

Affective Equilibria in the Endowment Effect

Nick Sevdalis and Nigel Harvey

University College London

Ashley Bell

City University

When people are endowed with an object, they demand more money in order to part with it than they would be willing to pay to acquire it in the first place. This phenomenon is known as the endowment effect. From a behavioral finance point of view, the effect is interesting because the asymmetry between people's willingness to pay to acquire the object versus to part with it seems to be triggered by mere ownership of the object. In this paper, we propose that the endowment effect is due to discrepancies in the affective equilibria between owners and potential buyers of an endowment. We define an affective equilibrium as the price or range of prices for which traders forecast equal post-trade happiness for themselves and for their trading partners. In three studies, we obtain empirical findings that are consistent with this explanation and that also demonstrate erroneous affective forecasting in endowment owners and potential buyers. We discuss these findings in relation to the endowment effect literature. We also suggest that transaction-related emotions should be studied alongside people's risk perceptions to provide a better understanding of financial behaviors.

Keywords: Affect, Emotion, WTA, WTP, Endowment effect, Affective forecasting

INTRODUCTION

The main aim of the emerging field of behavioral finance is to understand and explain how people make financial decisions, that is, how they weigh risks and benefits when money is at stake and how they choose between options that differ in their various attributes and have uncertain outcomes. Risk taking (i.e., how people judge risks and how they factor them into their decisions) has been one of the core themes of behavioral finance research—examining, for instance, the effects of gender (Felton, Gibson, and Sanbonmatsu [2003], Olsen and Cox [2001]), personality (Felton et al. [2003]), culture (O'Barr and Conley [2000]), and simple context manipulations (Sevdalis and Harvey [2007a]) on investors' risk preferences.

In addition to risk taking, a puzzling phenomenon that also relates to people's own perceptions of their finances and

possessions and their relevant decisions is that when people are endowed with an object, they demand more money in order to part with it than they would be willing to pay to acquire it. Thaler [1980] coined the term *endowment effect* for this phenomenon. In the typical endowment effect study, a group of participants are endowed with an object, often a mug engraved with the logo of the participants' university. These participants are the “owners” of the endowment. Another group of participants do not receive any endowment. These are the potential “buyers” of the endowment. Owners are then asked to state their minimum selling price for the object (i.e., the minimum amount of money for which they would be prepared to give up the endowment). Symmetrically, buyers are asked to state their maximum buying price for the object (i.e., the maximum amount of money they would be willing to pay to acquire the object). Typically, owners in such studies require more money to give up their endowment object than buyers are willing to pay to acquire it (Franciosi, Kujal, Michelitsch, Smith, and Deng [1996], Kahneman, Knetsch, and Thaler [1990], Van Boven, Loewenstein, and Dunning [2003]).

From a behavioral finance point of view, the phenomenon is interesting because of the owner-buyer asymmetry—an

Address correspondence to Dr. Nick Sevdalis, Department of Bio-Surgery and Surgical Technology, Imperial College London, 10th floor, QEOM, St. Mary's Hospital, South Wharf Road, London, W2 1NY, UK. E-mail: n.sevdalis@imperial.ac.uk

asymmetry that seems to be triggered by mere ownership of the object. An emerging explanation of the endowment effect is that the effect occurs because of people's inability to judge accurately the emotions triggered by the ownership of the endowment object. This inability affects, first, endowment owners, who fail to forecast accurately how attached they will become to an object once they have been endowed with it and what the psychological costs of parting with the endowment will be. Consistently with this view, Loewenstein and Adler [1995] found that when participants were asked to forecast their asking prices for an endowment they would receive in the future, they underestimated them. Second, inaccurate affective judgments are present in both endowment owners and buyers when they try to make judgments of each other's affective state. Owners fail to realize that their attachment to the endowment and their difficulty in parting with it is not shared by nonowners. Symmetrically, potential buyers underestimate the attachment that owners of the object have developed and the psychological costs that they associate with giving it up. As a result, buyers' offers to acquire the endowments are lower than the prices that owners consider reasonable. Van Boven, Dunning, and Loewenstein [2000] obtained empirical support for such *egocentric empathy gaps* between owners and buyers. These gaps are an instance of a more general projection bias (Loewenstein, O'Donoghue, and Rabin [2003]): Owners and buyers project erroneously their own emotional state onto each other.

A limitation of the research on erroneous affective judgments for the self and for other people in endowment effect situations is that these judgments are typically inferred from the traders' stated transaction prices rather than assessed directly. The aim of the three studies that we report here was to assess these affective judgments directly. In our studies, we gave half of the participants endowments, thus rendering them owners. The other half includes potential buyers. We then elicited trading prices from all participants following the procedure used by Loewenstein and Adler [1995]. (The procedure is described in detail in the Method section of Experiment 1.) In addition to trading prices, we elicited participants' happiness forecasts for themselves and for their trading partners for each price of the potential transaction. We then paired participants randomly and allowed them to trade. Finally, we assessed participants' posttrade happiness and their judgments of their trading partners' posttrade happiness.

From the participants' affective forecasts for themselves and for their trading partners, we were able to determine the prices for which transactions exhibited an *affective equilibrium*. We define an affective equilibrium as the price or range of prices for which traders forecast equal happiness for themselves and for their trading partners. If the endowment effect occurs because buyers misjudge the owners' emotional attachment to the endowment and their difficulty in parting with it and because owners project their own attachment to the endowment onto the buyers, then owners' affective

equilibrium should be set at a higher price than the buyers' affective equilibrium. The three experiments that we report here aimed to test this hypothesis, H_1 .

The first two experiments were run consecutively in a lecture theater. Participants were told that they would take part in a group study and they initially received a booklet with detailed instructions for Experiment 1a only. After they had completed Experiment 1, they were told that they would take part in a second study. They then received a second booklet with detailed instructions for Experiment 2. Experiment 3 was run on another group of participants.

EXPERIMENT 1

Method

Participants

Twenty students of City University, London, volunteered for the study ($M_{age} = 20.42$ years, $SD = 1.48$ years; 19 females; 1 male).

Materials and Procedure

The experiment ran in four phases. In the first phase, the experimenter (AB) distributed booklets that contained instructions and measures to the participants and then showed them a pen with the logo of City University printed on it. The pen cost £4 and the price tag was visible.

