

The extensibility of the endowment effect to others is mediated by degree of intimacy

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Recent studies have suggested that the endowment effect may actually be a type of self-referent cognitive bias due to the mere ownership of an object. However, it is not adequately understood how the ownership of an object affects the endowment effect. The current research is the first to explore if the endowment effect could be extended to different ownerships. The results suggest that the endowment effect extends to goods owned by their mothers, romantic partners and close friends, but not acquaintances. Furthermore, the level of intimacy between individuals and mothers/romantic partners/close friends/acquaintances mediates the relationship between the effect of ownership and the extensibility of the endowment effect. These findings are consistent with the mere ownership effect that ownership increases valuation by enhancing the salience of the self.

Key words: endowment effect, extend, intimacy, ownership, self.

Introduction

It can be very difficult to throw away a pair of comfortable but worn-out socks, give away a child's outgrown jeans or sell the family house. Why do people find it painful to part with their possessions (Maddux *et al.*, 2010)? Indeed, people tend to place greater value on items that they own, a phenomenon referred to as the endowment effect (Thaler, 1980). Previous research on the endowment effect shows a robust gap between the seller's willingness to accept (WTA) and the buyer's willingness to pay (WTP), that is, WTA always significantly exceeds WTP (Bischoff, 2008; Procaccia & Segal, 2004). The endowment effect has been replicated with a variety of goods, including lottery tickets (Knetsch & Sinden, 1984), mugs (Kahneman, Knetsch & Thaler, 1990), pens (Kahneman *et al.*, 1990), chocolate bars (Ven, Zeelenberg & Dijk, 2005), and has also been observed in chimpanzees (Brosnan *et al.*, 2007). The existence and magnitude of the endowment effect may be influenced by a number of factors, including uncertain value (Dijk & Knippenberg, 1996), transaction demand (Carmon & Ariely, 2000), curiosity (Ven *et al.*, 2005) and item likeability (Mandel, 2002).

The most widely accepted theoretical explanation for the endowment effect is loss aversion (i.e. the pain of giving up a possession is greater than the pleasure of acquiring that item). Past research indicates that the Value Function Curve

provides a fair model of loss aversion (Kahneman, Knetsch & Thaler, 1991; Knetsch & Sinden, 1984). However, a growing body of evidence suggests that the endowment effect may be viewed as an exemplar of the mere ownership effect in which a target object is rated more favourably by an owner than a non-owner (Beggan, 1992; Gawronski, Bodenhausen & Becker, 2007; Maddux *et al.*, 2010).

Many theories suggest that one's conceptual model of self can extend to close others. Self-expansion theory (Aron, Aron, Tudor & Nelson, 1991) posits that one's conceptual model of self can expand to incorporate a close partner. The extended self-evaluation maintenance model (Beach & Tesser, 1995) suggests that an individual is motivated to protect not only his or her own self, but also his or her romantic partner's self. Furthermore, in Chinese culture, individuals place great value on interpersonal connectivity and dependency (Gaines *et al.*, 1997; Oyserman, Coon & Kemmelmeier, 2002). Chinese subjects have been shown to attend to their mother, romantic partner or close friend as much as they do to themselves (Han, Gu, Mao, *et al.*, 2010; Hoshino-Browne, Zanna, Spencer, Zanna & Kitayama, 2005; Zhu & Zhang, 2002; Zhu, Zhang, Fan & Han, 2007). More importantly, our latest study indicates that the endowment effect can extend from self to mother, and medial prefrontal cortex (MPFC), which was linked to the perception of self, may play an important role in the extensibility of the endowment effect (Feng, Zhao & Donnay, 2013). However, the research did not investigate whether the extensibility existed in other closed persons. Based on these findings, if the endowment effect was related at least in part to the tendency to value the self highly, we predicted that the endowment effect would also extend to a romantic partner's or close friend's possessions, but not to those of a

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Received 24 October 2012; revision 17 December 2013; accepted 2 February 2014.

mere acquaintance. We also hypothesized that the extensibility of the endowment effect is influenced by the degree of closeness between the participant and each individual respectively (Aron *et al.*, 1991, 2004).

While there has been extensive research about the existence and magnitude of the endowment effect, no past experiments have explored the extensibility of the endowment effect to others. In the present study, participants were assigned randomly to one of four experimental conditions: mother ownership, romantic partner ownership, close friend ownership or acquaintance ownership. We used the Inclusion of Others in Self (IOS) scale to quantify the degree of closeness between the subjects and the mother/romantic partner/close friend/acquaintance relationship. Participants were asked to report the maximum WTP and the minimum WTA for items owned by their mother/lover/close friend/acquaintance. We hypothesized that the endowment effect would extend to their mother's, romantic partner's and close friend's possessions, but not to an acquaintance's goods. Furthermore, intimacy between the individual and the mother/romantic partner/close friend/acquaintance would mediate the extensibility of the endowment effect.

