

# Possession, feelings of ownership and the endowment effect

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## Abstract

Research in judgment and decision making generally ignores the distinction between factual and subjective feelings of ownership, tacitly assuming that the two correspond closely. The present research suggests that this assumption might be usefully reexamined. In two experiments on the endowment effect we examine the role of subjective ownership by independently manipulating factual ownership (i.e., what participants were told about ownership) and physical possession of an object. This allowed us to disentangle the effects of these two factors, which are typically confounded. We found a significant effect of possession, but not of factual ownership, on monetary valuation of the object. Moreover, this effect was mediated by participants' feelings of ownership, which were enhanced by the physical possession of the object. Thus, the endowment effect did not rely on factual ownership per se but was the result of subjective feelings of ownership induced by possession of the object. It is these feelings of ownership that appeared to lead individuals to include the object into their endowment and to shift their reference point accordingly. Potential implications and directions for future research are discussed.

Keywords: decision making; endowment effect; possession; psychological ownership, subjective ownership.

## 1 Introduction

Thaler (1980) presented half the students in a class with Cornell University coffee mugs and then allowed them to trade with their less fortunate classmates. Surprisingly little trading occurred. Those holding the mugs set their minimum selling prices too high, and those without mugs set their maximum offers too low, for many trades to clear. Apparently, briefly owning a coffee mug raised its value to the owner sufficiently to price it beyond the reach of most non-owners. Thaler coined the term *endowment effect* to describe the result: goods that are included in one's endowment — that is, goods that one owns — are valued more highly than identical goods not held in the endowment. The non-owner's potential gain from acquisition was apparently smaller than the owner's potential loss from sale. The effect has since been widely replicated (e.g., Kahneman, Knetsch, & Thaler, 1990; Kahneman, Knetsch, & Thaler, 1991).

The endowment effect is commonly interpreted as the result of *loss aversion*, a core ingredient of prospect theory (Kahneman & Tversky, 1979). Losses (outcomes below some reference point) are weighted substantially more than gains (outcomes above the reference point) in the evaluation of choice options (Kahneman & Tversky, 1984). If one initially owns an object, the prospect

of losing it is seen as a (relatively large) loss. If one does not, the prospect of acquiring it is seen as a (relatively small) gain. Hence the small volume of trading in Thaler's study: The endowment shifted reference points, and thus the assessment of what is a loss and what a gain.

More recently, researchers have started to examine in more detail the psychological mechanisms driving the effect. For example, Strahilevitz and Loewenstein (1998) found that valuation of an object can increase with duration of ownership, possibly due to increased adaptation, the psychological accustoming to the new material situation. Novemsky and Kahneman (2005a, b) present evidence that loss aversion, and thus an endowment effect, is found for goods that are owned for consumption, but not for goods that are owned for exchange, and that are thus given up "as intended" rather than as losses from an endowment. Carmon and Ariely (2000) report findings suggesting that endowment effects can be explained as the result of buyers and sellers having different cognitive perspectives on the exchange. These results suggest that there is more to the endowment effect than simple factual ownership of an object.

In the present research, we try to elucidate further what leads to the development of a sense of endowment and, subsequently, to higher monetary valuations. The concept of ownership of one's endowment of goods appears to involve two elements, legal entitlement and subjective ownership. These elements may be imperfectly correlated. One may feel some sense of ownership of items one does not own (e.g., a borrowed bicycle) and behave as an owner might (e.g., resenting the owner's demand for its return). Conversely, one may feel little ownership of

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items one does, in fact, own (e.g., a newly-bought computer) and require some period of experience and use before feeling full ownership. Pierce, Kostova and Dirks (2003) propose an elaborate psychological model, based on an extensive literature review, of the antecedents, experiences, and consequences of *psychological or subjective ownership* (see Belk, 1988; Dittmar, 1992; Furby, 1978). This research suggests that subjective feelings of ownership are more complex than simple legal entitlement (Etzioni, 1991). In the Pierce et al model feelings of ownership are induced by controlling the entity (e.g., through possession), becoming familiar with it (e.g., through actual or imagined use) and/or investing the self into it (e.g., through identification).

