

ANDONG CHENG and CYNTHIA CRYDER\*

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 are lower than they actually are, which can trigger higher expenditures. This mental accounting phenomenon, referred to as "double mental discounting," is driven by the extent to which gains feel associated, or coupled, with multiple purchases. This article also documents methods to decouple promotional gains from purchases, thus mitigating double mental discounting.

**Keywords:** mental accounting, pricing, financial decision making, coupling, price promotions

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## Double Mental Discounting: When a Single Price Promotion Feels Twice as Nice

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 Apple 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 \$1,100 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 2015b). As illustrated in the Apple example, promotional credit refers to price promotions that are received conditionally on making a first purchase and then reduce the cost of a subsequent purchase. For example, Amazon offers consumers the opportunity to "Buy Select Apps for Android, Get \$1 in MP3 Credit," (Amazon 2015a). Similarly, Kohl's offers "Kohl's Cash" for which every \$50 spent triggers receipt of \$10 of Kohl's credit to be used in the future (Kohl's 2015).

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\*Andong Cheng (corresponding author) is Assistant Professor of Marketing, Lerner College of Business and Economics, University of Delaware (email: andong@udel.edu). Cynthia Cryder is Associate Professor of Marketing, Olin Business School, Washington University in St. Louis (email: cryder@wustl.edu). The authors thank Lisa Bolton, Joe Goodman, Gary Lilien, Scott Rick, marketing faculty and doctoral students at Pennsylvania State University, and the members of the Consumer Behavior and Decision Science Lab and Journal Club at Washington University in St. Louis for providing feedback and insight on this project. The authors thank Miranda Lan, Nicole Cooper, and Gus Passov for research assistance. Jeffrey Inman served as associate editor for this article.

According to industry research, businesses planned to load \$14.5 billion onto promotional credit offers in 2017, triple the amount from 2007. 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 with 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 has documented 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 toward multiple costs to decrease

perceived costs and potentially justify greater spending. Whereas previous research about malleable mental accounting has demonstrated that consumers have considerable flexibility in choosing in which *one* mental account to post a cost (Cheema and Soman 2006), we propose that 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 to 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 research, 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 on the construct of “coupling” from mental accounting to explain the process behind double mental discounting. Coupling refers to the degree to which consumption suggests a particular expenditure and vice versa; consumption and payment are strongly coupled when their link is 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 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 has closely examined “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 (Dhar, Morrison, and Raju 1996; Raju, Dhar, and Morrison 1994) and for a subsequent purchase on receipt of cash back in their bank account (Vana, Lambrecht, and Bertini 2017). Indeed, Vana, Lambrecht, and Bertini (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, Lambrecht, and Bertini 2017). 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 with 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 through 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 on a first purchase and then is applied to a specific future purchase. Therefore, promotional credit is more strongly coupled with multiple purchases compared with other, similar price promotions.

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

H<sub>1</sub>: Consumers who receive promotional credit spend more than consumers who receive a financially equivalent discount.

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

H<sub>2</sub>: Strength of coupling between a gain and multiple costs mediates double mental discounting effects.

Finally, we also predict that if coupling drives double mental discounting, a successful decoupling manipulation should decrease double mental discounting effects. Therefore,

Table 1  
STUDY 1A: FIELD EXPERIMENT PURCHASES

# of Purchases	Condition	
	Promotional Credit	Discount
Percentage who purchased on Day 1	87% <sup>a</sup>	95% <sup>b</sup>
Percentage who purchased on Days 2–3	24% <sup>b</sup>	5% <sup>a</sup>
Average number of purchases	1.14 <sup>a</sup>	1.00 <sup>a†</sup>
Percentage who purchased 0 times	13% <sup>b</sup>	5% <sup>a</sup>
Percentage who purchased 1 time	62% <sup>a</sup>	90% <sup>b</sup>
Percentage who purchased 2 times	22% <sup>b</sup>	5% <sup>a</sup>
Percentage who purchased 3 times	3% <sup>a</sup>	0% <sup>a</sup>

Notes: 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 dagger symbol ([†]) indicates a statistically significant difference at a  $p \leq .10$  level.

H<sub>3</sub>: Decoupling a gain from one or more purchases mitigates 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 with standard discounts. In all studies in this article, we report all data exclusions, manipulations, and measures collected (Simmons, Nelson, and Simonsohn 2012). All sample sizes and exclusion criteria were determined before data collection began.

