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When consumers decide to upgrade to a new or better product, they often trade in their currently owned or used product for the new one. The authors examine whether such trade-in behavior, in which consumers must negotiate the price for both the new and the used product, affects their willingness-to-pay price for the new good. Drawing on research on mental accounting, the authors reason that when consumers engage in a transaction involving a trade-in (i.e., when they act as both buyer and seller simultaneously), they place more importance on getting a good value for the used product than on getting a good price for the new product. As a result, such consumers exhibit a higher willingness-to-pay price for the new product than consumers who just buy the new product alone. The results from a series of laboratory experiments provide systematic support for this hypothesis. Finally, the authors lend external validity to their results by confirming the hypothesis using real-world transaction data from the automobile market.

Keywords: trade-ins, mental accounting, automobile market

Can Trade-Ins Hurt You? Exploring the Effect of a Trade-In on Consumers' Willingness to Pay for a New Product

Consumers commonly engage in replacement purchases, in which they replace an existing product with a new, usually better and upgraded, product. In such situations, the existing or used product is often exchanged or traded in toward a reduction in the price of the new good. Although these types of purchases are most commonly observed for automobiles—approximately 57% of all new car sales involve a trade-in (National Automobile Dealers Association, Public Affairs 2001)—such transactions also occur for various other products, such as musical instruments, sporting goods, jewelry, and appliances.

A distinctive feature of many of these large-ticket transactions is that consumers must negotiate the price of the good. Thus, transactions that involve a trade-in require the consumer to negotiate two prices, one for the new product and one for the existing product. This raises the question whether the existence of the trade-in transaction creates any advantages or disadvantages for the consumer. For example, will the new product's price differ depending on whether there is a trade-in? Are consumers better off trading in their used product toward the purchase of the new one from the same retailer, or should they keep the two transactions separate by dealing with different retailers? This article sheds light on these questions.

Anecdotal evidence from the automobile market suggests that dealers gain from the presence of the trade-in, possibly at the cost of consumers' welfare. This notion is supported by many industry and consumer reports, such as one that states that "Car dealers have a bad habit of giving you more for your trade-in than they actually are. They do this by artificially inflating the price of the car you're purchasing and then artificially inflating the trade-in allowance" (Lorio 2005). Thus, several car buying guides, such as edmunds.com and autotrader.com, advise consumers to keep the two transactions separate. Similar suggestions have also been forwarded by public policy makers. For example, "consumers should not discuss the trade-in of their vehicle until *after* the purchase price of the new car is finalized. It is extremely important to keep the trade-in out of the new car purchase negotiation" (Madigan, n.d.). Simi-

lar incidents are prevalent in other markets (e.g., musical instruments) as well (e.g., Fine 2002).

Although these examples suggest that the presence of a trade-in transaction during the new product negotiation process has an impact on the bargaining outcome, little research has studied the association between such related transactions. Instead, the extant literature focuses primarily on situations in which consumers act either as buyers or as sellers (e.g., Carmon and Ariely 2000), but not both. Therefore, we extend this line of research by studying situations in which a consumer acts simultaneously as a buyer and a seller by engaging in these two transactions with a single retailer—hereinafter referred to as a "trade-in consumer"—and comparing them with situations in which a consumer acts as either a buyer or a seller, but not both.

We reason that when consumers engage in a trade-in, in line with mental accounting implications (Thaler 1980, 1985), they are likely to perceive the trade-in value of the currently owned product as highly important and thus spend a considerable amount of resources negotiating its price. Because people have limited resources at a given time, more resources allocated to the more important task would result in fewer resources available to respond to a less important task (Einstein and McDaniel 1987; Zhu and Meyers-Levy 2005). This implies that a trade-in consumer will have few resources left to negotiate the purchase price of the new good and thus should be more tolerant of a high purchase price. On the basis of these arguments, we expect that whereas a trade-in consumer and a seller alone (i.e., someone who is only selling his or her current product) should exhibit comparable levels of the willingness-to-accept price for their current products, a trade-in consumer should reveal a higher willingness-to-pay price for the new product than a consumer who is only buying the new product. However, this effect should disappear when trade-in consumers regard the used product transaction to be of low importance.

We test and find strong support for our hypotheses through a series of lab experiments. We also validate these results using real-world field data from the automobile market. Thus, this research makes several important contributions. First, it contributes to the trade-in literature by suggesting that trade-ins affect not only consumers' likelihood to make a replacement decisions (Okada 2001, 2007) but also their willingness to pay for the new product. We provide process measures to explain why trade-in consumers often end up paying more for the new product than people who are only buying the new product. Second, this research adds to the buyer–seller differences literature by investigating situations in which consumers act as both sellers and buyers simultaneously and by arguing that trade-in consumers tend to place heightened importance on the trade-in value of their used product and therefore expect to pay more for the new product than buyers alone. Finally, this research offers important public policy implications. We show that when consumers were explicitly told to treat the trade-in and new product purchase as two separate transactions, their willingness-to-pay prices were comparable to those of buyers alone.

THEORETICAL BACKGROUND

Our central thesis is that trade-in consumers tend to perceive the trade-in value of their used product as highly important and therefore spend a considerable amount of resources on negotiating the trade-in price. Consequently, these consumers are left with few resources to focus on the new product transaction and therefore are more tolerant of a higher price for the new product. Research on mental accounting and resource allocation offers support for our arguments.

According to mental accounting principles, consumers keep a mental account of the costs and benefits associated with a transaction (Gourville and Soman 1998; Thaler 1985, 1999). A consumer opens a mental account when he or she purchases a product (e.g., a vehicle). The cost of the product is recorded as a negative entry into the account. The benefits that the consumer derives from consuming the product are recorded as benefits or positive entries in the same account. When the consumer sells the product, the mental account associated with the product is effectively closed. The selling price essentially determines whether the account is closed at a gain or a loss—that is, in black or red (Prelec and Loewenstein 1998). Because closing an account (not opening an account) provides final feedback in terms of how well a person has managed the process, closing an account should be perceived as more important than opening one (Prelec and Loewenstein 1998; Soman 2001; Soman and Gourville 2001).

