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Temporal distance and the endowment effect

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TEMPORAL DISTANCE AND THE ENDOWMENT EFFECT

by

Dong Woo Ko

<u>An Abstract</u>

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Business Administration
in the Graduate College of
The University of Iowa

May 2013

Thesis Supervisors: Professor Catherine A. Cole

ABSTRACT

The endowment effect occurs when owners assign more value to the products they own than do non-owners to the same products. Research on the endowment effect has identified factors that enhance or mitigate the effect, such as the duration of ownership, as well as information processing differences between sellers and buyers. However, these studies have primarily involved immediate transactions between sellers and buyers. An interesting question emerges as to whether the endowment effect will be observed for temporally distant transactions.

The main purpose of the first two studies is to examine how the temporal distance from transactions influences customers' evaluations of products by comparing buyers' willingness to pay and sellers' willingness to accept in the present and future. Despite the fact that consumers often collect information today about product or services that will be consumed in the future, such as window shopping or looking at houses or cars for a future purchase, a limited number of endowment studies have considered the temporal effect on willingness to pay and willingness to accept. More specifically, studies 1, 2, and 3 find that the endowment effect disappears as temporal distance from the transaction increases. Study 2 and 3 demonstrates that when the transaction is expected to occur in the near future, sellers focus on their products, while buyers focus on their money. These different cognitive perspectives affect price gaps between sellers and buyers. Specifically study 2 demonstrates that when events are in the distant future, sellers' and buyers' cognitive perspectives change, and the endowment effect is eliminated. In study 3, the effects of role and time on memory traces and information structure were studied.

Finally, the underlying psychological and temporal mechanisms driving the salience differences are investigated in study 4-a and 4-b.

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Thesis Supervisor

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Title and Department

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Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

Dong Woo Ko

has been approved by the Examining Committee
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I would like to dedicate this doctoral dissertation to my wife, Jayoung and my precious daughter, Yuna, my parents, and my parents-in-law.

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ABSTRACT

The endowment effect occurs when owners assign more value to the products they own than do non-owners to the same products. Research on the endowment effect has identified factors that enhance or mitigate the effect, such as the duration of ownership, as well as information processing differences between sellers and buyers. However, these studies have primarily involved immediate transactions between sellers and buyers. An interesting question emerges as to whether the endowment effect will be observed for temporally distant transactions.

The main purpose of the first two studies is to examine how the temporal distance from transactions influences customers' evaluations of products by comparing buyers' willingness to pay and sellers' willingness to accept in the present and future. Despite the fact that consumers often collect information today about product or services that will be consumed in the future, such as window shopping or looking at houses or cars for a future purchase, a limited number of endowment studies have considered the temporal effect on willingness to pay and willingness to accept. More specifically, studies 1, 2, and 3 find that the endowment effect disappears as temporal distance from the transaction increases. Study 2 and 3 demonstrates that when the transaction is expected to occur in the near future, sellers focus on their products, while buyers focus on their money. These different cognitive perspectives affect price gaps between sellers and buyers. Specifically study 2 demonstrates that when events are in the distant future, sellers' and buyers' cognitive perspectives change, and the endowment effect is eliminated. In study 3, the effects of role and time on memory traces and information structure were studied.

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TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

CHAPTER 1: INTRODUCTION

A classic economic decision-making model predicts that there will be far more transactions between sellers and buyers than what actually occur (Lowenstein, 1998). The transaction-frequency gap between academic theory and the real world originates from the simplified assumption of the standard economic model that people form preferences independently of whether or not they own objects (Korobkin, 1994). However, as the subjective valuation and choice literature suggest, people tend to demand a higher selling price for a commodity they own than they are willing to pay for the same commodity (e.g., Kahneman, Knetsch, & Thaler, 1990; Knetsch, 1989; Knetsch & Sinden, 1984; Thaler, 1980; Van Boven, Dunning, & Loewenstein, 2000). These price gaps between sellers and buyers have been called the endowment effect.

