Double Mental Discounting:

When a Single Price Promotion Feels Twice as Nice

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ABSTRACT

This research finds that when a single gain has strong associations with multiple costs, consumers often mentally deduct that gain from perceived costs multiple times. For example, with some price promotions (e.g., spend $200 now and receive a $50 gift card to spend in the future), consumers mentally deduct the value of the price promotion from the cost of the first purchase when they receive the promotion, as well as from the cost of the second purchase when they use the promotion. Multiple mental deductions based on a single gain result in consumers' perceptions that their costs feel lower than they actually are, and can trigger higher expenditures. This mental accounting phenomenon is referred to as "double mental discounting" is driven by the extent to which gains feel associated, or coupled, with multiple purchases. This paper also documents methods to decouple promotional gains from purchases, thus mitigating double mental discounting.

Keywords: Mental Accounting, Pricing, Financial Decision Making, Coupling, Price Promotions

"School's beginning. But our offer ends soon. Buy a Mac for college by Sept. 9 and get a $100 Apple Store Gift Card. Or buy an iPad or iPhone and get a $50 gift card" (Apple Insider 2014)

Consider a situation in which a college student purchases a $900 Macbook and receives a $100 gift card to spend in an Apple Store in the future. Feeling confident that she will use the gift card, the student may mentally reduce the laptop cost and think: "I am spending only $800 (instead of $900) on this laptop because I am receiving $100 worth of credit back in my pocket." Now imagine that later, the student is back in the store purchasing a $300 iPad. At this point, she applies the $100 gift card, resulting in a final $200 charge for the iPad. She may think: "I am spending only $200 (instead of $300) for this tablet, because my gift card covers some of the cost." In total, this consumer has paid $1100 for the laptop and tablet, yet, because she mentally applied the price promotion to both purchases, she may feel as if she paid substantially less.

This research documents the pattern and psychology behind consumers' tendency to mentally "double discount" some forms of financial gains from purchase prices. We examine situations in which consumers receive a single gain, such as a single price promotion, yet count that gain multiple times in mental computations to reduce subjective costs.

One increasingly popular form of price promotion that lends itself to double mental discounting is "promotional credit" (Amazon.com 2015a). As illustrated in the Apple example above, promotional credit refers to price promotions that are received conditionally upon making a first purchase and then reduce the cost of a subsequent purchase. For example, Amazon.com offers consumers the opportunity to: "Buy Select Apps for Android, Get $1 in MP3 Credit," (Amazon.com 2015b). Similarly, Kohls offers "Kohls Cash" for which every $50 spent triggers receipt of $10 of Kohl's credit to be used in the future (Kohls 2015). According to industry research, businesses are about to load $14.5 billion onto promotional credit offers in 2017, triple

the amount from ten years ago. The current growth rate of this promotion type is projected to be 5% annually until 2020 (Sloane 2017). In addition, consumers redeem promotional credit 15 times as often as they redeem direct mail coupons (Mecia 2015).

In this research, we hypothesize that because gains such as promotional credit feel strongly associated with multiple purchases, they allow consumers to justify mentally deducting that credit multiple times. Specifically, we predict that gain structures that directly link a gain to multiple purchases (such as in the case of promotional credit; see also "on-pack coupons" Raju, Dhar and Morrison 1994) allow consumers to mentally "double discount" a single gain from multiple expenditures, reducing perceived costs.

CONCEPTUAL OVERVIEW

Mental Accounting and Purchase Justification

Mental accounting refers to the way that consumers psychologically organize, budget, and assess their finances (Thaler 1985). A primary function of consumers' mental accounting efforts is to enhance self-control (Thaler 1999). For example, consumers establish mental budgets that subsequently guide and restrain spending (Heath and Soll 1996) and consumers also commonly designate wages to either real or psychological "savings" accounts that become painful to breach (Shefrin and Thaler 1988; Soman and Cheema 2011; Sussman and O'Brien 2016; Thaler and Shefrin 1981).

A second, disparate function of mental accounting allows consumers to derive pleasure from transactions (Prelec and Loewenstein 1998; Thaler 1985). In early writings on mental accounting, Thaler (1985) referred to consumers as "pleasure machines" that extract psychological pleasure from gains and psychological pain from losses. Consumers can manipulate

their interpretation of financial outcomes to minimize this pain and maximize this pleasure (Arkes et al. 2008; Shafir and Thaler 2006; Thaler 1999), such as when consumers mentally integrate small losses with larger gains to cancel the distress of the loss (Thaler and Johnson 1990).

In addition to editing the interpretation of outcomes post-hoc to minimize distress, consumers also at times exploit ambiguity during purchasing decisions to curtail internal conflict and justify purchases. In the case of budget categorization, consumers are more likely to purchase products that can be posted to one of several budget categories rather than only a single budget category. For instance, consumers more frequently purchase restaurant dinners with live entertainment when the purchase can be assigned to either a food budget *or* an entertainment budget compared to when categorization constraints restrict the expenditure to a single budget category alone; purchases that can be posted to multiple budget categories are more easily justified (Cheema and Soman 2006). A variety of evidence from this domain documents that mental accounting is malleable when it comes to purchase categorization; when ambiguity exists in budget categorization, consumers exploit that ambiguity to justify desirable purchases (Cheema and Soman 2006; Mishra et al. 2013; Soman and Cheema 2001).

In this research, we extend the notion of malleable mental accounting to propose that in some circumstances, consumers flexibly apply a single gain towards multiple costs to decrease perceived costs and potentially justify greater spending. Whereas previous research about malleable mental accounting demonstrates that consumers have considerable flexibility in which *one* mental account to post a cost (Cheema and Soman 2006), we propose consumers can post a single gain to multiple expenditures across time, reducing total perceived costs relative to actual costs. This form of malleability suggests more than mere flexibility in budget categorization; in this case, a single gain reduces perceived costs multiple times, defying basic rules of accounting.

Coupling

Although consumers frequently seek favorable decision frames that allow them to mine financial outcomes for pleasure (Arkes et al. 2008; Shafir and Thaler 2006; Thaler 1999), they also frequently require associative links that allow them adopt such favorable interpretations (Schelling 1984; Shafir and Thaler 2006). For example, when budgeting a restaurant meal, consumers are unwilling to allocate that expense to an "entertainment" budget unless a music show is included that makes the categorization credible (Cheema and Soman 2006). In the current paper, we hypothesize that similar associative processes permit double mental discounting. Specifically, we posit that for double mental discounting to occur, a gain must be associated with multiple purchases, such as when promotional credit is received with a first purchase and then used on a second purchase.

We draw upon the construct of "coupling" from mental accounting to explain the process behind double mental discounting. Coupling refers to the degree to which consumption brings to mind a particular expenditure and vice versa; consumption and payment are strongly coupled when their link is very obvious or salient to the consumer (Loewenstein and Prelec 1992). For example, money spent on an annual gym membership in one lump sum is weakly coupled with each individual gym use whereas money spent on per-visit gym access is strongly coupled with each individual gym use (Prelec and Loewenstein 1998). The notion of coupling typically describes the strength of an association between a particular payment and the resulting consumption act (Gourville and Soman 1998; Prelec and Loewenstein 1998; Thaler 1999) or between a purchase decision and the actual parting of money (Raghubir and Srivastava 2008). Here, we extend the notion of coupling to describe the link between gains (such as price promotions) and related expenditures.

Throughout this investigation, we focus on the case of promotional credit because the structure of promotional credit lends itself particularly well to double mental discounting. We predict that promotional credit feels strongly coupled with an initial purchase (i.e., Purchase 1) because the credit is received as a result of that initial purchase; there is a direct, and even causal, link between the two events. At the same time, we predict that promotional credit feels strongly coupled with a second purchase (i.e., Purchase 2) because the promotion value is actually deducted from that purchase; in this case, the gain directly decreases the second purchase costs.

Other similar price promotions that do not couple well with multiple expenditures are likely to result in less double discounting. Discounts, for example, are received as a direct result of an initial purchase, but then do not link to any future purchase. Mail-in-rebates and cash back are also received as a direct result of an initial purchase. However, these promotions tend to be received in the form of cash or check that can be allocated to one of several mental accounts including general savings; the general and fungible nature of the receipt of mail-in-rebates and cash back makes these promotions feel weakly coupled with any subsequent purchase.

Recent empirical research takes a close look at "cash back" price promotions (Vana, Lambrecht, and Bertini 2017) in which customers make an initial purchase and then receive a portion of that purchase amount as "cash back" in their bank account. Relative to no price promotion, consumers may increase spending both for an initial purchase when accepting a cash back offer (Raju, Dhar, and Morrison 1994; Dhar, Morrison, and Raju 1996), and for a subsequent purchase upon receipt of cash back in their bank account (Vana et al. 2017). Indeed, Vana et al. (2017) document an increase in spending in the time period following receipt of the cash back. We predict that this cash back phenomenon may be driven by the same mental accounting processes behind double mental discounting; the price promotion is received as a result of Purchase 1, yet actually changes consumers' balance sheet in the future, potentially

spurring and/or increasing the size of Purchase 2 (Vana et al. 2017). But importantly, we further predict that the strength of links between a price promotion and multiple purchases is key to mental discounting effects. We therefore expect double mental discounting to be even more common in the case of promotional credit compared to cash back promotions because the promotional credit is more strongly coupled to the Purchase 2 expenditure. That is, promotional credit directly reduces the price of Purchase 2, whereas the cash back is at best simply received in temporal proximity to Purchase 2, presenting a relatively weaker link. Thus, although we predict that cash back and mail-in-rebate promotions drive some increased spending based on coupling and double mental discounting processes, we expect coupling to be stronger and mental discounting to be more frequent in the case of promotional credit, a proposition that we directly test in Study 3.