Several studies have shown that closing an account at a loss is painful, and thus consumers try their best to avoid it. For example, Odean (1998) tracked investors' behaviors in the stock market and observed that they were more likely to sell stocks that increased in value (i.e., closing at a gain) than stocks that decreased in value (i.e., closing at a loss). As another example, Okada (2001, 2007) suggests that a key factor that hinders consumers from upgrading their products is the psychological cost associated with closing the existing product account in the red.

Because closing an account is more important than opening one and because consumers try to avoid the painful cost associated with closing an account at a loss, such mental accounting implications suggest that trade-in consumers should place heightened importance on the trade-in value of their used product, probably even more so than the purchase price of the new product. This is because the trade-in value indicates the closing amount of the existing mental account and therefore ultimately determines whether the used product account is closed in the red or in the black. In contrast, the purchase price for the new product indicates the opening amount of a new mental account. Because many other factors, such as benefits associated with the new product and the future resale price of the product, will still affect the overall performance of the new account, the opening amount is not weighted as much as the closing amount.

Extensive research suggests that task importance is a critical determinant of effortful processing (Brewer 1998; Fiske and Neuberg 1990; Petty and Cacioppo 1986). When tasks are perceived as more important, people spend a considerable amount of attention and effort on it and exhibit better performance (Andrzejewski, Moore, and Corvette 1999; Chaiken, Liberman, and Eagly 1989). Furthermore, because people have limited resources at a given time, as the importance of one task increases, thus demanding more resources, the resources left for other tasks decrease (Kliegel et al. 2001; Zhu and Meyers-Levy 2005). In a

trade-in context, we argue that because of the mental accounting implications discussed previously, consumers will perceive the trade-in transaction involving their used product as highly important. Thus, they are likely to devote their resources primarily to negotiating the best possible price of their used product. As a result, these trade-in consumers will have few resources left for the new product transaction.

In contrast, people who are involved in a single transaction have only one task to focus on and are simply looking for the best deal possible. For example, buyers alone will focus exclusively on the opening amount of the new product mental account and try to minimize the red as much as possible. Thus, compared with buyers alone, we expect that trade-in consumers will perceive the new product transaction as less important and therefore will exhibit a higher willingness-to-pay price for the new product because of their emphasis on getting a good closing amount (i.e., trade-in value) for the existing product account. Conversely, we expect that trade-in consumers will exhibit willingness-to-accept prices for their used product that are comparable to those who act as sellers alone because for both, the willingness-to-accept prices indicate the closing amounts for their existing product mental accounts and should be perceived as equally important.

Indirect support for our theorizing also comes from research on how consumers process partitioned prices (Hossain and Morgan 2006; Morowitz, Greenleaf, and Johnson 1998). Firms often divide the price they charge consumers into two parts, such as the base price for the item itself and a charge for shipping and handling. According to Yadav (1994), people usually anchor on the piece of information they perceive as most important and then adjust this for other less important information. Thus, it seems reasonable that consumers may pay more attention to the base price and then adjust insufficiently for the surcharges. This is probably because people usually perceive the base price as more important because the base price is usually higher than the surcharges, though not necessarily in all situations. Consistent with this idea, Hossain and Morgan (2006; see also Stross 2006) find that on eBay, bidders happily accepted outrageously high shipping charges if they believed that they were getting a good deal on the auctioned item. Presumably, this happened because bidders cared more about the item and its base price than the surcharges and therefore were willing to accept the high surcharges. In the current context, the research implies that trade-in consumers should focus more on the used product trade-in value than the new product purchase price because they are likely to view the used product transaction as more important (because of mental accounting implications). Thus, such consumers should be more willing to accept a higher purchase price for the new product than those who are simply buying the product alone.

On the basis of our theorizing, we forward the following formal hypotheses:

H_1: Trade-in consumers exhibit (a) comparable levels of willingness-to-accept prices toward their used product as those who are only selling their used product and (b) a higher willingness-to-pay price toward the new product than those who are only buying the new product.

H_2: Perceived importance toward the new product transaction mediates the effect hypothesized in H_{1b}.

In addition, an inference from our theorizing suggests that if the final outcome (i.e., the price paid to purchase the new product after the trade-in value is accounted for) is held fixed, trade-in consumers should feel happier when they gain on the used product but lose on the new product than vice versa. Formally,

H_3: When we control for the net outcome, trade-in consumers should feel happier when they gain on the used product but lose on the new product than vice versa.

Next, we describe five lab experiments conducted to test the hypotheses. Specifically, Experiment 1 tests H_{1a}, H_{1b}, and H_2. Experiment 2 further investigates the underlying mechanism (H_2) by explicitly manipulating the importance of the trade-in, while controlling for people's income level. Experiment 3 tests H_3. Experiments 4 and 5 extend the previous experiments by investigating whether dealers and consumers have the same perspective in a trade-in context and whether trade-in consumers can take actions to avoid paying high price for the new product. Finally, we use real-world transaction data from the automobile market to provide more compelling support to our theory.

EXPERIMENT 1

Experiment 1 tests H_{1a}, H_{1b}, and H_2. Specifically, participants imagined that they were only buying, only selling, or trading in a car, and they estimated the price they would be willing to pay for the new vehicle and/or the price they would be willing to accept for the used one. In addition, to test H_2, we assessed participants' importance rating of their transactions.

Method

Forty-three undergraduate students participated in this experiment in exchange for course credit. They completed a survey in small groups of no more than five people. Participants were randomly assigned to one of three conditions, each representing the selling alone, buying alone, or trade-in situation.

Participants in the selling-alone condition imagined that Jack was thinking of selling his used car to a local dealer. Detailed information about the used car was included. After imagining this scenario, participants estimated the lowest price they believed that Jack would be willing to accept from the dealer. Then, to assess the perceived importance of this used car transaction, participants indicated (1) how important it was for Jack to get a good price for his used car (1 = "not at all important," and 7 = "very important") and (2) how much effort Jack would spend on negotiating his used car trade-in price (1 = "a little bit of effort," and 7 = "a great deal of effort"). We combined these two items to form a used car importance index (r = .54, p < .01). The experiment ended with some demographic questions.