In Thaler (1980), as in most studies of the endowment effect, two of these elements of ownership are confounded. It seems clear that the students who received the mugs understood that they legally owned them and could, if they wished, sell them to others. They also were given physical possession of the mugs and could inspect and control them. The extent to which these elements led to feelings of subjective ownership is unclear. Possession alone, even in the absence of factual ownership, can induce feelings of ownership (Etzioni, 1991; Furby, 1980). Indeed, because of the immediate control it provides over the entity, possession might be more psychologically salient and have a stronger effect on feelings of ownership of an object (and thus on its monetary evaluation) than does factual ownership (Pierce et al., 2003; Rudmin & Berry, 1987).

In the following two experiments we examine the relative contributions of factual and subjective ownership to the endowment effect by separately manipulating factual ownership and possession of an object. This design allows examining whether the endowment effect is driven by (a) factual ownership, (2) possession, or (3) both. We expect that possession will induce stronger feelings of ownership than pure factual ownership as such. We are arguing that it is this subjective sense of endowment — rather than a legal entitlement — that leads to a shift in the reference point and makes not having the object feel like a loss, rather than a foregone gain. As a result possession will lead to higher monetary evaluation, whereas factual ownership by itself will not.

## 2 Experiment 1

### 2.1 Method

#### 2.1.1 Design, procedure, manipulations, and measures

The experiment had a 2 (Ownership vs. No Ownership) x 2 (Possession vs. No Possession) between-subjects de-

sign. The object to be evaluated was a chocolate bar of a brand familiar to the participants. We assessed monetary valuations as our dependent variable and feelings of ownership as a potential mediator.

Participants in the Possession condition were given the chocolate bar before participating in an unrelated study that took about 30 minutes. They were handed the chocolate bar and told to keep it for now (and not to eat it) as it would be used later on in the study; they then placed it on the desk next to their computers. In the No Possession condition participants were shown the chocolate bar only after participating in the unrelated study. They were not given possession of the item and they had no physical contact with it. After completing the unrelated study participants in the Ownership condition were told that they now owned a chocolate bar (either the one on their desk or one just like the one they had been shown) and that they could either keep it or exchange it for some money. Those in the No Ownership condition were told that they now had a choice of receiving either a chocolate bar or some money. All participants then completed a response sheet which presented a series of choices between the chocolate bar and amounts of money rising from \$.10 to \$4.00 in steps of 10 cents. Respondents indicated their preference at each money amount. (All money amounts were given in the local currency, Singapore dollars, worth at the time about .60 \$US.)

The experiment thus compares the preferences of the following groups: those who own a chocolate bar but may, if they wish, exchange it for money; and those who do not own a bar but are offered a choice of either acquiring one or receiving a sum of money.<sup>1</sup> At the time of making this choice half the participants had possessed the bar in the sense that they had received it from the experimenter and placed it on their desks for about 15–30 minutes. The other participants had not had this prior possession. As in previous studies (e.g., Strahilevitz & Loewenstein, 1998) incentive compatibility was maintained by telling the participants that the experimenter had previously written down an amount of money and that partic-

<sup>1</sup>This method of assessing respondents' valuation of an object from their responses to a series of hypothetical choices between the item and differing sums of money has been used in a number of endowment effect studies (e.g., Kahneman et al., 1991; Lerner, Small, & Loewenstein, 2004) in which potential sellers (those initially given the object) were compared not to potential buyers (those not given the object) but to "choosers", who were offered choices such as those described above between the object and different sums of money. For current purposes, the choice-based method has a number of advantages over other commonly-used measures such as Willingness to Pay (WTP) and Willingness to Accept (WTA), which are prone to extreme responses (since they have no natural upper bound) and may be distorted if respondents interpret them as opening bids in a bargaining session rather than as final lowest or highest prices. Prices realized in actual market transactions may be influenced by the particular market mechanism imposed (e.g., open outcry, sealed bid, second price, etc.) and are, again, only imperfectly related to individual valuations.

ipants would receive either money or the chocolate bar depending on the choice they had indicated on their response sheet for this amount. Thus both under-bidders and over-bidders faced the risk of receiving their less-preferred option. Only honest valuations escape this concern.

All participants in a given session received the same possession treatment to rule out possible social comparison effects between participants. Each session included about 8 of the 99 participants, and sessions alternated between Possession and No Possession conditions. Participants indicated their valuations on the response sheet and then responded to additional questions including (1) a measure of feelings of ownership (“How much do you feel like you own the chocolate bar (even if you don’t legally own it)?”) and (2) a measure of information about the object (“How much information do you think you have in order to evaluate the chocolate bar?”), both on 7-point scales. The experimenter then revealed his preset valuation, and participants either kept or received a chocolate bar or were given the amount of money (and had to return the chocolate bar), depending on the choice they had indicated on their response sheets.