Then, what are the causes of this endowment effect? The endowment effect results from loss aversion (Thaler, 1980; Van Boven, Dunning, & Loewenstein, 2000). For example, from the perspective of someone who possesses a product, the idea of selling it is perceived as a loss; however, if that individual does not possess the product, the idea of buying it is perceived as a gain. According to the idea of loss aversion, losses loom larger than corresponding gains: -v (-x) > v (x) (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991); therefore, giving up an item is more painful than not obtaining the same item. As an example to explain loss aversion, it has been demonstrated that the endowment effect tends to be observed when it is difficult to integrate prospective losses and gains (Chapman, 1998; van Dijk & van Knippenberg, 1998).

Prior research on the endowment effect has identified factors that enhance or mitigate the effect, such as the length of ownership (Strahilevitz & Lowenstein, 1998), different cognitive perspectives (Carmon & Ariely, 2000), and selective attention (Johnson, Haubl, & Keinan, 2007). Strahilevitz and Loewenstein (1998), for example, study how emotional attachment influences loss aversion by manipulating how long sellers have owned a product. On the basis of this manipulation, they found that both ownership and the duration of ownership increase the value that sellers assign to their products. Carmon and Ariely (2000) argue that both sellers and buyers attend to what they give up in the transaction (*product* in the case of sellers; *money* in the case of buyers). These different cognitive perspectives lead to price differences between sellers and buyers. Sellers will give up their product in an expected transaction, while buyers will give up their money in the transaction. These different cognitive perspectives lead sellers to assign more value to the product than buyers. Nayakankuppam and Misha (2005) also suggest that differences between buyers' and sellers' attention explains the endowment effect. Their research shows that sellers attend more to the positive or value-increasing information of products, whereas buyers attend more to the negative or value-decreasing aspects of products. This discrepancy in attention explains why sellers and buyers differ in their processes.

Interestingly, these various endowment effect studies have only considered immediate transactions. Previous literatures have examined why owners irrationally consider an endowed object more positively or favorably than buyers. However, customers often make more decisions about distant transactions than near ones. For instance, people go window-shopping for their future consumption, make travel plans for

their upcoming summer or winter vacation, or look around at open houses for their future homes. These situations are different from immediate transactions, and consumers' willingness to pay will also be different because the temporal distance from the event systematically makes people attend to different types of information and use different information processing (Liberman & Trope 1998).

Questions emerge as to (1) whether different transaction times will influence consumers' and sellers' psychological distance from the transaction or the perceived value of the product, and (2) how the different temporal distances affect consumers' buying and sellers' selling prices. In order to explain the influence of temporal effects on people's decision-making, we need to understand how temporal distance influences both psychological distance or construal level (Liberman & Trope, 1998; Trope, Liberman, & Wakslak, 2007) and intertemporal discounting of mixed choices (Soman, 1998, 2004, & Homic, 1984). According to construal level theory, individuals use concrete, low-level construals to represent "near" events, whereas they use abstract, high-level construals to represent "distant" events. (Liberman & Trope, 1998). At low levels of abstraction, buyers and sellers may think about the cons or what they give up in a transaction (buyers focus on expenditures; sellers on the product); at higher levels of abstraction, buyers and sellers may think about the pros of or what they gain in a transaction (buyers focus on the product; sellers on the money). Additionally, we need to consider the temporal effects of discounting of mixed outcomes. When there are tradeoffs between efforts and gains, people tend to put off effort to a future date because the perceived pain of performing effort is undervalued in the distant future (Akerlof, 1991). In other words, I hypothesize that product (loss) is more valuable to sellers under an immediate transaction, but the

pain of loss decreases as temporal distance increases. In a similar vein, buyers place more value on their own money under an immediate transaction, but the perceived value of money (pain of loss) decreases as temporal distance increases. These consistent expected shifts of cognitive focus from construal and intertemporal research may influence sellers' willingness to accept and buyers' willingness to pay