In the buying-alone condition, participants imagined that Jack was considering buying a brand-new car from a local dealer. The scenario provided detailed information about the new car. After imagining the scenario, participants first estimated the highest price they believed that Jack would be willing to pay. Next, to assess the perceived importance of this new car transaction, they indicated (1) how important it was for Jack to get a good price for his new car (1 = "not at all important," and 7 = "very important") and (2) how much effort Jack would spend on negotiating his new car pur-

chase price (1 = "a little bit of effort," and 7 = "a great deal of effort"). We combined these two items to create a new car importance index (r = .83, $p < .001$).

Participants in the trade-in condition read a scenario that asked them to imagine Jack buying a new vehicle from and, at the same time, trading in his used car to the same local dealer. All the information provided was identical to the previously described two conditions, but the new car and used car information was presented simultaneously (for details, see Appendix A). Participants were reminded that Jack was likely to bargain with the dealer over both prices, but his goal was to maximize the total gain from these two transactions. After reading the scenario, participants estimated (1) the lowest price that Jack would be willing to accept for his used car and (2) the highest price that Jack would be willing to pay for his new car. Finally, participants provided ratings on the two sets of importance questions regarding both the used car transaction and the new car transaction, as described previously.

Results

To test H_{1a}, we compared the willingness-to-accept prices for the used vehicles produced by participants in the trade-in condition with those in the selling-alone condition. To test H_{1b}, we compared the willingness-to-pay prices for the new vehicle produced by those in the trade-in condition with those in the buying-alone condition. We subjected all the prices to a log-transformation. In addition, we compared participants' importance ratings regarding the used car transaction between those in the trade-in condition and those in the selling-alone condition, as well as the importance ratings regarding the new car transaction between those in the trade-in condition and those in buying-alone condition. We used a one-way analysis of variance (ANOVA) (condition: trade-in versus selling alone/buying alone) for this analyses.

As H_{1a} predicted, there was no treatment effect on willingness-to-accept prices for the used vehicle (F < 1). Specifically, participants in the trade-in (M = $7,335.20) and selling-alone (M = $6,829.21) conditions estimated comparable levels of willingness-to-accept prices for their used vehicles. The anticipated treatment effect emerged on the willingness-to-pay prices for the new vehicle (F(1, 27) = 4.93, $p < .04$). As H_{1b} predicted, participants in the trade-in condition expected to pay more for the new vehicle (M = 29,716.67) than those in the buying-alone condition (M = $27,382.14).

To test our proposed process mechanism (H_2), we analyzed participants' importance ratings regarding the used and/or new car transactions. As expected, we found that those in the trade-in and selling-alone conditions perceived the used car transaction as equally important ($M_{trade-in}$ = 5.73, M_{sell} = 5.32; F(1, 27) = 1.46, $p > .23$). However, those in the trade-in versus buying-alone condition perceived the new car transaction as less important ($M_{trade-in}$ = 4.40, M_{buy} = 5.68; F(1, 27) = 7.28, $p < .02$). Furthermore, a paired-sample t-test within the trade-in condition revealed that trade-in participants perceived the used car transaction as more important than the new car transaction (t(14) = –3.37, $p < .01$). In particular, 12 of 15 trade-in participants gave a higher importance rating to the used product transaction than to the new product transaction.

We conducted mediation analyses to assess whether perceived importance of the new car transaction mediated the effect of condition (trade-in versus buy alone) on willingness-to-pay prices (Baron and Kenney 1986). The results confirmed our theorizing. Specifically, the condition factor affected the willingness-to-pay prices for the new vehicle (b = –.04, $p < .04$), and it influenced importance ratings regarding the new car transaction (b = 1.28, $p < .02$). However, the effect of condition on willingness-to-pay prices was mediated by perceived importance of the new car transaction ($b_{condition}$ = –.01, $p = .47$; $b_{importance}$ = –.02, $p < .01$; Sobel: Z = –2.10, $p < .05$).

Discussion

Experiment 1 provides empirical support for H_1 and H_2. Specifically, it shows that presumably because of mental accounting principles, participants in the trade-in and selling-alone conditions perceived the used car transaction as equally important and thus revealed comparable levels of willingness-to-accept prices for the used vehicles. In contrast, those in the trade-in versus buying-alone condition perceived the new car transaction as less important and therefore revealed a much higher willingness-to-pay price for the new vehicle.

Note that to test the generalizability of the observed effects, we also tested our theorizing with a different scenario. Specifically, participants imagined selling their current house (selling-alone condition), buying a new house (buying-alone condition), or selling their current house and buying a new one (selling-and-buying condition). We strategically designed these housing scenarios such that the new house participants were asked to imagine buying was smaller and cheaper than the house they owned currently. Still, we observed that those in the selling-and-buying condition suggested a willingness-to-accept price for the currently owned house that was comparable to those in the selling-alone condition (F < 1) but a much higher willingness-to-pay price for the new house than those in the buying-alone condition ($p < .01$).

EXPERIMENT 2

Experiment 2 has two objectives. First, it further tests the underlying mechanism for the effects we observed in Experiment 1 (i.e., participants in the trade-in condition expected to pay more for the new product than those in the buying-alone condition). In Experiment 1, we argued and found support that perceived importance mediates the observed effect. In Experiment 2, we further examine this mechanism by explicitly manipulating people's perceived importance of the trade-in transaction. Specifically, we expect that the observed effect will emerge only if trade-in respondents are explicitly told that their used product trade-in value is of high importance. This is so because in this case, trade-in consumers will focus primarily on getting a good deal on the trade-in value. As such, they are likely to perceive the new product transaction as less important than those in the buying-alone condition, and consequently they will expect to pay more for the new product. However, such an effect should disappear if these respondents believe that their trade-in value is of low importance because in this case, trade-in consumers are likely to perceive the new product transaction as equally important as buyer-alone

consumers and thus estimate comparable purchasing prices for the new product.

The second objective of Experiment 2 is to examine a potential alterative explanation for the observed effect—namely, the income effect. Specifically, compared with buyer-alone consumers, those who trade in have more cash as a result of the trade-in and therefore may be willing to pay more for the new product. To test whether such an income effect caused our effect, we controlled for the income level of all participants in this experiment.

