



Report

Bad riddance or good rubbish? Ownership and not loss aversion causes the endowment effect

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ABSTRACT

People typically demand more to relinquish the goods they own than they would be willing to pay to acquire those goods if they did not already own them (*the endowment effect*). The standard economic explanation of this phenomenon is that people expect the pain of relinquishing a good to be greater than the pleasure of acquiring it (*the loss aversion account*). The standard psychological explanation is that people are reluctant to relinquish the goods they own simply because they associate those goods with themselves and not because they expect relinquishing them to be especially painful (*the ownership account*). Because sellers are usually owners, loss aversion and ownership have been confounded in previous studies of the endowment effect. In two experiments that deconfounded them, ownership produced an endowment effect but loss aversion did not. In Experiment 1, buyers were willing to pay just as much for a coffee mug as sellers demanded if the buyers already happened to own an identical mug. In Experiment 2, buyers' brokers and sellers' brokers agreed on the price of a mug, but both brokers traded at higher prices when they happened to own mugs that were identical to the ones they were trading. In short, the endowment effect disappeared when buyers were owners and when sellers were not, suggesting that ownership and not loss aversion causes the endowment effect in the standard experimental paradigm.

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The amount of rentable self-storage space in the United States is roughly 2.2 billion square feet (Russell, 2008). That's three times the size of Manhattan and large enough to hold every man, woman, and child in the nation. Why are cash-strapped Americans paying to store things they cannot use rather than selling them to people who can? One reason is that people value their possessions far more than others do. Dozens of studies in psychology and economics have shown that people typically demand higher prices to relinquish the goods they own than they would be willing to pay to acquire those goods if they did not already own them (Bateman, Munro, Rhodes, Starmer, & Sugden, 1997; Brown, 2005; Chapman, 1998; Franciosi, Kujal, Michelitsch, Smith, & Deng, 1996; Kahneman, Knetsch, & Thaler, 1990; Lerner, Small, & Loewenstein, 2004; List, 2004; Loewenstein & Adler, 1995; Mandel, 2002; Nayankuppam & Mishra, 2005; Thaler, 1980; Tom, 2004; Tom, Lopez, & Demir, 2006; van Boven, Dunning, & Loewenstein, 2000; van de Ven, Zeelenberg, & van Dijk, 2005; van Dijk & van Knippenberg, 1998; Zhang & Fishbach, 2005). Because the people who own lava lamps demand more to give them up than the people who do

not own lava lamps will pay to get them, deals go unmade and storage lockers remain filled with lava lamps that are destined never again to glow.

The tendency for people to overvalue what they own is known as the *endowment effect* and it has been called "one of the most important and robust empirical regularities to emerge from the field" (Loewenstein & Issacharoff, 1994). Why does it occur? The standard economic explanation is given by Prospect Theory (Kahneman & Tversky, 1979) which states that value is a reference-dependent function that decelerates in the domain of losses more quickly than it accelerates in the domain of gains. More simply said, people expect the pain of losing something to be greater than the pleasure of gaining it (a phenomenon known as *loss aversion*), and because sellers typically think of selling as a loss of something they own and buyers typically think of buying as a gain of something they do not own, sellers expect to suffer more than buyers expect to benefit. This leads sellers to demand more compensation than buyers are willing to provide (Kahneman, Knetsch, & Thaler, 1991). Early studies of the endowment effect found that when people were randomly assigned to receive or not receive a good, those who received the good demanded higher prices to sell it than those who did not receive the good were willing to pay to acquire it. These studies also found no differences in buyers' and sellers' ratings of the good's attractiveness, and researchers interpreted these

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results to mean that “the main effect of endowment is not to enhance the appeal of the good one owns, only the pain of giving it up” (Kahneman et al., 1991, p. 197). In other words, people store their lava lamps because the thought of losing them is especially painful and not because the lamps themselves are especially appealing. Although recent work has greatly expanded the psychological foundations of the endowment effect (Birnbaum & Stegner, 1979; Carmon & Ariely, 2000; Johnson, Haubl, & Keinan, 2007; Nayakankuppam & Mishra, 2005; Zhang & Fishbach, 2005), it has retained the central idea that the endowment effect occurs because sellers are contemplating a powerful loss and buyers are contemplating a tepid gain. The endowment effect is typically described as “the purest and most robust instantiation of loss aversion” (Rozin & Royzman, 2001) which “does not require a change in preference for the good once it becomes part of an individual’s endowment” (Brown, 2005, p. 337).