#### Method

One-hundred seventy-two students, faculty, staff, and visitors on the campus of a large private Midwestern university participated.<sup>1</sup> 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 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 on purchasing on Day 1. Ice cream options were priced at \$5, \$6, or \$7 depending on cone type and the number of scoops. (for full manipulation wording for all studies, see Web Appendix A). 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 email address every time they purchased so that we could enter them in a lottery for a \$50 Amazon gift card (one entry allowed per person per day). Recording email addresses enabled 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

<sup>1</sup>Nine promotional credit participants in a row used their gift card to receive an immediate discount on Day 1 without the retailer noticing; they were excluded from our 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.

participants in the promotional credit condition (95% vs. 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% vs. 5%;  $\chi^2(1, N = 163) = 13.93, p < .001$ ).

When we examine total purchases, we find that 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 ( $M = 1.00, SD = .30$ ;  $t(161) = 1.82, p = .07$ ; for details, see Table 1). Participants in the discount condition were significantly more likely to purchase exactly once than were participants in the promotional credit condition (91% vs. 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 once than were participants in the discount condition (24% vs. 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 ( $M_{\text{promotional}} = \$5.44, M_{\text{discount}} = \$2.68$ ;  $t(83) = 18.86, p < .001$ ). 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 collected this information on Days 2 and 3. Upon analyzing all participants' follow-up purchases on Days 2 and 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 and 3 purchases than did participants in the discount condition ( $M_{\text{promotional}} = \$0.80, M_{\text{discount}} = \$0.26$ ;  $t(161) = 2.36, p < .02$ ).

*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 the amount spent, we can create a revenue estimate per condition and per customer based on amounts spent by credit card on Day 1 and on actual amounts spent on Days 2 and 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; 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 with the discount condition.<sup>2</sup> 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. For additional analyses, see Web Appendix B.

### Discussion

Participants who received promotional credit, versus 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 with 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 with no promotion at all.

### Method

Four hundred sixty participants from Amazon's Mechanical Turk (MTurk; median age = 30 years; 59.5% male) participated. Participants read that they were shopping at their favorite mall store.

For Purchase 1, participants were randomly assigned to one of three conditions: (1) control (no promotion), (2) discount (\$20 discount off \$50 purchase), or (3) promotional credit (\$20 gift card with \$50 purchase). In the discount and promotional credit conditions, participants first read about the price promotion offer (for wording, see Web Appendix A). Participants then chose whether 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. In addition, 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 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.<sup>3</sup>

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

<sup>3</sup>In studies in which costs are reported in an open-ended format (Studies 1b, 2, and 3), we withheld from analyses perceived costs responses that were  $\pm 3$  standard deviations from the mean. Results do not meaningfully differ when these responses are retained.

Table 2  
STUDY 1B: WILLINGNESS TO PURCHASE

	Control	Promotional Credit	Discount
Promotion value	\$0	\$20	\$20
Percentage who made purchase 1	63% <sup>a</sup>	81% <sup>b</sup>	89% <sup>c</sup>
Percentage who made purchase 2	47% <sup>b</sup>	70% <sup>c</sup>	29% <sup>a</sup>
Average number of purchases	1.06 <sup>a</sup>	1.51 <sup>b</sup>	1.17 <sup>a</sup>
Percentage who purchase 0 times	25% <sup>b</sup>	14% <sup>a</sup>	10% <sup>a</sup>
Percentage who purchased 1 time	43% <sup>b</sup>	21% <sup>a</sup>	63% <sup>c</sup>
Percentage who purchased 2 times	32% <sup>a</sup>	65% <sup>b</sup>	27% <sup>a</sup>
Purchase 1 amount spent <sup>†</sup>	\$27.78 <sup>a</sup>	\$47.01 <sup>b</sup>	\$33.04 <sup>a†</sup>
Purchase 2 amount spent <sup>†</sup>	\$15.63 <sup>a</sup>	\$9.87 <sup>a</sup>	\$11.35 <sup>a</sup>
Total amount spent <sup>†</sup>	\$43.42 <sup>a</sup>	\$56.88 <sup>b</sup>	\$44.40 <sup>a</sup>
Total price tag purchase amount (retail price)	\$43.42 <sup>a</sup>	\$70.54 <sup>c</sup>	\$60.07 <sup>b</sup>
Likelihood of purchasing from store again	94% <sup>a</sup>	94% <sup>a</sup>	92% <sup>a</sup>
Satisfaction with store (composite, 1–7 scales)	5.34 <sup>a</sup>	5.38 <sup>a</sup>	5.39 <sup>a</sup>

<sup>†</sup>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 to \$19 for which the promotion applied, the amount spent was reduced to \$0.

