidence and base rate estimates by redemption period

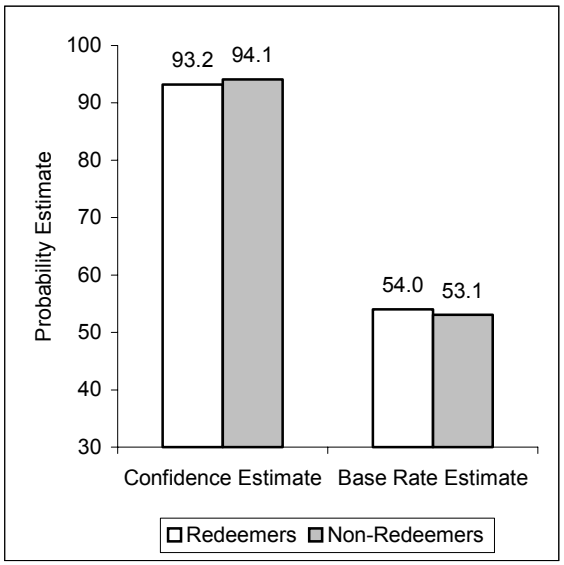

Figure 17. Experiment 2 confidence and base rate estimates of redeemers and non-redeemers

CHAPTER 7
EXPERIMENT 3

Although there is evidence to suggest that breakage is a recurring problem for some consumers (e.g., Jolson et al. 1987), this implies that rebate buyers do not learn from past experience and/or minimize the relevance of past redemption failures when considering the purchase of a rebate offer. Research has yet to experimentally investigate the repeat purchase behavior of rebate buyers to determine the extent to which breakage is a recurring outcome or to identify the conditions that lead to repeat instances of breakage. Experiment 3 was designed to address these questions.

Design and Procedure

Approximately five weeks after completing experiment 1, the 184 rebate buyers from experiment 1 were assigned to the same experimental conditions they experienced in experiment 1 and were provided with another opportunity to purchase and redeem the same offer. The experimental procedure and analyses were the same as in experiment 1, with four exceptions. First, the bogus market research survey that preceded the purchase opportunity consisted of new questions about movie preferences to maintain the face validity of the cover story. Second, participants were now aware of the redemption requirements if they had attempted to redeem the rebate in experiment 1 (i.e., rebate buyers that did not log on to the website in experiment 1 remained unaware of the redemption requirements). Third, those declining repeat purchase were asked why they did not purchase the rebate offer. Finally, the analysis included an additional predictor

variable, *past redemption behavior*, which indicated whether the rebate buyer redeemed the rebate in experiment 1.

Results

Repeat Purchase

As shown in figure 18, the purchase results closely resemble the redemption results of experiment 1. Multinomial logistic regression found no significant interactions on the proportion of buyers making a repeat purchase. Further analysis revealed significant main effects of past redemption behavior ($\chi^2 = 32.71$, $p < .001$) and redemption effort ($\chi^2 = 9.88$, $p < .01$). The estimated odds of repeat purchase are 10.8 times higher for buyers that redeemed the offer in experiment 1 than for buyers that did not redeem, and 3.2 times higher for buyers that experienced the low-effort redemption process than for buyers that experienced the high-effort redemption process. Thus, failing to redeem the offer and experiencing high-effort redemption requirements drastically reduced the likelihood of repeat purchase. In fact, only 8% of non-redeemers made a repeat purchase versus 41% of redeemers. The self-reported reasons for not making a repeat purchase were analyzed using multinomial logistic regression and are summarized in table 1. Past redemption behavior was the only factor to have a significant effect on the reasons given for not making a repeat purchase ($\chi^2 = 55.28$, $p < .001$). Failing to redeem the previous offer was the most common response given by non-redeemers who declined repeat purchase.

Redemption

Redemption analyses were conducted on the 51 rebate buyers that made repeat purchases. Eighty-four percent of rebate buyers applied for the rebate, resulting in a breakage rate of 16%, well below the rates of breakage observed in experiments 1 (33%) and 2 (26%). Four percent of the applications (5% of repeat rebate buyers) had their

rebate applications rejected, resulting in a redemption rate of 80%, well above the redemption rates observed in experiments 1 (59%) and 2 (69%). Despite the higher redemption rate and lower rate of breakage, the redemption results illustrated in figure 19 are consistent with the effects observed in experiments 1 and 2. Logit analyses found no significant interactions on the proportion of buyers that logged on to the website, applied for the rebate, or were accepted. Increasing the length of the redemption period decreased the proportion of rebate buyers that applied for the rebate ($\chi^2 = 4.84$, $p < .05$), and increasing redemption effort generated a marginally significant increase in the proportion of repeat buyers that applied for the rebate ($\chi^2 = 2.59$, $p < .10$). Increasing the reward did not have a significant effect on the proportion of rebate buyers that logged on to the website ($\chi^2 = 0.01$, $p > .90$), applied for the rebate ($\chi^2 = 0.37$, $p > .50$), or were accepted ($\chi^2 = 0.48$, $p > .40$). The estimated odds of applying for the rebate are 5.1 times higher when the redemption period is one day compared to 21 days, 2.9 times higher when the redemption period is seven days compared to 21 days, and 6.3 times higher when consumers experience the high-effort redemption process compared to the low-effort redemption process.

Procrastination

Procrastination analyses were conducted on the 46 repeat buyers that initiated the redemption process by logging on to the website and the 43 repeat buyers that completed the redemption process by mailing a rebate application. The results for *login delay* and *mail delay* replicated the effects observed in the previous experiments and are shown in figures 20 and 21 respectively. Increasing the length of the redemption period significantly increased the extent to which rebate buyers procrastinated before logging on to the website (F (2, 34) = 18.79, $p < .001$). Planned contrasts revealed a significant

difference between the seven-day and 21-day redemption periods ($p < .001$), but the difference between the one-day and seven-day redemption periods was not significant ($p > .10$). Interestingly, redemption effort did not have a significant effect on *login delay* despite the vast majority of repeat buyers being aware of the redemption requirements ($F(1, 34) = 1.29$, $p > .20$). Aversiveness to effort would predict repeat buyers in the high-effort condition to procrastinate longer than those in the low-effort condition, yet this was not the case. The effect of reward on *login delay* was not significant ($F(1, 34) = 0.22$, $p > .60$). Analysis of *mail delay* revealed a significant redemption period by redemption effort interaction ($F(2, 31) = 7.04$, $p < .01$). Consistent with the results of experiments 1 and 2, increasing the redemption period reduced procrastination in the high-effort condition relative to the low-effort condition. As before, size of reward did not have a significant effect on *mail delay* ($F(1, 31) = 0.06$, $p > .80$).

