

Decision Confidence and the Endowment Effect: A Case Study Among Undergraduate Students in the University of Malakand (Pakistan)

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Abstract

Behavioural economics combines psychology with economics, demonstrating how cognitive biases influence decision-making beyond the realm of rational choice theory. One of the most robust is the Endowment Effect, where individuals value owned items more than identical non-owned items. This study examines the influence of decision confidence on ownership, valuation, and exchange behaviour among undergraduate students in Pakistan. A quasi-experimental design was employed, with 112 students randomly assigned to receive either a book or a ceramic mug. Data on willingness-to-accept (WTA), willingness-to-pay (WTP), exchange decisions, and decision confidence were collected through structured questionnaires. Results revealed that a large majority (81%) reported high confidence in their decisions ($p = .001$), supporting Hypothesis 1. Confidence was also linked to greater reluctance to exchange items, indicating that it reinforced decisiveness in ownership choices. However, Hypothesis 2 was not supported, as confidence did not significantly influence monetary valuations ($r < .12$, $p > .39$). These findings suggest that while confidence drives rigidity in ownership decisions, it does not inflate economic value. The study contributes to behavioural economics by highlighting confidence as a factor that strengthens decisiveness rather than valuation, and by providing evidence from a non-Western context, offering insights relevant for educators, policymakers, and marketers.

Keywords: Behavioural Economics, Endowment Effect, Decision Confidence, Willingness to Accept, Willingness to Pay.

Introduction

Behavioural economics combines insights from psychology and economics to show that people do not always make purely rational decisions. One of the most important examples of this is the endowment effect, which explains why people often act differently from what traditional economic theory would predict.

The endowment effect refers to the strong tendency for people to place more value on things they already own compared to identical items they do not own. Researchers usually study this by comparing the gap between how much a person is willing to accept (WTA) to sell an item they own and how much they are willing to pay (WTP) to buy the same item if they did not already have it.

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Kahneman et al. (1990) were among the first to provide clear experimental evidence of this bias, demonstrating the significant influence of ownership on shaping our decisions. Their work revealed a consistent pattern where individuals demanded significantly higher prices to relinquish items they had been endowed with than they were willing to pay to acquire those same items. However, a critical observation emerging from the extensive empirical literature is the striking concentration of studies on participants from a limited range of demographic and cultural backgrounds. The vast majority of research has predominantly focused on individuals residing in societies characterised as western, educated, industrialised, wealthy, and democratic. This necessitates further dedicated research efforts to gain a comprehensive understanding of how this cognitive bias operates and potentially varies in diverse non-western contexts.

Several mediating and moderating variables are integral to the understanding of this bias. Decision Confidence, which refers to participants' self-reported confidence in their valuation judgments and choices in the Risk Task, is one such variable. In the present study's conceptual framework, decision confidence is considered a moderating variable, hypothesised to influence the strength or direction of the relationships between ownership and valuation outcomes.

Higher decision confidence may reinforce subjective ownership perception, thereby increasing the disparity between WTA and WTP and reducing willingness to exchange. Conversely, lower confidence may make individuals more open to trade or reassessment of the value of the owned item. Even when individuals are equally endowed, the one with higher confidence in their initial valuation may be more resistant to change, showing a more substantial bias toward keeping the endowed item. This can be reflected in both the valuation stage, where confident owners set higher WTA, and the exchange stage, where they refuse trades despite possible gains.

Such tendencies can align with status quo bias, in which the perceived disadvantages of giving up what is owned are weighted more heavily than the possible benefits of change. While the role of confidence in economic decision-making has been explored in related contexts such as investment behaviour and consumer choice, its interaction with ownership and valuation has received limited attention, particularly in culturally distinct, non-Western populations.

The present study focuses specifically on the relationship between decision confidence and valuation/exchange behaviour among undergraduate students in Pakistan. This approach aims to contribute to the literature by integrating a key psychological factor — confidence — into the experimental investigation of decision-making.

It is important to note that this study builds upon the same experimental sessions used in our earlier works on loss aversion and perceived value (Hassan et al., 2025). However, unlike those papers, which focused on risk preferences and valuation gaps, the current research isolates and analyses the unique role of decision confidence. By acknowledging this continuity while emphasising the distinct analytical focus, the paper provides clarity on its novelty and contribution.