Notes: 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. A dagger symbol (†) indicates a statistically significant difference at a  $p \leq .10$  level.

## 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 ( $M_{\text{promotional}} = 1.51$ ,  $SD = .73$ ) than did participants in the discount condition ( $M_{\text{discount}} = 1.17$ ,  $SD = .58$ ;  $B = .25$ , Wald  $\chi^2(1) = 6.33$ ,  $p = .01$ ). Participants in the promotional credit condition also purchased significantly more often than did participants in the control condition ( $M_{\text{control}} = 1.06$ ,  $SD = .76$ ;  $B = .35$ , Wald  $\chi^2(1) = 11.10$ ,  $p = .001$ ). There were no significant differences in mean number of purchases between the control and discount conditions ( $p = .37$ ; for more details, see Table 2).

**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 (s)he 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 ( $M_{\text{promotional}} = \$47.01$ ,  $SD = \$28.01$ ) than did participants in the discount condition ( $M_{\text{discount}} = \$33.04$ ,  $SD = \$17.53$ ;  $t(448) = 4.77$ ,  $p < .001$ ; we note that for participants in the discount condition who received the promotion, the promotion was applied 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 ( $M_{\text{control}} = \$27.78$ ,

$SD = \$30.35$ ;  $t(448) = 6.42$ ,  $p < .001$ ). 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 ( $M_{\text{promotional}} = \$9.87$ ,  $SD = \$15.05$ ) as participants in the discount condition ( $M_{\text{discount}} = \$11.35$ ,  $SD = \$21.47$ ;  $p > .25$ ) and significantly less than participants in the control condition ( $M_{\text{control}} = \$15.63$ ,  $SD = \$22.81$ ;  $t(448) = 2.48$ ,  $p < .05$ ; for participants in the promotional credit condition who received the promotion, the promotion was applied 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 ( $M = \$43.42$ ,  $SD = \$37.04$ ;  $t(448) = 3.46$ ,  $p = .001$ ) conditions. 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 with participants in other conditions (after their promotion was deducted from Purchase 2, when applicable), the promotional credit participants spent more in total across purchases. There were no significant differences between conditions in any of the follow-up questions (for additional details, see Table 2).

## 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 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 Studies 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 MTurk workers (median age = 31 years; 48% male) 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. This 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 ( $M_{\text{promotional}} = \$663.51$ ,  $SD = \$62.61$ ) than did participants in the discount condition ( $M_{\text{discount}} = \$701.85$ ,  $SD = \$42.91$ ;  $F(1, 430) = 55.63$ ,  $p < .001$ ). 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 our studies 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.

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

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 ( $M_{\text{discount}} = 7.41$ ;  $SD = 1.92$ ;  $M_{\text{promotional}} = 6.20$ ,  $SD = 2.64$ ;  $F(1, 430) = 29.35$ ,  $p < .001$ ). Participants in the promotional credit condition coupled their promotion with Purchase 2 to a greater extent than did participants in the discount condition ( $M_{\text{discount}} = 3.04$ ;  $SD = 2.39$ ;  $M_{\text{promotional}} = 7.61$ ,  $SD = 2.64$ ;  $F(1, 430) = 475.12$ ,  $p < .001$ ). 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

Table 3

ACROSS STUDIES, PERCENTAGE OF PARTICIPANTS REPORTING PERCEIVED COSTS THAT MATCH OBJECTIVE COSTS AND PERCENTAGE OF PARTICIPANTS FULLY "DOUBLE DISCOUNTING," BASED ON CONDITION

<i>Study 2</i>	<i>Promotional Credit</i>	<i>Discount</i>			
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%			
<i>Study 3</i>	<i>Promotional Credit</i>	<i>Discount</i>	<i>Mail-in Rebate</i>	<i>Cash Back (Basic)</i>	<i>Cash Back (Received Today)</i>
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%
<i>Study 4a</i>	<i>Promotional Credit</i>	<i>Discount</i>	<i>Credit Decouple</i>		
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%		
<i>Study 4b</i>	<i>Promotional Credit (\$)</i>	<i>Discount</i>	<i>Promotional Credit (Points)</i>		
Perceived costs = actual costs (reported perceived costs of \$1,000)	23.21%	66.67%	24.62%		
Complete double discounting (reported perceived costs of \$900)	35.71%	1.59%	21.54%		

Notes: 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  $\pm \$10$  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  $\pm \$3$  as acceptable to include in these percentages.