Method

Sixty-six undergraduate students participated in this experiment. We created three treatment conditions. Specifically, two conditions involved the same trade-in situation as that employed in Experiment 1, except that we manipulated the importance of the trade-in transaction to be either high or low. In the trade-in/high-importance condition, participants were told that because the used car served Jack well and because he had many great memories with it, it was extremely important for Jack to get a good value on it. In contrast, in the trade-in/low-importance condition, participants were told that Jack just wanted to sell his used car as soon as possible without worrying too much about getting a good deal on it. The third condition involved the same buying-alone situation as that used in Experiment 1, but to control the income effect, participants in this condition were told that Jack just sold his used vehicle and planned to use that money toward the purchase of his new car. Specifically, participants in this condition were first presented with the same used car information as those in the trade-in condition and were asked to estimate the lowest price Jack would be willing to accept. However, the main task for these participants was to estimate the highest willingness-to-pay price for the new car Jack planned to buy. Note that the buying-alone condition is different from the two trade-in conditions in that the used car was already sold in the former case. The purpose of including such used car information in the buying-alone condition is to control the income effect, so that people in all conditions presumably have the same amount of money when purchasing the new vehicle.

Similar to Experiment 1, participants in the two trade-in conditions estimated the lowest willingness-to-accept price for the used car and the highest willingness-to-pay price for the new car. They also indicated the perceived importance of the two transactions on the same two questions as those employed in Experiment 1 (i.e., importance and effort level). We combined these two items to create a new car importance index ($r = .48$, $p < .001$) and a used car importance index ($r = .67$, $p < .001$). Respondents in the buying-alone condition estimated the willingness-to-pay price for the new car and indicated the importance ratings for the new car transaction.

Results

Importance ratings and manipulation check. First, we analyzed participants' importance ratings regarding the used car transaction. Only those in the two trade-in conditions answered these questions. As we expected, those in the trade-in/high-importance condition perceived the trade-in transaction as more important (i.e., they believed that getting a good price was more important and that Jack would spend more effort negotiating the new car price) than those in the trade-in/low-importance condition ($M_{high} = 6.04$, $M_{low} = 3.74$; $F(1, 42) = 41.70$, $p < .001$). This confirmed that our importance manipulation was successful. In addition, participants in all conditions answered the two importance questions regarding the new car transaction. Analysis on this measure revealed a significant treatment effect ($F(2, 63) = 7.32$, $p < .001$). As we anticipated, those in the trade-in/high-importance condition rated the new car transaction as less important ($M = 5.22$) than those in the trade-in/low-importance condition ($M = 6.19$; $t(63) = -3.70$, $p < .001$) and those in the buying-alone condition ($M = 5.91$; $t(63) = -2.66$, $p < .01$). The difference between the latter two conditions was not significant ($p > .30$).

Price estimates. We log-transformed all price estimates before further analysis. A one-way ANOVA on the estimated willingness-to-accept prices for the used car revealed the expected treatment effect ($F(1, 42) = 15.96$, $p < .001$), such that trade-in participants estimated a much higher willingness-to-accept price for their used vehicle when they believed that the used car transaction was of high versus low importance ($M_{high} = \$7,738.96$, $M_{low} = \$6,342.38$).

More important, a one-way ANOVA on the expected willingness-to-pay prices for the new car revealed the anticipated treatment effect ($F(2, 63) = 3.30$, $p < .05$). Specifically, when trade-in consumers were explicitly told that their trade-in transaction was of high importance, the result replicated our observations in Experiment 1; that is, these trade-in participants indicated a much higher willingness-to-pay price for the new car ($M = \$29,943.48$) than those in the buying-alone condition ($M = \$28,329.55$; $t(63) = 2.29$, $p < .03$). However, as we also anticipated, when the trade-in participants were explicitly told that their trade-in transaction was of low importance, they expected to pay a low price ($M = \$28,419.05$) that was comparable to those in the buying-alone condition ($t(63) = .12$, $p > .90$). Finally, the willingness-to-pay price that respondents in the trade-in/high-importance condition estimated was significantly higher than that which respondents in the trade-in/low-importance condition suggested ($t(63) = 2.13$, $p < .04$).

Discussion

The results from Experiment 2 provide additional support for our proposed process mechanism. By manipulating the perceived importance of the trade-in transaction, we observed that the predicted effect (i.e., trade-in consumers expect to pay more for the new product than buyers alone) emerged only when people perceived their trade-in transactions as highly important. When the trade-in transaction was deemed to be unimportant, such an effect disappeared. Thus, perceived importance of the trade-in transaction (and, consequently, the perceived importance of the new product transaction) drove the observed effect. Finally, we replicated the results of Experiment 1 after controlling the income level, suggesting that the observed effect was not due to an income effect.[1]

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[1]As a reviewer pointed out, the income effect can be tested in a different manner. Specifically, if a trade-in consumer first negotiates the new product price and then the price of the trade-in, the observed effect should disappear if it is due to feelings of windfall or income effect but should remain if it is due to the importance perception of the involved transac-

EXPERIMENT 3

Method

Experiment 3 tests H$_3$ by demonstrating that when the final net outcome (i.e., the net price trade-in consumers must pay to get the new product) is fixed, trade-in consumers should feel happier when they gain on the used product while losing on the new one than vice versa. We created an outcome evaluation task for this experiment. One hundred twenty-two undergraduate students participated in the experiment, in which they were asked to imagine that two people (Person A and Person B) each bought an identical new car and, at the same time, traded in their comparable used car to the same dealer. Next, participants were presented with five sets of possible outcomes. Each set detailed the final selling price for the used car and the buying price for the new car for both A and B. They were asked to rate on a seven-point scale which person was happier (1 = "A is much happier than B," 4 = "A and B are equally happy," and 7 = "B is much happier than A"). To test H$_3$, we designed outcome sets in the following manner: For three sets of possible outcomes, A and B end up with exactly the same net outcome (i.e., they must pay exactly the same amount to get the new vehicle after accounting for the trade-in value for their used cars). However, compared with A, B always gets more for the trade-in vehicle but pays more for the new car. For example, one set presents the following information:

> Set 1: Person A: Sold the used car for $9,000 and purchased the new car at $33,000.
> Person B: Sold the used car for $9,500 and purchased the new car at $33,500.

Note that in this set, both A and B end up paying $24,000 to purchase the new car. However, compared with A, B gained on the used car by $500 but lost on the new car by $500. Similarly, we created two other sets of possible outcomes for replication purposes (for a complete list of the outcome sets, see Appendix B). For these three sets of outcomes, H$_3$ would be confirmed if participants rate B as happier than A (i.e., for each set, the observed value is higher than the middle point [4], which indicates that A and B are equally happy).