In the second phase of the experiment, half of the participants were given a pen, whereas the other half was not given anything. The participants who received the pens were told that they were now the "owners" of them. Those who had not received a pen were told that they were the "buyers." Owners were instructed that the pen was theirs to keep, but if they wanted, they could trade it for money. They were also told that, in order for them to be able to trade the pen, they would be randomly paired with a buyer in a subsequent phase of the experiment. Next, owners were presented with a range of possible trade prices, starting from £0.50 and reaching a maximum of £6.00 in £0.50 increments. For each price, owners indicated whether they would be willing to trade the pen (yes or no), how happy they thought they would be if they traded the pen (on a scale that ranged from -3 through 0 to $+3$), and, finally, how happy they thought that the buyer of the pen would be (on a similar scale). Buyers received similar instructions. They were told that they would be randomly paired with one of the owners and that they could buy the pen from that person, if they wished. They were then presented with a range of possible trade prices, starting from £0.50 and reaching a maximum of £6.00 in £0.50 increments. For each price, buyers indicated whether they would be willing to buy the pen (yes or no), how happy they thought they would be if they bought the pen (on a scale that ranged from -3 through

0 to +3), and, finally, how happy they thought that the owner of the pen would be (on a similar scale).

The third phase of the experiment was the trading phase. Owners were randomly paired with a buyer and they were given 10 minutes to trade.

In the final phase of the experiment, all participants recorded whether they traded the pen and, if they did, for how much money. They then recorded how happy they were with their decision to trade or not to trade (on a scale that ranged from -3 through 0 to +3). All transactions were honored by the experimenter.

Results

We first report findings for participants' willingness to trade and the actual prices at which the pens were exchanged. We then report findings for the participants' affective equilibria and for their affective forecasts and experiences.

Willingness to Trade and Trade Prices

Unsurprisingly, as the price of the pen increased, owners became more willing to trade, whereas buyers became less willing to do so (Figure 1, top panel). The first and second columns of Table 1 (top row) summarize the average minimum selling price for owners and the corresponding buying price for buyers. Three buyers stated that they were not willing to trade to acquire the pen at any price. In the remaining participants, the ratio of the owners' minimum asking prices over the buyers' maximum buying prices was 1.3.

The third column of Table 1 (top row) summarizes the actual trading prices we obtained. Regardless of their stated willingness to trade, the pens were traded in 9 out of 10 pairs of participants. The average trade price was £4.17 ($SD = £1.57$). Trade prices ranged between £2.00 and £6.00. In three out of nine trades, owners sold the pens at the highest possible price (i.e., £6.00).

Affective Forecasts and Affective Experiences

Owners' and buyers' forecasts of their own and of their trading partners' post trade happiness are depicted in Figure 2.

TABLE 1
Owners' and Buyers' Stated and Actual Trading
Prices in Each Experiment.

	Stated Price (£)				Actual Price (£)	
	Owners		Buyers		All Traders	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experiment 1 (pens)	3.17	1.28	2.50	2.12	4.17	1.57
Experiment 2 (mugs)	2.85	1.00	2.14	1.03	4.64	1.33
Experiment 3 (mugs)	3.91	1.72	1.97	0.85	3.98	1.96

The price at which the two lines intersect is the point of affective equilibrium. Both owners of the pens and their potential buyers predicted that the higher the price of the transaction, the happier the owner of the item and the unhappier the buyer of it would be. Owners and buyers differed, however, in their judgments of the prices that would ensure an affective equilibrium. Whereas owners thought that affective equilibrium prices were somewhere in the middle of the price range (i.e., around £3.00), buyers thought that these prices were somewhere in the first quarter or third of the price range (i.e., £1.50–2.50).

These impressions were confirmed by a mixed model ANOVA with Price (£0.50 vs. £1.00 vs. . . . vs. £6.00) and Target (Self vs. Other) as within-subjects factors and Role (Owner vs. Buyer) as a between-subjects factor. The analysis yielded a main effect of Target, a Target $\times$ Role interaction, and a Target $\times$ Price interaction, all of which, however, were qualified by the higher order Target $\times$ Price $\times$ Role interaction ($F(11, 176) = 66.73, p < .001$). We split this interaction into two Price $\times$ Target repeated measures ANOVAs—one for owners and one for buyers.

In the owners group (Figure 2, upper panel), the analysis revealed a significant Price $\times$ Target interaction ($F(11, 99) = 60.17, p < .001$). Pair-wise comparisons of the owners' happiness forecasts for themselves and for the buyers across the different price levels revealed that owners thought that they would be less happy than the buyers at trade prices less than or equal to £2.00 (all $ps < .05$), as happy as them at prices of £2.50 ($t(9) = 1.34, ns$), £3.00 ($t(9) = 0.15, ns$), and £3.50 ($t(9) = 1.87, ns$), and happier than them at prices of £4.00 or higher (all $ps < .01$).

In the buyers group (Figure 2, lower panel), the analysis yielded a main effect of Target ($F(1, 7) = 22.59, p < .01$), such that buyers thought that they would be less happy than the owners. This effect, however, was qualified by a significant Price $\times$ Target interaction that the analysis also revealed ($F(11, 77) = 19.48, p < .001$). Pair-wise comparisons of the buyers' happiness forecasts for themselves and for the owners across the different price levels revealed that buyers thought that they would be happier than the owners at a trade price of £0.50 ($t(9) = 2.91, p < .05$), as happy as them at prices of £1.00 ($t(9) = 1.20, ns$), £1.50 ($t(9) = 0.32, ns$), and £2.00 ($t(9) = 2.05, ns$), and less happy than them at prices of £2.50 or higher (all $ps < .05$).

The above analyses of participants' affective equilibria were done across all participants. In addition, we derived the price that ensured an affective equilibrium for each individual participant and correlated it with their stated selling/buying prices. At the level of an individual participant, an affective equilibrium was found at the price at which the participant judged equal levels of posttrade happiness for her/himself and for the trading partner. In those cases where participants judged equal levels of happiness across a range of prices (for example, £3.00–3.50), we took the average of these prices as the equilibrium price (in this example, £3.25). Finally,