### 2.1.2 Participants

Ninety-nine undergraduate students at a Singaporean university participated as part of a larger experiment session in exchange for course credit and task payoffs as described above.

### 2.1.3 Stimulus pretest

One might be concerned that the experimental manipulations of ownership and possession are confounded with the information participants received about the object, which could affect monetary valuation. However, given that a chocolate bar is a simple and familiar object we did not anticipate any differences between experimental conditions in the amount of product information participants had. Participants’ self-ratings confirmed this. Judgments of whether they had sufficient information to evaluate the chocolate bar (average rating of  $M = 4.16$ ,  $SD = 2.03$ ), on a 1–7 scale with higher values indicating more information) showed no significant difference between the two possession conditions,  $F(1, 90) = 1.57$ ,  $ns$ ,  $p_{rep} = .72$ ,  $\omega^2 = .01$ , or between the two ownership conditions,  $F(1, 90) = .40$ ,  $ns$ ,  $p_{rep} = .48$ ,  $\omega^2 = .00$ .

## 2.2 Results and discussion

### 2.2.1 Replication of endowment effect

The typical endowment effect experiment compares an individual who both owns and possesses the object with

one who neither owns nor possesses it. When comparing these two cells of our experiment we found a significant effect,  $F(1, 47) = 4.83$ ,  $p < .05$ ,  $p_{rep} = .90$ ,  $\omega^2 = .07$ . Those who were endowed with the object (i.e., owned and possessed it) gave higher monetary valuations,  $M = \$1.79$  ( $SD = .96$ ), than those who were not endowed with the object (i.e., neither owned nor possessed it),  $M = \$1.29$  ( $SD = .55$ ). Thus, the endowment effect was replicated.<sup>2</sup>

### 2.2.2 The relative roles of factual ownership and possession in the endowment effect

Was the endowment effect due to factual ownership of the object, possession, or both? A 2 (Ownership)  $\times$  2 (Possession) ANOVA showed a significant main effect only for possession,  $F(1, 95) = 5.10$ ,  $p < .05$ ,  $p_{rep} = .92$ ,  $\omega^2 = .04$  (see Figure 1). Participants gave the chocolate bar a higher monetary value when they had possessed it ( $M = \$1.72$ ,  $SD = .92$ ) than when they had not possessed it ( $M = \$1.35$ ,  $SD = .66$ ). The effect of actual ownership was not significant (ownership,  $M = 1.60$ ,  $SD = .88$ , no ownership,  $M = 1.47$ ,  $SD = .76$ ),  $F(1, 95) = .64$ ,  $ns$ ,  $p_{rep} = .56$ ,  $\omega^2 = .00$ , and there was no evidence of a significant interaction,  $F(1, 95) = .00$ ,  $ns$ ,  $p_{rep} = .12$ ,  $\omega^2 = .00$ . These results suggest that the differences in valuation that constitute the endowment effect were induced by possession, and subsequent feelings of ownership, rather than by ownership of the focal object as such.

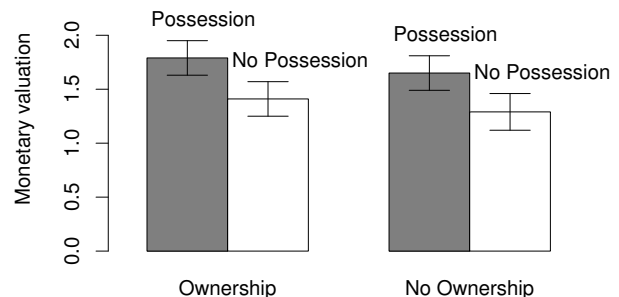


Figure 1: Effects of factual ownership and possession on monetary valuation, Experiment 1. (Error bars indicate  $\pm 1$  standard error of the mean.)

### 2.2.3 The Role of Feelings of Ownership

We next examined the possible mediating role of subjective feelings of ownership in linking possession to valuation. A 2 (Ownership)  $\times$  2 (Possession) ANOVA revealed a significant effect of possession on subjective ownership. As predicted, participants who had the chocolate bar in their possession felt stronger ownership ( $M = 4.34$ ,  $SD$

<sup>2</sup>The selling-price/choice-price ratio of 1.39 is typical in magnitude (e.g., in Lerner et al., 2004, it was 1.30).