Repeat Breakage

The opportunity to observe repeat instances of breakage was limited by the small proportion of non-redeemers that made a repeat purchase (only six of the 75 non-redeemers from experiment 1 made a repeat purchase). However, repeat breakage was observed for three of the six non-redeemers that made a repeat purchase. Two of the three repeat non-redeemers failed to log on to the website on both occasions, while the third logged on to the website but did not mail an application on both occasions. All three repeat non-redeemers were in the low-effort, 21-day redemption period condition, and two had purchased the $9 rebate offer. Given the small sample of repeat non-redeemers, valid inferences cannot be made regarding the conditions that increase the likelihood of repeat breakage. However, self-reports obtained from the post-test reveal that two repeat non-redeemers procrastinated and eventually forgot to log on to the website on both

occasions. The third non-redeemer did not realize the redemption form had to be submitted by mail on the first occasion, and lost the purchase receipt required for redemption on the second occasion. Thus, although it is hard to estimate the scope of repeat breakage, it certainly is a problem for some consumers.

Discussion

The results of experiment 3 suggest that rebate buyers avoid offers that are known to require a high degree of effort and offers that they failed to redeem in the past, and that moderate rates of breakage can still occur among successful redeemers that make repeat rebate-dependent purchases. The breakage rate among repeat buyers that redeemed in experiment 1 was 12%, and increasing the redemption period significantly increased procrastination and breakage despite these buyers having full knowledge of the redemption process. The low rate of repeat purchase among non-redeemers is understandable considering that experiment 3 was conducted within five weeks of experiment 1 and involved the same offer. The rate of repeat purchase and breakage among non-redeemers may have been greater if more time had elapsed between the two experiments or if the second offer had been more attractive than the first offer. Nonetheless, experiment 3 represents a conservative test of repeat breakage and suggests that repeat breakage is limited by the low probability of repeat rebate-dependent purchase among non-redeemers.

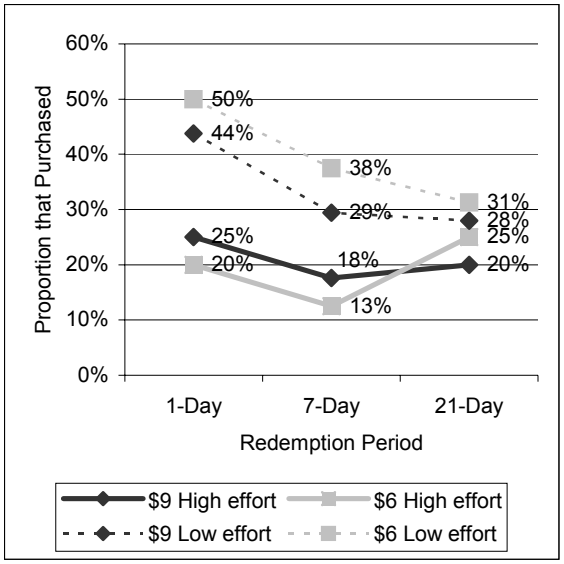

Figure 18. Proportion of rebate buyers making a repeat purchase of the rebate offer in experiment 3 by condition

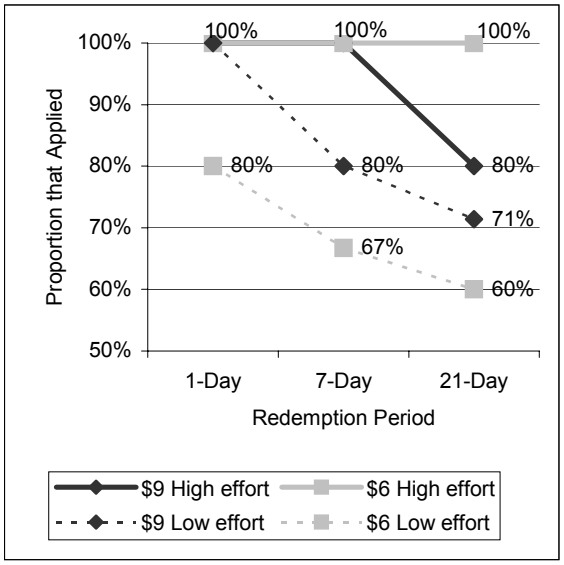

Figure 19. Proportion of experiment 3 rebate buyers that applied for the rebate by condition