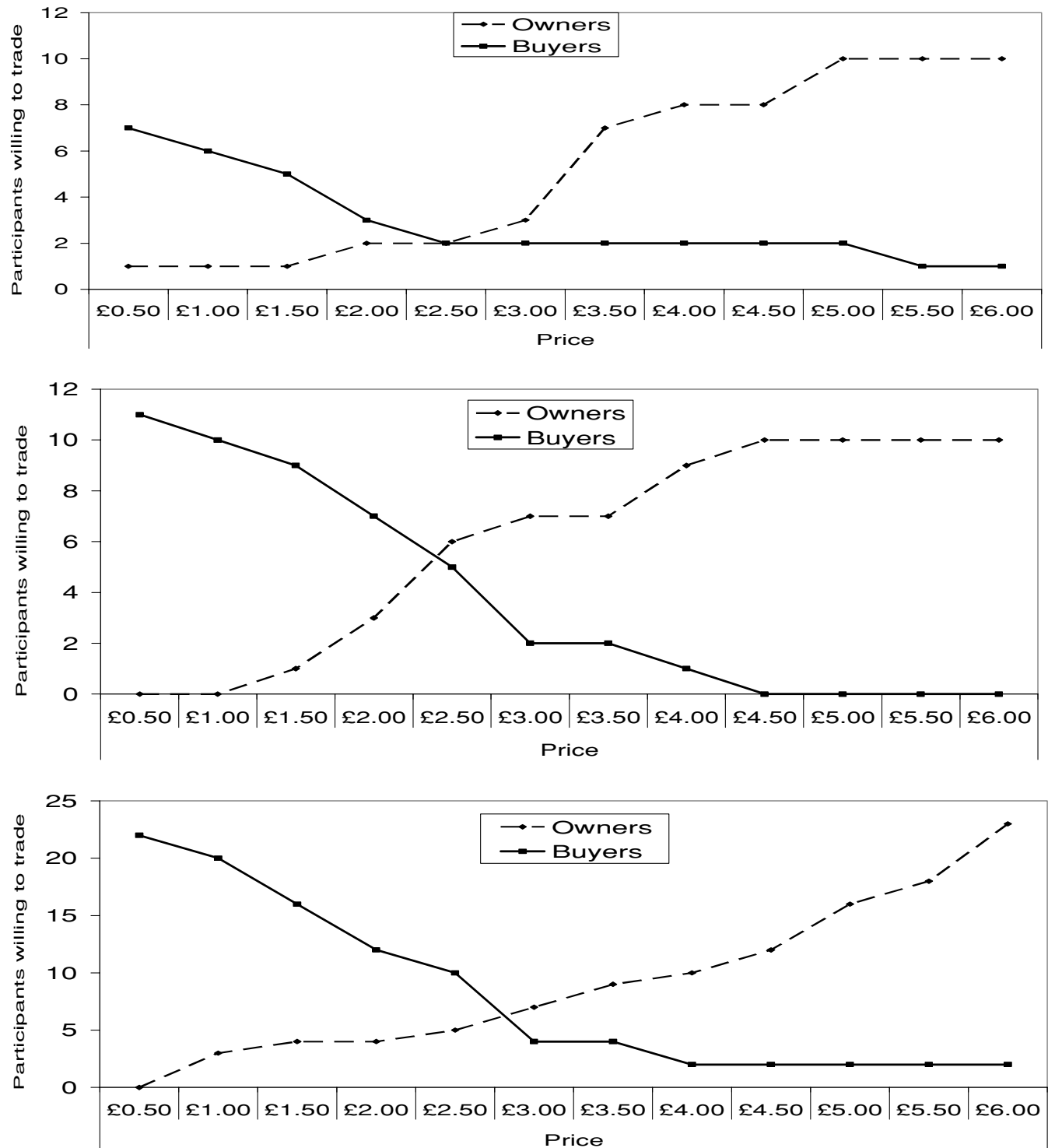


FIGURE 1 Number of owners (dotted line) and buyers (solid line) willing to trade as a function of the price of the pen in each experiment.

in those cases where the participants always judged one of the two traders (i.e., themselves or the trading partner) as happier across the range of available prices (£0.50–£6.00), we derived the equilibrium price by finding the range of prices over which there was a reversal between the happiness

ratings for the self and those for the trading partner. These are the points where the happiness curves intersect, as in Figure 2. For example, if a participant judged that she would be happier than the trading partner with a price lower than or equal to £2.00 and that the partner would be happier than she with

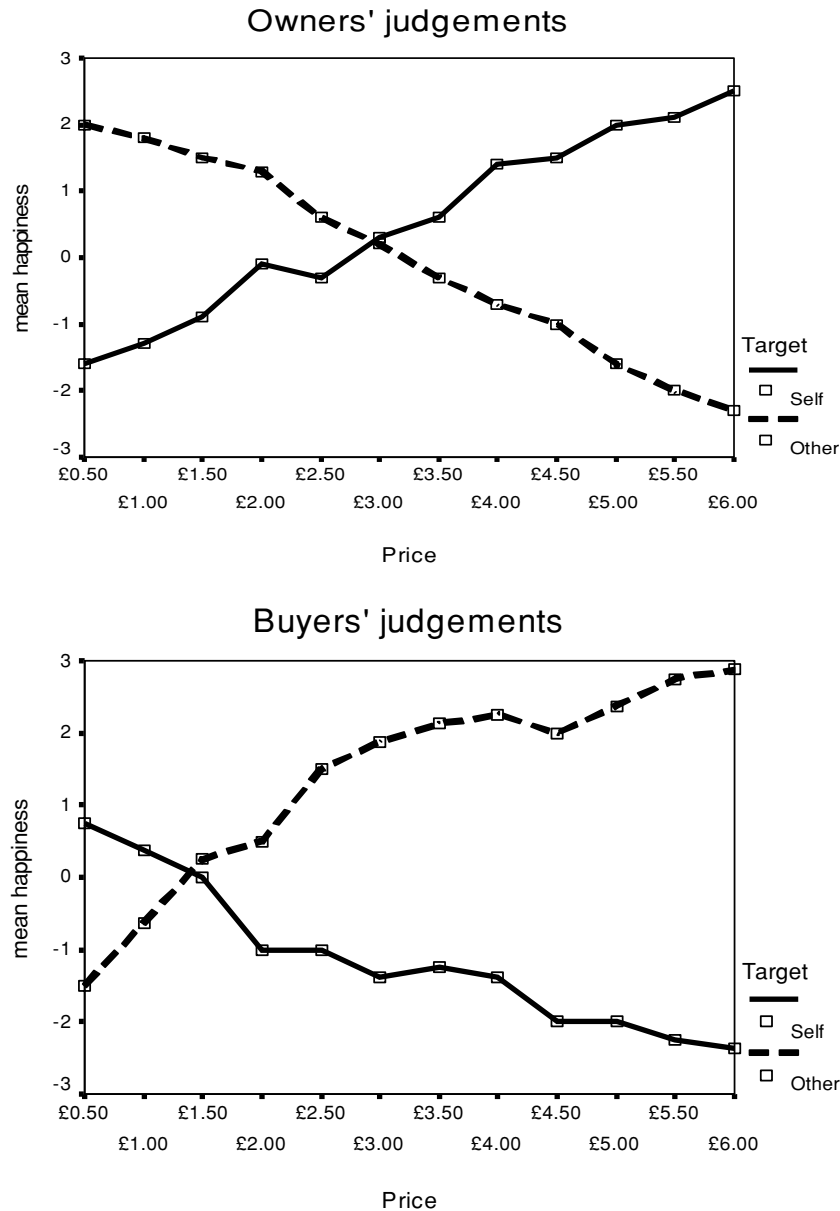


FIGURE 2 Experiment 1: Owners' (top panel) and buyers' (bottom panel) posttrade affective forecasts for themselves and for their trading partners. The price or range of prices at which the two curves intersect represents the affective equilibrium.

a price equal to or higher than £2.50, we used the price range £2.00–2.50 to derive an average equilibrium price (in this case, £2.25). Using this method, we obtained a reliable positive correlation between the participants' equilibrium prices and their stated selling/buying prices (Spearman's $\rho = .70$, $p < .01$, $N = 13$). (Any participants with multiple equilibria and those for whom the happiness curves for the self and the trading partner did not intersect at all across the range of available prices were excluded from this analysis.)