But research in psychology suggests that the ownership explanation may have been too quickly dismissed. Decades of work on cognitive dissonance theory (Cooper, 2007) has shown that people value what they choose simply because they chose it (Brehm, 1956), and indeed, when people choose Alternative X but are led via a clever experimental technique to believe they chose Alternative Y, it is Alternative Y—and not Alternative X—that increases in value (Johansson, Hall, Sikström, & Olsson, 2005). This increase in the value of chosen items (and decrease in the value of unchosen items) occurs in part because people are motivated to justify their choices, and in part because owning an item creates an association between the item and the self. As Gawronski, Bodenhausen, and Becker (2007, p. 221) have noted, “Choosing an object results in the creation of an association between the chosen object and the self. By virtue of this association, implicit evaluations of the self tend to transfer to the chosen object” (see also Greenwald & Banaji, 1995). The effects of such associations are so powerful that people prefer neutral stimuli that were subliminally paired with their names to neutral stimuli that were not (Jones, Pelham, Carvalho, & Mirenberg, 2004) and they consider items they own to be especially attractive even when they had no role in choosing them (Beggan, 1992; Beggan & Scott, 1997). In short, research in psychology suggests that there is a robust tendency for people to value items that are associated with the self, which suggests that ownership may play a role in producing the endowment effect. People may demand a lot for their lava lamps because they actually like them, and they may like them simply because they are theirs.

So which of these explanations of the endowment effect is correct? In the real world, people who sell goods typically own them and people who buy goods typically do not, which is to say that loss aversion and ownership are typically confounded. Unfortunately, they have typically been confounded in experiments as well. In the standard experimental paradigm, some participants are given a good and are asked how much they would require to relinquish it and other participants are not given a good and are asked how much they would pay to acquire it. In such studies the sellers are owners and the buyers are nonowners, and thus it is impossible to tell from the results whether ownership or loss aversion produced the endowment effect. We conducted two experiments that for the first time de-confounded these factors and thus put the ownership and loss aversion accounts into direct competition.

Experiment 1: when buyers are owners

In Experiment 1, we studied sellers who owned a coffee mug (owner–sellers) and buyers who did not own a coffee mug (non-owner–buyers), as has been done in previous studies of the endowment effect. But we also studied buyers who already owned the

same coffee mug (owner–buyers) (see Corrigan & Rousu, 2006). We reasoned that if loss aversion drives the endowment effect, then sellers should value the mug more than buyers do regardless of whether those buyers do or do not already own a mug. On the other hand, if ownership drives the endowment effect, then owners should value the mug more than nonowners do regardless of whether they are selling or buying. In other words, we sought to determine whether the valuations of owner–buyers were more like those of nonowner–buyers (which would support the loss aversion account) or more like those of owner–sellers (which would support the ownership account).

Method

Participants

Ninety students (29 males, 61 females; M age = 20.7, SD = 5.4) at Harvard University participated in exchange for monetary compensation (M = \$8.12).

Procedure

Participants reported to a laboratory, were shown a ceramic coffee mug, and were shown a list of 25 choices, each of which required that they make a choice between a sum of money (which changed across the choices) and an alternative (which did not change across the choices). Participants were told that at the end of the experiment, one of these choices would be randomly selected and enacted (Becker, DeGroot, & Marschak, 1964). This well-established procedure creates a strong incentive for people to report their honest valuations of the alternative, and is commonly used in studies of the endowment effect. In a between-subjects design, we randomly assigned participants to one of two standard conditions or one of two novel conditions.

Standard conditions. Owner–sellers were given a mug and were then asked to make a series of choices in which they chose between keeping that mug and receiving a monetary sum that ranged from \$0.50 to \$12.50 in \$0.50 increments. Nonowner–buyers were not given a mug and were asked to make a series of choices in which they chose between receiving a mug or a monetary sum which ranged from \$0.50 to \$12.50 in \$0.50 increments.¹ The smallest sum for which owner–sellers were willing to relinquish a mug and the largest sum that nonowner–buyers were willing to forego to receive a mug were taken as the participants’ valuations of the mug. These methods, measures, goods, and conditions are standard in previous studies of the endowment effect.