However, little is known about the effect of time or psychological distance on the endowment effect. Thus the main research question of this research is to investigate how time and psychological distance to transactions influences customers' evaluations of products by considering buyers' willingness to pay and sellers' willingness to accept. Also this research will contribute to the literature and will provide managerial implications 1) by demonstrating how psychological distance influences the value buyers and sellers assign to products; 2) by exploring the underlying mechanism: changing cognitive perspectives associated with increased psychological distance; and 3) by suggesting how changing cognitive perspective influences the salience of information.

The rest of the thesis is organized as follows. First, I review the previous literature streams on the endowment effect and temporal effects (inter-temporal discounting and construal level theory). Then I discuss five experiments. Specifically, in the first experiment, I examine the effect of temporal distance on consumers' willingness to pay and sellers' willingness to accept from participants in an online panel (Mturk). Respondents were assigned to sellers' or buyers' roles, and the temporal distance was manipulated by obtaining the selling and purchasing prices for an immediate or future transaction. The overall findings support my main proposition: as temporal distance increases, the difference between the selling and buying price decreases because the

selling price decreases and the buying price increases. Study 2 investigates whether the salience of the product (money) in thoughts about the transaction mediates the effect of time on price In study 3, I employ another measure of salience, based on the accessibility of thoughts about the product and money. Building upon these findings, the underlying mechanisms of temporal effects on price changes are examined, in two studies, where I manipulate construal level (study 4a) and where I study intertemporal discounting of products and money (study 4b). Finally, the theoretical and empirical contributions of this research are discussed.

CHAPTER 2: THEORETICAL BACKGROUND

2.1 Literature Review

2.1.1 The Endowment Effect

Research on subjective valuation and choice has suggested that people tend to set a higher selling price for their owned products than what they would be willing to pay in order to obtain the same product (e.g., Bateman, Munro, Rhodes, Starmer, & Sugden, 1997; Brown, 2005; Chapman, 1998; Franciosi, Kujal, Michelitsch, Smith, & Deng, 1996; Kahneman, Knetsch, & Thaler, 1990; Lerner, Small, & Loewenstein, 2004; Loewenstein & Adler, 1995; Mandel, 2002; Nayakankuppam & Mishra, 2005; Thaler, 1980; Tom, 2004; Tom, Lopez, & Demir, 2006; van Boven, Dunning, & Loewenstein, 2000; van de Ven, Zeelenberg, & van Dijk, 2005; van Dijk & van Knippenberg, 1998; Zhang & Fishbach, 2005). This price discrepancy between owner and non-owner for the same product has been defined as the endowment effect (Thaler, 1980), which has been regarded as "one of the most important and robust regularities to emerge from the field" (Loewenstein & Issacharoff, 1994, p. 158). The effect of ownership on willingness to pay and accept has suggested important insights to understand the underlying mechanism of transactions between sellers and buyers in the marketing literature (e.g., information processing (Carmon & Ariely, 2000; Nayakankuppam & Mishra, 2005), the ownership effect (Beggan, 1992; Peck & Shu, 2009; Sen & Block, 2009), or online bidding behavior (Ariely & Simonson, 2003; Heyman, Orhun, & Ariely, 2004)).

Then, why does ownership differentiate the selling and buying price? Prospect theory suggests that reference dependence and loss aversion may explain the endowment effect. (Kahneman & Tversky, 1979; Tversky & Kahneman,1991). Reference

dependence refers to the notion that the perceived value of a product depends on people's reference points. According to prospect theory, states below the reference point are negatively coded as losses, while states above the reference point are positively coded as gains. However, interestingly the losses from these reference points are heavily weighted more than the corresponding gains. This asymmetry between gains and losses has been termed as loss aversion.