In addition, we designed two more outcome sets, in which Person A was better off than Person B overall. Specifically, the two sets were as follows:

> Set 4: Person A: Sold the used car for $9,050 and purchased the new car at $32,750.
> Person B: Sold the used car for $8,500 and purchased the new car at $32,500.
> Set 5: Person A: Sold the used car for $9,050 and purchased the new car at $32,750.

> Person B: Sold the used car for $9,600 and purchased the new car at $33,600.

In these two outcome sets, A was always better off overall (i.e., A ended up paying $300 less than B to buy the new car). We intentionally kept A constant in both sets but varied B, such that compared with B, A either gained (in Set 4) or lost (in Set 5) on the used car by $550. If our theorizing is correct, participants should rate A as happier in Set 1 than in Set 2. Note that we randomized the presentation sequence of the five sets of outcomes, and there was no time limit.

Results

As we detailed previously, three of the outcome sets featured identical outcomes between Person A and Person B, but Person B always gained on the used car and lost the same amount on the new car price. Thus, for each of these three sets, we conducted a one-sample t-test, with the test value set at 4 (i.e., which indicates that A and B are equally happy). For each of the three sets, the t-test produced a significant *p* value (Set 1: t(121) = 4.15, *p* < .001; Set 2: t(121) = 4.52, *p* < .001; Set 3: t(121) = 4.90, *p* < .001). Consistent with our expectation, in all sets, participants perceived Person B as happier than Person A (M$_{Set1}$ = 4.43, M$_{Set2}$ = 4.46, M$_{Set3}$ = 4.54).

For the next two outcome sets (i.e., Sets 4 and 5), in which A is always better off than B but either gained or lost on the used car compared with B, we conducted a paired-sample t-test. As we anticipated, the t-test revealed a significant result (t(121) = –6.55, *p* < .001), such that participants rated Person A as happier in Set 4 (M = 2.55; Person A gained on the used car but lost on the new car) than in Set 5 (M = 3.94; Person A lost on the used car but gained on the new car).

Discussion

The results from Experiment 3 confirm H$_3$. In particular, across several outcome sets, we observed that when we controlled for the net outcome, trade-in consumers felt happier when they gained on the used product but lost on the new product than vice versa. Note that an alternative explanation to the outcome evaluation task results could be that participants paid more attention to the used car price because the price difference on the used car represented a larger percentage level than the price difference on the new car price. To test this explanation, we employed a different scenario in another experiment (i.e., a person sells a more expensive piano to buy a cheaper one) and designed outcome sets such that the new product purchase price was actually lower than the old product selling price. Thus, within each outcome set, the price difference between the used product selling prices represented a lower percentage level than the price difference between the new product purchase prices. Still, we replicated our observation in Experiment 3 in this new study.

In Experiment 4, we examine whether dealers and consumers have different perspectives in a trade-in context. In addition, we provide qualitative evidence (e.g., thoughts data) that suggests that trade-in consumers value the trade-in price more than the new product price.

EXPERIMENT 4

Our theorizing suggests that trade-in consumers usually place more weight on the used product trade-in value than

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tions. Accordingly, we conducted another study, in which four conditions were included, namely, the same buying-alone and trade-in conditions (i.e., buy and sell occur simultaneously) as those used in Experiment 1 and two other trade-in conditions in which we manipulated the sequence of the two transactions (i.e., participants buy the new car first and then sell the used car, or vice versa). In support of our theorizing, we found that those in the buying-alone condition estimated a significantly lower willingness-to-pay price for the new car than those in the other three trade-in conditions (M$_{buy}$ = $26,688.17, M$_{trade-in}$ = $28,734.50, M$_{buy_sell}$ = $28,165.22, M$_{sell_buy}$ = $28,677.27; *p*s < .05). The differences among the latter three conditions were not significant (*p*s > .48). Thus, we ruled out the income effect as an alternative explanation.

the new product purchase price. What remains unclear is whether dealers have the same perspective as trade-in consumers or whether they are indifferent to the alternative price combinations, as long as the final outcome is the same. We argue that dealers should be indifferent to the price combinations, mainly because they do not have the same concern as trade-in consumers about closing the used product account in the red. Given that dealers' only motivation is to make as much profit as possible from the two transactions combined, they should treat both transactions as equally important. Therefore, if we provide participants with similar outcome sets as those presented in Experiment 3, we should replicate the result of Experiment 3 from the consumers' perspective. However, if participants are asked to imagine from a dealer's perspective, these effects should disappear.

Method

Eighty-three undergraduate students were asked to imagine automobile trade-in situations from the dealer's perspective. In particular, the scenario stated that "Person A has come to you (the dealer) to buy a new vehicle and at the same time trade-in his used one. After doing all the calculation, you think you could accept a bottom line of $20,500 paid by A to trade-in for the new car." Next, participants were presented with the following two possible outcomes:

> Option 1: Give Person A $8,600 for his used car and charge him $29,100 for the new car.
> Option 2: Give Person A $8,200 for his used car and charge him $28,700 for the new car.

Then, they were asked to rate on a seven-point scale (1 = "definitely Option 1," 4 = "no difference," and 7 = "definitely Option 2") the following two questions: (1) "Which option do you think will make you (as a dealer) feel happier?" and (2) "Which option do you think will make Customer A feel happier?" Note that the two options in Set 1 actually have the same net outcome, but Person A gains on the used car while losing on the new car in Option 1 compared with Option 2. Finally, participants provided reasons for the ratings by writing down their thoughts in detail.

Results

For each of the two ratings participants provided, we conducted a one-sample t-test with the test value set at 4. When participants took the dealer's perspective, their ratings were not significantly different from the middle point of the scale (M = 3.94, *p* > .56). However, when participants were asked to think from Consumer A's perspective, their ratings replicated Experiment 3's results. That is, they believed that Option 1 (Person A gained on the used car but lost on the new car) would make Customer A happier (M = 2.77; t(82) = –6.83, *p* < .001).