Novel conditions. Owner–buyers were given a mug and were then asked to make a series of choices in which they chose between receiving a second, identical mug or a monetary sum which ranged from \$0.50 to \$12.50 in \$0.50 increments. This was the experiment’s critical condition because the loss aversion and ownership accounts make different predictions about how participants in this

¹ Technically, buying prices are elicited by asking a person to choose between receiving a good and keeping money that is already theirs, whereas choice prices are elicited by asking a person to choose between receiving a good or money. The difference between buying prices and choice prices is simply whether the money that is relinquished to acquire the good is already in the person’s pocket. Previous studies of the endowment effect have elicited both buying prices and choice prices, and the difference appears to be inconsequential (Kahneman et al., 1990). We used choice prices because, as Lerner et al. (2004) noted, “a choice price has three advantages over a buying price: (a) It does not require participants to give up money, and hence is not limited by the amount of money participants bring to a study; (b) it confronts participants with a choice that is formally identical to, but framed differently from, selling; and (c) it holds constant the money side of the equation—both selling and choice involve choices between receiving or not receiving money”. Although we elicited choice prices and not buying prices, we refer to participants as “buyers” rather than “choosers” for the ease of exposition.

condition should value the mug. Whereas the loss aversion account predicts that the valuations of owner–buyers will resemble those of nonowner–buyers (because both are thinking of the transaction as a gain), the ownership account predicts that the valuations of owner–buyers will resemble those of owner–sellers (because both own the mug they are valuing). The primary question that Experiment 1 sought to answer, then, was whether the valuations of owner–buyers more closely resembled the valuations of owner–sellers or nonowner–buyers.

We also included an additional condition to control for either of two potential problems. First, in economics the term *diminishing marginal utility* refers to the fact that people sometimes value a good more than they value additional goods of the same kind. For example, people may be willing to pay \$100 for a pair of red sneakers but only \$50 for a second pair of the same red sneakers because they do not particularly want to own two identical pairs of shoes. If owner–buyers valued a second mug less than nonowner–buyers valued a first mug simply because owner–buyers already had a mug and did not particularly want to own two identical mugs, then our data could appear to support the loss aversion account when they actually did not. Second, in economics the term *complementarity* refers to the fact that people sometimes value goods more in combination than they do separately. For example, people may be willing to pay \$100 for a pair of red sneakers but nothing at all for a single sneaker because a single sneaker is useless. If owner–buyers valued a pair of mugs more than twice as much as nonowner–buyers valued a single mug simply because owner–buyers did not particularly want to own a mug without a matching mate, then our data could appear to support the ownership account when they actually did not. To control for these two potential problems, we included a condition in which nonowner–pair-buyers were not given a mug and were asked to make a series of choices in which they chose between receiving a pair of identical mugs or a monetary sum that ranged from \$1 to \$25.00 in \$1 increments. By comparing the nonowner–pair-buyers to the nonowner–buyers, we would be able to determine whether diminishing marginal utility or complementarity had influenced participants' responses.

There was no deception of any kind in this study. At the end of the study, the experimenter randomly selected one of each participant's choices and gave the participant the cash or the mug that the participant had chosen.

Results and discussion

What did owner–buyers do?

The critical question was whether owner–buyers' valuations were more like those of nonowner–buyers (as the loss aversion account predicted) or owner–sellers (as the ownership account predicted). The valuations of nonowner–buyers, owner–sellers, and owner–buyers were compared with Analysis of Variance (ANOVA), which revealed significant differences between conditions, $F(2, 65) = 5.82$, $p = .005$, $\eta^2 = .15$. Post hoc tests (Tukey's HSD) revealed that nonowner–buyers valued a mug less than did owner–sellers, $p = .02$, replicating classic demonstrations of the endowment effect. The tests also revealed that owner–buyers valued a second mug more than nonowner–buyers valued a first mug, $p = .008$, and as much as owner–sellers valued the mug they already owned, $p = .92$. Owning a mug led buyers to value a mug exactly as much as sellers did and completely eliminated the endowment effect (see Table 1). In short, ownership without loss aversion caused the endowment effect but loss aversion without ownership did not.

What did nonowner–pair-buyers do?