- *H1*: Participants are expected to predominantly report high confidence in their decision to either retain or exchange the endowed item, with instances of low confidence being rare.
- *H2*: Participants are expected to show high decision confidence, which will be positively associated with the monetary value assigned to the endowed item.

Literature Review

The Endowment Effect refers to the tendency of individuals to assign greater value to items they own than to identical items they do not own (Thaler, 1980). This is typically measured by comparing willingness to accept (WTA) the minimum amount an individual is willing to accept to part with an owned item, compared with willingness to pay (WTP) the maximum amount an

individual is willing to pay to acquire the same item if they do not own it (Knetsch, 1989). The persistent observation is that WTA often exceeds WTP, a finding inconsistent with the predictions of standard economic theory (Horowitz & McConnell, 2002). Kahneman et al. (1990) demonstrated this phenomenon in controlled experimental settings, finding that participants endowed with a good required significantly higher selling prices than non-owners were willing to pay. Explanations for this effect often draw from Prospect Theory (Kahneman & Tversky, 1979), which posits that losses loom larger than equivalent gains, and from psychological ownership theory (Pierce et al., 2003), which suggests that ownership creates a personal connection to the object, thereby increasing its perceived value.

Meta-analyses (Sayman & Öncüler, 2005; Horowitz & McConnell, 2002) have confirmed the robustness of the endowment effect across various contexts, while also highlighting variability linked to item type, market familiarity, and cultural background. Despite extensive research, much of the literature remains focused on specific populations, leaving the operation of these interventions in other cultural settings less understood. This raises the need for research in culturally distinct contexts, where factors influencing ownership and valuation may differ.

While the endowment effect has been widely studied, one psychological factor that may influence its strength — decision confidence — has received relatively little attention. Decision confidence refers to how certain people feel about the accuracy of their judgment or choice (Koriat et al., 1980). In economic settings, confidence affects not only the choices people make but also how likely they are to revisit or revise those choices when faced with new information (Moore & Healy, 2008). In valuation tasks, high confidence may strengthen feelings of ownership and reinforce the belief that one's initial price is correct, leading to a wider gap between WTA and WTP and a lower willingness to trade. On the other hand, low confidence may encourage individuals to reconsider their valuations and be more open to exchanging the item.

Evidence from related fields highlights the role of confidence in shaping decisions. For instance, Barber and Odean (2001) showed that overconfident investors traded excessively and earned lower returns. In negotiation research, confidence has been linked to making firmer demands and a lesser willingness to compromise (Van Swol & Snizek, 2005). In consumer behaviour, it has been demonstrated to influence how people evaluate products and their intention to purchase (Parker, Lehmann, & Xie, 2016). Despite these insights, the connection between confidence and the endowment effect has not been directly examined, especially in studies that capture both price disparities and reluctance to exchange.

This gap matters because confidence could help explain why the endowment effect varies across individuals under the same conditions. Two people may own the same item, but the highly confident individual may set a high selling price and be unwilling to accept offers. In contrast, the less confident individual may be more flexible and willing to trade. Exploring this distinction is essential for behavioural economics because it links cognitive biases with people's individual awareness of their own decision-making processes.

To address this gap, the present study investigates the role of decision confidence in shaping the endowment effect among undergraduate students in Pakistan. By incorporating confidence into the analysis, this research aims to provide a deeper understanding of how ownership, valuation, and willingness to exchange interact, and to extend the relevance of the endowment effect beyond the populations typically studied in prior experiments.

Conceptual Framework and Research Design

The idea behind this study is that ownership changes how people see value. When someone is given an item, such as a book or a mug, they often begin to feel attached to it and tend to value it more than an identical item they do not own. This is the essence of the endowment effect.

What makes this study different is the focus on decision confidence. Confidence reflects how specific individuals feel about the choices they make. A student who feels very confident about their decision to keep an item may be less likely to exchange it, even if the alternative is equally appealing. In contrast, someone who is unsure or less confident may be more willing to trade or to reconsider the value they assign.

In this way, confidence can shape the way ownership biases unfold. High confidence can make students more rigid, sticking firmly with their initial choice, while lower confidence may create room for flexibility. The framework, therefore, assumes that ownership leads to higher perceived value, but the level of confidence can influence the strength of the effect a person feels about their decision.