Next, we compared participants' affective forecasts for themselves with their corresponding forecasts for their trading partners (Table 2, upper panel). We submitted these scores to a mixed model ANOVA, with Target (Self vs. Other) as

a within-subjects factor and Role (Owner vs. Buyer) as a between-subjects factor. The analysis yielded only a significant interaction between the two factors ($F(1, 16) = 14.75$, $p < .001$). At the actual trade price of the pens, owners predicted that they would be happier than the buyers ($t(16) = 3.16$, $p < .01$) and buyers predicted that they would be less happy than the owners ($t(16) = 3.77$, $p < .01$).

Finally, we analyzed the average happiness experienced by trading participants (Table 2, upper panel). A mixed model ANOVA with Judgment (Forecast vs. Experience) as a within-subjects factor and Role (Owner vs. Buyer) as a between-subjects factor on these scores yielded only a main effect of Role ($F(1, 16) = 10.00$, $p < .01$). Owners'

TABLE 2
Owners' and Buyers' Affective Forecasts and
Affective Experiences in Each Experiment.

		Experiment 1 (pens)							
		Owners				Buyers			
		Forecast		Experience		Forecast		Experience	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Target									
Self		1.56	1.13	1.44	0.88	-0.89	2.03	0.56	1.67
Other		-0.78	1.48	n/a	n/a	1.78	1.39	n/a	n/a
Experiment 2 (mugs)									
Target									
Self		1.82	1.33	1.55	1.75	-1.46	1.44	0.09	1.92
Other		-1.09	1.51	n/a	n/a	2.00	1.00	n/a	n/a
Experiment 3 (mugs)									
Target									
Self		1.33	1.56	0.95	1.66	-1.24	1.38	0.67	1.35
Other		-0.81	1.81	0.67	1.28	1.52	1.63	0.52	1.91

happiness judgments were consistently higher than buyers'. (Although the interaction term did not attain significance, a test of contrasts revealed that owners' happiness forecasts were significantly higher than those of the buyers' ($t(16) = 3.16$, $p < .01$), but the post-trade affective experiences of the two groups were similar ($t(16) = 1.41$, ns).)

In summary, owners set their affective equilibrium price between £2.50 and £3.50, whereas buyers set the same price between £1.00 and £2.00. Thus the buyers' forecast affective equilibrium was on average £1.50 lower than that of the owners. Moreover, all traders thought that buyers would be significantly less happy than owners if they paid for the pen what the owners' deemed to be the affective equilibrium price. After they traded, however, owners and buyers experienced similar levels of happiness. Taken together, these findings provide empirical support for our hypothesis, H_1 .

Before discussing these results we report our second experiment, Experiment 2.

EXPERIMENT 2

Method

Participants

Twenty-two students of City University, London, volunteered for the study ($M_{age} = 21.18$ years, $SD = 3.47$ years; 21 females; 1 male). Experiment 2 participants were all those who took part in Experiment 1 and two additional participants who took part in Experiment 2 but not in Experiment 1.

Materials and Procedure

Experiment 2 followed immediately after Experiment 1. When participants finished Experiment 1, the experimenter instructed them not to leave the lecture theater, as they would take part in a second, consecutive study. The instructions and the procedure in this experiment were directly analogous to those in Experiment 1, with three exceptions.

First, the endowment item was a mug engraved with the City University logo. The mugs cost £4.00 and the price tags were visible. Second, participants swapped roles: Those who were owners in the Experiment 1 became buyers in Experiment 2. (The pairings of trading partners were arranged in such a way that all participants had new trading partners; that is, none of them traded with the same person twice.) Third, participants were instructed that they *had* to trade the mug before stating their trading prices and also before they made the happiness judgments for themselves and for their trading partners. Our rationale for the introduction of this manipulation was as follows: If owners of an endowment know that they have no option but to trade the item they have just been endowed with they should be less likely to develop a strong attachment to it. Consequently, their asking prices should be lower and thereby more in line with the prices that the prospective buyers of the item would be willing to pay to acquire it.

Results and Discussion

As in Experiment 1, we first report findings for participants' willingness to trade and the actual trade prices at which the mugs were exchanged. We then report findings for the participants' affective equilibria and for their posttrade affective forecasts and experiences.

Willingness to Trade and Trade Prices

As the price of the mug increased owners became more willing to trade, whereas buyers became less willing to do so (Figure 1, middle panel). Table 1 (middle row) summarizes owners' average selling prices and buyers' corresponding buying prices. One owner stated that he/she was not willing to give up the mug at any price. In the remaining participants, the ratio of the owners' minimum asking prices over the buyers' maximum buying prices was 1.3, consistent with what we observed in Experiment 1.

Table 1 (middle row) also summarizes the actual prices that the mugs were traded for. The average trade price was £4.64 ($SD = £1.33$). Trade prices ranged between £2.50 and £6.00. The owners sold the mugs at the highest possible price (i.e., £6.00) in 4 of the 11 trades.