The reluctance to trade found in the endowment effect can be explained in terms of differential responses to these losses and gains predicted by loss aversion (Kahneman & Tversky, 1979). Thus, this should be observed as a disparity between selling and buying prices for the same good (Bar-Hillel & Neter, 1996). These findings imply that understanding loss aversion will provide insights into learning the underlying mechanism of the endowment effect. In fact, recent papers have examined the moderators of loss aversion in order to understand the endowment effect (Ariely, Huber, & Wertenbroch, 2005).

2.1.1.1 Moderator of Loss Aversion

Ariely et al. (2005) examined the loss aversion and endowment literature, and suggest two critical constructs that help understand the boundaries of loss aversion: emotional attachment and changes in cognitive perspective. Emotional attachment moderates loss aversion by altering the degree of involvement in products, while changes in cognitive perspective provide the reason as to why products are viewed as a loss for sellers and why money is perceived as a loss for buyers.

2.1.1.2 Emotional Attachment

As previously discussed, the endowment effect is the price disparity between owners and non-owners, which happens because loss is more salient than gain. This emotional attachment suggests the cause of price disparity from the affective perspective. The progressive experience of ownership makes owners feel more emotionally attached to the product and lets them adjust their feeling of possession and willingness to accept an offered price (Becker & Stigler, 1977). Strahilevitz and Loewenstein (1998), for example, show a relationship between endowment and ownership history. The research does not directly manipulate emotional attachment to the product; however, the research proposes that consumers become emotionally attached to goods they own over time and as a result their perceived value of the goods they own increases. When Strahilevitz and Loewenstein (1998) manipulated the duration of the time an object was possessed, the selling price increased as a function of how long an object had been owned. Specifically, the study manipulated the possession time by endowing a participant with a mug for different time durations, ranging from 20 minutes to an hour. The results shows that once a mug was owned, an item might increase in the value attached to attaining it; in other words, even when people physically lost an object, a psychological sense of ownership influenced the increased value of the object.

In a similar vein, an extension of emotional attachment has been examined in an online auction study by suggesting how perceived ownership influences consumers' willingness to pay. Ariely and Simonson (2003) suggest the term, pseudo-endowment effect, meaning that without actual possession of an item, temporarily being the high bidder during an online auction drives higher willingness to pay. Heyman, Orhun, and

Ariely (2004) designed online auction experiments in order to examine the effect of the highest bid and anticipation of winning in the auction. Subjects had an opportunity to bid in four different auctions for University T-shirts, a gift card, a gift certificate for a local store, and a half-pound box of chocolates. In every round the participants were informed about a list of everyone who had changed their bids in the previous round. The results demonstrate that subjects who had experienced the highest bids and who anticipated winning the auction became attached to the auction and increased their bids beyond their initial willingness to pay.

2.1.1.3 Changes in Cognitive Perspective

Changes in cognitive perspective are one of the important moderators of loss aversion, which result from differences in the tasks that sellers and buyers face. The different tasks can influence information processing because sellers and buyers pursue different goals. Sellers expect to obtain appropriate gain (monetary value) against their loss (objects), while buyers anticipate gains (object) against their loss of money (Ariely, 2005). The following literature suggests how the different roles in the transaction affect information processing and price disparity.

Van Boven, Duning, and Loewenstein (2000) directly demonstrate the influence of perceived role differences on selling and buying prices. Specifically, the study focused on the effect of task differences by considering egocentric empathy gaps between owners and non-owners in their estimation of the value of products. In one experiment, they manipulated egocentric empathy gaps by asking about the other actor's valuation of a commodity. Specifically, they asked mug owners to estimate the highest purchase price of buyers or to estimate the lowest selling price of sellers. The results show that owners

overestimate the buyers' valuations, and buyers underestimate the owners' valuations. The research directly shows the importance of role and psychological cognitive perspective in value perceptions. The pain of losses influences the perceived value of gains even when they are evaluated from other roles' perspective.