Participants' thoughts provided further support to our theory. Specifically, we classified their thoughts into two categories. The first category captured the number of thoughts pertaining to dealers being indifferent to the price allocations (e.g., dealers are rational, so there is no difference for the two options), and the second category captured the number of thoughts pertaining to consumers valuing the trade-in value more (e.g., the existing user has emotion toward the loss, so he or she would be happier for a higher sale price of the car).

We first conducted frequency analysis and found that more than 32% of the participants generated thoughts in the first category and more than 51% of the participants produced thoughts in the second category. In addition, the number of thoughts in the second category (i.e., consumers value more of the trade-in value) was significantly correlated with participants' rating of Customer A's happiness (r = –.62, *p* < .001). Such thoughts were not correlated with participants' rating of the dealer's happiness (*ps* > .59). The number of thoughts in the first category (regarding dealers being indifferent) was not correlated with participants' ratings of either the dealer's or the customer's happiness (*ps* > .29).

Discussion

The results from Experiment 4 provide more insights into our theorizing. Specifically, when participants were asked to imagine the situations from either the customer's or the dealer's perspective, we observed different but expected results. Whereas participants perceived dealers as being indifferent to the price allocations between the trade-in value and the new vehicle purchase price, they believed that the customer would place more value on the trade-in. Thought protocols provided additional support to our arguments.

EXPERIMENT 5

In Experiment 5, we attempt to address a potentially important public policy issue—namely, whether there is anything that consumers can do to avoid paying a higher price for the new good if they are educated about the trade-in process. As many experts suggest, it appears that if trade-in consumers can regard the trade-in and new product purchase as two separate transactions, they might be able to negotiate successfully a lower price for the new product. This should be the case because when the products are regarded as separate transactions, consumers' concern for the trade-in transaction should not affect their attitude toward the new product transaction. Thus, they should perceive the new product transaction as equally important as those in the buying-alone condition and therefore should expect to pay a comparable amount of price for the new product. Experiment 5 tests this reasoning.

Method

Sixty-six students participated in this experiment and imagined one of the following three scenarios: Two of the scenarios (i.e., the buying-alone and trade-in conditions) were identical to those used in Experiment 1. The third scenario also featured a trade-in situation, but participants were explicitly told to treat the trade-in and new car purchase as two separate transactions and to negotiate with the dealer on the price for one transaction at a time. Participants estimated their willingness-to-accept price for the used car and/or their willingness-to-pay price for the new one.

Results

A one-way ANOVA on the willingness-to-pay measure reached significance (F(2, 63) = 3.70, *p* < .05). As we anticipated, when treating these transactions separately, trade-in consumers estimated a low willingness-to-pay price for the new car that was comparable to the buying-

alone consumers (M = $27,821.25 versus $27,359.05, *p* > .54). In addition, participants who processed the two transactions simultaneously estimated a significantly higher willingness-to-pay price (M = $19,366.29) than those in the buying-alone condition (t(63) = 2.59, *p* < .05) and those in the trade-in separate condition (t(63) = 2.06, *p* < .05). Finally, a one-way ANOVA on the willingness-to-accept measure revealed that regardless of whether trade-in consumers processed the two transactions separately or simultaneously, they asked for comparable prices for their used cars (M = $6,857.71 versus $6,926.00, F < 1).

Discussion

The results from this experiment confirm our prediction that when trade-in consumers regard the two transactions as separate, they can avoid paying higher prices for the new product. We realize that in reality, it may be difficult for consumers to separate these two transactions (e.g., because of pressure from the dealer). Thus, a more practical way might be for consumers to separate the two transactions physically by selling their used car and buying a new car from different dealers. In summary, the results from the five lab experiments provide convergent support for our theorizing. Next, we conduct a field study in which we use real-life automobile data to test our theory further.

FIELD STUDY USING AUTOMOBILE TRANSACTION DATA

Data Description

We use data on individual purchases of new cars from the sport-utility-vehicle segment collected by the Power Information Network (an affiliate of J.D. Power and Associates) from participating dealers in California. The data consist of transactions for those dealers from January 1997 to March 2003. For each transaction, we observe the exact vehicle purchased, the price the consumer negotiated for it, the dealer's cost of obtaining the car from the manufacturer, information on a potential trade-in, and consumer demographics.

We focus on "cash" transactions, which are transactions that are neither leases nor financed through the dealer system. This is because both leases and dealer-financed transactions are subject to various types of promotions, such as cash rebates, interest rate promotions, and residual value enhancements, all of which could affect the final negotiated price. For example, a low promotional interest rate or APR (annual percentage rate) on a lease could result in the consumer consenting to a higher price than if the promotion were absent. Because our objective is to understand only how the presence of a trade-in affects the negotiated price for the new car, deleting these transactions enables us to focus on how the trade-in alone affects price.

Methodology

Our objective is to test whether trade-in consumers pay a higher price for a new car than customers who simply purchase a car without trading in a used vehicle with the dealer. Intuitively, this involves comparing prices of new cars that involve a trade-in with the prices of those without one. If our hypothesis is correct, the new car price for trade-in customers should be higher on average than that for non-trade-in customers. We use a simple regression approach in which our dependent variable, new car price, is regressed on a dummy variable, which indicates whether the transaction involved a trade-in (coded as 1) or not (coded as 0). A positive coefficient for this variable, after we control for other effects, will signify that trade-in customers indeed pay a higher price for their new vehicle.

Dependent Variable

As we stated previously, the dependent variable in our regression is the transaction price for the new vehicle. This price is the pre-sales-tax price that the customer pays for the vehicle, including factory-installed accessories and options and any dealer-installed accessories contracted at the time of sale that contribute to the resale value of the car.

Conceptually, the price of the car should not reflect the impact of any promotions offered to the customer. Therefore, we eliminate leases and dealer-financed transactions from our estimation set. However, cash transactions are still subjected to cash promotions, such as customer and manufacturer rebates. For this reason, we make one modification to the observed transaction price; specifically, we subtract a rebate amount if the purchase is made under a rebate offer. Thus, any difference in prices for trade-in and non-trade-in customers should not reflect the impact of any cash promotions.

Controls

To assess correctly the impact of a trade-in on the final new car price, we need to control for various factors. We control for car fixed effects. A "car" in our sample is the interaction of make, model, year, body type, transmission, displacement, doors, cylinders, and trim level. For identification purposes, we drop from the estimation set any such cars that have fewer than 50 sales in our sample. This leaves us with 102 cars and a sample size of 11,146.