To check for the influence of diminishing marginal utility and/or complementarity, we compared the per-unit valuations of

Table 1

Value per unit in Experiment 1.

<i>Standard conditions</i>	
Owner–sellers	\$4.26 (2.07) _a
Nonowner–buyers	\$2.47 (1.57) _b
<i>Novel conditions</i>	
Owner–buyers	\$4.52 (2.80) _a
Nonowner–pair buyers	\$2.22 (1.70) _b

Table lists means with standard deviations in parentheses. Means that do not share the same subscript differ significantly ($p < .05$).

nonowner–buyers, owner–buyers, and nonowner–pair-buyers with ANOVA, which revealed a significant difference between conditions, $F(2, 64) = 4.20$, $p = .019$, $\eta^2 = .12$. Post hoc tests (Tukey's HSD) revealed that the per-unit valuations of nonowner–pair-buyers were equal to the per-unit valuations of nonowner–buyers, $p = .996$, and less than the per-unit valuations of owner–buyers, $p = .04$. In other words, buyers who did not own a mug valued two mugs twice as much as they valued one, suggesting that neither diminishing marginal utility nor complementarity were present to cloud the interpretation of the results.

Experiment 2: when sellers are not owners

The ownership account predicts that the endowment effect should disappear when buyers become owners, and this is what happened in Experiment 1. The ownership account also predicts that the endowment effect should disappear when sellers become nonowners, and that prediction was investigated in Experiment 2.

Although the idea of selling without owning may seem odd at first, it happens all the time. Buyers' brokers and sellers' brokers are people who trade goods they do not own. In Experiment 2, we asked participants to act as brokers and to buy or sell goods on behalf of a client. Some of the participants were endowed with the same good they were trading and some were not. The ownership account predicts that brokers should value the good they are trading more when they happen to own an identical good themselves. The loss aversion account predicts that sellers' brokers should value the good more than buyers' brokers do, regardless of whether they happen to own an identical good themselves. We sought to determine whether one, both, or neither of these predictions was correct.²

Method

Participants

Seventy-eight students (25 males and 53 females; M age = 20.4, $SD = 3.0$) at Harvard University participated in exchange for \$5.

Procedure

Participants reported to a laboratory and were shown a ceramic coffee mug. In a between-subjects design, participants were randomly assigned to the role of *Owner* or *Nonowner*. Owners were told that they could keep the mug they were shown, and nonowners were shown the mug but were not told they could keep it.

Participants were then told that they would be making decisions on behalf of another student who would be participating in

² It is important to remember that Prospect Theory predicts how people will value gains and losses regardless of whose gains and losses they are. For example, the Asian Disease problem (Tversky & Kahneman, 1981) requires participants to make decisions about medical interventions that will result in the gain or loss of other people's lives and not their own lives. Like brokers, people who are presented with this problem are asked to make decisions that will impact others but not themselves. Their decisions have traditionally been interpreted as providing support for Prospect Theory, and thus the theory must make predictions about such decisions.

a similar study in the near future (the client). Participants were randomly assigned to the role of *Buyer's Broker* or a *Seller's Broker*.

Buyers' brokers were told that their client would be shown a mug identical to the mug that the buyer's broker had been shown or given. Buyers' brokers were then shown a list of 25 choices, each of which required that they decide whether their client would (a) be given a mug or (b) be given a specific monetary sum instead. The monetary sums ranged from \$0.50 to \$12.50 in \$0.50 increments. Buyers' brokers were told that one of their choices would be randomly selected, and that their client would receive whatever the buyer's broker had chosen on his or her behalf.

Sellers' brokers were told that their client would be given a mug identical to the mug that the seller's broker had been shown or given. Sellers' brokers were then shown a list of 25 choices, each of which required that they decide whether their client would (a) keep the mug that he or she had been given or (b) be given a specific monetary sum instead. The monetary sums ranged from \$0.50 to \$12.50 in \$0.50 increments. Sellers' brokers were told that one of their choices would be randomly selected, and that their client would receive whatever the seller's broker had chosen on his or her behalf.

There was no deception of any kind in this study. At the end of the experiment, one of each participant's choices was randomly selected. A new group of participants (clients) was invited to the laboratory, randomly yoked to a broker, and given the cash or the mug that the broker had chosen for them.