Affective Forecasts and Affective Experiences

Owners' and buyers' forecasts of their own and of their trading partners' posttrade happiness are depicted in Figure 3. The price at which the two lines intersect is the point

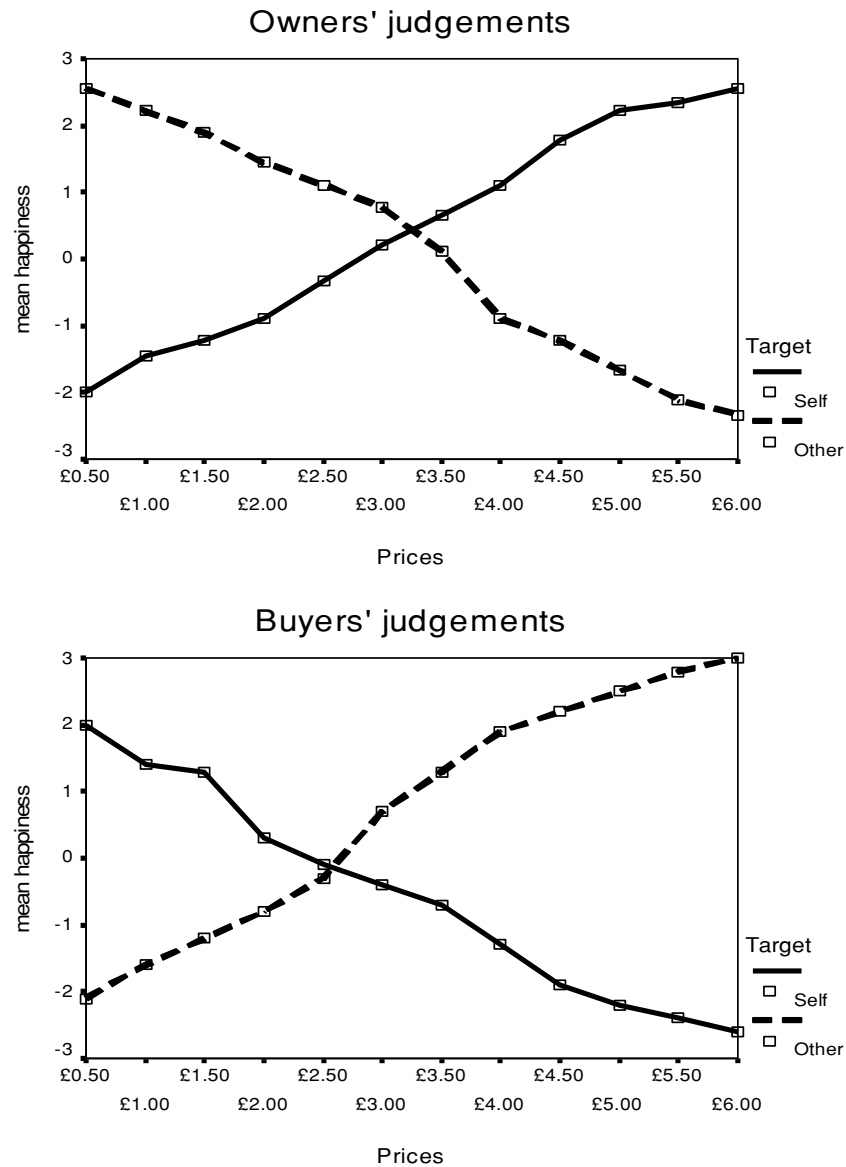


FIGURE 3 Experiment 2: Owners' (top panel) and buyers' (bottom panel) posttrade affective forecasts for themselves and for their trading partners. The price or range of prices at which the two curves intersect represents the affective equilibrium.

of affective equilibrium. As in Experiment 1, participants thought that the higher the price of the transaction the happier the owners and the less happy the buyers would be. Regarding their affective equilibria, owners set their prices somewhere in the middle of the price range (i.e., around £3.00), whereas buyers set them somewhere in the first quarter or third of the price range (i.e., £1.50–2.50).

These impressions were confirmed by a mixed model ANOVA with Price (£0.50 vs. £1.00 vs. ... vs. £6.00) and Target (Self vs. Other) as within-subjects factors and Role (Owner vs. Buyer) as a between-subjects factor. The analysis yielded a Target $\times$ Role interaction, which was qualified by the higher order Target $\times$ Price $\times$ Role interaction that the analysis also revealed ($F(11, 187) = 97.64, p < .001$). As in

the analysis of the Experiment 1 data, we split this interaction into two Price $\times$ Target repeated measures ANOVAs—one for owners and one for buyers.

In the owners group (Figure 3, upper panel), the analysis revealed a significant Price $\times$ Target interaction ($F(11, 88) = 34.25, p < .001$). Pair-wise comparisons of the owners' happiness forecasts for themselves and for the buyers across the different price levels revealed that owners thought that they would be less happy than the buyers at trade prices less than or equal to £2.00 (all $ps < .01$), as happy as them at prices of £2.50 ($t(10) = 1.85, ns$), £3.00 ($t(9) = -0.76, ns$), £3.50 ($t(10) = 0.42, ns$), and £4.00 ($t(10) = 2.16, ns$), and happier than them at prices of £4.50 or higher (all $ps < .01$).

In the buyers group (Figure 3, lower panel), the analysis revealed a significant Price $\times$ Target interaction that the analysis also yielded ($F(11, 99) = 74.86, p < .001$). Pair-wise comparisons of the buyers' happiness forecasts for themselves and for the owners across the different price levels revealed that buyers thought that they would be happier than the owners at a trade price of £1.50 or lower (all $ps < .01$), as happy as them at prices of £2.00 ($t(10) = 2.08, ns$), £2.50 ($t(9) = 0.36, ns$), and £3.00 ($t(10) = 1.67, ns$) and less happy than them at prices of £3.50 or higher (all $ps < .01$).

Following this analysis, we used the method that we described in Experiment 1 to find each individual participant's affective equilibrium price. We then computed a correlation between this price and the participant's stated selling/buying price. Equilibrium prices were reliably and positively correlated with stated selling/buying prices (Spearman's $\rho = .84, p < .001, N = 16$).

Next, we compared participants' affective forecasts for themselves with their corresponding forecasts for their trading partners (Table 2, middle panel). A mixed model ANOVA on these scores with Target (Self vs. Other) as a within-subjects factor and Role (Owner vs. Buyer) as a between-subjects factor yielded a significant Target $\times$ Role interaction ($F(1, 20) = 38.52, p < .001$). For the actual trade price of the mugs, owners predicted that they would be happier than the buyers ($t(20) = 5.54, p < .001$) and buyers predicted that they would be less happy than the owners ($t(20) = 5.65, p < .001$). Participants were thus in agreement regarding their forecasts of their own and their trading partners' posttrade emotions. If the item were traded at the given price, owners were forecast to be happier than the buyers.

Table 2 (middle panel) also summarizes the average experienced happiness of the participants who traded the mugs. A mixed model ANOVA on these scores with Judgment (Forecast vs. Experience) as a within-subjects factor and Role (Owner vs. Buyer) as a between-subjects factor yielded a main effect of Role and a main effect of Judgment, both of which, however, were qualified by a significant Judgment $\times$ Role interaction ($F(1, 20) = 9.85, p < .01$). Whereas owners' happiness forecasts were significantly higher than those of the buyers' ($t(20) = 5.54, p < .001$), owners and buyers experienced similar levels of posttrade happiness ($t(20) = 1.86, ns$).