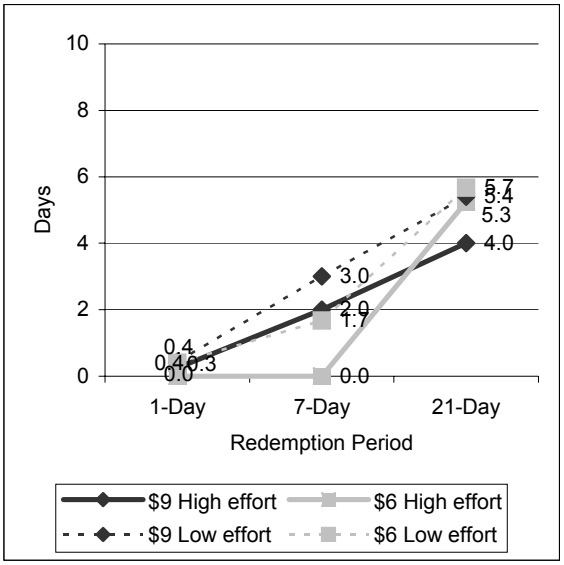

Figure 20. Experiment 3 login delay by condition

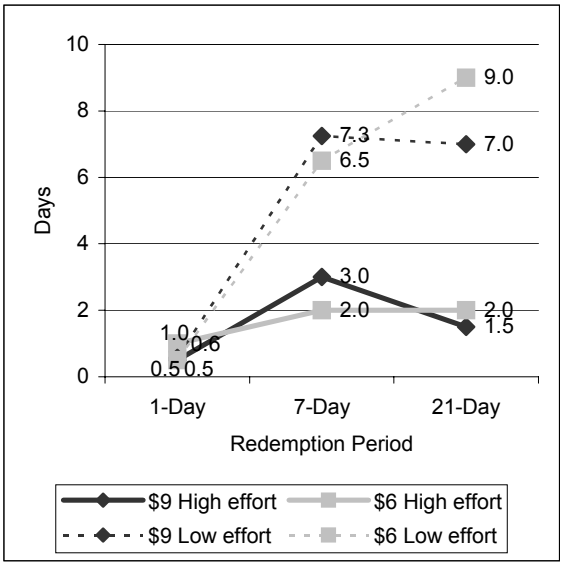

Figure 21. Experiment 3 mail delay by condition

Table 1. Self-reported reasons for not making a repeat rebate purchase in experiment 3

Reason	Redeemers n = 64	Non-Redeemers n = 69	Total Responses n = 133
I still haven't used the tickets I bought last time	54.7%	13.0%	33.1%
I didn't redeem last time	0.0%	47.8%	24.8%
It's too much work/effort to redeem the rebate	21.9%	23.2%	22.6%
I don't have the money / can't afford it	15.6%	10.2%	12.8%
I don't go to the movies that often	4.7%	2.9%	3.7%
Other	3.1%	2.9%	3.0%
Total	100%	100%	100%

CHAPTER 8
POST TEST SURVEY

Experiments 1, 2 and 3 were not able to separate the effects of procrastination and prospective forgetting on breakage, nor were they able to identify other potential factors that may have interfered with redeeming. The post-test survey was designed to address these issues. The survey was administered to the 184 rebate buyers that participated in experiments 1 and 3 approximately five weeks after the study 3 purchase opportunity. Rebate buyers responded to items that solicited retrospective descriptions of the purchase decision and efforts to redeem the rebate, as well as items that measured redemption confidence and base rate estimates, perceived fairness of the rebate offer, actual redemption effort relative to expectations of redemption effort at the time of purchase, attitudes toward rebate offers, and the likelihood of purchasing a rebate offer in the future. In addition to these items, non-redeemers (i.e., rebate buyers that failed to redeem the rebate in experiment 1 and/or experiment 3) explained why they did not redeem the rebate offer. The post-test survey items are listed in the appendix.

Results

All 184 rebate buyers (112 redeemers and 72 non-redeemers) completed the post-test. Ninety-eight percent of participants believed that the series of studies was about measuring movie preferences, indicating that the cover story was successful. One-hundred percent of participants indicated that they had purchased the rebate offer to obtain the rebate, confirming that the procedure was successful in isolating rebate-dependent purchases.

Reasons for Breakage

Non-redeemers' self-reported reasons for breakage are summarized in table 2. Procrastination and forgetting accounted for a greater proportion of breakage (59.7%) than redemption effort (20.8%) and procedural constraints (19.5%) combined. As expected, redemption effort was a factor only among those who initiated redemption, while procrastination interfered with initiating *and* completing redemption. These results are consistent with the procrastination and redemption patterns observed in the experiments and confirm that procrastination can have a greater influence on breakage than procedural constraints and redemption effort. One explanation for the strong influence of procrastination on breakage is that procrastination invites a multitude of other factors to interfere with redemption. Responses to open-ended questions about why participants failed to redeem revealed that those who procrastinated maintained the intention to redeem the rebate, but either engaged in diversionary activities or were distracted by other daily tasks and commitments. This behavior is consistent with Knaus' (2000) self-perpetuating explanation of procrastination. It is also worth noting that although procrastination leads to forgetting in some cases, this accounted for only 5.6% of total breakage.

With respect to the relative influences of procrastination and prospective forgetting, the self reports suggest that procrastination contributes more to breakage than prospective forgetting. Prospective forgetting accounted for 22.5% of the breakage among rebate buyers that failed to initiate the redemption process, but did not contribute to breakage among those who initiated the redemption process. Apparently, those who forgot to redeem did so early in the process and consequently "did nothing" after purchase. Further analysis revealed that the proportion of respondents who reported forgetting to redeem as

the reason for breakage increased with the length of the redemption period, although this difference was not significant. Thus, there is not sufficient evidence to support H6. One explanation for the relatively weak influence of prospective forgetting is that the purchase receipt may have served as an effective memory cue which reminded rebate buyers of their intention to redeem the rebate.

Redeemers vs. Non-redeemers

Response frequencies to the items administered to redeemers and non-redeemers are summarized in table 3. Consistent with the findings of experiment 2, retrospective confidence estimates confirmed that rebate buyers were highly confident of redeeming at the time of purchase (M = 93.3%) and that redeemers (M = 93.5%) and non-redeemers (M = 92.9%) were equally confident of redeeming (F (1, 170) = 0.06, $p > .80$). Consistent with other studies on overconfidence in personal forecasts (e.g., Hoch 1985), the majority (67%) of rebate buyers did not consider factors that could have potentially interfered with redeeming. The proportion of rebate buyers that considered such factors was similar for redeemers (P = 32.8%) and non-redeemers (P = 32.8%), ($\chi^2 = 0.01$, $p > .90$), which is understandable given the similarity in their confidence estimates. As argued in the overconfidence literature (e.g., Griffin and Varey 1996; Hoch 1985; Pulford and Coleman 1996; Vallone et al.1990), failing to consider factors that could interfere with achieving a desired outcome is likely to contribute to overconfidence.

Perceived fairness of the rebate offer was measured by asking rebate buyers to indicate whether they perceived the offer as “fair” or “deceptive”. The proportion of rebate buyers that perceived the rebate offer as “fair” was significantly higher for redeemers (P = 90.4%) than for non-redeemers (P = 76.1%), ($\chi^2 = 6.43$, $p < .05$). Further analysis revealed that the difference between redeemers and non-redeemers can be

attributed to rebate buyers whose rebate applications were rejected for not complying with the terms and conditions of the offer (i.e., late or incomplete submissions).

