How Beliefs Influence the Relative Magnitude of Pleasure and Pain

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ABSTRACT

Loss aversion is an economic assumption about utility—people value giving up a good more than they value getting it. It also has hedonic meaning—the pain of a loss is greater in magnitude than the pleasure of a comparable gain. But value and pleasure are not necessarily identical. We test the hedonic interpretation of loss aversion in experimental markets. With hedonic forecasts, sellers imagine the pain of losing their endowment, and buyers imagine the pleasure of being endowed. With hedonic experiences, sellers rate the pleasure of having the endowment, and buyers rate the pain of being without it. Contrary to loss aversion, predicted pleasure is greater in magnitude than predicted pain, and experienced pleasure surpasses experienced pain. We show that the relative magnitude of pleasure and pain depends on beliefs about the likelihood of outcomes, as well as utilities. Surprise makes gains more pleasurable and losses more painful. With surprising gains and expected losses, pleasure can surpass pain. But when gains and losses are equally likely (or losses are surprising and gains are expected), the opposite pattern can occur. Finally, within-group and between-group prices are significantly correlated with hedonic experiences. Sellers who feel better with their endowments assign higher selling prices, and buyers who feel worse about the absence of endowment assign higher buying prices. Despite the fact that hedonic experiences deviate from loss aversion, these emotions predict the endowment effect.

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KEY WORDS emotions; loss aversion; pleasure; pain; hedonic forecasting; surprise; beliefs

INTRODUCTION

One of the best known principles in psychology is loss aversion. This principle asserts that the disutility of a loss is approximately twice as great as the utility of a comparable gain (Kahneman & Tversky, 1979). It predicts a wide range of phenomena, including the status quo bias (Samuelson & Zeckhauser, 1988), the disposition effect (Odean, 1999), the equity premium puzzle (Benartzi & Thaler, 1995), foreign policy
decisions (Tetlock, 1998), and legal precedents (Sunstein, 2000). Loss aversion has also been used to explain the endowment effect (Kahneman, Knetsch, & Thaler, 1990, 1991).

In a classic demonstration, Kahneman et al. distributed mugs to half of the students in a classroom. Those with mugs stated their minimum selling prices, and those without mugs gave their maximum buying prices. Since mugs were distributed randomly, economic theory asserts that buying prices and selling prices should be roughly equal. Yet sellers wanted significantly more than buyers are willing to pay. Sellers were assumed to view the exchange as a loss, while buyers perceived it as a gain. The aversion to losses produces the gap in average prices.

Although loss aversion was proposed to describe the utilities in prospect theory, Kahneman and Tversky (1979) applied it to emotions as well. Kahneman and Tversky wrote, “The aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount” (p. 279). If so, hedonic forecasts about gains and losses should follow the same pattern as utilities. In later work, Kahneman (1994) distinguished among many types of utilities. Those relevant to this paper are predicted utilities, experienced utilities, and decision utilities. Predicted utilities are hedonic forecasts about outcomes, experienced utilities are the hedonic experiences of outcomes, and decision utilities are the values of outcomes in prospect theory.

By assumption, decision utilities obey loss aversion. Do predicted and experienced utilities follow the same principle? Surprisingly few studies have investigated this question. In one experiment, Peters, Slovic, and Gregory (2003) endowed half of their participants with a lottery ticket (a 5% chance of winning $100, otherwise $0), and the other half received nothing. Buyers predicted the pleasure of getting a ticket, and sellers predicted the pain of losing it. Although Peters et al. were interested in correlations between affective experiences and prices, they discovered that buyers’ predicted pleasure of a gain was greater in magnitude than sellers’ predicted pain of a loss, contrary to loss aversion.

In another experiment, Kermer, Driver-Linn, Wilson, and Gilbert (2006) examined the hedonic forecasts and hedonic experiences associated with a gamble having a 50% chance to win $5, otherwise lose $3. Winning and losing amounts were either added to or subtracted from a $5 baseline payment. Predicted pain was greater in magnitude than predicted pleasure, consistent with loss aversion. But experienced pain and experienced pleasure were roughly equivalent.