The findings of Experiment 2 are strikingly similar to those of Experiment 1. Consistently with our hypothesis, H_1 , owners' affective equilibrium price was between £2.50 and £4.00, whereas buyers' affective equilibrium price was between £2.00 and £3.00. Thus the buyers' affective equilibrium was again lower than that of the owners, this time £0.75 on average. Moreover, traders thought that the buyers would be significantly less happy than owners if they paid for the pen what the owners' deemed to be the affective equilibrium price. After the trades, however, owners and buyers experienced levels of happiness that were not significantly different from each other. Notably, our manipulation

of forcing the trades did not have any effect on any of the measures. The prices and the forecasts that we obtained in this experiment were very similar to those that we observed in Experiment 1, where participants had a choice to trade or not. The consistency in the results across Experiments 1 and 2 suggests that the affective determinants of the endowment effect were beyond the participants' control: The knowledge that owners' ownership of the pen would be short-lived did not have any impact on either their asking prices or on their happiness forecasts.

Taken together, Experiments 1 and 2 demonstrate the affective underpinnings of the endowment effect. Owners and buyers made offers that fell within the range of prices that they thought would ensure an affective equilibrium between themselves and their trading partners. In other words, traders made offers that they deemed reasonable. Because owners and buyers, however, disagreed as to what constitutes an affective equilibrium price, these initial offers differed. When the two groups traded, owners seemed to get what they wanted. The actual transaction prices that we observed were much closer to the owners' asking prices than to the prices that the buyers stated they were willing to pay. However, although buyers paid more than they stated they would be willing to pay, after the transaction they were not significantly less happy than the owners. Neither the buyers themselves nor the owners were able to predict this accurately; before the trading, all participants predicted that owners would feel worse than the buyers at the actual transaction prices.

In Experiment 3, our aim was to offer a clear motivation to all traders to trade in the same way that they would trade in the real world. Lack of motivation cannot account for the pattern that we obtained in the owners in the previous experiments, as they achieved high selling prices. It might, however, have contributed to the findings that we obtained in the buyers. Since buyers did not trade with their own money, they might have been willing to succumb to the owners' pressure. This might have led them to accept artificially high buying prices. (If this is the case, the buyers' high levels of posttrade happiness could perhaps be attributed to their excitement with the negotiation.) To minimize effects of this type, in Experiment 3 we motivated owners to sell at the highest possible price and buyers to buy at the lowest possible price by offering prizes to the highest selling owner and to the lowest buying buyer.

In Experiment 3 we also collected additional measures in the posttrading phase. In addition to the traders' judgments of their own posttrade emotions, we asked them to judge the posttrade emotions that they thought their trading partners experienced. Furthermore, we instructed the traders to rate their agreement with two explanations of their trading partners' behavior—one based on erroneous affective judgments and another based on greed. In a similar set of questions, Van Boven and his colleagues found that their participants attributed each other's behavior more to their greed than to

their emotions (Van Boven et al. [2000]). We expected to replicate this finding in Experiment 3.

EXPERIMENT 3

Method

Participants

Forty-six students of City University, London volunteered for the study ($M_{age} = 20.15$ years, $SD = 2.94$ years; 39 females; 7 males).

Materials and Procedure

The design, materials and procedure of this experiment were directly analogous to those of Experiment 1; we shall not repeat the details here. The endowment object was a mug engraved with the City University logo. In addition to the instructions that we gave in Experiment 1, just before the trading phase participants in the “owners” group were instructed that there would be a prize for the highest-selling owner. Symmetrically, participants in the “buyers” group were instructed that there would be a prize for the lowest-buying buyer. After the trading, in addition to judging how happy they were with the outcome, participants judged how happy they thought their trading partners were with it. Finally participants rated their agreement with two explanations of the endowment effect, one attributing it to people’s greed and the other on people’s affective mispredictions. All these judgments were made on -3 through 0 to $+3$ scales, similar to those used in Experiments 1 and 2. In the end of the experiment, all transactions were honored by the experimenter and the prizes allocated via a draw, as there were more than one owners/buyers entitled to them.

Results

We first report findings for participants’ willingness to trade and the actual trade prices at which the mugs were exchanged. We then report findings for the participants’ affective equilibria, their posttrade affective forecasts and experiences, and their agreement with the suggested explanations of their trading partners’ behavior.

Willingness to Trade and Trade Prices

As the price of the item increased, owners became more willing to trade, whereas buyers became less willing to do so (Figure 1, bottom panel). Table 1 (bottom row) summarizes the average selling price for owners and the corresponding buying price for buyers. One buyer stated that he/she was not willing to pay any money at all to acquire a mug, whereas two other buyers stated that they would be happy to pay any amount (i.e., up to £6.00) to acquire one. In the remaining

participants, the ratio of the owners’ minimum asking prices over the buyers’ maximum buying prices was 1.99, somewhat higher than in the previous two experiments, but in the same direction.

Table 1 (bottom row) also summarizes the actual prices at which the mugs were traded. Regardless of their stated willingness to trade, the majority of the participants (21 out of 23 pairs) traded the mugs. The average trade price was £3.98 ($SD = £1.96$). Trade prices ranged between £0.50 and £6.00. In 7 out of 21 trades, owners sold the mugs at the highest possible price (i.e., £6.00).

Affective Forecasts and Affective Experiences

Figure 4 depicts owners’ and buyers’ forecasts of their own and of their trading partners’ posttrade happiness. The price at which the two lines intersect is the point of affective equilibrium. All participants thought that the higher the price of the transaction, the happier the owner of the item and the less happy the buyer of it would be. Regarding their affective equilibria, owners set their prices somewhere in the middle of the price range (i.e., around £3.00), whereas buyers set them somewhere between the first and third quarter of the price range (i.e., £1.50–2.50).

These impressions were confirmed by a mixed model ANOVA with Price (£0.50 vs. £1.00 vs. . . . vs. £6.00) and Target (Self vs. Other) as within-subjects factors and Role (Owner vs. Buyer) as a between-subjects factor. The analysis yielded a main effect of Target, a Target $\times$ Role interaction, and a Target $\times$ Price interaction, all of which, however, were qualified by the higher order Target $\times$ Price $\times$ Role interaction ($F(11, 396) = 110.26$, $p < .001$). We split this interaction into two Price $\times$ Target repeated measures ANOVAs – one for owners and one for buyers.