In summary, we hypothesize that strong associations between a gain and multiple purchases are central to double mental discounting effects. Although promotional credit resembles other price promotions designed to incentivize immediate purchases such as discounts or mail-in rebates, promotional credit is distinct from these promotions because receiving promotional credit is conditional upon a first purchase, and then is applied to a specific future purchase. Therefore, promotional credit is more strongly coupled with multiple purchases compared to other, similar price promotions.

We start our investigation by testing whether price promotions that facilitate double mental discounting influence purchasing, hypothesizing:

> **H1:** Consumers who receive promotional credit will spend more than consumers who receive a financially equivalent discount.

We next test whether strength-of-coupling drives double mental discounting, hypothesizing:

H2: Strength of coupling between a gain and multiple costs will mediate double mental discounting effects.

Finally, we also predict that, if coupling is the driver of double mental discounting, a successful decoupling manipulations should decrease double mental discounting effects. Therefore,

H3: Decoupling a gain from one or more purchases will mitigate double mental discounting effects.

STUDY 1A: FIELD EXPERIMENT

We first explore in a field experiment whether promotional credit, which has the potential to prompt mental discounting across several purchases, increases purchases compared to standard discounts. In all studies in this paper, we report all data exclusions, manipulations, and measures collected (cf. Simmons et al. 2012). All sample sizes and exclusion criteria were determined before data collection began.

Method

One-hundred and seventy-two students, faculty, staff, and visitors on the campus of a large private Midwestern university participated.[1]

A local gourmet ice cream shop partnered with the researchers to bring an ice cream cart to campus for three days. On Day 1 (i.e., "Time 1"), potential customers who paused to read the ice cream cart sign were approached by a research assistant. Every 20 minutes, the research assistant rotated whether potential customers were offered 1) a discount, for which participants received a card for an immediate $3 discount off of an ice cream purchase, or 2) promotional credit, for which participants received a card for $3 off an ice cream purchase on Day 2 or 3 (i.e.,

"Time 2"), contingent upon purchasing on Day 1. Ice cream options were priced at $5, $6, or $7 depending on cone type and the number of scoops. (Please see Web Appendix A for full manipulation wording for all studies). Customers paid using cash or credit card. Whether participants purchased or not on each day was our main dependent variable.

We asked participants for their e-mail address every time they purchased so that we could enter them in a lottery for a $50 Amazon.com gift card (one entry allowed per person per day). Recording e-mail addresses allowed us to track purchase incidence for each participant each day.

Results

Purchase Frequency. On Day 1, participants in the discount condition were significantly more likely to purchase than were participants in the promotional credit condition (95% versus 87%, $\chi^2(1, N = 163) = 3.79$, $p = .05$). On Days 2 and 3, participants in the promotional credit condition were significantly more likely to make a purchase than were participants in the discount condition (24% versus 5%, $\chi^2(1, N = 163) = 13.93$, $p < .001$).

Examining total purchases, participants in the promotional credit condition purchased marginally significantly more often on average (M = 1.14, SD = .67), than did participants in the discount condition (M = 1.00, SD = .30, $t(161) = 1.82$, $p = .07$; please see Table 1 for details). Participants in the discount condition were significantly more likely to purchase exactly one time than were participants in the promotional credit condition (91% versus 62%, $\chi^2(1, N = 163) = 19.39$, $p < .001$), while participants in the promotional credit condition were significantly more likely to purchase more than one time than were participants in the discount condition (24% versus 5%, $\chi^2(1, N = 163) = 13.93$, $p < .001$).

Time 1 Amount Spent. Although it turned out that the retail partner was unable to track individual cash transactions in this field experiment, they were able to track and share credit card

transaction data. Examining the credit card data only from Day 1, we see that participants in the promotional credit condition spent significantly more than did participants who used a discount ($M_{PromotionalCredit}$ = \$5.44, $M_{Discount}$ = \$2.68, $t(83) = 18.86$, $p < .001$). This substantial difference in purchase price occurs primarily because discount condition participants used their discount at Day 1 whereas promotional credit participants could not.

Time 2 Amount Spent. After we learned from the Day 1 results that the retail partner was unable to track individual cash transactions, we (the researchers) collected this information on Days 2 and 3. Upon analyzing all participants' follow-up purchases on Days 2-3, including from those who did not purchase at all (total amount spent across all days = \$0), we observe that participants in the promotional credit condition spent more on average for Days 2-3 purchases than did participants in the discount condition ($M_{Promotional\ Credit}$ = \$0.80, $M_{Discount}$ = \$0.26, $t(161) = 2.36$, $p < .02$).

Insert Table 1 about here

Revenue Projection. One important pattern regarding amount spent is that customers in each condition who purchased exactly once, the modal purchase frequency across conditions, spent substantially different amounts based on condition. Promotional credit customers who purchased once paid full price whereas discount customers who purchased once paid a discounted amount. To illustrate how this pattern influenced amount spent, we can create a revenue estimate per condition and per customer based on amounts spent via credit card on Day 1 and on actual amounts spent on Days 2-3.

First, if we assume that participants in the discount condition spent an average of \$2.68 on their first purchase, as reflected in the Purchase 1 credit card transaction data, an average of \$5.75 on any subsequent purchases, as reflected in actual amount spent data, and \$0 if they made 0

purchases, we calculate a discount condition total revenue of $234.72, or $2.73 per customer who received the offer.

Next, if we assume that all participants in the promotional credit condition spent an average of $5.44 on their first purchase, as reflected in the Day 1 credit card transaction data, an average of $2.80 for any second purchase and an average of $5 for any third purchase as reflected in actual amount spent data, and $0 if they made 0 purchases, we calculate a promotional condition total revenue of $313.28, or $4.12 per customer who received the offer. This is a 51% increase in revenue per customer compared to the discount condition[2]. Thus, because customers who receive promotional credit must pay full price on their first purchase, small differences in purchase frequency between promotional credit and discount customers translate into substantial differences in amount spent per customer. Please see Web Appendix B for additional analyses.

Discussion

Participants who received promotional credit compared to an equivalent discount in a real purchase scenario were somewhat less likely to make an initial purchase, but then substantially more likely to make subsequent purchases. Taken together, the total purchase results suggest that customers can make more purchases overall, and spend more overall, when receiving promotional credit compared to a financially equivalent discount.

STUDY 1B: WILLINGNESS TO PAY

Study 1B tests whether promotional credit increases the amount that consumers project that they are willing to spend across purchases in hypothetical scenarios, further testing the

consequences of promotional credit. New to Study 1B, we added a control group to test the influence of promotional credit and standard discounts compared to no promotion at all.

Method

Four hundred and sixty participants from Mechanical Turk (median age = 30, males = 59.5%) participated. Participants read that they were shopping at their favorite mall store.

For Purchase 1, participants were randomly assigned to one of three conditions: a) control (no promotion) b) discount ($20 discount off of $50 purchase) or c) promotional credit ($20 gift card with $50 purchase). In the discount and promotional credit conditions, participants first read about the price promotion offer (Please see Web Appendix A for wording). Participants then chose whether or not they would make a purchase at the store that day (yes/no). Those who responded "yes" were subsequently asked to respond in an open-ended text box: "How much do you think would be the total value of your clothing purchase according to the price tags?"

For Purchase 2, participants imagined being back in their favorite mall store again after one month. At this time, we did not offer any participants another promotion. We asked participants the same purchase choice and price tag amount questions from Purchase 1. Additionally, there were no reminders about the promotion that came with Purchase 1 when we asked the Purchase 2 questions.

Finally, follow-up questions asked participants whether or not they would purchase from the store again in the future (yes/no), and included three questions about satisfaction with the store (how happy, satisfied, and likely to recommend the store participants would be, $\alpha = .90$). Web appendix C contains a list of all measures in all studies.[3]

Results

Purchase Frequency. Purchase frequency is a count variable; accordingly, we analyzed patterns using Poisson regression. Participants in the promotional credit condition made significantly more purchases ($M_{PromotionalCredit}$ = 1.51, SD = .73) than did participants in the discount condition ($M_{Discount}$ = 1.17, SD = .58; B = 0.25, Wald χ^2 (1) = 6.33, p = .01). Participants in the promotional credit condition also purchased significantly more often than did participants in the control condition ($M_{Control}$ = 1.06, SD = .76; B = 0.35, Wald χ^2 (1) = 11.10, p = .001). There were no significant differences in mean number of purchases between the control and discount conditions, p = .37; please see Table 2 for more details.