Results and discussion

The loss aversion account suggests that sellers' brokers should value their client's mug more than buyers' brokers should value acquiring such a mug for their client because sellers' brokers should think of the transaction as a loss and buyers' brokers should think of it as a gain. The ownership account suggests that owning (and not selling) a mug increases its value, and that buyers' brokers and sellers' brokers should value their clients' mugs more when they personally own identical mugs than when they do not.

Participants' valuations were analyzed with a 2 (Broker's Status: owner or nonowner) \times 2 (Broker's Client: buyer or seller) between-subjects ANOVA, which revealed a main effect of Broker's Status, $F(1, 74) = 6.61$, $p = .01$, $\eta^2 = .08$. As the ownership account predicted, brokers who owned a mug both bought and sold mugs for their clients at a higher price than did brokers who did not own a mug. Importantly, the ANOVA revealed no effect of Broker's Client, $F < 1$, $\eta^2 < .001$ and no Broker's Status \times Broker's Client interaction, $F < 1$, $\eta^2 < .01$. Contrary to the prediction of the loss aversion account, buyers' brokers bought mugs for their clients at the same price that sellers' brokers sold mugs for their clients. In short, owning a mug, but not selling a mug, increased the price at which brokers were willing to buy or sell on behalf of their clients (see Table 2).

General discussion

The loss aversion account of the endowment effect states that the effect is due solely to the fact that sellers see transactions as

powerfully aversive losses whereas buyers see them as mildly attractive gains. It explicitly denies the possibility that the effect occurs because people find the goods they own to be especially appealing. This denial is based on the fact that in previous studies when people were asked to trade a good, sellers demanded more than buyers were willing to pay, but when asked to rate the good, the scale ratings of buyers and sellers did not differ significantly. Unfortunately, the latter null result may simply be evidence of a weak measure rather than the absence of a phenomenon. In our studies we used a single measure—buying and selling prices—to measure both the effects of loss aversion and the effects of ownership. When we put these two accounts into direct competition and measured them with the same measure, we found that ownership and not loss aversion determined the price at which the person traded. In other words, the main effect of endowment in our studies was to enhance the appeal of the goods participants owned, and the pain of giving them up was irrelevant.

These findings join a growing list of findings that cast doubt on the ability of the loss aversion account to explain the endowment effect. For instance, the endowment effect is less pronounced among experienced traders (List, 2004) and among sellers who will be paid with items that are similar to those they are selling (Chapman, 1998). The effect is more pronounced for goods that are easy to associate with the self, such as a mug with a college insignia (Tom, 2004), for goods that sellers have owned for a long time (Strahilevitz & Loewenstein, 1998), and for goods that are the reward for a successful performance (Loewenstein & Issacharoff, 1994). Facts such as these are difficult to explain in terms of loss aversion but easy to explain in terms of the strength of the association between the good and the self. Gawronski et al. (2007, p. 231) have speculated that "the endowment effect and the mere ownership effect might be driven by the same underlying mechanism. In fact, they may even be regarded as the same phenomenon". Our studies are the first to de-confound and systematically manipulate loss aversion and ownership, and their results support this speculation.

It is also important to understand what our studies do not show. Although loss aversion cannot account for our data—and by extension, cannot account for the majority of experimental demonstrations of the endowment effect that use a paradigm identical to or very similar to ours but that confound loss aversion and ownership—this does not mean that Prospect Theory is wrong or that loss aversion is incapable of producing the endowment effect. In our studies, owning without selling caused the endowment effect and selling without owning did not, and while we know of no experimental evidence for the latter effect, this does not preclude the possibility that such evidence may be found. The fact that people expect losses to be more powerful than gains is a robust and well-established phenomenon, and it is possible that it can lead to the endowment effect under some circumstances. Our studies simply show that the circumstances under which the endowment effect is typically demonstrated are not among them. We do not know if people store their lava lamps because parting with them is such sweet sorrow, but we do know that they store them because they like them and that they like them because they're theirs.

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Table 2
Value per unit in Experiment 2.

	Broker's Status	
	Nonowner	Owner
<i>Broker's client</i>		
Buyer	\$3.43 (1.47) _a	\$4.78 (1.79) _b
Seller	\$3.70 (1.93) _a	\$4.44 (1.98) _b

Note: Table lists means, with standard deviations in parentheses. Means that do not share the same subscript differ significantly ($p < .05$).

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