Changes in attitudes toward rebate offers were measured by asking rebate buyers to indicate their general attitude toward rebates before and after participating in the study. Rebate buyers were also asked to estimate their probability of purchasing a rebate offer in the future. Changes in attitudes and the probability of future purchase were analyzed using MANOVA. The analysis tested the effects of reward, redemption period, redemption effort, redemption behavior (redeeming/not redeeming the offer), and relative redemption effort (a measure of the actual redemption effort relative to rebate buyers' expectations at the time of purchase). As shown in table 3, changes in attitudes (F (1, 170) = 14.33, $p < .001$) and the probability of future purchase (F (1, 170) = 4.89, $p < .05$) were significantly different for redeemers and non-redeemers. Relative redemption effort also had a significant negative effect on changes in attitudes (F (1, 170) = 34.06, $p < .001$) and the probability of future purchase (F (1, 170) = 21.15, $p < .001$). In summary, failing to redeem the rebate and redemption procedures that are more effortful than expected can have negative effects on consumers' attitudes and purchase intentions. These findings are consistent with the repeat purchase effects observed in experiment 3, and provide support for H8.

Non-Redeemers

Response frequencies to the items administered exclusively to non-redeemers are summarized in table 4. Non-redeemers were asked whether they considered themselves "better off", "no better or worse off", or "worse off" for not redeeming the rebate. Only 35.9% of non-redeemers considered themselves "worse off." Multinomial logistic regression revealed a significant effect of redemption effort on responses ($\chi^2 = 6.39$, $p <$

.05), and the estimated odds of being "worse off" were 3.9 times higher for those in the high-effort condition compared to those in the low-effort condition. In explaining their responses, many non-redeemers mentioned that they still benefited from their purchase (i.e., seeing a movie) despite paying a higher price. This suggests that some non-redeemers may use product utility or product satisfaction as a post-hoc justification for failing to redeem a rebate offer.

Non-redeemers were also asked which behavior, "purchasing the rebate offer" or "not redeeming the rebate offer", was their bigger mistake. Interestingly, the vast majority (68.8%) regarded not redeeming as their bigger mistake. This implies that the majority of rebate buyers believe that their purchases were justified and that the main culprit in breakage is faulty post-purchase behavior. In contrast, the results of experiment 2 suggest that the main culprit in breakage is redemption overconfidence that leads consumers to purchase rebate offers that they are unlikely to redeem. Thus, most non-redeemers appear to be unaware of their redemption overconfidence or that redemption overconfidence contributes to breakage.

Finally, non-redeemers were asked whether failing to redeem the rebate was their fault or the fault of the rebate offer. Seventy percent of non-redeemers attributed their redemption failure to themselves. Binary logistic regression revealed a significant effect of relative redemption effort on responses ($\chi^2 = 9.02$, $p < .01$), indicating that non-redeemers are more likely to attribute their redemption failure to the rebate offer when redeeming the rebate requires more effort than is expected at the time of purchase.

Table 2. Self-reported reasons for breakage by non-redeemers

Reason	Buyers who did not initiate redemption n = 40	Buyers who did initiate redemption n = 32	Total Responses n = 72
Procrastination and forgetting:			
I procrastinated and the deadline passed before I applied	50.0%	43.8%	47.2%
I procrastinated and eventually forgot to apply	10.0%	--	5.6%
I completely forgot to apply	12.5%	--	6.9%
Redemption effort & deciding to not redeem:			
I tried to redeem but it was too much work so I gave up	--	28.1%	12.5
I decided the money saved was not worth the effort required	--	18.8%	8.3
The money saved didn't seem as valuable when it came time to redeem	--	--	--
Procedural constraints:			
I lost my receipt / tickets and could not apply	10.0%	--	5.6
I used the tickets before I could photocopy them and could not apply	17.5%	9.4%	13.9
Total	100%	100%	100%

Table 3. Post-test responses by redeemers and non-redeemers

Item	Redeemers n = 112	Non-Redeemers n = 72	Test Result
Mean subjective probability of redemption (redemption confidence):	93.5%	92.9%	F (1, 170) = 0.06, p > .80
Mean base rate estimate for redemption:	63.5%	62.7%	F (1, 170) = 0.01, p > .90
Proportion that foresaw problems that could interfere with redeeming:	32.8%	33.0%	χ^2 = 0.01, p>.90
Proportion indicating the rebate offer was a fair offer:	90.4%	76.1%	χ^2 = 6.43, p<.05
Change in attitude toward rebates (attitude before – attitude after):	-.08	-26.0	F (1, 170) = 14.33, p < .001
Probability of purchasing a rebate offer in the future:	81.0%	70.6%	F (1, 170) = 4.89, p < .05

Table 4. Post-test responses by non-redeemers only

Item	Non-Redeemers n = 72		
How would you categorize yourself as a result of buying the rebate offer?	Better off: 21.9%	No better or worse off: 42.2%	Worse off: 35.9%
Which behavior do you regard as the bigger mistake?	Buying the rebate 31.3%		Not redeeming: 68.8%
All things considered, not redeeming the rebate was:	The offer's fault: 29.7%		My fault: 70.3%

CHAPTER 9
EXPERIMENT 4

Experiments 1 and 2 demonstrated that increasing reward has a stronger influence on purchase behavior than redemption behavior. However, since participating in the redemption phase of the experiments was conditional on purchasing the rebate offer, it is possible that the weak (i.e., null) effect of reward on redemption behavior is an artifact of self-selection bias (i.e., those who did not purchase the rebate offer may have responded differently than rebate buyers had they participated in the redemption phase of the experiments). It is important to note that any self-selection that may have occurred in the previous experiments also exists in the marketplace since the opportunity to redeem is always conditional on purchase. Thus, any threat posed by self-selection cannot affect the external validity of the results observed in the previous experiments. However, to make the assertion that manipulating reward exerts a relatively weak influence directly on redemption behavior, an alternative procedure was developed which excluded the purchase phase used in the in the previous studies and randomly assigned participants directly to the two reward conditions of the redemption phase of the procedure.