Another research stream suggests that different roles prompt different information processing (Carmon & Ariely, 2000; Nayakankuppam & Mishra, 2005). Carmon and Ariely (2000) argue that buyers and sellers focus on what they give up in the transaction; sellers' willingness to accept is affected by variables related to the possession of products, while buying prices are influenced by variables associated with expenditures. Nayakankuppam and Mishra (2005) extended this research by considering the valence of the information buyers and sellers are processing: buyers focus on the negative aspect of products, whereas sellers focus on the positive aspect of objects. Specifically Carmon et al. (2000) suggest that both buyers and sellers think more about things that they are going to give up in transactions because buyers naturally consider expenditures more, and sellers think more about the product in the exchange. These differences lead sellers to increase the valuation for the products and buyers to come up with lower prices for the product, resulting in price disparities between the two different roles. They demonstrate these shifts in cognitive perspective through four experiments. They ask students to list buying/selling prices for tickets to different sporting events that varied according to the face value of the ticket and the importance of the event. They found that changes in the game importance significantly influenced the selling price more than the buying price, whereas the face value of the ticket significantly affected the buying price more than the

selling price. The findings show that roles in a transaction affect what participants attend to during a transaction.

Moreover, a study of norm salience extended the cognitive perspective literature by showing the moderation effect of norm salience on loss aversion (Aggarwal & Zhang, 2006). Two different norms were manipulated in the experiments: communal and exchange relationships. Exchange relationships refer, for example, to business-oriented relationships with others; here, the primary motivation of the exchange is to procure something from others. In this type of relationship, representative examples include interactions with strangers and business partners. On the other hand, in communal relationships, the primary motivation of the exchange concern for individuals' well being. Relationships with family and friends represent communal relationships. The study primed the two types of relationships, and the reservation price was intended to measure the influence of salient norms on the endowment effect. The manipulated salience of the communal relationship norm induced a greater degree of loss aversion, compared to that of an exchange relationship. The results imply the important effect of social psychological distance on people's willingness to pay because people feel more psychological distance to strangers than relatives (Aggarwal & Zhang, 2006).

In sum, as discussed previously, since Thaler (1980) offered loss aversion as an explanation of the endowment effect, various studies (e.g., history of ownership, norm salience, and differences in information processing) have suggested factors decreasing or increasing gaps between willingness to pay and accept. These studies have used various settings such as lottery tickets, mugs, pens, and sports tickets. (see table A1)

However, interestingly all these past studies have only considered immediate transactions. The act of endowment causes differential information processing and differential valuation for products between owners and non-owners, even with limited time to experience the product. Only a limited number of studies have considered time-related issues on the endowment effect, such as the history of product possession (Strahilevitz & Loewenstein, 1998); however, even that study was conducted on immediate transactions. The effect of the future on the endowment effect has not yet been studied.

My research will extend the endowment literature by manipulating different transaction times and will propose how temporal effects influence the endowment effect. The following question, then, is key: Does temporal distance influence sellers' willingness to accept and buyers' willingness to pay? I expect that different transaction times will influence cognitive focus because temporal distance affects people's information processing (e.g., Benzion, Rappoport, & Yagil, 1989; Loewenstein, 1987), gain and loss frames (Soman, 1998, 2004), and different aspects of information (Liberman & Trope, 1998).

2.1.2 Study of Temporal Distance

In everyday life, people make purchasing decisions not only for events that will take place in the temporally near future, but also in the distant future. Do people evaluate temporally close or distant events with the same information processing, or the same criteria? Regarding these temporally related questions, the behavioral and social sciences have demonstrated the influences of time on our decision-making (e.g., Benzion, Rappoport, & Yagil, 1989; Loewenstein, 1987; Loewenstein & Kalyanaraman, 1999;