To control for time variation in prices, we define a dummy variable, WeekEnd, to specify whether the car was purchased on a Saturday or Sunday. In addition, we control for seasonal effects by including a dummy for each of the first three quarters. Because dealers tend to offer lower prices to clear high inventory, we accounted for the impact of inventory levels on price by including the number of days the car was on the lot before it was sold (DaysToTurn). Finally, if there were volume targets to be met at the end of the month, we account for these with a dummy variable, EndofMonth, that equals 1 if the car was sold within the last five days of the month.

We also control for the age, gender, income, education, occupation, and race of buyers by using census data that the data provider matches with the buyer's address from the transaction record. The data are at the level of "block groups," which contain an average of 1100 people. Finally, we control for the geographic region in which the car was sold (Northern or Southern California).

Table 1 presents summary statistics for the data. Of our transactions, 30% involve trade-ins, and the rest were simply direct purchases of new cars. The average transaction price of a new vehicle in our data is $29,070. The table also presents customer demographics.

Results

The equation to be estimated is as follows:

$$(1) \qquad P_{ijt} = \lambda TradeIn_i + \beta_1 X_i + \beta_2 X_{jt} + \mu_j + \varepsilon_{ijt},$$

Table 1

DESCRIPTIVE STATISTICS FOR THE FIELD STUDY

Variable	M	SD	N	Minimum	Maximum	Mdn
Price ($)	29,069.8	4258.3	11,146	11,581.0	45,627.0	29,280.0
First quarter	.2	.4	11,146	0	1.0	0
Second quarter	.3	.4	11,146	0	1.0	0
Third quarter	.3	.4	11,146	0	1.0	0
End of month	.2	.4	11,146	0	1.0	0
Weekend	.2	.4	11,146	0	1.0	0
Trade-in	.3	.5	11,146	0	1.0	0
Trade-in sport-utility vehicle	.1	.3	11,146	0	1.0	0
Days to turn	42.7	63.4	11,146	1.0	675.0	18.0
Northern California	.5	.5	11,146	0	1.0	1.0
Age	46.2	13.1	11,146	16.0	102.0	46.0
Female	.3	.5	11,146	0	1.0	0
Asian (%)	10.0	10.9	11,146	0	87.7	6.7
Black (%)	2.6	6.2	11,146	0	100.0	1.0
Blue collar (%)	20.6	12.7	11,146	0	100.0	18.2
College graduate (%)	38.9	17.0	11,146	0	88.6	38.6
Hispanic (%)	11.3	8.9	11,146	0	56.4	8.9
Less high school graduate (%)	8.4	8.2	11,146	0	100.0	6.0
House ownership (%)	72.9	22.3	11,146	.6	100.0	79.5
Rural (%)	8.5	25.2	11,146	0	100.0	0
Median household size	3.0	.6	11,146	1.5	6.0	2.9
Median house value ($)	274,133.2	118,019.6	11,146	13,636.0	500,000.0	248,551.0
Income ($)	70,472.5	27,239.9	11,146	10,551.0	150,000.0	68,114.0

where P_{ijt} is the adjusted price negotiated by consumer i for vehicle j at time t; $TradeIn_i$ is a dummy variable indicating whether a trade-in occurred at the time of the transaction (coded as 1) or not (coded as 0); X_i is a vector of consumer characteristics, including gender, age, race, income, education, employment type, and home ownership; X_{jt} is a vector of control variables, such as inventory levels; and μ_j are car-specific fixed effects.

The results of the analysis appear in Table 2. The primary parameter of interest is λ, which measures the extent to which a trade-in influences the final price of the new vehicle. If $\lambda > 0$, our hypothesis is supported. If $\lambda = 0$, the trade-in has no influence on the new car price. If $\lambda < 0$, trade-in customers actually pay less on the new vehicle than their non-trade-in counterparts.

In support of H_{1b}, λ is positive and significant, implying that trade-in customers end up paying more than non-trade-in consumers. We find that, on average, when there is a trade-in, customers pay $452.5 more than if no trade-in were involved in the transaction.

GENERAL DISCUSSION

The goal of this research is to examine how trading in a currently owned product for a new one might affect consumers' willingness-to-pay price for the new product. On the basis of the literature—in particular, mental accounting principles—we propose that trade-in consumers view getting a good value on their current product to be particularly important and therefore spend a considerable amount of resources on it. As a result, they are left with few resources for the new product transaction and therefore exhibit a higher willingness-to-pay price for the new product than consumers who are only buying the new product.

This theorizing was supported by a series of five experiments. Experiment 1 established that though trade-in consumers perceived the used product transaction as equally important as those who were only sellers, and therefore exhibited comparable levels of willingness-to-accept prices for their used products, they perceived the new product transaction as less important than those who were buyers alone and thus expected to pay more for the new product. Experiment 2 provided additional evidence to the proposed process mechanism. By manipulating the perceived importance of the trade-in transaction, we replicated the results of Experiment 1, when participants perceived their trade-in transaction to be highly important. However, such an effect was absent when the trade-in importance was low. Experiment 3 demonstrated that when the final net outcome is

Table 2

REGRESSION RESULTS FOR THE FIELD STUDY

Parameter	Estimates	SD
Intercept	22,617.97*	335.930
Trade-in	452.515*	43.629
First quarter	84.848	60.2303
Second quarter	120.847*	60.416
Third quarter	−113.036*	59.203
Weekend	10.081	51.076
Days to turn	−6.157*	.341
Northern California	343.958*	49.381
End of month	−50.771	49.502
Age	.993	1.691
Female	171.707*	45.157
Asian (%)	1.437	2.157
Black (%)	17.154*	3.548
Blue collar (%)	1.611	3.477
College graduate (%)	3.733	2.607
Hispanic (%)	1.782	3.842
Less high school graduate (%)	10.256*	4.775
House ownership (%)	−1.438	1.470
Rural (%)	−.555	.905
Median household size	−66.876	51.670
Median house value (divided by 10^5)	−59.353*	32.757
Income (divided by 10^5)	572.368	474.275
Income2 (divided by 10^{10})	−79.255	230.791
Adjusted R^2	.7476	

*Significant at the 5% level.