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 5,000 samples using Hayes's (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% confidence interval [CI] = [-17.04, -9.80]; direct effect  $B = -6.12$ ;  $t = -2.39, p = .02$ ). We substituted simultaneous coupling as the mediator in a second mediation model, and 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 overapply 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 that promotional 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 the discount nor promotional credit conditions overdiscount 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" section.

### STUDY 3: MULTIPLE FORMS OF PRICE PROMOTIONS OVER TIME

Studies 1a, 1b, and 2 demonstrated that promotional credit differs from standard discounts in purchasing patterns, perceived costs, and coupling. Study 3 compares promotional credit with 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 with 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

Workers from MTurk ( $n = 569$ , median age = 30 years, male = 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, which 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), and (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 with 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 cooccurrence, potentially also increasing coupling for Purchase 2, and (2) simulate conditions from Vana, Lambrecht, and Bertini (2017), whose analysis of cash-back spending depended on 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). We also asked participants to rate their likelihood of buying the laptop if it came with the promotion described, the attractiveness of the promotion, and the pain of paying for the laptop (1–9 rating scales), which were unique additions to this study.

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 after 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 ( $M_{\text{promotional}} = \$652.88$ ,  $SD = \$67.61$ ) than did participants in any other condition ( $M_{\text{discount}} = \$711.28$ ,  $SD = \$94.50$ ;  $t(554) = -5.34$ ,  $p < .001$ ;  $M_{\text{rebate}} = \$693.89$ ,  $SD = \$72.18$ ;  $t(554) = -3.86$ ,  $p < .001$ ;  $M_{\text{cash basic}} = \$684.82$ ,  $SD = \$86.57$ ;  $t(554) = -2.97$ ,  $p < .01$ ;  $M_{\text{cash today}} = \$677.75$ ,  $SD = \$84.81$ ;  $t(554) = -2.26$ ,  $p = .02$ ; all  $p$ -values relative to the promotional credit condition).

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

*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 our 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 percentage of correct guessers per condition was as follows: promotional credit = 3.3%, discount = 0%, mail-in rebate = 3.3%, cash back [basic] = 2.5%, and 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 the analyses.<sup>4</sup>

### Discussion

Study 3 tested how five different price promotions of equivalent financial value influence perceived costs over time. As in our previous studies, we observe that consumers mentally overapply 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). In Table 4, we show 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, Lambrecht, and Bertini 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 either coupling or mental discounting to the same degree as did promotional credit. However, they did trigger increased total coupling and