= 2.13) than those who did not ( $M = 2.60$ ,  $SD = 1.86$ ),  $F(1, 90) = 17.75$ ,  $p < .001$ ,  $p_{rep} = .999$ ,  $\omega^2 = .15$ , (see Figure 2). As with valuations, we found no effect of factual ownership,  $F(1, 90) = .09$ ,  $ns$ ,  $p_{rep} = .30$ ,  $\omega^2 = .00$ , and no significant interaction  $F(1, 90) = .94$ ,  $ns$ ,  $p_{rep} = .62$ ,  $\omega^2 = .00$ .

Feelings of ownership, in turn, predicted monetary valuations. Regressing monetary valuations on feelings of ownership showed that stronger feelings of ownership were related to higher monetary valuations,  $B = .12$ ,  $SE(B) = .04$ ,  $\beta = .33$ ,  $t(92) = 3.35$ ,  $p < .01$ , adjusted  $R^2 = .10$ . In order to test for mediation, we regressed participants' monetary valuations on both the experimental manipulation of possession and the presumed mediator (feelings of ownership). Results showed that feelings of ownership continued to predict monetary valuation,  $\beta = .29$ ,  $t(90) = 2.64$ ,  $p < .05$ , whereas the experimental manipulation did not,  $\beta = .11$ ,  $t(90) = .99$ ,  $p = .32$ ,  $ns$ . A Sobel test of mediation was significant,  $z = 2.24$ ,  $p < .05$ . Thus, we found that feelings of ownership fully mediated the effect of possessing the chocolate bar on the monetary valuation of the item.

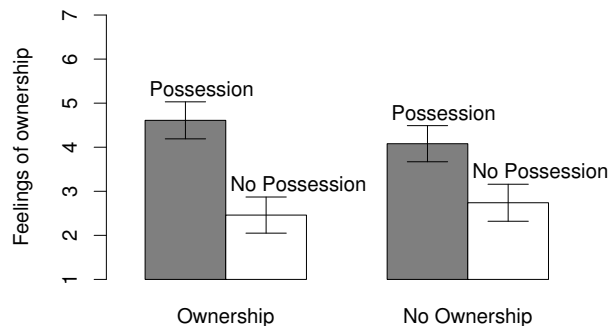


Figure 2: Effects of factual ownership and possession on feelings of ownership, Experiment 1.

In sum, Experiment 1 indicates that the sense of endowment that leads to higher monetary valuations results from the feelings of ownership induced by possessing an object, rather than legal ownership as such. Experiment 2 provides a conceptual replication, extending the first experiment to (a) a different object of choice, (b) an alternative measure of the dependent measure, and (c) a different, and briefer, implementation of the concept of “possession.”

### 3 Experiment 2

Experiment 2 was designed to provide a conceptual replication of the findings of Experiment 1. The design was again a 2 (Ownership vs. No Ownership)  $\times$  2 (Possession vs. No Possession) between-subjects design. The proce-

dures, design, and materials were identical to Experiment 1 except for the differences noted below.

One purpose of Experiment 2 was to see if the results would replicate with a different object. For this experiment, we chose the object that has probably been used most commonly in endowment effect studies: a coffee mug from the participants' university. This object was rather different from the chocolate bar used in Experiment 1, being more durable, non-hedonic, and of higher price. To accommodate for the higher value, the new response sheet gave amounts of money rising from \$.20 to \$8.00 in steps of 20 cents.

In Experiment 1 the duration of possession and the duration of ownership were unequal: participants in the Possession condition had the chocolate bar in their possession for about 15–30 minutes, while those in the Ownership condition only learned that they owned the item shortly before giving their valuations. This difference in duration may have exaggerated the effect of possession relative to that of ownership, pitting “possession for a significant period of time” against “ownership for a brief period”. In Experiment 2, duration of possession and duration of ownership were equal (and short). As participants sat down at individual cubicles for the experiment, they were given a questionnaire explaining the study and the condition they were in, and containing the valuation measures. All participants were shown an example mug, and those in the Possession condition received the object at this time. After brief verbal instructions, all participants proceeded to give their valuations. The elapsed time from receiving experimental instructions to completing the valuation measures was thus only a minute or two, in both Possession and Ownership conditions.