Method

Participants

One hundred and forty-six Chinese undergraduate students (49 males, 97 females, mean age = 21 years) participated in the experiment. All participants consented prior to their participation in the study and were compensated with a small cash payment (10 RMB) or two mugs. They were assigned randomly to one of four experimental conditions: mother ownership ($n = 35$), romantic partner ownership ($n = 33$), close friend ownership ($n = 38$) and acquaintance ownership ($n = 40$).

Procedure

Participants were asked to evaluate the degree of intimacy between themselves and their mother, romantic partner, close friend or acquaintance (subjects were asked to specify one friend and one acquaintance in a pre-experiment questionnaire) using the IOS scale. Then, participants completed a classical trade-in experiment. Participants entered a laboratory space where two mugs were displayed (the actual ¥6.00 purchase price of the mugs was not indicated), and were asked to report the maximum amount (up to ¥30) they were willing to pay to buy one of the mugs (WTP). Subjects then completed a simple cognitive experiment, and were told that for compensation they would receive one mug for themselves, and the other mug would

be given to their mother, romantic partner, close friend or acquaintance (depending on the experimental condition). Finally, subjects reported the smallest amount (¥0–30) they would be willing to accept to sell the mugs subjects owned ($WTA_{\text{for own mug}}$) and the mugs owned by their mother, romantic partner, close friend or acquaintance ($WTA_{\text{for other person's mug}}$). In this study, participants had to judge whether they liked or disliked the mug on a 7-point Likert scale, ranging from (1) dislike the mug very much, (4) not sure to (7) like the mug very much. We found subjects liked the mugs moderately ($M_1 = 6.06$, $SD_1 = 1.00$; $M_2 = 6.10$, $SD_2 = 1.10$; $M_3 = 5.84$, $SD_3 = 1.10$; $M_4 = 6.13$, $SD_4 = 0.97$). And there was no difference in likability between the conditions [$F_{(3,142)} = 0.568$, $p = 0.637$].

Results

Existence of the endowment effect

In order to examine whether there was a robust endowment effect for goods subjects owned, we performed paired t-tests respectively in the four conditions. In all conditions, WTA for the owned mug was significantly greater than WTP: for subjects assigned to the mother ownership condition ($WTA_{\text{for the owned mug}}$: $M = 9.54$, $SE = 1.03$; WTP: $M = 7.49$, $SE = 0.85$; $t_{(34)} = 2.43$, $p = 0.021$), for subjects assigned to the romantic partner ownership condition ($WTA_{\text{for the owned mug}}$: $M = 10.58$, $SE = 1.96$; WTP: $M = 5.64$, $SE = 0.59$; $t_{(32)} = 2.68$, $p = 0.011$), for subjects assigned to the close friend ownership condition ($WTA_{\text{for the owned mug}}$: $M = 10.95$, $SE = 1.15$; WTP: $M = 8.18$, $SE = 0.93$; $t_{(37)} = 4.33$, $p < 0.001$), and for subjects assigned to the acquaintance ownership condition ($WTA_{\text{for the owned mug}}$: $M = 12.48$, $SE = 2.41$; WTP: $M = 6.75$, $SE = 0.62$; $t_{(39)} = 2.56$, $p = 0.014$). These results indicated that the endowment effect existed for the mugs subjects owned, which was in line with previous research (Kahneman *et al.*, 1990; Knetsch & Sinden, 1984; Ven *et al.*, 2005).

Extensibility of the endowment effect

To investigate whether the endowment effect extended to others, we performed a 4×2 mixed analysis of variance (ANOVA) of the between-subjects relationship type (Mother, Romantic Partner, Close Friend, Acquaintance) and the within-subjects response type ($WTA_{\text{for the other person's mug}}$, WTP). Both relationship type and response type showed significant main effects [$F_{(3,142)} = 3.93$, $p = 0.01$; $F_{(1142)} = 89.59$, $p < 0.001$, respectively]. Furthermore, the interaction between these two factors was also significant, in which the type of relationship determined if there was a significant difference between $WTA_{\text{for the other person's mug}}$ and WTP [$F_{(3142)} = 9.50$, $p < 0.001$]. Simple effect analysis was