Design and Procedure

Experiment 4 used a simple two-cell between-subjects design (reward: $6 or $9). Redemption period was fixed at 21 days and redemption effort was fixed using the low-effort redemption procedure used in the previous experiments. One hundred and thirty-four students from an undergraduate subject pool participated in the experiment for course credit and were randomly assigned to either the $6 or $9 reward condition,

resulting in 67 participants per cell. Upon entering the experiment room, participants were informed of the market research survey on movie preferences and told that they would inherit a rebate offer coupon from a previous marketing campaign after completing the survey. The following cover story was used to introduce the market research survey and explain why the rebate coupons were being distributed:

> *"Earlier this summer, to kick-off the start of the "summer blockbuster" season, a well-known cinema chain launched a rebate promotion that was later discontinued after learning that the promotion was unprofitable due to the unexpectedly high number of rebate redemptions. However, due to a recent FTC ruling outlawing the premature cancellation of rebate promotions once they are launched, the cinema chain is obligated to distribute the remaining rebate coupons to the general public and mail rebate checks to those who redeem the rebate. To kill two birds with one stone, the cinema has decided to use this opportunity to learn more about the types of movies college audiences want to see, and to distribute the remaining rebate coupons. After completing the market research survey on movie preferences, you will receive a rebate coupon that you are free to redeem for the cash reward prior to the redemption deadline stated on the coupon."*

Following the completion of the bogus market research survey, rebate coupons were randomly distributed to participants and the participants exited the room. The redemption procedure that followed was identical to that used in experiments 1, 2, and 3, with the exception that the UPC code was printed on the rebate coupon since movie tickets were not used in the study.

Dependent Measures and Analysis

With the exception of the purchase dependent measure which was omitted from the study, experiment 4 used the same dependent measures as the previous experiments. Redemption was analyzed using binary logistic regression and procrastination was analyzed using ANOVA.

Results

Redemption

Redemption analyses were conducted on the 134 participants that received rebate coupons. Approximately 7.5% of coupon holders applied for the rebate, resulting in a breakage rate of 92.5%. Thirty percent of the applications (2.3% of coupon holders) had their rebate applications rejected, resulting in a redemption rate of 5.2%. The proportion of coupon holders in each condition that applied for the rebate is shown in figure 22. Consistent with the results of the previous experiments, logit analyses revealed that increasing the reward did not have a significant effect on the proportion of coupon holders that logged on to the website ($\chi^2 = 0.06$, $p > .80$), applied for the rebate ($\chi^2 = 0.00$, $p = 1.00$), or were accepted ($\chi^2 = 0.15$, $p > .70$).

Procrastination

Procrastination analyses were conducted on the 21 coupon holders that logged on to the website and the 10 coupon holders that mailed a rebate application. The results for *login delay* and *mail delay* are shown in figures 23 and 24 respectively. Consistent with the results of the previous experiments, increasing the reward did not have a significant effect on the extent to which coupon holders procrastinated before logging on to the website ($F(1, 19) = 1.05$, $p > .30$) or mailing the rebate application ($F(1, 8) < 1$, $p > .80$).

Discussion

Although the null effect of reward on redemption behavior observed in experiments 1, 2 and 3 was replicated in experiment 4, the prudent interpretation is that the results were inconclusive regarding the direct effect of reward on redemption behavior due to the extremely low response rate (i.e., only 21 of the 134 coupon holders initiated the redemption process and only 10 of the coupon holders applied for the rebate). One

explanation for the low response rate is that excluding the purchase phase of the procedure effectively eliminated the up-front financial investment that usually accompanies the purchase of a rebate offer, thereby diminishing participants' motivation to redeem the rebate coupon. Alternatively, participants may not have believed that they were being given an opportunity to receive a cash reward with "no strings attached." The failure of experiment 4 to produce conclusive results dictates that claims cannot be made regarding the direct influence of reward on redemption behavior. Nonetheless, the assertion that increasing reward has a stronger influence on purchase behavior than redemption behavior when the opportunity to redeem is contingent on purchase is maintained.

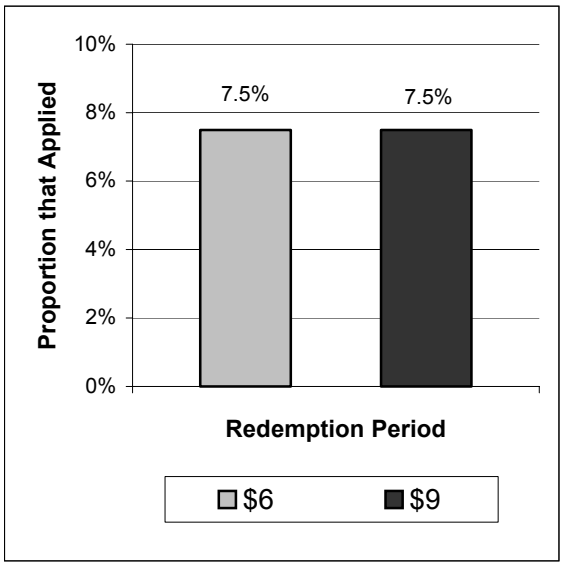

Figure 22. Proportion of experiment 4 coupon holders that applied for the rebate by condition