Amount Spent. Using participants' price tag value estimates, we calculated amount spent for each purchase by deducting the value of the price promotion where applicable. Specifically, in the discount condition, when the Purchase 1 price tag was reported as $50 or higher, we deducted $20 from the Purchase 1 price tag to determine amount spent. In the promotional credit condition, when the Purchase 1 price tag was reported as $50 or higher, we deducted $20 from the Purchase 2 price tag to determine amount spent. If, in the promotional credit condition, the Purchase 1 price tag was greater than $50 (qualifying the participant for the promotion), but the Purchase 2 price tag was less than $20, the Purchase 2 amount spent was reduced to $0. We assumed in all cases that when a promotion was available to a participant that they used it. No promotional values were deducted for participants in the control condition.

After incorporating price promotion deductions, we see that participants in the promotional credit condition spent significantly more on average for Purchase 1 ($M_{PromotionalCredit}$ = $47.01, SD = $28.01) than did participants in the discount condition ($M_{Discount}$ = $33.04, SD = $17.53; t(448) = 4.77, $p < .001$; we note that for participants in the discount condition who received the promotion, the promotion applied here at Purchase 1). Participants in the promotional credit condition also spent significantly more on average than did participants in the control

condition for Purchase 1 ($M_{Control}$ = \$27.78, SD = \$30.35; t(448) = 6.42, $p < .001$). The difference in amount spent between the control and discount conditions for Purchase 1 was marginally significant; t(448) = 1.76, $p < .08$.

For Purchase 2, participants in the promotional credit condition spent approximately the same amount ($M_{PromotionalCredit}$ = \$9.87, SD = \$15.05) as participants in the discount condition ($M_{Discount}$ = \$11.35, SD = \$21.47; $p > .25$), and significantly less than participants in the control condition ($M_{Control}$ = \$15.63, SD = \$22.81; t(448) = 2.48, $p < .05$; for participants in the promotional credit condition who received the promotion, the promotion applied here at Purchase 2). Participants in the discount condition spent marginally significantly less for Purchase 2 than did participants in the control condition, t(448) = 1.81, $p < .08$.

We added the Purchase 1 and Purchase 2 amounts to create a "total amount spent" variable. Participants in the promotional credit condition spent significantly more in total (M = \$56.88, SD = \$34.39) than did participants in the discount (M = \$44.40, SD = \$28.84; t(448) = 3.28, $p = .001$) or control conditions (M = \$43.42, SD = \$37.04; t(448) = 3.46, $p = .001$). There was no significant difference in total amount spent between the control and discount conditions, $p > .25$). Because participants who received promotional credit spent substantially more for Purchase 1, then spent similar amounts for Purchase 2 compared to participants in other conditions (after their promotion was deducted from Purchase 2 when applicable), they spent more in total across purchases.

There were no significant differences between conditions in any of the follow-up questions (please see Table 2 for additional details).

Insert Table 2 about here

Discussion

Participants who imagined receiving promotional credit spent more frequently and in a greater magnitude than did participants in discount or control conditions. These results are in line with those from Study 1A.

One potentially important feature of Studies 1A and 1B is that in both contexts, participants were very likely to make the first purchase (over 50% indicated willingness to make Purchase 1, even in a control condition with no price promotion in Study 1B). We suspect that this high level of interest in Purchase 1 might be important for uptake of promotional credit. It is possible that discounts outperform promotional credit in influencing total purchases when likelihood of making Purchase 1 is low. Nevertheless, it is rarely a retailer's goal to encourage only a single purchase. We also note that promotional credit is also likely to be most attractive to customers who are likely to return, potentially facilitating identification of committed customers.

To summarize, in both Study 1A and 1B we find that although promotional credit results in lower purchase rates at Time 1, it also can result in substantially higher purchase rates at Time 2. The higher purchases at Time 2 in the case of promotional credit more than offset the lower purchase rates at Time 1 in our contexts, resulting in more total purchases and total amount spent with promotional credit. In our remaining studies, we examine whether these purchase patterns correspond with consumers' mental computations of perceived costs and judgments of coupling.

STUDY 2: TESTING COUPLING AS A MEDIATOR

We propose that promotional credit increases purchases because it feels strongly coupled with multiple purchases, allowing "double mental discounting" to occur. In Study 2, we test this proposition, measuring whether promotional credit allows consumers to couple a single gain with multiple purchases, reducing total perceived costs relative to actual costs.

Method

Four hundred thirty-eight U.S.-based Mechanical Turk workers (median age = 31, males = 48%) participated in this study. Participants in the "promotional credit" condition imagined making a purchase that came with a gift card to use in the future while participants in the "discount" condition imagined making a purchase that came with an immediate discount. Below is exact text for each scenario:

> *"Imagine that you are in Best Buy and you see a laptop that you really like priced $500 including taxes. There is a special today. The laptop comes with a $100 [gift card to use at Best Buy in the future]/[price discount to use today at Best Buy*]."

After imagining this purchase, participants answered: "How much does it feel like you are spending on the laptop?" (Purchase 1). This measured participants' Purchase 1 "perceived costs" or subjective costs (Shafir and Thaler 2006; Thomas and Morwitz 2009a).

Next, participants read the following scenario:

> *"Now imagine that you go back to Best Buy one month later. You previously received a $100 [gift card]/[discount] when making a prior purchase at this store. You want to buy a tablet and you see that the tablet is priced $300 including taxes."*

We asked all participants to imagine that they decided to buy the tablet and indicate how much they felt they spent on the tablet (Purchase 2) to obtain Purchase 2 perceived costs.

In addition, participants responded to two questions gauging the extent to which participants coupled the promotion with their purchase (i.e. "How much did you think about the gift card/discount when you thought about the price of this purchase?" and "How related is the gift card/discount you received to the price of the purchase?" (1-9 scales; we refer to this measure as "coupling"). As a separate coupling measure, we asked participants whether their promotion

felt relevant to Purchase 1 only (1), both Purchase 1 and Purchase 2 (5), or Purchase 2 only (9) on a 1-9 semantic differential scale (we refer to this measure as "simultaneous coupling"). To analyze and report this measure, we calculated the absolute value of the deviation of each participant's response from the scale's midpoint, with lower values indicating greater simultaneous coupling with both purchases and higher values indicating less simultaneous coupling with both purchases.

Results

Total Perceived Costs. Participants in the promotional credit condition reported lower total perceived costs ($M_{PromotionalCredit}$ = \$663.51, SD = \$62.61) than did participants in the discount condition ($M_{Discount}$ = \$701.85, SD = \$42.91; $F(1, 430) = 55.63$, $p < .001$). According to the scenario, all participants objectively spent \$700. Participants' total perceived costs in the credit condition were significantly lower than \$700 ($t(210) = -8.45$, $p < .001$) whereas participants' total perceived costs in the discount condition were not ($t(220) = .64$, $p = .52$). Table 3 shows the percentage of participants in each condition who reported perceived costs that matched actual dollar costs, and the percentage who fully "double discounted" their perceived costs (i.e., deducted the promotional value two times; Table 3 also reports these percentages for the rest of the studies in this paper in which participants report perceived costs). Web Appendix D describes an extension of this study that also measures how much participants think they actually spent objectively on these two purchases.

Insert Table 3 about here

Coupling. For each purchase (Purchase 1 and Purchase 2), we averaged each participant's response to the two questions in the "coupling" measure, and then added the Purchase 1 and Purchase 2 coupling averages together to create a "total coupling" score for each participant (α =

.91). This range of potential values was therefore 2-18 because both coupling measures were measured on 9-point scales. As expected, across both purchases, participants in the promotional credit condition reported higher total coupling ($M_{PromotionalCredit}$ = 13.81, SD = 3.62) than did those in the discount condition ($M_{Discount}$ = 10.46, SD = 3.03; F(1, 430) = 106.75, $p < .001$).

As a more detailed analysis, we next examined the extent to which participants coupled their respective promotions with each individual purchase. Participants in the discount condition coupled their promotion with Purchase 1 to a greater extent than did participants in the promotional credit condition ($M_{Discount}$ = 7.41; SD = 1.92; $M_{PromotionalCredit}$ = 6.20, SD = 2.64; F(1, 430) = 29.35, $p < .001$). Participants in the promotional credit condition coupled their promotion with Purchase 2 to a greater extent than did participants in the discount condition ($M_{Discount}$ = 3.04; SD = 2.39; $M_{PromotionalCredit}$ = 7.61, SD = 2.64; F(1, 430) = 475.12, $p < .001$). Looking at the pattern of means across conditions, we conclude that participants in the discount condition strongly coupled the discount with Purchase 1, but weakly coupled the discount with Purchase 2. Participants in the promotional credit condition, by contrast, coupled their promotion to a substantial degree with both purchases.

Simultaneous Coupling. Participants had indicated whether their promotion felt relevant to Purchase 1 only (1), both Purchase 1 and Purchase 2 (5), or Purchase 2 only (9). We calculate "simultaneous coupling" from this measure using the formula |score-5|; higher scores indicate weaker coupling and lower scores indicate stronger coupling across both purchases. Ratings in the promotional credit condition averaged a distance of 1.73 (SD = 1.69) from the midpoint whereas ratings in the discount condition averaged a significantly larger distance of 3.42 from the midpoint (SD = 1.22); F(1, 430) = 142.44, $p < .001$). These results suggest that promotional credit felt more strongly coupled with both purchases than did the discount.