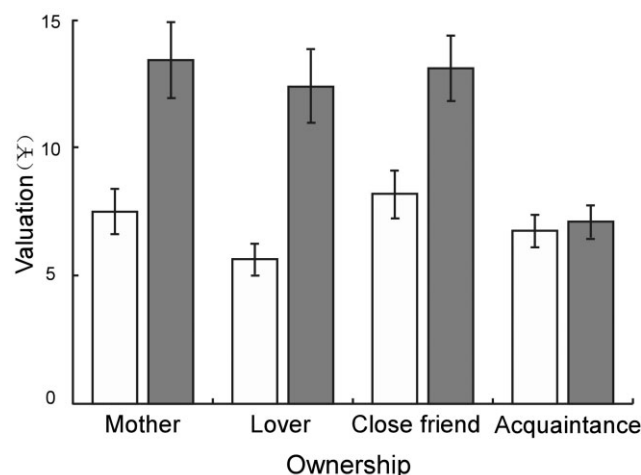


Figure 1 Mean valuation of mugs as a function of mother ownership, romantic partner ownership, close friend ownership and acquaintance ownership conditions (WTA vs WTP). Error bars indicate standard errors of the mean. □, WTP; ■, WTA.

used to test for extensibility of the endowment effect in specific relationship types (see Fig. 1). As expected, WTA was significantly greater than WTP for a mother's mug (WTA: $M = 13.40$, $SE = 1.48$; WTP: $M = 7.49$, $SE = 0.85$; $t_{(34)} = 5.25$, $p < 0.001$), for a romantic partner's mug (WTA: $M = 12.36$, $SE = 1.40$; WTP: $M = 5.64$, $SE = 0.59$; $t_{(32)} = 5.21$, $p < 0.001$), and for a close friend's mug (WTA: $M = 13.08$, $SE = 1.25$; WTP: $M = 8.18$, $SE = 0.93$; $t_{(37)} = 5.49$, $p < 0.001$). However, there was no significant difference between WTA ($M = 7.10$, $SE = 0.61$) and WTP ($M = 6.75$, $SE = 0.62$) for an acquaintance's mug [$t_{(39)} = 0.951$, $p = 0.347$]. These results demonstrate that the endowment effect extended to mother, romantic partner and close friend, but not to a mere acquaintance.

Intimacy and the endowment effect

To investigate further why the endowment effect could extend to close others, we performed mediation analysis between the degree of intimacy and the extensibility of the endowment effect. We used Preacher and Hayes's (2008) macro for SPSS Version 16.0, which provides bias-corrected and bootstrapped estimates of indirect effects at specific levels of a moderator (MacKinnon & Fairchild, 2009; MacKinnon, Fairchild & Fritz, 2007; Preacher & Hayes, 2004, 2008; Smith, 2012). Figure 2 depicts a simple mediation model and shows how variable ownership's causal effect can be apportioned into its indirect effect on extensibility of endowment effect through the degree of intimacy (Baron & Kenny, 1986; Preacher & Hayes, 2004,

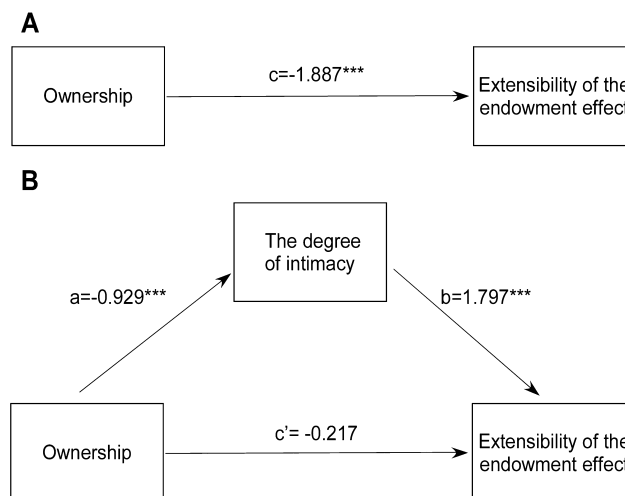


Figure 2 Mediation analysis: the effect of ownership on extensibility of the endowment effect, mediated by the intimacy between individuals and mothers/romantic partners/close friends/acquaintances. ***Indicates significance, $p < 0.001$.

2008). Path a = IV to MedV; Path b = MedV to DV, controlling for the IV (when multiplied together these are the INDIRECT effect); Path c = IV to DV (aka the TOTAL effect); Path c' = IV to DV, controlling for the MedV (aka the DIRECT effect). Total effects = Indirect effect + Direct effect. In this case, path $a = -0.929$, $p < 0.001$; path $b = 1.797$, $p < 0.001$; path $c = -1.887$, $p < 0.001$; path $c' = -0.217$, $p = 0.661$. The Sobel Test demonstrates that a significant mediation is present in this analysis (indirect effect = -1.67 , $z = -4.73$, $p < 0.001$). Twenty thousand bootstrap samples were used. The TRUE indirect effect is 95% likely to range from -2.425 to -0.961 and the estimated effect is -1.653 (lying in between these two values). If (as in this case) zero does not occur between the LL and the UL then we can conclude that the indirect effect is significant. In summary, the results of mediation analysis indicate that ownership influenced the extensibility of the endowment effect, which is mediated by the degree of intimacy.