Finally, Harinck, Van Dijk, Van Beest, and Mersmann (2007) explored affective forecasts associated with finding or losing hypothetical sums of money. The relative magnitude of predicted pleasure and predicted pain varied with outcome size. With smaller amounts (1 or 2 Euros), predicted pleasure loomed larger than predicted pain. But with larger amounts (50 Euros), the opposite pattern occurred. Their results suggest that the relative magnitude of predicted pleasure and pain depends on another variable.

When does pleasure have greater impact than pain?
To understand the intensity of pleasure and pain, one needs a theory in which relative magnitude can vary. The evaluative space model (Cacioppo, Gardner, & Bernston, 1999) and decision affect theory (Mellers, Schwartz, Ho, & Ritov, 1997; Mellers, Schwartz, & Ritov, 1999) provide such accounts, depending on the level of another variable. For the evaluative space model, that variable is arousal. High arousal often occurs with important decisions, high stakes, little time, and much to lose. When arousal is high, the pain of a negative event surpasses the pleasure of a comparable positive one. Low arousal is often associated with less consequential decisions, curiosity, exploratory behavior, and variety seeking. When arousal is low, pleasure exceeds pain.

For decision affect theory, that variable is surprise. Emotional reactions to outcomes depend on utilities, comparisons between utilities, and beliefs about the likelihood of outcomes. Beliefs shape the sense of surprise associated with an outcome, and surprise increases emotional intensity. Surprising gains are more pleasurable than expected gains, and surprising losses are more painful than expected ones. In short, emotions depend on utilities, but they are also influenced by beliefs.
Surprise and arousal are similar, but not identical. Arousal refers to the overall energy level of the body and mind, whereas surprise is the sense of astonishment that comes from a sudden or unexpected event. One can be surprised in a high or a low state of arousal, or one can be aroused from a surprising or an expected event. In this paper, we investigate the role of surprise, although we acknowledge that arousal also plays a role.

We test decision affect theory to describe hedonic forecasts in experimental markets. By this account, sellers predicted pain about the loss of their good, \( R_L \), is

\[
R_L = J[u_L + d(u_L - u_G)(1 - s_L)]
\]  

(1)

where \( J \) is a linear function relating a subjective feeling to a numerical response, \( u_L \) is the disutility of a loss, and \( u_G \) is the utility of a gain. Next, \( d(u_L - u_G) \) is a disappointment function that compares the utilities, \( s_L \) is the belief that a loss would occur, and \( (1 - s_L) \) is the imagined surprise of a loss. Since surprise multiplies the disappointment function (which, in this case, has a negative value), greater surprise implies greater pain. Buyers’ predicted pleasure of getting the endowment, \( R_G \), is

\[
R_G = J[u_G + d(u_G - u_L)(1 - s_G)]
\]  

(2)

where \( s_G \) is the belief that a gain would occur, and \( (1 - s_G) \) is the imagined surprise of a gain. Once again, since surprise multiplies the disappointment function (which has a positive value in this case), greater surprise implies greater pleasure.

In an experimental market where endowments are assigned at random, buyers may feel that the absence of a gain is really a loss. If so, the actual hedonic experiences of buyers and sellers would be described by Equations (1) and (2), respectively. Otherwise, buyers experienced pain of not being endowed (or no gain), \( R_{NG} \), is

\[
R_{NG} = J[u_{NG} + d(u_{NG} - u_G)(1 - s_{NG})]
\]  

(3)

where \( u_{NG} \) is the disutility of no gain. Sellers’ experienced pleasure of an endowment, \( R_G \), is

\[
R_G = J[u_G + d(u_G - u_{NG})(1 - s_G)]
\]  

(4)

What are participants’ beliefs about the likelihood of about gains and losses? Gains and losses are counterfactual outcomes that depend on buying and selling prices. Although not guaranteed, higher buying prices are more likely to yield gains, and lower selling prices are more likely to produce losses. Prices are under the control of participants, and for this reason, neither outcome may seem surprising. But if beliefs about counterfactual outcomes are related to beliefs about actual outcomes in the experiment, certain outcomes could seem surprising. Participants in experiments presumably expect to receive something for their time and effort—course credit, payment, or both. But they are usually not expecting an endowment. Although the chances of endowment are 50%, endowments may still seem surprising because they are unexpected events in most laboratory studies.