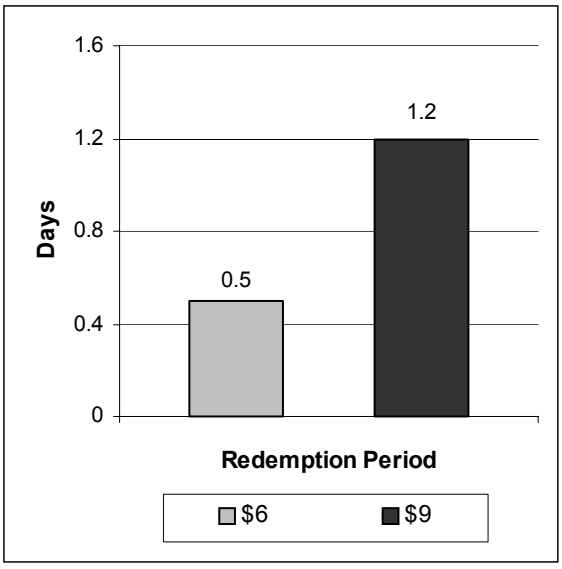

Figure 23. Experiment 4 login delay by condition

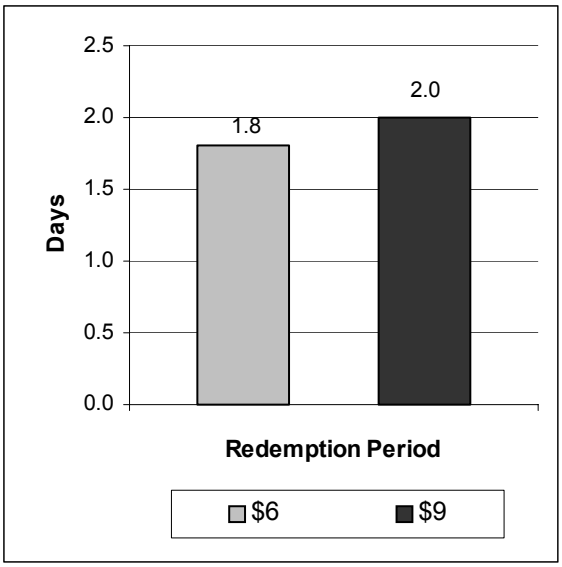

Figure 24. Experiment 4 mail delay by condition

CHAPTER 10
GENERAL DISCUSSION

The psychological mechanisms proposed in this article are applicable not only to real-world mail-in rebates, but also to other paradigms where the opportunity for breakage looms (i.e., when the attainment of a delayed incentive is conditional on the performance of some future effort). This research offers four contributions to marketing's understanding of breakage. First, by isolating rebate-dependent purchases, the experiments establish that breakage is indeed a common post-purchase outcome. Second, by tracking post-purchase behavior, the experiments go beyond redemption rates to examine how and when breakage occurs. Although exact levels of breakage are dependent on the characteristics of the offer and the redemption process, results suggest that much of breakage can be attributed to psychological mechanisms that exert influence *before* consumers initiate the redemption process (i.e., redemption overconfidence, procrastination, and to a lesser extent, forgetting). This finding is important because it demonstrates that breakage is largely determined before consumers become aware of the effort required to redeem a rebate. Third, the results provide direct evidence of the relationship between consumers' redemption confidence and their purchase and redemption behavior. Redemption confidence can be manipulated to encourage purchase by increasing the size of a reward and the length of a redemption period, but high confidence in redeeming does not necessarily translate into actual redemption behavior. Fourth, by examining repeat purchase behavior, the experiments reveal that rebate buyers making rebate-dependent purchases avoid offers that are known to require a high degree

of effort and offers that they failed to redeem in the past, and that moderate rates of breakage can still occur among successful redeemers that make repeat rebate-dependent purchases. Although breakage can be a recurring problem for some consumers, the likelihood of repeat breakage is limited by the low probability of repeat purchase among failed redeemers.

Alternative Explanations for Breakage

It is evident from the results that there are many factors which influence purchase and redemption behavior to create breakage. In addition to the factors identified by this research, there are two additional explanations for breakage that may have exerted effects. One of these explanations is reward discounting. Research on value discounting has established that people often apply discount rates that diminish the perceived value of future payments (see Frederick, Loewenstein, and O'Donoghue 2002 for a review). If reward discounting were to occur after purchase, the reward could appear less valuable at the time of redemption than it does at the time of purchase, which would encourage breakage. Although evidence supporting reward discounting was not observed, it may still have exerted an effect. The absence of a reward by redemption period interaction on redemption in experiments 1, 2, 3 and 4 suggests that the influence of reward discounting is relatively minor. Furthermore, none of the respondents reported that reward appeared less valuable after making their purchases. Nevertheless, reward discounting cannot be ruled out as a contributor to breakage.

A second alternative explanation is that consumers frame the value of the reward relative to the list price at the time of purchase and later reframe the value of the reward relative to redemption effort after purchase. Consequently, the cost of the future effort is underweighted at the time of purchase and more accurately weighted after purchased.

The post test results provide some support for this explanation. The low proportion of rebate buyers that foresaw problems with redeeming at the time of purchase (P = 33%) suggests that redemption effort is not prominent in the minds of most buyers at the time of purchase. This portion of the reframing argument is essentially the same as the argument for redemption overconfidence (i.e., people are overconfident because they fail to consider factors that could potentially interfere with redeeming). With regard to the reframing of reward after purchase, one would expect a) the majority of breakage to occur once buyers become aware of the redemption effort, and b) for rebate buyers to report redemption effort and/or insufficient reward as the reason for breakage. Although this occurred, it was not the case for the majority of cases. Experiments 1, 2, and 3 showed that the majority of breakage occurred *before* buyers became aware of redemption effort, and the self-reported reasons for breakage indicate that redemption effort and/or insufficient reward accounted for only 20.8% of breakage. In summary, although reframing may certainly occur, it does not appear to account for the majority of breakage.

Implications for Regulators

Curbing Breakage

From a regulatory perspective, the results indicate that a substantial proportion of rebate buyers can fall victim to breakage, and that breakage is caused, in part, by consumers being highly confident of redeeming a rebate that they are objectively unlikely to redeem. For those interested in curbing breakage, two approaches may be effective. One approach is to focus on curbing consumers' redemption confidence at the time of purchase. This approach is based on the notion that a consumer's objective probability of redeeming is largely predetermined, and that curbing breakage is a function of

discouraging rebate-dependent purchases among consumers who are unlikely to redeem the rebate. As noted earlier, a common behavioral phenomenon is that people tend to overlook situational factors that could potentially interfere with achieving a desired outcome. Thus, regulators may wish to conduct research that examines how to overcome this phenomenon in the context of rebates and other forms of delayed incentives. For example, regulators may wish to explore how regulating the presentation of rebate offers (e.g., explicitly listing redemption requirements on the price tag) influences breakage. A second approach to curbing breakage is to focus on post-purchase behavior. This assumes that breakage can be reduced by simplifying the redemption process. Research could examine whether regulatory efforts to simplify redemption are effective in mitigating procrastination and procedural constraints that contribute to breakage. This approach is currently reflected in pending legislation in several regions (e.g., California Bill 1154).