Thaler, 1992; Ainslie, 1975; Mischel, 1974; and Mischel, Grusesec, & Masters, 1969). Among these various research studies, intertemporal discounting and construal level theory (CLT) are particularly influential. When there is temporal distance to exchanges, we may expect that both psychological distance to the transaction (CLT) and intertemporal discounting will affect consumers' value perceptions. I review these two theories in the next two sections. These theories provide concrete evidence as to how temporal effects influence a wide range of individuals' choices and cognitive foci. When there is temporal distance from actual engagement in an activity, people are systematically influenced in decision-making, information processing, and preferences (Trope & Liberman, 2000). For example, the study of intertemporal discounting choice demonstrates that when an outcome has both gain and loss components, the tradeoff among the costs and benefits are influenced by time (Soman. 1998); in a situation with both monetary gain and loss of effort, the efforts are less valued when the outcome is in the future than when it is temporally close. Consistent with the notion of intertemporal discounting theory, time influences change in the utility of an outcome, and CLT suggests that different attributes of choice are considered at different temporal distances. These findings in the temporal literature imply that temporal distance can influence individuals' cognitive focus, which is one of the most prominent moderators of endowment (Ariely et al., 2005).

2.1.2.1 Discounted Utility Model

Intertemporal choice occurs when there are immediate and delayed choices. People assign less value to time-delayed choices, so people prefer $10 today over $14 in a week (Homic, 1984). In each of these choices, a decision-maker is required to trade off

the utility of the outcome in temporally close and distant situations. People are usually more likely to choose the option with the most subjective value, which may have a lower dollar value, but is more temporally proximal. In the study of intertemporal choice, the discounted utility model (DU) (Samuelson, 1937) has been the dominant normative model. In the DU model, temporally proximal utility is simply the weighted sum of the discounted values over a given time horizon. Thus, in order to measure the indifference between outcomes (typically money) spread out over time in experiments, subjects are given the outcome for a temporally proximal condition, and they then are asked to list the dollar amount that would make them indifferent between receiving the money today or at some specified point in the future. According to this DU model, the value of future outcomes appears smaller than the outcomes for temporally close conditions when it is viewed in the present. However, in the last three decades, empirical research on intertemporal discounting has documented various findings that are not accounted for by the DU model. This happens because the DU function handles the intertemporal tradeoff with a single parameter—the discount rate—from either an economic or a psychological perspective (Frederick, Loewenstein, & O'Donoghue, 2002). As an example, people are more likely to take a larger (later) reward to a smaller (earlier) reward when both choices are expected within a year, whereas if the choices are expected within a month, the smaller/earlier outcome looms large, and a decision-maker will shift his or her preferences; people are more likely to take an smaller (earlier) outcome than large(later) outcome (Ainslie & Haslam, 1992; Hoch & Loewensten, 1991). The traditional DU model cannot explain this pattern of preferences, as they are dynamically inconsistent.

These empirical findings have led to the proposal of alternative theoretical models in order to modify the discounting utility model.

The study of discounting of mixed outcomes, one of the alternative theoretical models of the traditional intertemporal discounting model, studies multi-attribute decisions across time. Studies looking into the discounting of mixed outcomes specify a decision-maker's different preferences for losses and gains in different time frames. (Soman 1998, 2004). Soman (1998) examines the tradeoff between monetary incentives and the completion of effort (e.g., buying either fully assembled furniture or a do-it-yourself piece of furniture). He finds that when a mixed outcome is expected in the future, it is more attractive than when the same outcome is expected in a temporally close situation. Consumers are overconfident about their ability to perform future efforts (Josephs and Hahn 1995) and underestimate the pain associated with future efforts (Akerlof 1991 & Loewenstein 1996). Thus, people are willing to give less value to future efforts. Soman (2004) suggests that when there is a time delay, effort becomes more discounted than monetary rewards. By studying choices within a multi-attribute and intertemporal choice situation, he tested how time delays influence respondents' perceived importance weights, values of attributes and preferences. In one study, as an example, subjects made a choice between two vacation package options. The first option was a full-service package with a higher price that did not require the consumer to expend any effort prior to the trip. The second vacation plan involved some effort on the part of the individual prior to leaving for the trip, but the price was cheaper than the first option. The researcher manipulated the timing of the payment and the effort of the second vacation independently. Results showed that products involving consumer effort are

attractive when the transaction is expected in the future, but not when they are temporally proximal. Also, they found that the preference shift occurs because of a different perceived value of effort, suggesting different discounting profiles for effort and money.