To check this possibility, we measure the surprise associated with actual outcomes (i.e., those that are not under participants’ control). We also manipulate the surprise of an endowment by varying the percentage of goods in the market (e.g., 15 vs. 85% mugs). In the market with 15% mugs, sellers should be relatively more surprised by their endowment and more pleased, and buyers should be relatively less surprised by the absence of an endowment and feel less pain.

The accuracy of hedonic forecasts

Research on affective forecasting has demonstrated that people often fall prey to an impact bias in which they overestimate the intensity of their real feelings (Wilson & Gilbert, 2005). This error occurs because we neglect the importance of other factors to our overall sense of pleasure (Schkade & Kahneman, 1999). In
addition, we forget how resilient we are and how quickly we recover from bad luck, failure, or setbacks (Gilbert, Pinel, Wilson, Blumberg, & Wheatly, 1998). Partial support for the impact bias was found by Kermer et al. They showed that predicted pleasure and experienced pleasure were virtually equivalent, but predicted pain was more intense than experienced pain. Participants expected to feel worse about losing $3 than they actually felt. The authors argued that loss aversion was a hedonic forecasting error, not a hedonic reality.

We examine whether people make forecasting errors in experimental markets by asking participants to make hedonic forecasts about gains and no gains prior to the assignment of roles. Then we compare hedonic forecasts to hedonic experiences. Affective forecasting errors might contribute to the endowment effect if sellers overestimate their actual pain of a loss.

**Predicting prices**

Research shows that valuations are closely linked emotions. Peters et al. (2003) found that hedonic forecasts predicted prices for a lottery ticket. Buyers’ who anticipated greater pleasure with the ticket assigned higher buying prices, and sellers’ who predicted greater pain with the loss of their ticket assigned higher selling prices. Carmon and Ariely (2000) showed that prices correlate with anticipated regret about the foregone. Sellers focused on the good they were about to give up, whereas buyers focused on the expenditure. Selling prices for NCAA basketball tickets were correlated with the experience of the game (frequency of games watched on TV, importance of the game), whereas buying prices for the same tickets were correlated with expenditures (i.e., price of a flight to the game).

Another possibility is that valuations was linked to hedonic experiences. Buyers focus on their displeasure from the absence of endowment, and sellers focus on their pleasure from the endowment. Prices may also be affected by differential moods that arise from the outcomes. Small gifts are often used to induce positive affect in experimental settings (Isen, 2000). The receipt of an endowment may put sellers in better moods and if happier, sellers might set higher prices to keep their endowment and maintain their positive mood. To examine these hypotheses, we will correlate prices with hedonic forecasts and hedonic experiences. We will also conduct a market to measure moods immediately after the exchange. By correlating mood scores with prices, we can examine whether moods also shape the valuation process.

**Overview**

In the studies that follow, we address five questions using seven experimental markets and a lottery. First, does loss aversion capture the hedonic forecasts of buyers and sellers in an experimental market? Second, does loss aversion describe hedonic experiences? Third, can participants accurately forecast their hedonic experiences? Fourth, are hedonic forecasts and/or hedonic experiences consistent with decision affect theory? Finally, which emotions best predict prices within groups and between groups?

**METHOD**

Since many of our experimental markets are similar, we describe the first one in some detail. Subsequent methods will be discussed only when they differ. Differences across markets are summarized in Table 1. Participants selected a marble at random from a basket to determine their role. Half were sellers who received a university coffee mug valued at approximately $4.00, and half were buyers who received nothing. Sellers were asked a variety of questions, the most important of which were, “How do you feel about getting a coffee mug? How would you feel if you had to give up your coffee mug?” Answers were made on a rating scale from −8 (“extremely unhappy”) to 8 (“extremely happy”). Sellers were also asked, “How attractive is the mug?” They responded with a scale from 1 (“not at all attractive”) to 8 (“extremely attractive”). Then sellers were told,
Consider the possibility of selling your mug. Decide on the lowest price you would be willing to accept to sell it. Your price should reflect the value you place on the mug. If it has no value to you, you should be willing to sell it at any price. If it has great value, you should refuse to sell it at any price. Soon we will determine the market price at which mugs will be bought and sold. If the market price for the mug is higher than your selling price, you will sell your mug (at market price). If the market price for the mug is lower than your selling price, you will not sell your mug. Remember, all trades are final. Your best strategy is to be perfectly honest about how much you value the mug. What is the minimum price you would accept to sell your mug?