Implications for Managers

Trend toward Shorter Redemption Periods

From a managerial perspective, four implications are noteworthy. The first implication relates to the trend toward shorter redemption periods. Twenty years ago, consumers were typically given 60 to 90 days to redeem a rebate offer. Today, 30-day, 14-day and 7-day redemption periods are the norm in many product categories.[1] Marketers report that this trend has been guided by two forces: the desire to complete and assess promotions in a timely manner, and the conventional wisdom that giving consumers less time to redeem will decrease redemption rates. Although this intuition seems reasonable, the results have major implications for marketers in demonstrating that

[1] Source: DDS Right Choice, GeigerDonnelly Marketing, Promotion Marketing Association.

shorter redemption periods decrease sales and increase redemption applications. As discussed earlier, there are several factors that have hindered research on breakage. Consequently, many managers may be unaware of these effects.

The Role of Redemption Effort in Breakage

The majority of breakage appears to occur before consumers become aware of the effort required to redeem. Even if this result is attributed to consumers' expectations of redemption effort (which self-reports suggest is not the case), manipulating redemption effort would not have affected this result. Furthermore, increasing redemption effort decreased procrastination and marginally increased redemption applications. Although redemption effort did create breakage among those who initiated redemption, procrastination interfered with initiating *and* completing redemption and accounted for a greater proportion of breakage than redemption effort. These results have three implications. First, excessively effortful redemption processes should not be viewed as a minimum requirement for breakage. Second, increasing redemption effort to increase breakage can have an upper limit and can increase redemption rates. Third, although exact levels of breakage are dependent on the characteristics of a firm's redemption process, redemption processes that provide multiple opportunities to procrastinate can create more breakage than moderate levels of redemption effort. Given the conventional wisdom that breakage is caused primarily by redemption effort, firms may be over-attributing the role that effort plays in creating breakage.

Repeat Purchase Behavior

Results reveal that rebate buyers avoid high-effort offers and offers that they failed to redeem in the past, and that moderate rates of breakage can still occur among successful redeemers that make repeat rebate-dependent purchases. This implies that

high-effort redemption requirements can steer consumers away from rebates and generate less breakage in the long run. Consequently, moderate-effort offers may be more optimal than high-effort offers since moderate-effort offers can take advantage of breakage without risking higher redemption rates or decreases in future sales.

Future Research

Effects of Effort on Redemption

Increasing redemption effort was shown to reduce procrastination and increase (marginally) the proportion of buyers that applied for the rebate. This result is opposite to the "aversiveness of effort" effect observed in earlier experiments on delayed incentives (e.g., Soman 1998). The apparent inconsistency between these effects may be explained by the timing of the effort manipulations. The delayed incentives study manipulated effort at the time of choice by showing subjects the length of the survey that was to be completed to receive the reward. In contrast, the current study did not manipulate effort until after subjects had initiated the redemption process. Post-test responses revealed that the majority of consumers in the high-effort condition felt that the redemption procedures were more effortful than they had expected at the time of purchase. Thus, the quicker response and higher redemption rate among these participants could be interpreted as a backlash effect. However, the reasons for this effect are not clear. In particular, three explanations are plausible. First, the result could be a sunk cost effect whereby effort invested in stage one of a task increases one's motivation to complete subsequent stages of the task. Second, the result could be a retribution effect whereby one's motivation to redeem increases when redeeming is framed as an opportunity to seek retribution for completing an unnecessarily effortful task. Third, the result could be a salience effect whereby increasing the effort increases the salience of the task and the likelihood of

completing it before a deadline. Future research could examine these explanations and their implications.

Differential Effects of Reward on Purchase and Redemption

Increasing the reward was shown to exert a stronger effect on purchase than redemption. Although the null effect of reward on redemption is unlikely to hold at larger reward values (i.e., at some point, a reward will be sufficiently large to generate a significant effect on redemption), it is uncertain whether the differential strength of the effect will hold at larger reward values (i.e. will offering a $100 reward still have a larger influence on purchase than redemption?). Reports of large sales increases and moderate redemption rates for large reward values (i.e., $400) suggest that the differential effect may hold (e.g., Spencer 2002). Given the difficulties of studying large-ticket purchases in a laboratory environment, this issue would be best addressed by future field studies that manipulate offer characteristics and control for market factors.

APPENDIX
POST TEST SURVEY ITEMS

Instructions

The series of studies that you completed for us were not about movies, but were actually about rebate offers. This rebate study was conducted for the Federal Trade Commission to find out if rebates constitute a risk to consumer welfare.

We will ask you some questions about how you decided to purchase the rebated movie tickets, and about your attempt(s) to redeem the rebate offer.

It is very important that you answer all questions honestly so that we can accurately assess how consumers respond to rebate offers.

Questions

*Denotes questions that were administered to non-redeemers only.

(1) Did you know at the time of doing the movie rating studies that this was an experiment on rebate offers? (Please be honest)

- ☐ Yes
- ☐ No

(2) If you did know, please tell us how you knew. If you did not know, click continue.

(3) When you purchased the tickets, how confident were you that you would redeem the rebate?

Your confidence estimate should correspond to the probability that you would redeem the rebate. For example, "100% confident" means that you were completely certain that you would redeem the rebate. "50% confident" means that you were completely uncertain about whether you would redeem (e.g., a 50/50 chance you would redeem). Any number below 50% means that you believed it was more likely that you would not redeem. For example, "0% confident" means that you were completely certain you would not redeem the rebate. Please indicate your confidence estimate using the scale below. Remember, your answer should be based on what you thought at the time of purchase. [1]

[1] Probability scale instructions adapted from Vallone et al. 1990.

0% confidence – 100% confidence [sliding scale]

(4) Please estimate the percentage of rebate buyers that you thought would redeem the rebate when you purchased the tickets.