In the owners group (Figure 4, upper panel), the analysis revealed a significant Price $\times$ Target interaction ($F(11, 198) = 38.90$, $p < .001$). Pair-wise comparisons of the owners’ happiness forecasts for themselves and for the buyers across the different price levels revealed that owners thought that they would be less happy than the buyers at a trade price of £2.00 or lower (all $ps < .01$), as happy as them at prices of £2.50 ($t(19) = 1.26$, ns), £3.00 ($t(22) = 0.54$, ns), and £3.50 ($t(22) = 0.63$, ns), and happier than them at prices of £4.00 or higher (all $ps < .05$).

In the buyers’ group (Figure 4, lower panel), the analysis yielded a main effect of Target ($F(1, 18) = 42.82$, $p < .001$), such that buyers thought they would be less happy than the owners regardless of the price of the trade. This effect, however, was qualified by a significant Price $\times$ Target interaction that the analysis also revealed ($F(11, 198) = 88.88$, $p < .001$). Pair-wise comparisons of the buyers’ happiness forecasts for themselves and for the owners across the different price levels revealed that buyers thought that they would be happier than the owners at a trade price of £1.50 or lower (all $ps < .05$), as happy as them at

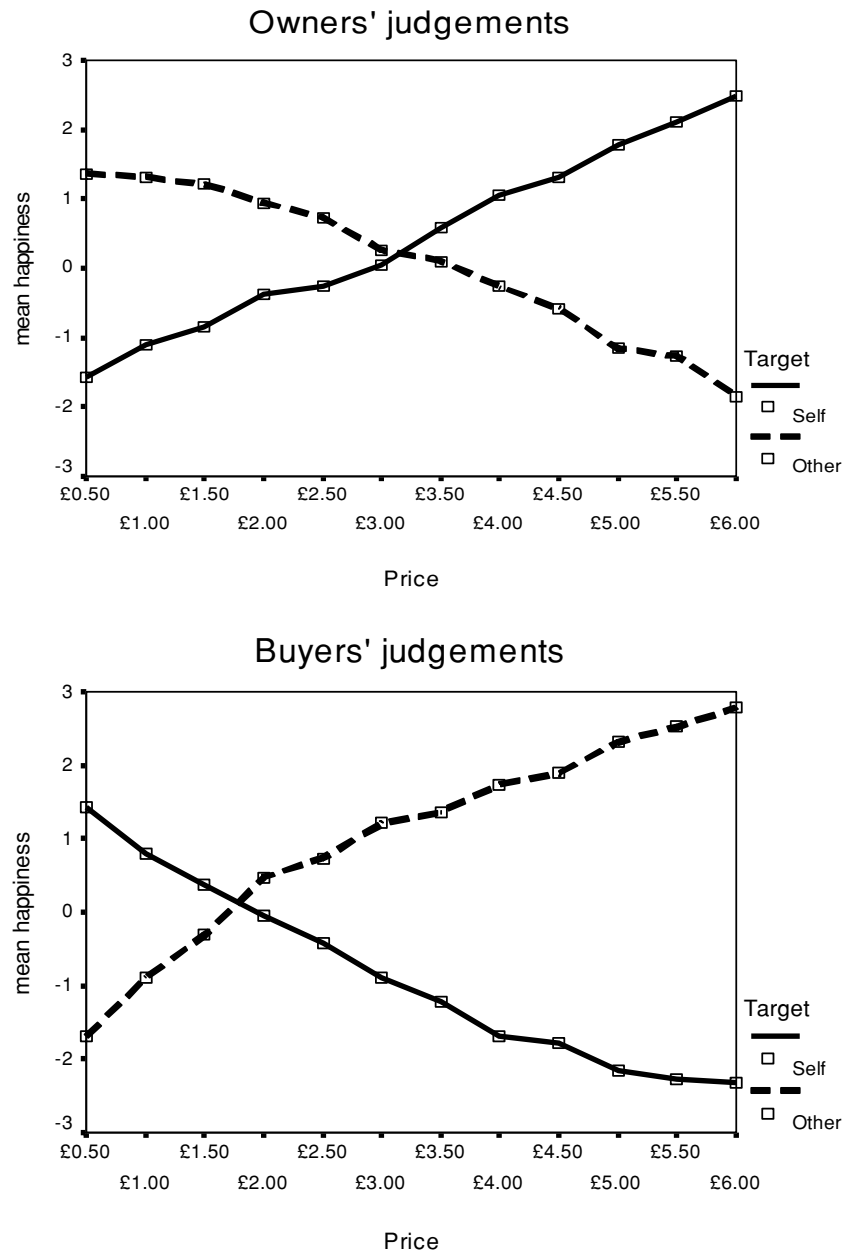


FIGURE 4 Experiment 3: Owners' (top panel) and buyers' (bottom panel) posttrade affective forecasts for themselves and for their trading partners. The price or range of prices at which the two curves intersect represents the affective equilibrium.

prices of £2.00 ($t(19) = 1.02$, *ns*) and £2.50 ($t(21) = 1.20$, *ns*), and less happy than them at prices of £3.00 or higher (all p s < .01).

As in the previous two experiments, we computed a correlation between each individual participant's affective equilibrium price and the participant's stated selling/buying price. The two prices were reliably and positively correlated (Spearman's $\rho = .54$, $p < .01$, $N = 32$).

Table 2 (bottom panel) summarizes the participants' affective self-forecasts and their own affective experiences with their forecasts and judged experiences for their trading

partners. A mixed model ANOVA on these scores with Judgment (Forecast vs. Experience) and Target (Self vs. Other) as within-subjects factors and Role (Owner vs. Buyer) as a between-subjects factor yielded a main effect of Judgment and a Target $\times$ Role interaction, both of which were qualified by a significant Judgment $\times$ Role $\times$ Target interaction ($F(1, 40) = 51.65$, $p < .001$). We first split this interaction into two Judgment $\times$ Role mixed model ANOVAs—one for the judgments that participants made for themselves and one for those they made for their trading partners. This analysis focuses on intergroup differences between owners and buyers

across the full range of affective judgments they were asked to make.

In the judgments that participants made for themselves, the analysis yielded a main effect of Role and a main effect of Judgment, both of which, however, were qualified by a significant Judgment $\times$ Role interaction ($F(1, 40) = 24.72$, $p < .001$). Whereas owners' happiness forecasts were significantly higher than those of the buyers' ($t(40) = 5.67$, $p < .001$), owners and buyers experienced similar levels of posttrade happiness ($t(40) = 0.61$, *ns*). In the judgments that participants made for their trading partners, the analysis also yielded a main effect of Role, which was qualified by a significant Judgment $\times$ Role interaction ($F(1, 40) = 22.35$, $p < .001$). Whereas owners' affective forecasts for the buyers were significantly lower than the buyers' affective forecasts for the owners ($t(40) = 4.39$, $p < .001$), owners and buyers did not differ significantly in the experienced happiness that they judged for their trading partners after the trade ($t(40) = 0.28$, *ns*).