Mediation. To test whether coupling mediates the relationship between promotional credit and double mental discounting, we performed two bootstrapping mediation analyses with 5000 samples using Hayes (2013) PROCESS Macro (Model 4). First, we found that total coupling partially mediated the relationship between promotion type (coded as discount = -1, credit = 1) and total perceived costs (Indirect Effect 95% CI = [-17.04 to -9.80]; Direct Effect B = -6.12, t = -2.39, p = .02). Substituting simultaneous coupling as the mediator in a second mediation model, patterns mimicked those from the total coupling mediation (Indirect Effect 95% CI = [7.22, 14.77]; Direct Effect B = 8.61, t = 3.09, p < .01). In short, mediation of coupling between promotion type and total perceived costs was robust to multiple methods of measuring coupling.

Discussion

Study 2 provides evidence that consumers mentally over-apply a promotional credit gain to reduce perceived costs across several purchases. Participants who receive promotional credit feel as if they spend less money across purchases than they actually do, and as if they spend less than do participants who receive a financially equivalent discount. More specifically, Study 2 demonstrates patterns of double mental discounting; when a price promotion is directly linked to two purchases, participants at times mentally deduct promotional that credit from two different purchase prices even though it actually only reduces one.

Study 2 also establishes that double mental discounting occurs at least partly because promotional credit can be easily coupled with several purchases. A financially equivalent discount does not allow the price promotion to be as easily coupled with multiple purchases, and instead, prompts consumers to only link the discount to a single purchase and mentally deduct it once.

A follow-up study (in Web Appendix D) demonstrates that although promotional credit reduces participants' subjective costs, consumers seem fully aware of the actual costs of their

purchases. When participants report actual costs, participants in neither discount nor promotional credit conditions over-discount promotional gains. Thus, it seems that although participants report lower perceived costs when using promotional credit, they are not overtly tricked by promotional credit. Instead, they are aware of actual costs despite their subjective sense that they are spending less. We discuss this pattern further in the General Discussion.

STUDY 3: MULTIPLE FORMS OF PRICE PROMOTIONS OVER TIME

Studies 1A-2 demonstrated that promotional credit differs from standard discounts in purchasing patterns, perceived costs, and coupling. Study 3 compares promotional credit to multiple other forms of price promotions to determine the precise features of promotional credit that influence coupling and perceived costs.

In Study 3, we increase the comparison set to include not only standard discounts but also mail-in rebates and cash back promotions. Because promotional credit has stronger direct links with multiple purchases compared to these other forms of price promotions, particularly for Purchase 2, we predict that it will feel more strongly coupled with multiple purchases. Thus, we predict that double mental discounting most likely will occur in the case of promotional credit, and that for each promotion type, coupling will predict the degree of mental discounting.

Method

Mechanical Turk workers (n = 569, median age = 30, males = 42.7%) participated in a study that took place across two sessions approximately two weeks apart. In the first session (Time 1), participants considered Purchase 1 that came with a price promotion. In the second session (Time 2), the same participants considered Purchase 2 at the same retailer.

Participants were randomly assigned to one of five price promotion conditions: 1) promotional credit 2) discount 3) mail-in rebate 4) cash back—basic 5) cash back—received today. Each promotion was received with the first purchase in a series of two purchases.

We compared the standard cash back-basic condition to a cash back-received today condition in which we emphasized at Time 2 that the cash back had been *received today*, the same time as considering Purchase 2. We added the *received today* condition to 1) strengthen the association between cash back and Purchase 2 by emphasizing temporal co-occurrence, potentially also increasing coupling for Purchase 2 and to 2) simulate conditions from Vana et al. (2017) whose analysis of cash back spending depended upon cash back receipt within a time frame that was proximal to the second purchase.

In the first session, participants first imagined buying a laptop (Purchase 1) at Best Buy priced at $500 and received a $100 price promotion corresponding with their experimental condition. Participants then indicated how much they felt like they were spending on the laptop by typing a number into a free response box and how coupled their promotion felt with the laptop (using the same measures as those in Study 2). Unique to this study, we also asked participants to rate likelihood they would be to buy the laptop if it came with the promotion described, attractiveness of the promotion, and pain of paying for the laptop (1-9 rating scales).

Approximately two weeks later, the same participants were asked to complete the second part of the study in a separate session. The return rate from Time 1 to Time 2 was 83.87% and did not differ across conditions ($ps > .25$). Participants initially were reminded that they received a $100 promotion at Best Buy upon making Purchase 1. All participants were then told to imagine that were now buying a $300 tablet (Purchase 2). Participants reported how much they felt like they spent on the tablet by typing a number into an open-ended response box. They then completed other measures regarding Purchase 2 (i.e., coupling, purchase likelihood, promotion

attractiveness, and pain of paying on 1-9 rating scales; see Web Appendix C). Finally, participants attempted to guess the hypothesis of the study using an open-ended response box.

Results

Total Perceived Costs. Participants in the promotional credit condition reported significantly lower total perceived costs ($M_{PromotionalCredit}$ = \$652.88, SD = \$67.61) than did participants in any other condition ($M_{Discount}$ = \$711.28, SD = \$94.50, t(554) = -5.34, $p < .001$; M_{Rebate} = \$693.89, SD = \$72.18, t(554) = -3.86, $p < .001$; $M_{Cashback\text{-}Basic}$ = \$684.82, SD = \$86.57, t(554) = -2.97, $p < .01$; $M_{Cashback\text{-}ReceivedToday}$ = \$677.75, SD = \$84.81; t(554) = -2.26, $p = .02$; all p-values relative to the promotional credit condition).

Total Coupling. In addition, participants in the promotional credit condition reported significantly higher total coupling ($M_{PromotionalCredit}$ = 13.55, SD = 3.02) than did participants in any other condition ($M_{Discount}$ = 11.26, SD = 2.86, t(554) = 5.07, $p < .001$; M_{Rebate} = 11.50, SD = 3.66, t(554) = 4.68, $p < .001$; $M_{Cashback\text{-}Basic}$ = 11.98, SD = 3.69, t(554) = 3.54, $p = .001$; $M_{Cashback\text{-}ReceivedToday}$ = 12.47, SD = 3.49; t(554) = 2.43, $p = .01$; all p-values relative to the promotional credit condition). Results from the simultaneous coupling measure mimic results from the total coupling measure; please refer to Table 4 for more results and details.

Insert Table 4 about here

Hypothesis Guessing. We tested whether participants in different conditions correctly guessed the double mental discounting hypothesis at different rates, potentially compromising interpretation of results. Two coders blind to hypotheses coded when participants correctly guessed that we were attempting to gauge whether participants mentally deducted a single promotion multiple times ($\alpha = .72$). The double mental discounting hypothesis was not more obvious for participants in any given condition; the percent of correct guessers per condition was:

Promotional Credit = 3.3%, Discount = 0%, Mail-in Rebate = 3.3%, Cash back-Basic = 2.5%, Cash back-Received Today = 4.2%, $\chi^2(N = 559) = 4.62$, $p = .33$; all contrast ps > .10. In addition, reported patterns of results do not change when these participants are excluded from analyses.[4]

Discussion

Study 3 tested how five different price promotions of equivalent financial value influence perceived costs over time. Similar to our previous studies, we observe that consumers mentally over-apply promotional credit across multiple purchases, but do so to a lesser degree for other price promotions even when those price promotions delay receipt of the gain similarly to promotional credit (i.e., in the case of cash back and mail-in rebates). Referring to Table 4, we see that patterns of coupling correspond with the degree of mental discounting for each promotion. Overall, the evidence is consistent with the notion that strong associations between a gain and multiple purchases promote coupling, and ultimately, can promote double mental discounting.

Because of recent work about cash back promotions (Vana et al. 2017), we focused heavily on that particular promotion type in Study 3, incorporating two different cash back conditions into the experimental design. Neither cash back condition triggered coupling nor mental discounting to the same degree as promotional credit. However, they did trigger increased total coupling and mental discounting (as measured by perceived costs) in relation to standard discounts. Most notably, we see results consistent with Vana et al. (2017) who focus on Purchase 2, that consumers who receive a cash back promotion mentally discount a portion of that promotion from their Purchase 2 (and simultaneously, increase coupling with Purchase 2). Thus, although cash back, especially when linked temporally with spending, appears to induce mental discounting, it does not (consistent with our hypotheses) do so to the same degree as promotional credit for which coupling across purchases is the strongest.

STUDY 4A: DECOUPLING VIA DIFFERENT-STORE CREDIT

Studies 2-3 demonstrate that a single gain can decrease perceived costs multiple times when that gain feels coupled with multiple purchase prices. In Studies 4A and 4B, we attempt to mitigate double mental discounting. First, in Study 4A we decrease the strength of the link between the promotional credit gain and one of the purchases; that is, we aim to "decouple" the gain from Purchase 1. If coupling is essential to triggering double mental discounting, then decoupling a purchase from promotional credit should mitigate the effect. Second, in Study 4B, we reduce the ease with which consumers can calculate the promotional credit gain and thus mentally deduct it from the Purchase 1 price. We predict that as the mental computation increases in difficulty, consumers will be less likely to deduct the promotional value from the purchase price.