Your estimate should correspond to the percentage of rebate buyers you thought would redeem the rebate. For example, an estimate of 100% means that you thought all of the rebate buyers would redeem the rebate. An estimate of 50% means that you thought half of the rebate buyers would redeem the rebate. An estimate of 0% means that you thought none of the rebate buyers would redeem the rebate. Please indicate your estimate below. Remember, your answer should be based on what you thought <u>at the time of purchase</u>.

0% – 100% [sliding scale]

(5) At the time of purchasing the tickets, did you foresee any problems that could interfere with redeeming the rebate?
If yes, please type "yes" and describe what you thought about when you purchased the tickets, and why you still chose to buy the tickets.

If no, please type "no" and describe what you thought about when you purchased the tickets.

(6) How was the experience of redeeming the rebate compared to what you expected it would be when you purchased the tickets?

-100 (more effort than I expected) to +100 (less effort than I expected) [sliding scale]

(7) Please describe the actions you took (if any) to redeem the rebate, and any obstacles that you encountered. For example, did you logon to the rebate website? Did you complete the redemption form? What obstacles did you encounter? (e.g., procrastination, no postage stamps, etc.)

(8) *In your own words, please describe why you didn't redeem the rebate. Please be as specific as possible.

(9) *Below are some common reasons why people don't redeem rebates. Please select the reason that best describes your situation:

- ☐ I mailed my rebate application but I was rejected.
- ☐ I lost my receipt / tickets and could not apply.
- ☐ I used the tickets before I could photocopy them and could not apply.
- ☐ I procrastinated and the deadline passed before I applied.
- ☐ I procrastinated and eventually forgot to apply.
- ☐ I completely forgot to apply.

- ☐ I tried to redeem but it was too much work so I gave up.
- ☐ I decided the money saved was not worth the effort required.
- ☐ The money saved didn't seem as valuable when it came time to redeem.

(10) *If we gave you another chance to redeem the rebate, would you take it?

- ☐ Yes
- ☐ No

(11) *Please explain the reason for your answer in the box below.

(12) *All things considered, how would you categorize yourself as a result of buying the rebate offer?

- ☐ I am better off for buying the rebate offer.
- ☐ I am no better or worse off for buying the rebate offer.
- ☐ I am worse off for buying the rebate offer.

(13) *Please explain the reason for your answer in the box below.

(14) *Which behavior do you regard as the bigger mistake?

- ☐ Buying the rebate offer was the bigger mistake.
- ☐ Not redeeming the rebate offer was the bigger mistake.

(15) *Please explain the reason for your answer in the box below.

(16) *All things considered, not redeeming the rebate was:

- ☐ My fault
- ☐ The fault of the offer

(17) *Please explain the reason for your answer in the box below.

(18) All things considered, the rebate offer was:

- ☐ A fair offer
- ☐ Not a fair offer (deceptive)

(19) Please explain the reason for your answer in the box below.

(20) Before participating in this study, how many times in the past have you purchased a rebate offer with the intention of redeeming the rebate?

- ☐ Never
- ☐ Once
- ☐ Twice
- ☐ 3 times
- ☐ 4 times

- ☐ 5 – 10 times
- ☐ More than 10 times

(21) Of the purchases you indicated above, approximately what proportion of them did you successfully redeem?

0% (none of them) – 100% (all of them) [sliding scale]

(22) Before this study, what was your general attitude toward rebate offers?
Use the scale below to record your response. A rating above "0" represents a positive attitude toward rebates. A rating of "0" represents a neutral attitude. A rating below "0" represents a negative attitude toward rebates.

-100 (generally negative) to +100 (generally positive) [sliding scale]

(23) Since participating in this study, what is your general attitude toward rebate offers?
Use the scale below to record your response. A rating above "0" represents a positive attitude toward rebates. A rating of "0" represents a neutral attitude. A rating below "0" represents a negative attitude toward rebates.

-100 (generally negative) to +100 (generally positive) [sliding scale]

(24) What is the likelihood that you will purchase another rebate offer (for some other product) in the future?

Your estimate should correspond to the probability that you will buy a rebate offer in the future. For example, an estimate of 100% means that you are completely certain that you will buy another rebate offer in the future. An estimate of 50% means that you are completely uncertain about whether you will buy another rebate offer in the future. Any number below 50% means that you believed it is more likely that you will not buy another rebate offer in the future. For example, 0% means that you are completely certain that you will not buy another rebate offer in the future.

0% (not at all likely) – 100% (very likely) [sliding scale]

(25) [Those who did not successfully redeem were given the opportunity to purchase tickets again using the purchase opportunity choice set.]

(26) *How confident are you that you will redeem the rebate?

Your confidence estimate should correspond to the probability that you would redeem the rebate. For example, "100% confident" means that you are completely certain that you will redeem the rebate. "50% confident" means that you are completely uncertain about whether you will or will not redeem (e.g., a 50/50 chance you will redeem). Any number below 50% means that you believe it is more likely that you will not redeem. For example, "0% confident" means that you are completely certain you will not redeem the rebate. Please indicate your confidence estimate using the scale below.

0% confidence – 100% confidence [sliding scale]

(27) *Please estimate the percentage of rebate buyers that you think will redeem the rebate.

Your estimate should correspond to the percentage of buyers that will redeem the rebate. For example, an estimate of 100% means that you think all of the rebate buyers will redeem the rebate. An estimate of 50% means that you think half of the rebate buyers will redeem the rebate. An estimate of 0% means that you think none of the rebate buyers will redeem the rebate. Please indicate your estimate below.

0% – 100% [sliding scale]

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BIOGRAPHICAL SKETCH

Timothy Guy Silk received his BBA from Wilfrid Laurier University in Waterloo, Ontario, Canada, in 1997. He joined the University of Western Ontario as an instructor, where he taught at the Ivey School of Business and traveled to Russia and Ukraine to teach local business managers as part of the LEADER economic development program. Tim moved to the United States in the fall of 2000 to pursue his Ph.D. in marketing at the University of Florida, and will join the University of South Carolina as an assistant professor of marketing in August 2004.