Research Design

This study employed a quasi-experimental design to investigate the Endowment Effect among undergraduate students. The design incorporated a Valuation Task measuring the disparity between Willingness-to-Accept (WTA) and Willingness-to-Pay (WTP), as well as participants' willingness to exchange their endowed item for an alternative. Random assignment was used for item endowment within departments, while framing conditions were applied at the department level.

Participants

A total of 112 undergraduate students from the University of Malakand participated, with 28 students from each of four departments: Management (BBA), Commerce, Economics-A, and Economics-B. Within each department, 14 participants were randomly assigned to receive an academic book and 14 to receive a ceramic mug. Participants were aged between 18 and 25 years, represented both genders, and took part voluntarily without compensation.

Materials and Instruments

Two tailored questionnaires, one for book owners and one for mug owners, were prepared in both Urdu and English. The first section of each questionnaire focused on ownership and valuation. Participants were asked to estimate the perceived market price of both items, describe their emotional attachment to the item they had been given, indicate whether they were willing to exchange it, state their willingness-to-accept (WTA) for the item they owned, and report their willingness-to-pay (WTP) for the alternative item. The actual retail prices (Book: PKR 360; Mug: PKR 160) were intentionally withheld to prevent anchoring effects.

Procedure

Data Collection was conducted in classroom settings, with each department tested separately to prevent potential contamination across groups. At the beginning of each session, participants were informed about the study's purpose and provided with a description of the study, along with an explanation of their informed consent. They were then randomly endowed with either a book or a ceramic mug to serve as the basis for subsequent valuation tasks.

The study incorporated department-specific framing conditions to examine whether contextual emphasis would influence responses. For students in Economics-A, the academic relevance of the book was highlighted, while for those in Economics-B, the practical utility of the mug was emphasised. In contrast, students in the BBA and Commerce departments received neutral instructions, with no special emphasis on either item.

After assigning items, participants completed a valuation task. They were asked to estimate the market prices of both items, state the minimum price at which they would be willing to give up their endowed item (willingness-to-accept), and indicate the maximum amount they would be willing to pay to acquire the alternative item (willingness-to-pay). In addition, participants recorded whether they would prefer to exchange their endowed item for the alternative and provided brief descriptions of any emotional attachment they felt toward their assigned item.

Data Analysis

The data collected from the experimental sessions were coded and analysed using SPSS. The analysis was structured around the two hypotheses of the study. Descriptive statistics were first used to summarise the participants' confidence ratings, exchange decisions, and assigned prices for both the book and the mug.

To test the first hypothesis, which proposed that participants would report predominantly high confidence in their decisions, a binomial test was employed. This test compared the observed proportion of high-confidence responses with a neutral benchmark of 0.50 to determine whether the level of confidence was significantly above chance. Additional analysis involved cross-tabulations between confidence ratings and exchange behaviour, allowing for a clearer picture of how confidence influenced whether students chose to keep or exchange their endowed items.

The second hypothesis suggested that decision confidence would be positively related to the monetary value participants assigned to their endowed items. To test this, Pearson's product-moment correlation coefficients were calculated separately for book owners, non-book owners, mug owners, and non-mug owners. This approach enabled the study to explore whether confidence ratings were systematically associated with the willingness-to-accept or willingness-to-pay values provided by participants.

In addition to these hypothesis tests, data were also visually represented to illustrate key trends. Tables were used to display the results of the binomial test, cross-tabulations, and correlation analyses. A figure was prepared to depict the distribution of exchange decisions across different levels of confidence. Together, these analyses provided both statistical and graphical evidence to assess the role of decision confidence in ownership and valuation behaviour.

Results and Discussion

The findings of this study are presented in two parts, corresponding to the hypotheses. The first hypothesis predicted that participants would report predominantly high confidence in their decision to either retain or exchange their endowed item. The results of the binomial test strongly supported this expectation.

As shown in Table 1, a large majority of participants (81%) reported high confidence in their decision, while 1% indicated moderate confidence.

Table 1: Binomial Test of Confidence Levels in Retain-or-Exchange Decisions

		Category	N	Observed Prop.	Test Prop.	Exact Sig. (2-tailed)
Confidence	Group 1	High confidence	91	0.81	0.5	0.001
	Group 2	Moderate	21	0.19		
Exchange decision	Group 1	Keep	80	0.71	0.5	0.001
	Group 2	Exchange	32	0.29		

The difference was statistically significant ($p = .001$), confirming that most respondents felt certain about their choices, while low confidence was rare.