In Study 4A, we specifically aimed to decouple promotional credit from consumers' initial purchase (i.e., Purchase 1) by creating a scenario in which coupling was weakened between promotional credit and Purchase 1. Specifically, in a "promotional credit-decouple" condition, the retailer for Purchase 1 differed from the retailer for Purchase 2. We hypothesized that making the retailers distinct would make it more difficult for consumers to associate the single gain to both purchases. Specifically, it is more difficult to link Purchase 1 made with one retailer to a gift card that can only be used for a different retailer. Because the link between the promotional credit gain and the Purchase 1 retailer would be weaker, we expected coupling, and therefore mental discounting for Purchase 1, to be less pronounced as well.

Method

Four hundred ninety-eight U.S.-based Mechanical Turk workers (median age = 31, male = 45.9%) completed the study. The study included a 3 promotion type (discount, promotional credit, promotional credit-decouple) between-subjects experimental design. All participants were asked to think about receiving a $20 Amazon.com [discount]/[gift card] upon purchasing a $50 video game. Participants in the discount and promotional credit conditions were told that they had purchased their video game (Purchase 1) at Amazon.com. In contrast, participants in the promotional credit-decouple condition were told that they had purchased their video game at Gamestop—thus making the retailer for Purchase 1 (Gamestop) distinct and unrelated to the retailer at Purchase 2 (Amazon) in this condition. Next, all participants reported their perceived costs of their video game and answered the coupling questions used in previous studies. We then asked all participants to imagine that they bought a $60 table from Amazon.com (Purchase 2). Participants then reported their perceived costs of the table and the degree to which they coupled the cost of the table with the value of the price promotion received (because Studies 2 and 3 showed that total coupling and simultaneous coupling measures operate similarly, we only measured total coupling for the remainder of the paper) .

Results

Total Perceived Costs. All participants spent $90 across purchases in the scenario. There was a main effect of promotion type on total perceived costs; $M_{Discount}$ = $88.97, SD = $14.54; $M_{PromotionalCredit}$ = $80.83, SD = $15.71; $M_{PromotionalCredit\text{-}Decouple}$ = $84.33, SD = $18.06; $F(2, 495) = 10.89$, $p < .001$. Contrasts show that the average total perceived costs in the promotional credit-decouple condition was lower than that of the discount condition ($t(495) = -2.62$, $p < .01$) but higher than that of the promotional credit condition ($t(495) = 1.98$, $p = .05$). It appears those in the promotional credit-decouple condition discounted the promotional credit to a lesser extent across

purchases. Please see Table 5 for Purchase 1 and Purchase 2 results; the main difference between the promotional credit and promotional credit-decouple condition occurs for Purchase 1.

Total Coupling. We analyzed how the additional promotional credit-decouple manipulation compared with the promotional credit and discount conditions. There was a main effect of promotion type on total coupling ($M_{Discount}$ = 10.39, SD = 2.60; $M_{PromotionalCredit}$ = 13.73, SD = 2.99; $M_{PromotionalCredit\text{-}Decouple}$ = 13.04, SD = 3.18; $F(2, 495) = 60.15$, $p < .001$). Contrasts revealed that those in the promotional credit-decouple condition more strongly coupled the promotion across purchases than did those in the discount condition ($t(495) = 8.23$, $p < .001$), but did so to a lesser extent than those in the promotional credit condition ($t(495) = -2.14$, $p = .03$). Consistent with perceived costs results, the main difference in coupling between the promotional credit and promotional credit-decouple condition occurred for Purchase 1 (See Table 5).

Mediation. We ran a mediation analysis to determine whether mediations in previous studies held in this study. Examining the contrast between promotional credit and discount conditions first, we coded discount = -1, promotional credit = 1, credit-decouple = 0 as the independent variable (i.e. promotion type). We found a significant mediation effect of promotion type on total perceived costs through total coupling (Indirect effect = -2.89, 95% CI = [-4.06, -1.98]). Similarly, we ran another series of mediation analyses with promotion type on total perceived costs through total coupling, coding promotion type discount as 0, promotional credit as 1, and promotional credit-decouple as -1. In this model, the indirect effect though total coupling was marginally significant (Indirect effect = -.56, 90% CI = [-1.15, -.04]). When including the orthogonal code of discount = 2, promotional credit = -1, promotional credit-decouple = -1 into this model as a covariate, the indirect effect of mediation through total coupling becomes fully significant (Indirect effect = -.58, 95% CI = [-1.22, -.05]).

Discussion

Study 4A demonstrates that double mental discounting is mitigated when coupling between the promotional credit and Purchase 1 is weakened. In this scenario, consumers disassociate their promotional credit with their initial purchase and report higher total perceived costs that are closer to actual costs.

STUDY 4B: DECOUPING VIA DIFFERENT DENOMINATIONS

In Study 4B, we test whether making the mental computations behind mental discounting more difficult decreases double mental discounting. A body of research has shown that money in different denominations and currencies (e.g. cash, credit, token payment systems) is not treated equally even when equivalent in objective value (e.g., Gourville 1998; Raghubir and Srivastava 2002, 2008). For example, some currencies feel like "monopoly money" that are more easily decoupled from purchase decisions (Raghubir and Srivastava 2008). Following this stream of thinking, we hypothesize that altering the form of promotional credit could alter consumers' tendency to couple promotional credit with multiple purchases. For instance, if a consumer makes an initial purchase and receives promotional credit in the form of points instead of gift card dollars, he may be less likely or able to couple the promotional credit with the original purchase. Prior research shows that ease of price computation can influence perceived costs and magnitudes of discounts (Kwong, Soman, and Ho 2011; Thomas and Morwitz 2009b) and in the current context, promotional credit of 10,000 frequent flier miles (each mile worth a penny) may feel more difficult to compute, and therefore associate with (i.e., couple with) a purchase price.

Method

Participants in this study were undergraduates from a large public university in the northeast (N = 184, median age = 19, males = 52.3%). The design was a 3-cell (promotion type: discount, promotional credit-dollars, promotional credit-points) between-subjects design. Participants in this study imagined buying two sets of plane tickets. First, all participants read: "*Imagine that you are buying plane tickets online to travel to the Caribbean this winter and you find tickets for $300. The airline is currently doing a promotion*." Participants in the discount condition then read: "*Your tickets also come with a $100 discount off the present flight booking*." Participants in the promotional credit-dollars condition read instead: "*Your tickets also come with a $100 promotional credit to use on a future flight booking*." Participants in the promotional credit-points condition read instead: "*Your tickets also come with 10,000 frequent flier points that can be cashed into credit to spend on a future flight booking. Each point is equivalent to one cent*." We did not spell out to participants in the promotional credit-points condition explicitly that 10,000 frequent flier points had a monetary value of $100; they could have reached this conclusion if they chose to convert the points into dollar form. All participants then indicated their Purchase 1 perceived costs (using a slider bar from $200-$300) and answered the two coupling questions in the Coupling measure we use throughout our studies.

Next, participants read: "*Imagine that you are now booking a flight to Japan for your summer vacation and you find tickets selling for $800 in the same airline you booked your Caribbean tickets*." Participants in the discount condition then read: "*The airline is no longer holding the $100 discount promotion*." Participants in the promotional credit condition read: "*You have decided to apply your previously earned $100 promotional credit towards this flight*." Participants in the promotional credit-points condition read: "*You have decided to apply your previously earned 10,000 points, which translates to $100 worth of credit, towards this flight*."

All participants indicated their perceived costs of the Japan tickets (using a slider bar from $700-$800) and answered the two coupling questions for total coupling.

Results

Total Perceived Costs. There was a main effect of promotion type on total perceived costs; $M_{Discount}$ = $1003.19, SD = $32.19; $M_{PromotionalCredit\text{-}Dollars}$ = $969.66, SD = $64.71; $M_{PromotionalCredit\text{-}Points}$ = $998.29, SD = $71.43; $F(2, 181) = 5.58$, $p < .01$. Planned contrasts showed that participants in the promotional credit-dollars condition reported lower total perceived costs than did participants in both the promotional credit-points ($t(181) = -2.68$, $p < .01$) and discount conditions ($t(181) = -3.12$, $p < .01$) but there was no difference in perceived costs between the discount condition and promotional credit-points conditions ($t(181) = -.47$, $p = .64$). Viewed another way, every participant spent $1000 total across the two flight purchases in the scenario. Participants in the promotional credit-dollars condition perceived the total cost of the two flights to be significantly less than $1000 ($t(55) = -3.51$, $p = .001$) whereas those in the discount condition ($t(62) = .79$, $p = .44$) and the promotional credit-points condition did not ($t(64) = -.19$, $p = .84$).

Total Coupling. There was a main effect of promotion type on total coupling ($M_{Discount}$ = 11.60, SD = 2.49; $M_{PromotionalCredit\text{-}Dollars}$ = 13.19, SD = 2.70; $M_{PromotionalCredit\text{-}Points}$ = 12.35, SD = 2.95; $F(2, 181) = 5.11$, $p < .01$). Planned contrasts showed that the promotional credit-dollars condition yielded a statistically higher total coupling score than the discount condition ($t(181) = 3.20$, $p < .01$) and marginally significantly higher total coupling score than the promotional credit-points condition ($t(181) = 1.70$, $p = .09$). Promotional-credit-points means were not statistically different from the discount means ($t(181) = 1.57$, $p = .12$). Please see Table 5 for all contrasts.