Buyers were asked, “How do you feel about not getting a coffee mug? How would you feel if you got a mug? How attractive is the mug?” Buyers were then instructed,

Consider the possibility of buying a mug with your own money. Please take into consideration how much money you have with you, and don’t say that you will buy a mug for an amount that you can’t afford at this moment. If the mug has no value to you, you should refuse to buy it at any price. If it is something that you would like to own, think about the highest price you would be willing to pay to buy it right now. Soon we will determine the market price at which mugs will be bought and sold. If the market price for the mug is lower than your buying price, you will not get to buy the mug. Remember, all trades are final. Your best strategy is to be perfectly honest about how much you value the mug. What is the maximum price you are willing to pay to buy the mug?

To establish the market price, we found the intersection of the supply curve (selling prices plotted from lowest to highest) and the demand curve (buying prices plotted from highest to lowest). All sellers with prices below the intersection traded their mug for the market price, and all buyers with prices above the intersection paid the market price for the mug. In this experiment, participants (N = 112) were undergraduates from the University of California at Berkeley. In others, participants were undergraduates from Cal and the Hebrew University. In the Hebrew samples, prices were measured in shekels and converted to US dollars. When
samples were collected from both universities, we looked for cross-national differences. None were found, so the data were pooled.

**Results**

As expected, selling prices for mugs were significantly higher than buying prices ($6.19 and $1.57, respectively ($t(110) = 8.82$). Figure 1 presents hedonic forecasts—the pleasure buyers imagine about a gain and the pain sellers imagine about a loss. To compare the relative intensity of these hedonic forecasts, we reversed the sign of predicted pain and conducted a $t$-test. Contrary to loss aversion, predicted pleasure surpassed predicted pain (2.9 vs. $|0.7|$, $t(110) = 4.57$). The hedonic meaning of loss aversion in a standard experimental market does not appear to hold.

We wondered whether the same pattern of hedonic forecasting would occur with a lottery. We also wondered a different response scale could reverse the results. To explore these questions, we ran a lottery ($N = 32$) in which each participant had a 50% chance of winning a mug, otherwise nothing. Results were determined by a coin toss. Winners were asked,

> Imagine a lottery in which you could lose money instead of losing the mug. How much money would you have to lose to be just as unhappy as you would feel without the mug?

Losers were asked,

> Imagine a lottery in which you could win money instead of the mug. How much money would you have to win to be just as happy as you would feel with the mug?

Winners said they would have to lose $3.94 to be as unhappy as they were without their mug, and losers said they would have to win $7.47 to be as happy as they were with their mug. Results showed the same pattern in the lottery as found in the experimental market. Predicted pleasure surpassed predicted pain, even when responses were made in monetary terms ($t(30) = 2.23$). Though the hedonic meaning of loss aversion is typically thought to hold in experimental markets, our results demonstrate exactly the opposite.

What about hedonic experiences? Is the relative intensity of pleasure and pain reversed with these emotions as well? Means from the first market appear in Figure 2. Sellers’ experienced pleasure of a gain is

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1This significance test and all others are one-sided with an alpha level of 0.05.
greater in magnitude than buyers’ experienced pain of no gain (5.0 vs. $-3.1$, $t(110) = 4.12$). For both hedonic forecasts and hedonic experiences, pleasure surpasses pain.

Would this pattern occur with a more valuable good? Perhaps if the loss was greater, pain would surpass pleasure. To find out, we conducted a second market with university T-shirts, valued at $17.00 ($N = 49$). Participants were asked to report their hedonic experiences. Selling prices were higher than buying prices ($13.76 and $1.94, $t(47) = 8.25$), and the experienced pleasure of a gain exceeded the experienced pain of its absence, as shown in Figure 3. Even with a more desirable good, pleasure surpasses pain (4.2 vs. $-1.1$, $t(47) = 6.35$).

Differences in hedonic experiences might be caused, at least in part, by differences in moods. If sellers were happier than buyers, they might assign higher prices. We explored this idea in a third market ($N = 90$). Moods were measured immediately after the market. Eight items measured positive affect (lively, happy, contented, peppy, calm, active, caring, loving), and eight items measured negative affect (annoyed, grouchy, angry, gloomy, worried, sad, tired, anxious). Participants rated each item on a scale from 1 (“very slightly or not at all”) to 5 (“extremely”). Mood scores were the difference between averages for positive items and negative items.