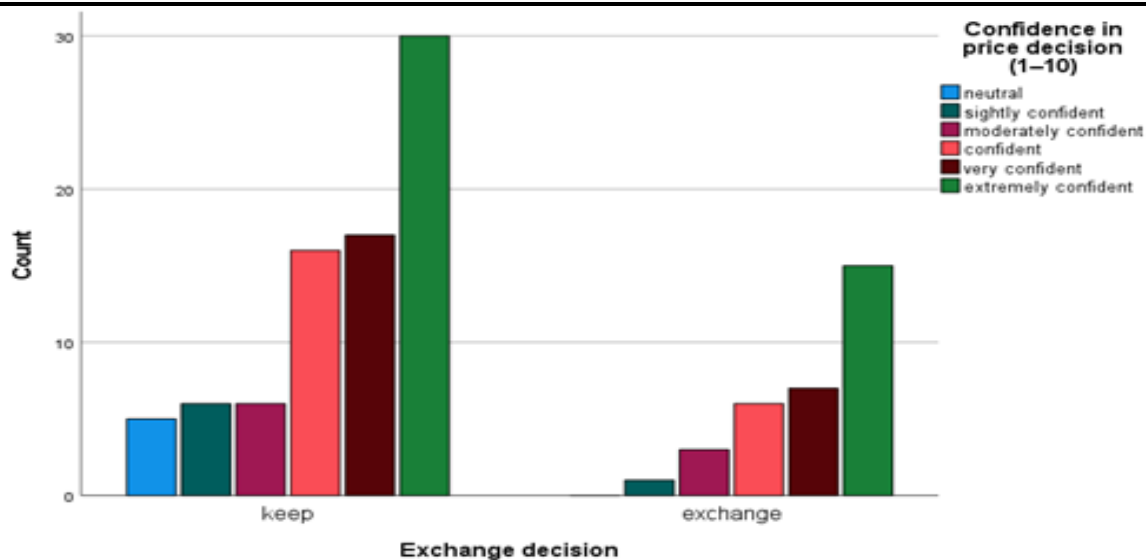
Further insights were obtained through a cross-tabulation of confidence ratings with exchange behavior.

Table 2 shows that those reporting extreme confidence (a score of 10) represented the largest group, with thirty participants choosing to keep their endowed item and fifteen opting to exchange. In general, higher confidence was more frequently associated with retaining the item, although some highly confident individuals still decided to exchange.

Table 2: Cross-tabulation of Confidence in Price Decision and Exchange Decision

		Keep	Exchange
Confidence in price decision (1–10)	Neutral	5	0
	Slightly confident	6	1
	Moderately confident	6	3
	Confident	16	6
	Very confident	17	7
	Extremely confident	30	15

The corresponding distribution is illustrated in Figure 1, which clearly shows that participants with greater confidence were more likely to keep their endowed item, while uncertainty was infrequent across the sample.

Figure 1: Participants' Keep-or-Exchange Decisions by Confidence Level

These results confirm hypothesis 1 and reinforce the view that confidence plays a key role in decision rigidity.

The second hypothesis proposed that decision confidence would be positively associated with the monetary value participants assigned to their endowed item. To test this, Pearson correlation analyses were conducted separately for book owners, non-owners, mug owners, and non-owners. The results, presented in Tables 3 to 6, revealed no significant relationship in any of the groups. For book owners (Table 3), the correlation was $r = .082$ ($p = .550$), while for non-owners (Table 4) it was $r = .074$ ($p = .587$).

Table 3: Correlation between Confidence and Assigned Price – Book Owners

		Book owners	Confidence
Book owners	Pearson Correlation	1	.082
	Sig. (2-tailed)		.550
	N	56	56
Confidence	Pearson Correlation	.082	1
	Sig. (2-tailed)	.550	
	N	56	112

Table 4: Correlation between Confidence and Assigned Price – Non-Owners

		Non-owners	Confidence
Non-owners	Pearson Correlation	1	.074
	Sig. (2-tailed)		.587
	N	56	56
Confidence	Pearson Correlation	.074	1
	Sig. (2-tailed)	.587	
	N	56	112

For mug owners (Table 5), the correlation was slightly stronger at $r = .116$ ($p = .393$), and for non-owners (Table 6) it was $r = .093$ ($p = .494$).