<sup>4</sup>When participants who guessed the hypothesis were excluded from the 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 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 <sup>b</sup>	\$424.51 <sup>a</sup>	\$431.80 <sup>ab</sup>	\$429.86 <sup>ab</sup>	\$426.38 <sup>ab</sup>
Purchase 2 perceived costs	\$213.30 <sup>a</sup>	\$286.77 <sup>c</sup>	\$262.09 <sup>b</sup>	\$254.96 <sup>b</sup>	\$251.37 <sup>b</sup>
Total perceived costs	\$652.88 <sup>a</sup>	\$711.28 <sup>c</sup>	\$693.89 <sup>bc</sup>	\$684.82 <sup>b</sup>	\$677.75 <sup>b</sup>
Total actual costs (\$700) – Total perceived costs	\$47.12	–\$11.28	\$6.11	\$15.18	\$23.38
Purchase 1 coupling	6.00 <sup>a</sup>	6.86 <sup>b</sup>	6.71 <sup>b</sup>	7.09 <sup>b</sup>	7.10 <sup>b</sup>
Purchase 2 coupling	7.55 <sup>c</sup>	4.40 <sup>a</sup>	4.79 <sup>ab</sup>	4.89 <sup>ab</sup>	5.37 <sup>b</sup>
Total coupling	13.55 <sup>c</sup>	11.26 <sup>a</sup>	11.50 <sup>a</sup>	11.98 <sup>ab</sup>	12.47 <sup>b</sup>
Simultaneous coupling (smaller values signal greater coupling across both purchases)	1.70 <sup>a</sup>	2.89 <sup>c</sup>	2.70 <sup>c</sup>	2.39 <sup>b</sup>	2.36 <sup>b</sup>
Likelihood to make Purchase 1	5.81 <sup>ab</sup>	5.39 <sup>a</sup>	5.93 <sup>ab</sup>	6.05 <sup>b</sup>	6.44 <sup>b</sup>
Likelihood to make Purchase 2	5.89 <sup>c</sup>	4.34 <sup>a</sup>	4.59 <sup>ab</sup>	4.78 <sup>ab</sup>	5.09 <sup>b</sup>
Total likelihood to purchase	11.70 <sup>d</sup>	9.73 <sup>a</sup>	10.52 <sup>ab</sup>	10.83 <sup>bc</sup>	11.53 <sup>dc</sup>
Pain of paying Purchase 1	5.19 <sup>a</sup>	5.10 <sup>a</sup>	5.32 <sup>a</sup>	5.34 <sup>a</sup>	5.13 <sup>a</sup>
Pain of paying Purchase 2	5.40 <sup>a</sup>	6.08 <sup>b</sup>	5.74 <sup>ab</sup>	5.85 <sup>b</sup>	5.92 <sup>b</sup>
Total pain of paying	10.59 <sup>a</sup>	11.18 <sup>a</sup>	11.06 <sup>a</sup>	11.19 <sup>a</sup>	11.06 <sup>a</sup>
Attractiveness of promotion at Time 1	6.81 <sup>a</sup>	6.99 <sup>a</sup>	6.89 <sup>a</sup>	7.24 <sup>ab</sup>	7.60 <sup>b</sup>
Attractiveness of promotion at Time 2	7.61 <sup>c</sup>	6.67 <sup>a</sup>	7.26 <sup>bc</sup>	6.89 <sup>ab</sup>	7.44 <sup>bc</sup>
Total attractiveness of promotions	14.42 <sup>ab</sup>	13.66 <sup>a</sup>	14.15 <sup>a</sup>	14.13 <sup>ab</sup>	15.04 <sup>b</sup>

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

mental discounting (as measured by perceived costs) in relation to standard discounts. Most notably, we see results consistent with Vana, Lambrecht, and Bertini (2017), who focus on Purchase 2: we find 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 appears to induce mental discounting, especially when it is linked temporally with spending, it does not do so to the same degree as promotional credit, for which coupling across purchases is the strongest. This finding is consistent with our hypotheses.

#### STUDY 4A: DECOUPLING THROUGH DIFFERENT-STORE CREDIT

Studies 2 and 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 MTurk workers (median age = 31 years; 45.9% male) 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 [discount/gift card] after purchasing a \$50 video game. Participants in the discount and promotional credit conditions were told that they had purchased their video game (Purchase 1) on Amazon. 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 (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 report only total coupling for the remainder of the article).

#### Results

**Total perceived costs.** All participants spent \$90 across purchases in the scenario. There was a main effect of

Table 5  
STUDIES 4A AND 4B: DECOUPLING RESULTS

	Promotional Credit	Promotional Credit (Decouple)	Discount
<i>Study 4a</i>			
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 <sup>b</sup>	\$40.58 <sup>c</sup>	\$32.25 <sup>a</sup>
Purchase 2 perceived costs	\$42.80 <sup>a</sup>	\$43.75 <sup>a</sup>	\$56.72 <sup>b</sup>
Total perceived costs	\$80.83 <sup>a</sup>	\$84.34 <sup>b</sup>	\$88.97 <sup>c</sup>
Total actual cost (\$90) – Total perceived costs	\$9.17	\$5.66	\$1.03
Purchase 1 coupling	6.57 <sup>b</sup>	5.92 <sup>a</sup>	7.31 <sup>c</sup>
Purchase 2 coupling	7.15 <sup>b</sup>	7.14 <sup>b</sup>	3.07 <sup>a</sup>
Total coupling	13.73 <sup>c</sup>	13.04 <sup>b</sup>	10.39 <sup>a</sup>
<i>Study 4a</i>			
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 <sup>b</sup>	\$258.40 <sup>c</sup>	\$216.02 <sup>a</sup>
Purchase 2 perceived costs	\$731.38 <sup>a</sup>	\$739.89 <sup>a</sup>	\$787.17 <sup>b</sup>
Total perceived costs	\$739.89 <sup>a</sup>	\$998.29 <sup>b</sup>	\$1,003.19 <sup>c</sup>
Total actual costs (\$1,000) – Total perceived costs	\$30.34	\$1.71	–\$3.19
Purchase 1 coupling	6.34 <sup>a</sup>	5.90 <sup>a</sup>	7.48 <sup>b</sup>
Purchase 2 coupling	7.02 <sup>b</sup>	6.62 <sup>b</sup>	4.18 <sup>a</sup>
Total coupling	13.35 <sup>b</sup>	12.52 <sup>ab</sup>	11.66 <sup>a</sup>