![Figure 2](image1.png)

**Figure 2.** Hedonic experiences of gains and no gains (black bars) in the first experimental market with mugs. The experienced pleasure of a gain is greater in magnitude than the experienced pain of no gain.

![Figure 3](image2.png)

**Figure 3.** Hedonic experiences of gains and no gains (black bars) in the second experimental market with T-shirts. The experienced pleasure of a gain is greater in magnitude than the experienced pain of no gain.
Selling prices were significantly higher than buying prices ($6.16 vs. $1.53, \( t(88) = 7.94 \)) and experienced pleasure surpassed experienced pain (3.5 vs. \(-1.0\), \( t(88) = 5.82 \)). But, sellers and buyers did not differ appreciably in their moods. Average scores were 1.31 and 1.18, respectively. Single items showed the same pattern. Only one of the 16 single items revealed a significant difference (buyers were grouchier than sellers). Thus, if receipt of the gift generated positive affect, the effect was either very short-lived or the market context eliminated it. Most importantly, the relative magnitude of pleasure and pain was not due to sellers’ more positive moods.

**Forecasting accuracy**

How well do participants in experimental markets predict their hedonic experiences? To check their accuracy, we used a within-subject design of hedonic forecasts and experiences in a fourth market (\( N = 126 \)). Participants predicted how they would feel if they did or did not receive a mug. After that, roles were assigned, and actual feelings were measured. Sellers were asked, “How do you feel about having a mug?” and buyers were asked, “How do you feel about not having a mug?” Predicted and experienced feelings are presented in Figure 4. Buyers were accurate hedonic forecasters, but sellers expected to feel less pleasure than they actually felt (3.1 vs 3.7, \( t(124) = 2.03 \)). There was no evidence of an impact bias. In fact, the opposite error occurred with positive emotions. This error in forecasting could be due to the inability of sellers to accurately anticipate the emotional intensity of a surprising outcome.

**Decision affect theory**

In a standard experimental market, half of the participants are endowed and the other half are not. Nonetheless, those who are endowed may be more surprised than those who are not since it is unusual to receive a gift in a laboratory study. In a fifth market (\( N = 56 \)), we measured participants’ surprise after the assignment of roles and endowments. Sellers were asked, “How surprised were you to receive a mug?” and buyers were asked, “How surprised were you about not receiving a mug?” Responses were made on a category rating scale from 1 (“not at all surprised”) to 9 (“very surprised”). Judgments appear in Figure 5. Endowment was rated as more surprising than the absence of endowment (5.1 and 3.0, respectively \( t(54) = 4.15 \)). Decision affect theory predicts that these beliefs should increase the pleasure of endowment and decrease the pain of its absence. Surprise may explain the reversal of hedonic intensity.

Next, we manipulated the surprise of outcomes and measured the effects on hedonic experiences. In a sixth market (\( N = 126 \)), 15% of the participants received mugs, and in a seventh market (\( N = 177 \)), 85% of the participants received mugs. To check the effectiveness of our manipulation, we asked participants in each
market to rate their surprise with their outcome. Figure 6 compares surprise judgments across the two markets. Endowments were more surprising in the market with 15% mugs than in the one with 85% mugs (7.5 vs. 4.5, respectively, $t(45) = 4.43$). Furthermore, the absence of endowment was more surprising in the market with 85% mugs than in the one with 15% mugs (4.5 vs. 1.9, respectively, $t(32) = 2.18$). Our manipulations had the desired effect on beliefs.

We now turn to hedonic experiences. Figure 7 shows that the pleasure of a gain and the pain of its absence shifted in the expected directions. Though our manipulation did not reverse the relative intensity of pleasure and pain, we did find that a surprising gain was more pleasurable (5.6 vs. 4.4, $t(175) = 2.04$), and the absence of a gain was less painful when expected (−1.1 vs. −2.2, $t(124) = 1.77$).

If beliefs about the chances of gains and losses are roughly equivalent, pleasure and pain should depend on utilities and the comparison of utilities. When utilities are loss averse or negative comparisons have greater impact than positive ones, hedonic forecasts should be consistent with loss aversion. It was difficult influence laboratory expectations about endowment because of participants’ strong real-world expectations. But we

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Figure 5. The judged surprise of gains and no gains in the fifth market with mugs. Despite the equal odds, endowment and the absence of endowment are not equally surprising. Endowments are perceived as much more unexpected.