We also split the Judgment $\times$ Role $\times$ Target interaction into two Judgment $\times$ Target within-subjects ANOVAs – one for the owners and one for the buyers. This analysis is also interesting, because it focuses on the differences between affective judgments made within each trading group.

In the owners group, the analysis yielded a main effect of Judgment and a main effect of Target, both of which, however, were qualified by a significant Judgment $\times$ Target interaction ($F(1, 20) = 12.22$, $p < .01$). Whereas in their forecasts owners thought that they would be happier than the buyers ($t(20) = 3.03$, $p < .01$), the happiness that they reported for themselves after the trade was not significantly higher than the happiness that they judged for their trading partners ($t(20) = 0.56$, *ns*). Our findings were symmetrical in the buyers group. In this group, the analysis yielded a main effect of Target, which was qualified by a significant Judgment $\times$ Target interaction ($F(1, 20) = 53.85$, $p < .001$). Whereas in their forecasts buyers thought that they would be less happy than the owners ($t(20) = 4.37$, $p < .001$), the happiness that they reported for themselves after the trade was not significantly lower than the happiness that they judged for their trading partners ($t(20) = 0.25$, *ns*).

Traders' Agreement with the Suggested Explanations of Their Behavior

According to the first explanation of the traders' behavior that we offered to the participants, their trading partners' behaviors were attributable to people's inability to forecast their feelings accurately, whereas the second one attributed these behaviors to people's greed. We submitted the participants' agreement ratings with these explanations to a mixed model ANOVA, with Type of explanation (Inaccurate forecasts vs. Greed) as a within-subjects factor and Role (Owner vs. Buyer) as a between-subjects factor. The analysis revealed only a main effect of Type of explanation ($F(1, 40) = 11.33$,

$p < .01$). All traders thought that their trading partners' behavior was driven more by their greed ($M_{\text{greed}} = 1.31$; $SD = 1.51$) than by their inability to forecast their own emotions as well as those of their fellow experimental participants ($M_{\text{inaccurate forecasts}} = 0.12$; $SD = 1.58$).

Discussion

The findings of Experiment 3 replicate those of the previous two experiments. Owners' affective equilibrium price was between £2.50 and £3.50, whereas buyers' affective equilibrium price was between £2.00 and £2.50. Thus the buyers' affective equilibrium was on average £0.75 lower than that of owners. Moreover, traders thought that buyers would be significantly less happy than the owners if they paid for the mug what the owners' deemed to be the affective equilibrium price. After they traded the mugs, however, owners and buyers experienced comparable levels of happiness. Taken together, these findings support our hypothesis, H_1 . Furthermore, consistently with Van Boven et al.'s [2000] findings, owners and buyers in Experiment 2 attributed each other's behavior more to their greed than to misjudgments of the emotions involved in the endowment effect.

GENERAL DISCUSSION

The aim of the present research was to explore the affective underpinnings of people's behavior when they have been endowed with an object. Specifically, we tested empirically an emerging affect-based explanation of the endowment effect. According to this explanation, the effect occurs as a result of traders' affective mispredictions for themselves (Loewenstein and Adler [1995]) and also the egocentric empathy gaps that they exhibit when they attempt to judge other people's emotions (Loewenstein et al. [2003] Van Boven et al. [2000]). Building on these explanations, we introduced the concept of an *affective equilibrium* as the price or range of prices for which endowment traders forecast equal post-trade happiness for themselves and for their trading partners and we put forward the hypothesis that the effect occurs because owners' affective equilibria are set at higher prices than those of potential buyers'.

The three studies that we report in this paper provided empirical support for this hypothesis. On average, the owners' affective equilibrium was £1.50, £0.75, and £0.75 higher than that of the buyers in Experiments 1, 2, and 3, respectively. In other words, owners overestimated the price at which buyers would be equally happy with them by between £0.75 (Experiments 2 and 3) and £1.50 (Experiment 1). Because the misjudgment is symmetric across the two trading groups, at the same time buyers underestimated the price at which owners would be equally happy with them by the same amounts. These findings extend Van Boven et al.'s [2000] findings on the empathy gaps between traders in the endowment effect.

In addition, the present studies revealed evidence of erroneous affective forecasting in both the owners' and buyers' groups. Posttrade happiness of owners and buyers was not significantly different. In their forecasts of their posttrade happiness in case the trades materialized at the observed prices, however, owners anticipated that they would be happier than the buyers and, conversely, buyers anticipated that they would be less happy than the owners. These findings are consistent with previous research that documents erroneous predictions of future asking prices in groups of owners (Loewenstein and Adler [1995]). These findings are also consistent with recent demonstrations of affective mispredictions in ultimatum game bargaining (Sevdalis and Harvey [2007b]) and a growing body of evidence that people are not very good at predicting their future emotions (Loewenstein and Schkade [1999], Wilson and Gilbert [2003]).

Finally, we did not obtain any evidence that traders realized the extent to which their behaviors were affected by affective misjudgments. Both groups of traders attributed each other's behavior more to their greed than to their inability to judge accurately their own and their trading partner's emotions in the situation. This finding replicates the relevant finding by Van Boven et al. [2000].

Our conceptualization of the endowment effect in terms of the traders' affective equilibria offers a novel conceptual framework for the interpretation of the effect. This framework is efficient in that it encompasses the existing stream of research on the affective underpinnings of the endowment effect (Loewenstein and Adler [1995], Van Boven et al. [2000, 2003]). Moreover, the framework appears robust in that it resulted in a series of studies with consistent results. A further prediction that stems from the framework, is empirically testable, and will act as a further test of its robustness is that, if the endowment effect is a consequence of the difference between the prices that ensure affective equilibria for owners versus those who achieve the same for buyers, the effect should be reduced if these affective equilibria are rendered more similar to each other. This hypothesis awaits empirical testing. Finally, we speculate that the concept of affective equilibrium could be applied to a variety of financial transactions that involve numerous stakeholders. In other words, the affective equilibrium model suggests that people do think of their financial partners' affective reactions to bids and offers and they try to take these emotions into account in their decision making. Although risk taking is certainly an important aspect of the financial world, the studies that we report here suggest that there are inputs to people's financial behaviors

in addition to risk perceptions and risk weighting, such as their transaction-related emotions.

ACKNOWLEDGMENTS

This research was supported in part by the Economic and Social Research Council Centre for Economic Learning and Social Evolution and in part by the British Academy.

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