Notes: Product dummy is not included in the table.

fixed, trade-in consumers feel happier when they gain on the used product and lose on the new product than vice versa. Finally, Experiments 4 and 5 extended the previous experiments by showing that consumers and dealers indeed have different perspectives in a trade-in context, and consumers can take actions (e.g., separating the two transactions) to avoid paying higher prices for the new product when a trade-in is involved.

In addition to these lab experiments, the results from real transaction data in the automobile market provide external validity to our theorizing. Specifically, after controlling for various other variables that may affect the negotiated price, we show that, on average, trade-in customers end up paying $452 more than customers who simply buy a new car from the dealer.

This research makes several important contributions. First, it contributes to the literature on trade-ins or replacement decisions. Extent research has focused primarily on factors that facilitate or hinder replacement decisions. For example, Okada (2001) suggests that a key factor that hinders consumers from upgrading their products is the psychological cost of closing the existing product account in the red. Thus, the presence of a trade-in should lead to more replacement purchases because the trade-in enables the consumer to reduce the mental cost associated with closing the existing product account. We add to this literature by suggesting that the presence of a trade-in affects not only consumers' likelihood to make a replacement purchase but also their purchase price for the new product (i.e., willingness-to-pay price in lab experiments and real purchase price in the field data). Second, this research adds to the buyer–seller differences literature by investigating situations in which consumers act as both buyer and seller simultaneously. We found that trade-in consumers tend to care more about the trade-in value they receive than the price they pay for the new product, and consequently they exhibit a higher willingness-to-pay price for the new product than those who are buyers alone. Third, this research offers important insights into consumer psychology in a trade-in context. Although there is substantial anecdotal evidence suggesting that consumers should never discuss the terms of their trade-in product before finalizing a purchase price for the new product, it remains unclear why. This research addresses this question and provides evidence for the underlying process. Finally, this research offers public policy implications by demonstrating that when consumers separate the trade-in and new product purchase transactions, they can avoid paying a higher price for the new good.

The current research also presents potential weaknesses that merit future studies. First, in the lab experiments, we asked participants to imagine trade-in scenarios. Thus, we ignored the real-world bargaining process that is usually involved in such transactions. Further research could examine whether our results can be replicated in a real bargaining experiment. Second, research could also investigate the boundary conditions for our observed effects. In Experiment 2, we show that when the used product is perceived as unimportant, trade-in consumers no longer estimate a higher willingness-to-pay price for the new product than buyers alone, but it remains unclear what contributes to such low importance perceptions. Several factors, such as the extremely low value associated with the used product compared with the new one, might cause such low importance ratings. Third, in our field study, although we observe the trade-in price for each used car involved in a trade-in transaction, we have no information on prices obtained by consumers who sold their used cars separately to dealers (i.e., consumers who only sold their used car to the dealer without buying a new vehicle). Thus, we are unable to test whether the selling prices (presumably indicative of willingness-to-accept prices) of the used vehicle exhibited by trade-in consumers and selling alone consumers are indeed comparable, as our experimental results indicate. Finally, we do not have sufficient information to conclude whether there is a net loss when consumers buy a new car with a trade-in, compared with those who only buy the new car from a dealer but sell their used car privately. Such an analysis would require not only information about the used car selling price when sold privately but also the associated transaction costs. These and many other worthwhile questions await future investigation.

Appendix A
EXPERIMENT 1 STIMULI (TRADE-IN CONDITION)

Jack is thinking of buying a new car (2006 Volkswagen Passat) from a local dealer (say, Dealer C) and, at the same time, trades in his used car (2000 Honda Accord) to the same dealer.

Jack's current used car is a 2000 Honda Accord and he has had it for nearly 5 years. The vehicle has been an important part of his life in the past several years, as he drives it to school every day as well as to various other places. In sum, the car has served him very well. However, due to various reasons, Jack has decided to move on and trade it in for a new car.

Jack did his research and found that, according to the Canadian Black Book, the average price for a used 2000 Honda Accord in average condition is CAD$7,528. The Manufacturer Suggested Retail Price (MSRP) for the 2006 Volkswagen Passat is CAD$29,950.

Below are the brief descriptions of both Jack's used car that he plans to trade in and the new car that he is thinking of buying from Dealer C:

	Used Car Jack Plans to Trade in	New Car Jack Plans to Buy
Year	2000	2006
Make and model	Honda Accord	Volkswagen Passat
Description	Four-door sedan, two-wheel drive, 2.3 liter	Four-door sedan, four-wheel drive, 3.6 liter
Mileage	63,000	110
Horse power	135	280
Weight	2932 lbs.	3576 lbs.
Length	188.8 in.	188.2 in.
Wheelbase	106.9 in.	106.7 in.
Price	CAD$7,528 (average price, according to the Canadian Black Book)	$29,950 (MSRP)

Notes: Participants in the buying-alone condition only imagined that Jack is thinking of buying a new car from the dealer, and they were presented only with the new car information. Similar, participants in the selling-alone condition imagined only that Jack is thinking of selling his used car to the local dealer, and they were presented only with the used vehicle information.

Appendix B
EXPERIMENT 3 STIMULI (OUTCOME SETS)

	Outcome Sets	Net Outcome
Set 1	**Person A:** Sold the used car for $9,000 and purchased the new car at $33,000. **Person B:** Sold the used car for $9,500 and purchased the new car at $33,500.	Same net outcome within each set, but compared with A, B always gains on the used car.
Set 2	**Person A:** Sold the used car for $8,340 and purchased the new car at $33,000. **Person B:** Sold the used car for $8,520 and purchased the new car at $33,180.	
Set 3	**Person A:** Sold the used car for $8,950 and purchased the new car at $31,500. **Person B**: Sold the used car for $9,100 and purchased the new car at $31,650.	
Set 4	**Person A:** Sold the used car for $9,050 and purchased the new car at $32,750. **Person B**: Sold the used car for $8,500 and purchased the new car at $32,500.	A is always better off by $300 overall but, compared with B, either gains (Set 4) or loses (Set 5) on used car.
Set 5	**Person A:** Sold the used car for $9,050 and purchased the new car at $32,750. **Person B**: Sold the used car for $9,600 and purchased the new car at $33,600.	

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