Figure 6. The judged surprise of gains and no gains in the sixth and seventh markets with mugs. Mugs are more surprising in the 15% market than in the 85% market. No mugs are more surprising in the 85% market than in the 15% market.

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Due to an oversight, this question was only asked of a subset of the participants ($N = 34$ in the sixth market and $N = 47$ in the seventh).
thought another question might allow us to hold expectations relatively constant across gains and losses. Participants in the sixth and seventh markets were asked to predict their feelings about three exchanges. After setting their prices, sellers were asked,

How would you feel about an exchange if you received the amount you stated as your selling price? How would you feel about the exchange if you received 50¢ more? How would you feel about the exchange if you received 50¢ less?

Buyers were asked,

How would you feel about an exchange if you paid the amount you specified as your buying price? How would you feel about the exchange if you had to pay 50¢ more? How would you feel about the exchange if you were able to pay 50¢ less?

A few buyers who stated prices that were less than 50¢ were excluded from the analysis to avoid any possible confusion. Predicted feelings about the exchange at the stated price were 1.8 and 2.6 for buyers and sellers, respectively. To examine relative intensity of feelings about better and worse exchanges, we subtracted feelings about the original exchange from the adjusted exchanges. Differences appear in Figure 8. For buyers and sellers, the increased pain of a worse exchange (bars below the zero point) was greater than the
increased pleasure of a better exchange (bars above the zero point). The pain of a loss surpassed the pleasure of a comparable gain ($t(21) = 6.01$ and $t(43) = 8.5$, respectively).

**Predicting prices**

To discover how emotions are related to prices, we correlated prices for each group with hedonic forecasts and hedonic experiences. For buyers, hedonic experiences, but not hedonic forecasts, were significant predictors of price. Buyers who felt greater pain from not having the endowment were more likely to assign higher prices ($r = -.28, t(53) = -2.13$). For sellers, neither hedonic forecasts nor hedonic experiences could predict prices, but the correlation between hedonic experiences and price was in the right direction ($r = .13$). We also computed these correlations in the market with T-shirts and found significant correlations between prices and hedonic experiences for both buyers and sellers. Buyers who felt greater pain about not having a T-shirt assigned higher prices ($r = -.35, t(22) = 1.79$), and sellers who felt greater pleasure about having a T-shirt demanded more to give it up ($r = .48, t(2.59)$).

Do hedonic experiences also predict the endowment effect (prices across groups)? We computed the correlations between hedonic experiences and prices in the first and second markets. Correlations were .54 with mugs ($t(110) = 6.77$) and .73 with T-shirts ($t(47) = 7.38$). In short, feelings about what actually occurred were good predictors of the valuation process both within and across groups. Sellers who felt better about their good wanted more to sell it, and buyers who felt worse about not having the good offered more to get it. These connections did not appear to be mood-based; there were no significant correlations between prices and mood scores for either group.

**CONCLUSION**

Loss aversion refers to value in tradeoffs between gains and losses. We do not test this economic assumption. Plenty of evidence suggests that people value a good more when they imagine losing it than when they imagine getting it. But value is not the same as pleasure. We test the hedonic assumption of loss aversion in experimental markets. Is the pain that sellers imagine about the loss of a good greater in magnitude than the pleasure buyers imagine about the gain of the good?

The novel contributions of our paper are empirical and theoretical. Like Peters et al., we show that hedonic forecasts are inconsistent with loss aversion; the pleasure buyers anticipate is more intense than the pain sellers anticipate. But unlike Peters et al., we show that hedonic experiences are also inconsistent with loss aversion; the pleasure sellers’ experience with the good surpasses the pain that buyers feel with the absence of the good. This finding is relevant to loss aversion if buyers perceive the absence of a gain as a loss.

We offer a theoretical account of hedonic forecasts and hedonic experiences in which emotions depend on beliefs, not just utilities. Beliefs influence the feeling of surprise associated with an event, and surprise increases emotional intensity. Participants are more surprised by an endowment than by the absence of one, despite the equal odds. These beliefs increase the pleasure of endowment and decrease the relative pain of its absence. This effect is strong enough to reverse the relative magnitude of pleasure and pain. Finally, we manipulate the surprise of endowment by conducting experimental markets with 15 and 85% mugs. Hedonic experiences shift in the predicted direction; pain is greater relative to pleasure when losses are surprising and gains are expected.