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

promotion type on total perceived costs ( $M_{\text{discount}} = \$88.97$ ,  $SD = \$14.54$ ;  $M_{\text{promotional}} = \$80.83$ ,  $SD = \$15.71$ ;  $M_{\text{promotional decouple}} = \$84.33$ ,  $SD = \$18.06$ ;  $F(2, 495) = 10.89$ ,  $p < .001$ ). Contrasts show that the average total perceived costs in the promotional credit–decouple condition were lower than those in the discount condition ( $t(495) = -2.62$ ,  $p < .01$ ) but higher than those in 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. (For Purchase 1 and Purchase 2 results, see Table 5; 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 ( $M_{\text{discount}} = 10.39$ ,  $SD = 2.60$ ;  $M_{\text{promotional}} = 13.73$ ,  $SD = 2.99$ ;  $M_{\text{promotional decouple}} = 13.04$ ,  $SD = 3.18$ ;  $F(2, 495) = 60.15$ ,  $p < .001$ ). 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, and 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 through 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: DECOUPLING THROUGH DIFFERENT DENOMINATIONS

In Study 4b, we test whether complicating the mental computations behind mental discounting 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 it is equivalent in objective value (e.g., Gourville 1998; Raghubir and Srivastava 2002, 2008). For example, some currencies feel like “Monopoly money” and 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, (s)he may be less likely or able to couple the promotional credit with the original purchase. Prior research has shown 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 one penny) may feel more difficult to compute and, therefore, to associate with (i.e., couple with) a purchase price.

### Method

Participants in this study were undergraduate students from a large public university in the U.S. northeast ( $N = 184$ ; median age = 19 years; 52.3% male). The design was a three-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 dollars. 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 ( $M_{\text{discount}} = \$1,003.19$ ,  $SD = \$32.19$ ;  $M_{\text{promotional dollars}} = \$969.66$ ,  $SD = \$64.71$ ;  $M_{\text{promotional points}} = \$998.29$ ,  $SD = \$71.43$ ;  $F(2, 181) = 5.58$ ,  $p < .01$ ). 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 ( $t(181) = -3.12$ ,  $p < .01$ ) conditions, 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 \$1,000 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 \$1,000 ( $t(55) = -3.51$ ,  $p = .001$ ), whereas those in the discount condition ( $t(62) = .79$ ,  $p = .44$ ) and the promotional credit (points) condition ( $t(64) = -.19$ ,  $p = .84$ ) did not.

**Total coupling.** There was a main effect of promotion type on total coupling ( $M_{\text{discount}} = 11.60$ ,  $SD = 2.49$ ;  $M_{\text{promotional dollars}} = 13.19$ ,  $SD = 2.70$ ;  $M_{\text{promotional points}} = 12.35$ ,  $SD = 2.95$ ;  $F(2, 181) = 5.11$ ,  $p < .01$ ). 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 (coded credit-points = -1, discount = 0, credit-dollars = 1) 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]).

### 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 with 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 (Study 4a) and making coupling computations more difficult (Study 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 when it is received, and second, a subsequent purchase when 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 are spending 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 Loewenstein 1998), can also describe how clearly consumers link financial gains with specific expenditures. In addition, 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 are spending less, thus 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 are spending less than they actually are—a good feeling. However, this also may enable consumers to justify unwise spending. Although consumers seem readily aware of actual costs and thus are not “tricked” by promotional credit, companies that 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 more serious problem of spending too much may have good reason to steer clear of promotional credit offers.

Future research could explore how consumers who double discount their gains justify their purchases not only to themselves but also to others. The case of joint decision making could be interesting. On the one hand, a consumer may want to persuade a partner to make a purchase, potentially making mental discounting more likely to occur because of the support 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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