Experiment 1 relied on a single dependent measure, the monetary value at which the participant's choice switched from the object to a sum of money. In Experiment 2, we added a second measure that asked participants to provide willingness to accept (WTA) prices (for those in the Ownership condition) and willingness to pay (WTP) prices (for those in the No Ownership condition). Participants were asked “What is the minimum amount of money you are willing to accept for the coffee mug?” (WTA, Ownership condition), or “What is the maximum amount of money you are willing to pay for the coffee mug?” (WTP, No Ownership condition). We will refer to the first set of values as “choice values,” to the second as “WTA/WTP.”

In contrast to the choice values, which were restricted by the response sheet to be between \$0 and \$8, WTA/WTP ratings were made in a free response format, opening the possibility of extreme values that might unduly affect the analyses. Inspecting the responses revealed only one value that was markedly different (\$20) from the rest and double the next highest value (\$10 for two respondents). We Winsorized this value to the next



highest (\$10) (see Peters, Slovic, & Gregory, 2003 for a similar approach).

Finally, in Experiment 1 the Possession and No Possession conditions were conducted separately. This had the advantage of avoiding possible social comparison effects between those who received the mug and those who did not. However, this procedure had the disadvantage of not allowing for random assignment to one of the four experimental cells. Thus, in Experiment 2, we ran all four cells of the experiment at the same time, allowing for better random assignment of participants to experimental conditions. We minimized potential social comparison effects by seating participants in individual cubicles.

### 3.1 Method

#### 3.1.1 Participants

Ninety-six business undergraduate students at a Singaporean university participated as part of a larger experiment session in exchange for course credit and task payoffs as described in Experiment 1. Only Singaporean students were allowed to participate as foreign exchange students might perceive and value the university coffee mug systematically different.

#### 3.1.2 Stimulus Pretest

As in Experiment 1, we assessed participants' judgments of whether they had sufficient information to evaluate the coffee mug (average rating of  $M = 3.64$ ,  $SD = 1.84$ , on a 1–7 scale with higher values indicating more information). These ratings showed no significant difference between the two possession conditions,  $F(1, 92) = 3.38$ ,  $ns$  ( $p = .07$ ),  $p_{rep} = .85$ ,  $\omega^2 = .02$ , or between the two ownership conditions,  $F(1, 92) = 1.23$ ,  $ns$ ,  $p_{rep} = .67$ ,  $\omega^2 = .00$ .

### 3.2 Results and discussion

#### 3.2.1 Replication of endowment effect

As in Experiment 1, we first tested for a difference in valuation between (1) those who owned and possessed the object and (2) those who neither owned nor possessed it. When comparing these two cells of our experiment, we found a significant effect on the choice measure,  $F(1, 46) = 4.13$ ,  $p < .05$ ,  $p_{rep} = .88$ ,  $\omega^2 = .06$ . Those endowed with the object (i.e., owned and possessed it) gave higher monetary valuations,  $M = \$3.82$  ( $SD = 2.28$ ), than those not endowed (i.e., neither owned nor possessed it),  $M = \$2.70$  ( $SD = 1.44$ ). The same effect materialized with the alternative, WTP/WTA dependent measure such that those who owned and possessed the object ( $M = 4.08$ ,  $SD = 2.61$ ) gave higher valuations than those who neither owned nor possessed the it ( $M = 2.76$ ,  $SD = 1.64$ ),

$F(1, 46) = 4.37$ ,  $p < .05$ ,  $p_{rep} = .89$ ,  $\omega^2 = .06$ . Thus, the endowment effect was again replicated.<sup>3</sup>

#### 3.2.2 The relative roles of factual ownership and possession in the endowment effect

**Choice values.** A 2 (Ownership) x 2 (Possession) ANOVA showed a significant main effect only for possession,  $F(1, 91) = 5.13$ ,  $p < .05$ ,  $p_{rep} = .92$ ,  $\omega^2 = .04$  (see Figure 3). Participants gave the coffee mug a higher monetary value when they possessed it ( $M = \$3.84$ ,  $SD = .203$ ) than when they did not possess it ( $M = \$3.00$ ,  $SD = 1.50$ ). The effect of actual ownership was not significant (ownership,  $M = 3.58$ ,  $SD = 1.96$ , no ownership,  $M = 3.30$ ,  $SD = 1.73$ ),  $F(1, 91) = .60$ ,  $ns$ ,  $p_{rep} = .54$ ,  $\omega^2 = .00$ , and there was no evidence of a significant interaction,  $F(1, 91) = .77$ ,  $ns$ ,  $p_{rep} = .58$ ,  $\omega^2 = .00$ . These results replicate the findings of Experiment 1 that the differences in valuation that constitute the endowment effect were induced by possession rather than by factual ownership of the focal object.