Our theory does not imply that pleasure will always surpass pain. If expectations about gains and losses are roughly equivalent (or losses are surprising and gains are expected), the relative magnitude of pleasure and pain could reverse. We demonstrate this pattern by asking buyers and sellers to consider how they would feel about an exchange at the stated price, a 50¢ better price, and a 50¢ worse price. We did not change participants’ expectations across questions. Results showed that the increased pain of a worse exchange...
exceeded in magnitude the increased pleasure of a better exchange. The same buyers and sellers who indicated that predicted pleasure surpassed predicted pain also said that predicted pain surpasses predicted pleasure.

Our theory has implications for the psychological management of losses. The pain of a loss can be stretched or shrunk, depending on expectations. For many people, gambling at the racetrack, on the internet, or in an office football pool is an enjoyable experience. Gains are surprising, and losses are usually expected. In fact, losses are often managed by means of pre-commitment—people ask themselves how much they can afford to lose before they gamble and stop when they reach that point. The increased magnitude of predicted and experienced pleasure relative to predicted and experienced pain may motivate this type of behavior.

Emotions and the endowment effect
Several studies have investigated connections between emotional attachments and endowment effects, emotional attachment to the foregone good is a consistently valid predictor of prices (Ariely & Simonson, 2003; Carmon, Wertenbroch, & Zeelenberg, 2003; Dhar & Wertenbroch, 2000; Strahilevitz & Loewenstein, 1998). We argue that greater emotional attachment implies that sellers will feel greater pleasure with their good and buyers will feel greater pain with the absence of the good. These hedonic experiences also predict value for both buyers and sellers.

Another form of emotional attachment is the mere ownership effect. Objects are often evaluated more favorably by owners than by non-owners (Beggan, 1992). This effect may be part of a more general tendency of self-serving judgments. To satisfy the desire to see ourselves in a more favorable light, we enhance the value of objects with which we are associated. This explanation differs from that of loss aversion because it suggests that buyers and sellers differ in their utilities, not their frames (i.e., gains vs. losses). Our results support this hypothesis. Coffee mugs and T-shirts were rated as more attractive by sellers than buyers ($t(110) = 2.80$ and $t(47) = 4.65$, respectively).

Even incidental emotions can influence the endowment effect. Lerner, Small, and Loewenstein (2004) investigated how two types of negative moods—disgust and sadness—on the endowment effect. Moods were induced using a task that was irrelevant to the experimental market. Disgust triggered the goal to expel, reduced prices, and eliminated the endowment effect. Sadness triggered the goal to change one’s circumstances, increased buying prices, but decreased selling prices, and reversed the endowment effect.

Forecasting
Research on the endowment effect has examined people’s ability to predict prices, as well as emotions. Loewenstein and Adler (1995) found that people make systematic errors when predicting their own prices because they are unaware of how much they will value a commodity once they own it. Van Boven, Dunning, and Loewenstein (2000) further documented pricing errors in the prediction of other peoples’ prices due to egocentric empathy gaps. Participants are insensitive to the difference between their own valuation of a good and that of a person in the other group. Buyers think sellers will demand less, and sellers think buyers will pay more. Egocentric empathy gaps lead people to underestimate the magnitude of the endowment effect.

We examined affective forecasting errors in our experimental markets. Buyers were quite good in their affective predictions about the absence of an endowment, and sellers underestimated, not overestimated the pleasure they actually experienced. This pattern is inconsistent with the impact bias. Indeed, the underestimation of pleasure is not a common pattern, although there are circumstances under which people underestimate needs and desires. People in “cold” emotional states have difficulty imagining their desires in “hot” emotional states (Loewenstein, 1996).
To conclude, hedonic forecasts and hedonic experiences vary with beliefs as well as utilities. The pleasure of receiving a gift, getting a good grade, or reading a wonderful book is greater when the event is surprising. Likewise, the pain of having a favorite football team trounced, a financial portfolio shrink, or a vacation cut short by nasty weather is less painful when the events were expected. At least to some extent, we can control the relative intensity of pleasure and pain by carefully monitoring our expectations.

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