Mediation. The effect of promotion type (coded discount = -1, credit-points, = 0, credit-dollars = 1) on total perceived costs was mediated by total coupling (Indirect effect = -2.63, 95%

CI = [-6.85, -.29]). Similarly, we ran another series of mediation analyses of promotion type on total perceived costs, coding promotion type as credit-dollars as 1, credit-points as -1, and discount as 0 to understand the contrasts between these credit-dollars and credit-points. We found that promotion type (credit-dollars vs. credit-points) was marginally significantly mediated by total coupling (Indirect effect = -1.48, 90% CI = [-4.25, -.08]). As in Study 4A, we then included the code credit-dollars as -1, credit-points as -1, and discount as 2 into the model as a covariate, and observed a marginally significant mediation (Indirect effect = -1.38, 90% CI = [-3.84, -.08]).

Insert Table 5 about here

Discussion

Study 4B demonstrates that as the mental computation to subtract a promotion from a purchase increases in difficulty, double mental discounting decreases. Specifically, when promotional credit is expressed in the form of a different denomination at one time, consumers become less likely to reduce perceived costs by that promotional credit amount at that time point and are more likely to perceive total costs accurately. Thus, it seems that in addition to requiring direct associations between the gain and multiple expenditures, the mental computations behind double mental discounting must also be straightforward for double mental discounting to occur.

GENERAL DISCUSSION

In this research we document that consumers favorably compute perceived costs when gains are strongly coupled with multiple expenditures, mentally discounting some gains multiple times to feel as if they spend less money than they actually do. We refer to this tendency as "double mental discounting" and demonstrate that, beyond maintaining flexibility in deciding to

which mental account to post gains (Cheema and Soman 2006), consumers often post a single gain to multiple expenditures when a gain is directly relevant to multiple purchases.

Six studies explore double mental discounting when consumers receive gains that have strong associations with multiple purchases. Studies 1A and 1B demonstrate that promotional credit, a price promotion with strong associations with multiple purchases, increases purchasing compared to standard discounts. Study 2 establishes that consumers often mentally discount a single promotional credit multiple times and shows that strength-of-coupling drives this effect. Study 3 finds that consumers double discount promotional credit more substantially than multiple other forms of promotions including discounts, mail-in rebates and cash back offers. Finally, Studies 4A and 4B show that both decoupling promotional credit from one expenditure (4A) and making coupling computations more difficult (4B) mitigate double discounting.

We focus on the case of promotional credit in this project because the structure of a promotional credit gain lends itself particularly well to double mental discounting. Promotional credit is strongly associated with multiple purchases—first, an initial purchase where it is received and second, a subsequent purchase where it is used. Because the promotional credit gain is strongly associated with multiple costs, it can be coupled and mentally deducted from multiple purchases. Other financially equivalent price promotions such as discounts, mail-in rebates, and cash back are not as strongly coupled to both purchases, and tend to be mentally discounted in line with the strength of associations across purchases (Study 3).

We also observe that in the case of promotional credit, consumers maintain an almost puzzling duality when reporting differences between objective and subjective costs (see Web Appendix D). Consumers are not blinded to true objective costs when using promotional credit, nor are they overtly tricked by them. Instead, when engaging in double mental discounting, consumers overlook objective costs when subjective costs allow them to feel as if they spend less.

Throughout our experiments, we observe how several mental accounting constructs extend to the domain of price promotions. First, we observe that "coupling," a construct typically used to describe the strength of mental links between consumption experiences and expenditures (Prelec and Lowenstein 1998), can also describe how clearly consumers link financial gains with specific expenditures. Additionally, we observe that malleable mental accounting (Cheema and Soman 2006), a concept originally used to describe consumers' tendency to flexibly assign purchases to budget categories to justify purchases, captures how consumers flexibly apply gains to psychological purchase costs. In the case of double mental discounting, consumers actually apply a single gain to purchase costs multiple times.

Implications and Future Directions

The managerial implications of our findings, in one sense, seem clear: when consumers receive gains such as promotional credit that are linked to multiple purchases, they feel like they spend less, encouraging them to actually spend more. This increase in spending appears to be an obvious advantage to retailers.

The consumer welfare implications of the present findings, however, are nuanced. Promotional credit allows consumers to feel that they spend less than they actually do—a good feeling. However, this also may allow consumers to justify unwise spending. Although consumers seem readily aware of actual costs and thus are not "tricked" by promotional credit, companies who offer promotional credit may allow consumers to trick themselves. This may be a welcome option for consumers who feel as if they spend too little (i.e., "Tightwads," Rick, Cryder, and Loewenstein 2008), however, consumers who face the generally more serious problem of spending too much may have good reason to steer clear of promotional credit offers.

Future research can explore how consumers who double discount their gains justify their purchases not only to themselves but to others. The case of joint decision making could be interesting. On one hand, a consumer may wish to persuade a partner about making a purchase, potentially making mental discounting more likely to occur due to the support that it offers in favor of purchasing. On the other hand, being accountable to a partner may involve greater deliberation and justification, making less-than-logical mental computations less influential.

We have investigated double mental discounting primarily in the case of promotional credit. It is likely, however, that double mental discounting exists on a broader scale and future research could explore these cases. Indeed, we predict that any type of monetary gain can be mentally applied to offset costs or losses when the situation couples the gain with multiple expenditures. For example, although many types of windfall gains may reduce subjective costs and increase spending (Arkes et al. 1994; Heilman, Nakamoto, and Rao 2002; Milkman and Beshears 2009), we predict that increasing direct associations between a windfall gain and multiple purchases could make such mental discounting more likely.

In summary, previous research about malleable mental accounting has documented that consumers must have mental associations that justify flexible accounting before they can adopt favorable decision frames (Schelling 1984; Shafir and Thaler 2006). Our findings are consistent with this view: consumers do not double discount all price promotions, but only the ones that are strongly coupled with multiple expenditures. In a variety of contexts where a gain has multiple direct links with costs or losses, we expect double mental discounting to occur.

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FOOTNOTES

[1] Nine promotional credit participants in a row used their gift card to receive an immediate discount on Day 1 without the retailer noticing, and were excluded from analyses. When these participants are included, Day 1 purchase rates between conditions are marginally significantly different and all other results look substantively the same as reported in text.

[2] We note that this increase includes increases in average amount spent due to two participants in the promotional credit condition who purchased three times.

[3] In studies where costs are reported in open-ended format (Studies 1B, 2, and 3), we withheld from analyses perceived costs responses +/- 3 standard deviations from the mean. Results do not meaningfully differ when these responses are retained.

[4] When participants who guessed the hypothesis were excluded from analysis, the promotional credit condition still yielded lower total perceived costs than any other condition ($ps < .05$) and higher total coupling than any other condition ($ps < .01$).

TABLE 1: STUDY 1A FIELD EXPERIMENT PURCHASES

# of Purchases	Condition	
	Promotional Credit	***Discount***
Percent Who Purchased on Day 1	87% [a]	95% [b]
Percent Who Purchased on Days 2-3	24% [b]	5% [a]
Average Number of Purchases	1.14 [a]	1.00 [a†]
Percent Who Purchased 0 Times	13% [b]	5% [a]
Percent Who Purchased 1 Time	62% [a]	90% [b]
Percent Who Purchased 2 Times	22% [b]	5% [a]
Percent Who Purchased 3 Times	3% [a]	0% [a]

Contrast effects are denoted by superscript letters. Condition means in the same row with different superscript letters are significantly different from each other at a $p \leq .05$ level. A [†] symbol indicates a statistically significant difference at a $p \leq .10$ level.

TABLE 2: STUDY 1B WILLINGNESS TO PURCHASE

	Control	***Promotional Credit***	***Discount***
Promotion Value	$0	$20	$20
Percent Who Made Purchase 1	63% [a]	81% [b]	89% [c]
Percent Who Made Purchase 2	47% [b]	70% [c]	29% [a]
Average Number of Purchases	1.06[a]	1.51[b]	1.17[a]
Percent Who Purchase 0 Times	25% [b]	14%[a]	10% [a]
Percent Who Purchased 1 Time	43% [b]	21%[a]	63% [c]
Percent Who Purchased 2 Times	32%[a]	65%[b]	27%[a]
Purchase 1 Amount Spent[1]	$27.78[a]	$47.01[b]	$33.04 [a†]
Purchase 2 Amount Spent[1]	$15.63[a]	$9.87[a]	$11.35[a]
Total Amount Spent [1]	$43.42[a]	$56.88[b]	$44.40[a]
Total Price Tag Purchase Amount (Retail Price)	$43.42 [a]	$70.54[c]	$60.07[b]
Likelihood of Purchasing from Store Again	94% [a]	94% [a]	92% [a]
Satisfaction With Store (Composite, 1-7 scales)	5.34 [a]	5.38[a]	5.39[a]

Contrast effects are denoted by superscript letters. Condition means in the same row with different letter superscripts are significantly different from each other at a $p \leq .05$ level.

[1] Promotion applied where applicable. For participants in the discount condition, the price promotion of $20 was deducted from Purchase 1 prices of $50 or more; for participants in the promotional credit condition who had indicated that their Purchase 1 would total $50 or more, the price promotion of $20 was deducted from Purchase 2 prices of $20 or more; for such purchases from $1-$19 for which the promotion applied the amount spent was reduced to $0.