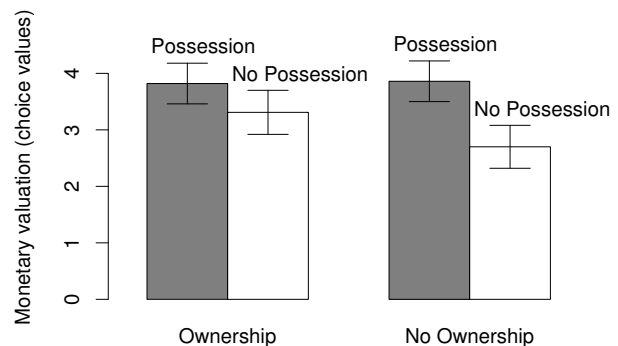


Figure 3: Effects of factual ownership and possession on choice values, Experiment 2.

**WTA/WTP.** The same analysis on the WTA/WTP measure yielded the same substantive results: a main effect of possession (possession,  $M = 4.01$ ,  $SD = 2.29$ , no possession,  $M = 3.18$ ,  $SD = 1.66$ ),  $F(1, 92) = 4.10$ ,  $p < .05$ ,  $p_{rep} = .88$ ,  $\omega^2 = .03$ . The effect of actual ownership was not significant (ownership,  $M = 3.85$ ,  $SD = 2.18$ , no ownership,  $M = 3.37$ ,  $SD = 1.90$ ),  $F(1, 92) = 1.45$ ,  $ns$ ,  $p_{rep} = .70$ ,  $\omega^2 = .01$ , and there was no evidence of a significant interaction,  $F(1, 92) = .69$ ,  $ns$ ,  $p_{rep} = .57$ ,  $\omega^2 = .00$ .

#### 3.2.3 The Role of Feelings of Ownership

We next examined again the possible mediating role of subjective feelings of ownership in linking possession to

<sup>3</sup> The selling-price/choice-price ratio (1.41) is highly similar to that of Experiment 1 (1.39).



Figure 4: Effects of Factual Ownership and Possession on WTA/WTP, Experiment 2

valuation. A 2 (Ownership) x 2 (Possession) ANOVA revealed a significant effect of possession on subjective ownership. As predicted, participants who had the coffee mug in their possession felt stronger ownership ( $M = 3.54, SD = 1.79$ ) than those who did not ( $M = 2.48, SD = 1.48$ ),  $F(1, 92) = 9.94, p < .01, p_{rep} = .98, \omega^2 = .09$ , (see Figure 4). As with valuations, we found no effect of factual ownership,  $F(1, 92) = .63, ns, p_{rep} = .55, \omega^2 = .00$ , and no significant interaction  $F(1, 92) = .08, ns, p_{rep} = .29, \omega^2 = .00$ .

Stronger feelings of ownership, in turn, led to higher monetary valuations,  $B = .46, SE(B) = .10, \beta = .43, t(93) = 4.59, p < .001, adjusted R^2 = .18$ . In order to test for mediation, we regressed participants' choice values on both the experimental manipulation of possession and the presumed mediator (feelings of ownership). Results showed that feelings of ownership continued to predict monetary valuation,  $\beta = .40, t(92) = 4.01, p < .001$ , whereas the experimental manipulation did not,  $\beta = .11, t(92) = 1.06, p = .29, ns$ . A Sobel test of mediation was significant,  $z = 2.49, p < .05$ . Thus, we found that feelings of ownership fully mediated the effect of possessing the coffee mug on the monetary valuation of the item.<sup>4</sup>

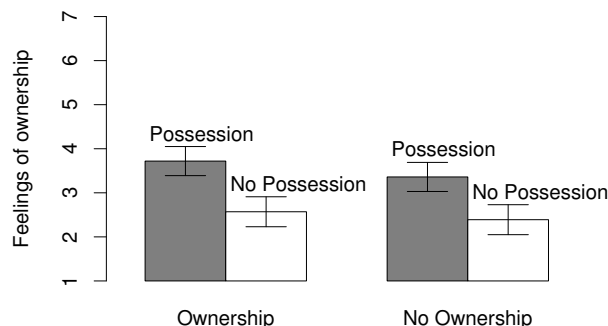


Figure 5: Effects of factual ownership and possession on feelings of ownership, Experiment 2.