Discussion

The current research investigated the extensibility of the endowment effect and further explored the mechanism of how the endowment effect could be extended to others by using a classical trade-in experiment. The study showed that the endowment effect could be extended to goods owned by a person's mother, romantic partner or close friend. More importantly, intimacy between an individual

and his or her mother/lover/close friend/acquaintance mediated the relationship between the effect of ownership and the extensibility of the endowment effect. Therefore, the current findings demonstrate that ownership increases valuation of a good through an expansion of the self onto others.

Our results replicated and extended previous findings in several ways. First, we replicated previous findings that the endowment effect led to the tendency to value objects related to one's self more favourably than objects that are not (Beggan, 1992; Maddux *et al.*, 2010). Belk argues that possessions are an important component of a sense of self, in which an association develops between a possession and self by virtue of ownership (Belk, 1988). Individuals also tend to value possessions that are related to their self more positively (Finch & Cialdini, 1989). Additionally, previous research has shown that people tend to be concerned with increasing the positivity or decreasing the negativity of the self as a means of maintaining self (Brown & Dutton, 1995). Following these ideas, our findings show that participants had greater WTA for a good they owned than WTP when it was not their own possession, possibly to increase the positivity of the self.

Secondly, the current research was the first to investigate the extensibility of the endowment effect, in which the expansion of the self aligned with an expansion of the endowment effect. We hypothesized the endowment effect could be extended to individuals who are close to one's self, such as a mother, romantic partner or close friend. Our results established that the degree of intimacy between an individual and his or her mother/romantic partner/close friend/acquaintance mediates the extensibility of the endowment effect. As Aron *et al.* (1991, 2004) have suggested, the more intimate a relationship is, the more likely it is to overlap with one's self (Aron *et al.*, 1991, 2004). A meta-analysis confirmed this overlap in a study in which referencing an intimate other appeared to have similar effects as self-reference (Symons & Johnson, 1997). Therefore, the concept of the self can be expanded to an intimate other. In the current study, participants were more willing to accept a greater price for goods belonging to their mother, romantic partner or close friend, but not for a mere acquaintance. The current findings demonstrate that the endowment effect extends to others who are intimately close.

Research has suggested that mere ownership can offer a better account for endowment effect than loss aversion (Gawronski *et al.*, 2007; Maddux *et al.*, 2010; Morewedge, Shu, Gilbert & Wilson, 2009). Loss aversion theory postulates that losses loom larger than corresponding gains (Kahneman *et al.*, 1990). Therefore, the theory considers selling as a loss and buying as a gain, so sellers are expected to suffer more than buyers can benefit. This leads sellers to demand more compensation than buyers are

willing to provide (Kahneman *et al.*, 1991). In fact, mere ownership theory proposes that when an object becomes 'mine,' it is viewed as part of the self (Belk, 1988; Morewedge *et al.*, 2009), and consequently people evaluate their own possessions more favourably (Beggan, 1992). Our latest study indicates that the endowment effect exhibited by subjects extended to the subjects' mothers as well and MPFC may play a key role in the extensibility of the effect (Feng *et al.*, 2013). Some neuroimaging studies found stronger activation in MPFC linked to self- and other-related judgements (Craig *et al.*, 1999; Fossati *et al.*, 2004; Kelley *et al.*, 2002), indicating that the MPFC was engaged in representation of self-knowledge (Zhu *et al.*, 2007). Further, evidence from the neuroimaging data supported that the self-evaluation maintenance model can offer an account for extensibility of the endowment effect. More importantly, the neuroimaging results refined our behavioural study and made it more convincing. On the other hand, in our behavioural study, the endowment effect extended to include others, such as a mother, romantic partner or close friend. Collectively, we proposed that because the mother, romantic partner and close friend were all viewed as parts of the self, individuals showed a strong extensibility of the endowment effect.

In conclusion, the present study offers a new perspective on a combination between self-referential processing and the endowment effect. Our findings are consistent with the mere ownership effect that ownership increases valuation by enhancing the salience of the self. We believe that our study contributes to the body of research focused on the endowment effect in general and on cultural variation in particular (East Asian self-system). Considering that previous research has established that interpersonal connectivity is an important aspect of Chinese culture (Gaines *et al.*, 1997; Oyserman *et al.*, 2002) and past studies have exhibited a cross-cultural difference in the view of self between Eastern and Western societies (Markus & Kitayama, 1991), future research should investigate the possible existence of the extensibility of the endowment effect towards a mother, romantic partner, close friend or acquaintance in Western culture. Owing to the fact that most Westerners display independent self-construal, we expect qualitatively different results in non-Chinese samples (e.g. the mediation mechanism may be different in Chinese samples).

Acknowledgements

This study was supported by the National Natural Science Foundation of China (31271117), the Fundamental Research Funds for the Central Universities (SWU1309002) and the National Key Discipline of Basic Psychology in Southwest University of China (TR201207-2).

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