TABLE 3: ACROSS STUDIES 1) PERCENTAGE OF PARTICIPANTS REPORTING PERCEIVED COSTS THAT MATCH OBJECTIVE COSTS AND 2) PERCENTAGE OF PARTICIPANTS FULLY "DOUBLE DISCOUNTING", BASED ON CONDITION

Study #

Study 2	***Promotional Credit***	***Discount***
Perceived Costs = Actual Costs (Reported Perceived Costs of $700)	39.52%	81.53%
Complete Double Discounting (Reported Perceived Costs of $600)	38.57%	3.06%

Study 3	***Promotional Credit***	***Discount***	***Mail in Rebate***	***Cash Back (Basic)***	***Cash Back (Received Today)***
Perceived Costs = Actual Costs (Reported Perceived Costs of $700)	38.14%	55.77%	49.57%	36.94%	42.20%
Complete Double Discounting (Reported Perceived Costs of $600)	50.00%	10.58%	25.64%	34.23%	34.86%

Study 4A	***Promotional Credit***	***Discount***	***Credit Decouple***
Perceived Costs = Actual Costs (Reported Perceived Costs of $90)	43.19%	51.79%	48.82%
Complete Double Discounting (Reported Perceived Costs of $70)	37.86%	11.31%	30.59%

Study 4B	***Promotional Credit (Dollars)***	***Discount***	***Promotional Credit (Points)***
Perceived Costs = Actual Costs (Reported Perceived Costs of $1000)	23.21%	66.67%	24.62%
Complete Double Discounting (Reported Perceived Costs of $900)	35.71%	1.59%	21.54%

Many of our studies ask participants to use slider bars to report perceived costs and so some cost estimations may not be precise. Therefore, for Studies 2, 3, and 4B, we counted total perceived costs that ranged +/- $10 as acceptable to include in these percentages when matching a particular value. For Study 4A (which has expenditures less than $100), we counted total perceived costs that ranged +/- 3 as acceptable to include in these percentages.

TABLE 4: STUDY 3 MULTIPLE PROMOTION TYPES, COUPLING, AND MENTAL DISCOUNTING

	Promotional Credit	***Discount***	***Mail-in Rebate***	***Cash back-Basic***	***Cash back-Received today***
Promotion Value	$100	$100	$100	$100	$100
Purchase 1 Retail Price	$500	$500	$500	$500	$500
Purchase 2 Retail Price	$300	$300	$300	$300	$300
Purchase 1 Perceived Costs	$439.58^{b}	$424.51^{a}	$431.80^{ab}	$429.86^{ab}	$426.38^{ab}
Purchase 2 Perceived Costs	$213.30^{a}	$286.77^{c}	$262.09^{b}	$254.96^{b}	$251.37^{b}
Total Perceived Costs	$652.88^{a}	$711.28^{c}	$693.89^{bc}	$684.82^{b}	$677.75^{b}
Total Actual Costs ($700) – Total Perceived Costs	$47.12	-$11.28	$6.11	$15.18	$23.38
Purchase 1 Coupling	6.00^{a}	6.86^{b}	6.71^{b}	7.09^{b}	7.10^{b}
Purchase 2 Coupling	7.55^{c}	4.40^{a}	4.79^{ab}	4.89^{ab}	5.37^{b}
Total Coupling	13.55^{c}	11.26^{a}	11.50^{a}	11.98^{ab}	12.47^{b}
Simultaneous Coupling (smaller values signal greater coupling across both purchases)	1.70^{a}	2.89^{c}	2.70^{c}	2.39^{b}	2.36^{b}
Likelihood to Make Purchase 1	5.81^{ab}	5.39^{a}	5.93^{ab}	6.05^{b}	6.44^{b}
Likelihood to Make Purchase 2	5.89^{c}	4.34^{a}	4.59^{ab}	4.78^{ab}	5.09^{b}
Total Likelihood to Purchase	11.70^{d}	9.73^{a}	10.52^{ab}	10.83^{bc}	11.53^{dc}
Pain of Paying Purchase 1	5.19^{a}	5.10^{a}	5.32^{a}	5.34^{a}	5.13^{a}
Pain of Paying Purchase 2	5.40^{a}	6.08^{b}	5.74^{ab}	5.85^{b}	5.92^{b}
Total Pain of Paying	10.59^{a}	11.18^{a}	11.06^{a}	11.19^{a}	11.06^{a}
Attractiveness of Promotion at Time 1	6.81^{a}	6.99^{a}	6.89^{a}	7.24^{ab}	7.60^{b}
Attractiveness of Promotion at Time 2	7.61^{c}	6.67^{a}	7.26^{bc}	6.89^{ab}	7.44^{bc}
Total Attractiveness of Promotions	14.42^{ab}	13.66^{a}	14.15^{a}	14.13^{ab}	15.04^{b}

Contrast effects are denoted by superscript letters. Condition means in the same row that share a same letter are insignificant from each other at $p \leq .05$.

TABLE 5: STUDY 4A AND 4B DE-COUPLING RESULTS

	Promotional Credit	*Promotional Credit (Decouple)*	*Discount*
Study 4A			
Promotion Value	$20	$20	$20
Purchase 1 Retail Price	$50	$50	$50
Purchase 2 Retail Price	$60	$60	$60
Purchase 1 Perceived Costs	$38.03[b]	$40.58[c]	$32.25[a]
Purchase 2 Perceived Costs	$42.80[a]	$43.75[a]	$56.72[b]
Total Perceived Costs	$80.83[a]	$84.34[b]	$88.97[c]
Total Actual Cost ($90) – Total Perceived Costs	$9.17	$5.66	$1.03
Purchase 1 Coupling	6.57[b]	5.92[a]	7.31[c]
Purchase 2 Coupling	7.15[b]	7.14[b]	3.07[a]
Total Coupling	13.73[c]	13.04[b]	10.39[a]
Study 4B			
Promotion Value	$100	$100	$100
Purchase 1 Retail Price	$300	$300	$300
Purchase 2 Retail Price	$800	$800	$800
Purchase 1 Perceived Costs	$236.50[b]	$258.40[c]	$216.02[a]
Purchase 2 Perceived Costs	$731.38[a]	$739.89[a]	$787.17[b]
Total Perceived Costs	$739.89[a]	$998.29[b]	$1003.19[c]
Total Actual Costs ($1000) – Total Perceived costs	$30.34	$1.71	-$3.19
Purchase 1 Coupling	6.34[a]	5.90[a]	7.48[b]
Purchase 2 Coupling	7.02[b]	6.62[b]	4.18[a]
Total Coupling	13.35[b]	12.52[ab]	11.66[a]

Contrast effects are denoted by superscript letters. Condition means in the same row with different superscript letters are significantly different from each other at $p \leq .05$.

Title: Double Mental Discounting: When A Single Price Promotion Feels Twice As Nice

WEB APPENDIX A

SCENARIO WORDING FOR ALL STUDIES

Experimental Conditions	*Time 1 Scenario*	*Time 2 Scenario*
Study 1A		
Promotional Credit Condition	$3 Gift Card Valid April 25 or 26, 11 a.m. - 2 p.m.	
Discount Condition	$3 Discount Valid Monday April 24, 11a.m.-2p.m.	(No additional stimuli)
Study 1B (all)	Imagine that you are at a mall when you walk past your favorite clothing store. You decide to go inside.	Now imagine that it is one month later and you are back at the mall. You see your favorite clothing store again.
Control condition	(No additional wording)	(No additional wording)
Promotional Credit condition	There is a special today in the store. If you purchase $50 worth of clothes, you will receive a $20 gift card for this store that can be used any time in the future.	(No additional wording)
Discount condition	There is a special today in the store. If you purchase $50 worth of clothes, you will receive a $20 discount today.	(No additional wording)
Study 2 (all)	Imagine that you are in Best Buy and you see a laptop that you really like priced $500 including taxes. There is a special today.	Now imagine that you go back to Best Buy one month later.
Promotional Credit condition	The laptop comes with a $100 gift card to use at Best Buy in the future. You decide to buy the laptop and gain the $100 gift card.	You previously received a $100 gift card when making a prior purchase at this store. You want to buy a tablet and you see that the tablet is priced $300 including taxes. You decide to buy the tablet and use the $100 gift card."
Discount condition	The laptop comes with a $100 price discount to use today at Best Buy. You decide to buy the laptop and use the $100 discount.	You previously received a $100 discount when making a prior purchase at this store. You want to buy a tablet and you see that the tablet is priced $300 including taxes. You decide to buy the tablet."