<sup>4</sup>The same substantive results were obtained for WTA/WTP as dependent measures. For reasons of brevity, the analyses are omitted, but can be obtained from the first author.

## 4 General Discussion

In two endowment effect experiments, we independently manipulated factual ownership and possession of an object (a chocolate bar in Experiment 1 and a university coffee mug in Experiment 2). This allowed us to disentangle the effects of these two factors, which are typically confounded — sellers generally both own and possess the object from the outset, while buyers or choosers neither own nor possess it. We found a significant effect of possession, but no significant effect of factual ownership, on monetary valuation of the objects, both on choice values (Experiment 1 and 2) and traditional WTA/WTP values (Experiment 2). These results suggest that while the endowment effect can be “turned on” in the typical fashion, it can be “turned off” in one of two ways. First, it can be turned off by taking the good away from both sellers and buyers (no possession). Second, it can be given to both sellers and buyers (possession). These results help to clarify the antecedents of the endowment effect and suggest an important role of the subjective sense of ownership in decision making.

The results suggest that the endowment effect may be primarily driven by subjective feelings of ownership rather than by factual ownership as such. In other words, it may require the development of a subjective sense of endowment, rather than a legal entitlement, for the reference point to shift. Once the reference point is shifted, loss aversion sets in and leads to higher valuations. In our experiments, this shift seems to have been triggered by possession, not factual ownership. Thus, it appears that participants in the possession condition felt that not having the object would be a loss, rather than a foregone gain — counterfactually to their objective state of no ownership in the possession/no-ownership condition. On the other side, participants in the no possession condition felt that not having the object would be a foregone gain, rather than a loss — again counterfactually to their objective state of ownership in the no-possession/ownership condition.

This interpretation is consistent with the results of the mediation analyses. In both experiments, we found the effect of possession on monetary valuation to be completely mediated by participants' rated feelings of ownership, which were enhanced by the physical possession of the object (briefly in Experiment 2, for a significant period of time in Experiment 1). The results of these mediation analyses should be interpreted cautiously, however, due the inherent shortcomings in observational/correlational approaches such as mediation analyses (Spencer, Zanna, & Fong, 2005) and because of a potential influence of the monetary valuations participants provided before indicating their subjective feelings of ownership.

The present research contributes to a growing literature on the psychological mechanisms behind the endowment effect (e.g., Carmon & Ariely, 2000; Novemsky & Kahneman, 2005a,b) and may help explain several past findings. For example, Strahilevitz and Loewenstein (1998) found that valuation of an object increased with the duration of ownership. It is possible that over time, owners' feelings of ownership increased, thus leading to higher valuations. Lerner, Small, & Loewenstein (2004) found that owners' selling prices of an object decreased strongly when incidental disgust was induced experimentally (through a video clip). It is possible that the experience of disgust, which is associated with an "expel" goal (see Lerner et al.), prevented the development of feelings of ownership for the object, thus leading to lower monetary valuations as compared to a control group.

Beyond the endowment effect, the present research also raises the possibility that the notion of subjective ownership may help explain a number of phenomena that have been of interest to decision researchers. For example, future research could examine the role of subjective ownership in the escalation of commitment to failing projects (Staw, 1976) and failure to disregard sunk costs (Arkes & Blumer, 1985), which may well involve decision makers' subjective ownership of a project and a resulting feeling that one must take care of and maintain it. Similarly, late-bid escalation in English auctions (Ku, Malhotra, & Murnighan, 2005) may be partly due to strong feelings of ownership developing among the few remaining bidders. Subjective ownership might also help explain why windfall gains (Arkes et al., 1994) and "house money" (Thaler & Johnson, 1990) are spent lightly, and why pre-choice attachment to more than one option can lead to post-choice discomfort after having to choose one of them, which implies "losing" the other (Carmon, Wertebroch, & Zeelenberg, 2003). Thus, a more nuanced conceptualization of the possible divergence of objective and subjective ownership may help to explain a number of important decision making phenomena. As usual, more research is needed before we can fully appreciate the role of feelings of ownership in judgment and decision making.

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