Table 5: Correlation between Confidence and Assigned Price – Mug owners

		Mug owners	Confidence
Mug owners	Pearson Correlation	1	.116
	Sig. (2-tailed)		.393
	N	56	56
Confidence	Pearson Correlation	.116	1
	Sig. (2-tailed)	.393	
	N	56	112

In all cases, the relationships were weak and statistically non-significant. These findings indicate that, although participants were confident in their decisions, this confidence did not translate into higher or lower valuations of the items.

Table 6: Correlation between Confidence and Assigned Price – Non-Owners

		Non-owners	Confidence
Non-owners	Pearson Correlation	1	.093
	Sig. (2-tailed)		.494
	N	56	56
Confidence	Pearson Correlation	.093	1
	Sig. (2-tailed)	.494	
	N	56	112

Taken together, the results highlight an important theoretical distinction. Decision confidence influences decisiveness, i.e., the degree to which participants commit to retaining or exchanging their endowed items, but it does not affect the monetary values they assign. This finding partially aligns with Prospect Theory (Kahneman & Tversky, 1979), which emphasises the asymmetry between perceived losses and gains. However, it also suggests that confidence strengthens behavioural rigidity without inflating economic value. Similarly, Psychological Ownership Theory (Pierce et al., 2003) suggests that ownership enhances attachment and perceived value; however, our results indicate that confidence influences the certainty of action rather than the valuation itself. This interpretation aligns with prior studies on overconfidence in economic behaviour (Moore & Healy, 2008; Barber & Odean, 2001), which demonstrate that confidence influences persistence in decisions without necessarily improving accuracy. Thus, confidence functions as a catalyst for decisiveness, shaping exchange behaviour in ownership situations, particularly in non-Western contexts.

From a broader perspective, the findings align with behavioural research indicating that confidence can drive persistence in judgments and decisions, even if it does not necessarily improve accuracy. In this case, confidence shaped whether participants stood firm in their choices but did not alter the amount they were willing to accept or pay. This distinction adds a new dimension to the understanding of the endowment effect, particularly in non-Western contexts. It provides evidence that ownership biases may be shaped by psychological certainty in ways that differ from monetary valuation.

Conclusion

This study aimed to investigate the role of decision confidence in influencing the endowment effect among undergraduate students in Pakistan. The results confirmed the first hypothesis: the majority of participants reported high confidence in their decision to retain or exchange their endowed item. This finding highlights the strong role that confidence plays in reinforcing decisiveness, making individuals more certain about their choices regardless of whether they chose to keep or exchange. The second hypothesis, however, was not supported. Confidence did not show a significant relationship with the monetary values that participants assigned to their endowed items. This suggests that while confidence drives commitment to a decision, it does not necessarily translate into inflated economic valuations.

The findings contribute to the broader literature on behavioural economics by demonstrating that confidence has a greater impact on decisiveness than valuation. This distinction adds nuance to the understanding of the endowment effect, particularly in a non-Western context. It demonstrates that ownership biases are not only about perceived value but also about the certainty with which individuals act on their preferences.

In terms of practical implications, the study offers valuable insights for educators, policymakers, and consumer researchers. For educators, the findings underscore the importance of teaching students how confidence can influence decision-making, thereby enhancing critical thinking and negotiation skills. For policymakers and consumer protection bodies, the results underscore that individuals may hold firmly to their decisions not necessarily because of higher valuations but due to confidence-driven rigidity. This awareness can help in designing interventions that address ownership-related biases in markets and consumer behaviour. For businesses, understanding the difference between valuation and decisiveness can help create more effective marketing and negotiation strategies.

Despite these contributions, the study has several limitations. The sample was restricted to a single university, which limits the generalizability of the findings to broader populations. The use of only two items — a book and a mug — may also restrict the scope of the conclusions, as different products could evoke different levels of attachment and valuation. Furthermore, the study relied on self-reported measures of confidence, which may be influenced by social desirability or individual differences in self-assessment. Future research should include larger and more diverse samples, expand the range of items tested, and explore cross-cultural comparisons to understand better how confidence interacts with ownership biases across different contexts.

Overall, this research highlights the importance of considering decision confidence as a distinct psychological factor that influences behaviour in ownership situations. By highlighting its role in decisiveness rather than valuation, the study offers a more nuanced perspective on the endowment effect and opens avenues for further exploration in behavioural economics.

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