Study 3		
(all)	Imagine that you are in Best Buy and you see a laptop that you really like priced $500 including taxes. There is a special today.	In the scenario in part I of this study, you received a $100 [promotion] when making a laptop purchase at Best Buy. Now, imagine that you are back at Best Buy. You want to buy a tablet and you see that the tablet is priced $300 including taxes.
Promotional Credit condition	The laptop comes with a $100 gift card to use at Best Buy in the future.	You have not used the $100 gift card from your previous laptop purchase and have it in your wallet.
Discount condition	The laptop comes with a $100 price discount to use at Best Buy today.	You received a $100 discount when making a laptop purchase at Best Buy.
Mail-in rebate condition	The laptop comes with a $100 mail-in rebate that you can mail in to receive a check.	You have received the $100 rebate check from your previous laptop purchase and deposited it in your bank account.
Cash back-basic condition	The laptop comes with $100 cash back that will be deposited in your bank account in the future.	You have received the $100 cash back from your previous laptop purchase in your bank account.
Cash back-received today condition	The laptop comes with $100 cash back that will be deposited in your bank account in the future.	*Just today*, you have received the $100 cash back from your previous laptop purchase in your bank account (Italic emphasis for "just today" was included in the original materials).

Study 4A		
Promotional Credit condition	Imagine that you are shopping at Amazon.com and you see a video game you really want to buy priced $50. There is a special today. Purchasing the video game comes with a $20 gift card to use in the future at Amazon.com. You decide to buy the game and you receive the $20 gift card.	You previously received a $20 Amazon gift card when buying a video game at Amazon.com. Now imagine that you are back shopping at Amazon.com a couple of days later. You want to buy a new table and you see a table you like priced $60. You decide to buy the table. You apply the $20 gift card towards this purchase.
Discount condition	Imagine that you are shopping at Amazon.com and you see a video game you want to buy priced $50. There is a special today. Purchasing the video game comes with a $20 price discount to use today at Amazon.com. You decide to buy the game and you receive the $20 discount. You apply the $20 discount towards this purchase.	You previously received a $20 discount when buying a video game at Amazon.com. Now imagine that you are back shopping at Amazon.com a couple of days later. You want to buy a new table and you see a table you like priced $60. You decide to buy the table.
Promotional Credit-decouple condition	Imagine that you are shopping at Gamestop and you see a video game you want to buy priced $50. There is a special today. Purchasing the video game comes with a $20 gift card to use in the future at Amazon.com. You decide to buy the game and you receive the $20 gift card.	You previously received a $20 Amazon gift card when buying a video game at Gamestop. Now imagine that you are shopping at Amazon.com a couple of days later. You want to buy a new table and you see a table you like priced $60. You decide to buy the table. You apply the $20 gift card towards this purchase.

Study 4B (all)	Imagine that you are buying plane tickets online to travel to the Caribbean this winter and you find tickets for $300. The airline is currently doing a promotion.	Imagine that you are now booking a round trip flight to Japan for your summer vacation. The ticket costs $800 round trip.
Promotional Credit-dollars condition	Your tickets also come with a $100 promotional credit to use on a future flight booking.	You have decided to apply your previously earned $100 promotional credit towards your Japan flight.
Discount condition	Your tickets also come with a $100 discount off the present flight booking.	You have previously gotten a $100 discount promotion through this airline.
Promotional Credit-points condition	Your tickets also come with 10,000 frequent flier points that can be cashed into credit to spend on a future flight booking. Each point is equivalent to one cent.	You have decided to apply your previously earned 10,000 points, which translates to $100 worth of credit towards your Japan flight.

WEB APPENDIX B

ADDITIONAL DETAILS FROM STUDY 1A

Additional Results, Day 1

We observe that participants who used a discount were directionally more likely to "upgrade" from the base-price cone value of $5 (before discount) on Day 1, than were participants in the promotional credit condition (52% versus 39%), however, this difference was not statistically significant ($\chi^2(1, N = 85) = 1.50$, $p = .22$). The difference between conditions in amount spent above the base price was marginally significant ($M_{Discount} = \$.68$, $M_{Promotional\ Credit} = \$.44$, $t(83) = 1.66$, $p = .10$).

Additional Results, Days 2-3

When we attempt to look at differences in amount spent among only those who purchased, sample sizes become quite small, i.e., only 4 people in the discount condition purchased on Days 2-3. Nevertheless, a comparison of means still shows a significant difference in amount spent between conditions among those who spent ($M_{Promotional\ Credit} = \$3.21$, $M_{Discount} = \$5.75$, $t(21) = 2.61$, $p = .02$), with participants in the discount condition spending more on average (promotional credit participants typically applied the $3 promotion at Time 2 whereas discount condition participants could not). There was no significant difference between conditions in the percentages of customers who spent above base price or for the amount of money spent above base price (ps > 0.25).

WEB APPENDIX C

EVERY MEASURE COLLECTED IN EACH STUDY

Study 1A

- Day 1 Purchase Choice
  - Actual purchase choice *(observed)*
  - Amount spent - *credit card transaction data only*
- Days 2 and 3 Purchase Choice
  - Actual purchase choice *(observed)*
  - Amount spent *(observed)*

Study 1B

- Purchase 1 Choice
  - Would you make a purchase at this store today?
- Purchase 1 Purchase Amount *(If answered Yes to Purchase 1 Choice)*
  - How much do you think would be the total value of your clothing purchase according to the price tags?
- Purchase 2 Purchase Choice
  - Would you make a purchase at this store on this day?
- Purchase 2 Purchase Amount *(If answered Yes to Purchase 2 Purchase Choice)*
  - How much do you think would be the total value of this second clothing purchase according to the price tags?
- Future purchase
  - After your interactions with the store in this scenario, do you think you would purchase from the store again in the future?
- Satisfaction ($\alpha = .90$)
  - How happy would you feel about your experience at this store?
  - How satisfied would you feel with this store?
  - How likely would you be to recommend this store to a friend or colleague?

Study 2

- Perceived Costs of [Purchase 1]/[Purchase 2] (free response)
- Coupling
  - How related is the (promotion) to the price of the [Purchase 1]/[Purchase 2]?
  - How much did you think about the (promotion) when you thought about the price of this [Purchase 1]/[Purchase 2]? (1-9 scales)
- Simultaneous Coupling
- Comfortable paying for (purchase) (1-9 scales)
- How good of a deal is (purchase) (1-9 scales)
- Highest WTP on (purchase; free response)
- Manipulation Check

Study 3

- Perceived costs of [Purchase 1]/[Purchase 2] (free response)
- Coupling
- Simultaneous Coupling
- Pain of Paying
- Likelihood to make purchase
    - "How likely would you be to make this purchase in real life"? (1-9 scale)
- Attractiveness of promotion
    - "How attractive is the $100 (promotion) that you received [with this purchase]/[with the previous purchase]? (1-9 scale)
- Happiness with promotion
    - "How happy would you be with the $100 (promotion) that you received [with this purchase]/[with the previous purchase]? (1-9 scale)
- Hypothesis guessing (free response)
    - Coded for hypothesis: promotional gain is linked to double mental discounting
- Manipulation Check

Study 4A

- Perceived Costs of [Purchase 1]/[Purchase 2] (slider $0-$100)
- Coupling
- Which purchase felt more expensive (1-9 scale)
- Familiarity with [Purchase 1]/[Purchase 2] category (1-9 scales)
- Manipulation Check

Study 4B

- Perceived Costs of [Purchase 1]/[Purchase 2] (slider $200-$300 for Purchase 1; slider $700-$800 for Purchase 2)
- Coupling
- Familiarity with [Purchase 1]/[Purchase 2] category (1-9 scales)
- Motivation to save money when considering purchases (1-9 scale)
- Manipulation Check

WEB APPENDIX D

ADDITIONAL RESULTS – REPORTED PERCEIVED COSTS VERSUS REPORTED ACTUAL COSTS

We ran an extension study of Study 2. This study tests the basic effect of double mental discounting, using the same stimuli as Study 2, but uniquely explores if participants are aware of actual total costs of purchases when they use promotional credit despite reporting low perceived total costs of purchases.

Method

Participants were Mechanical Turk workers (N = 171, median age = 32, males = 44.4%) participated in this study, randomly assigned to a promotional credit condition or a discount condition. The stimuli of this study was identical to that of Study 2 except for one addition. After participants filled out their perceived costs of two purchases, we asked participants to report how much they "actually spent" on their two purchases (a dependent variable unique to this study).

Results and Discussion

We observed a main effect of promotion type on total perceived costs; specifically, we found that participants in the promotional credit condition reported lower total perceived costs ($M_{PromotionalCredit}$ = \$664.72, SD = \$59.04) than did participants the discount condition ($M_{Discount}$ = \$701.84, SD = \$26.32; $F(1, 169) = 38.14$, $p < .001$). Participants in each condition objectively spent \$700 across the two purchases; however, participants in the promotional credit condition perceived the total cost of the two purchases to be significantly lower than \$700 ($t(84) = -5.51$, $p < .001$) whereas those in the discount condition did not ($t(85) = .65$, $p = .52$).

Despite perceiving lower *perceived costs*, participants in the promotional credit condition and discount condition did not differ in reporting *actual* costs ($M_{Discount}$ = \$692.86, SD = 74.68; $M_{Promotional\ Credit}$ = \$700.13, SD = \$79.76; F(1, 169) = .37, p = .54. Further, participants in both the promotional credit condition (t(84) = .02, p = .98) and discount condition (t(85) = -.88, p = .38) reported total actual costs that were statistically identical than the real dollar total costs of \$700.

In sum, we observe that although promotional credit reduces participants' subjective costs, consumers seem fully aware of the actual costs of their purchases. It appears that the subjective feeling of spending less itself can trigger the downstream consequences of double mental discounting.