In order to show why such reversals of preference occur as a function of time, Soman (1998, 2004) used the hyperbolic discounting model of money and effort. The discounting values of money and effort at any given point in time are captured by hyperbolic functions. He finds that the parameter for effort is greater than that for reward (money); thus, the transaction looks unattractive from temporal proximity because losses loom larger than gains. However, it looks more attractive when viewed from a temporal distance, as losses are discounted more quickly than gains as time increases. In sum, Soman's (1998, 2004) findings imply that because of different discounting rates between gains and losses, losses are more salient in the near transaction condition, while gains are more salient in the future transaction than temporally close conditions.

Because the traditional intertemporal discounting theory does not consider possible parameter differences between gains and losses, it cannot be used to predict the effect of temporal distances on the transactions between sellers and buyers. However, the discounting of mixed outcome theory can be used to make predictions about the tradeoff between monetary incentive (gain) and effort (loss), the effects of temporal distance on buyers' and sellers' prices, because it allows for parameter differences for gains and losses. Similarly, temporal construal level theory, one of the most prominent psychological theories, allows us to predict shifts in cognitive foci that affect prices.

2.1.2.2 Construal Level Theory

Construal level theory (CLT) suggests that people construe information in different ways, based on different psychological dimensions regarding temporal distance, physical distance, social distance, and probability (Liberman & Trope, 1998, Liberman Trope, and Wakslak, 2007). According to construal level theory (Trope, Liberman, & Wakslak, 2007), individuals use concrete, low-level construals to represent psychologically near events, whereas they use abstract, high-level construals to represent psychologically distant events. Low-level construals are relatively unstructured, contextualized representations that include subordinate and incidental features of events. Thus, low-level construals are rich in detail and consider the secondary features of events, such as peripheral or incidental aspects of events. High-level construals, on the contrary, represent the schematic and decontextualized features extracted from available information (Liberman & Trope, 1998).

Another proposed feature of construal-level differences on consumers' evaluations is that psychological distance affects the salience of the pros and cons of a decision (Eyal, Liberman, Trope, & Walther, 2004). For example, in deciding at what price to sell a mug, a seller might consider the advantages of having the money gained from the sale or the disadvantages of giving up the mug. Following Eyal, Liberman, Trope and Walther (2004)'s reasoning the advantages of the transaction will become more salient in the distant future, whereas the cons of the transaction are more salient when temporal distance decreases. In their first two studies, they show the reason for this shift from low level cons to higher level pros. Cons are subordinate to pros in the sense that when we consider an action like selling a mug, the importance of the cons

dependence on the existence of the pros more than the importance of the pros dependence on the existence of cons.

Construal Level Theory and Product Evaluation.

Because construal levels are associated with the superordinate or subordinate aspects of objects or events, considerable product evaluation research has paid attention to the effect of construal levels in evaluation. Thomas, Chandran, and Trope (2006) applied construal level theory to consumer choice. They demonstrate that feasibility-related information is related to purchase intentions for proximal temporal distance, while desirability information increases the willingness to pay for future consumption. In one study, participants were endowed with a memory stick-purchasing situation. After they read about the product, they were asked to list their initial purchasing intentions, and they saw information about a promotion offer written with either a coupon lowering the price (feasibility) or an additional feature at the same price (desirability) focus on the product. Further, respondents had two different temporally near or far purchasing conditions with their purchase intention questions. The results suggest that when purchases move from temporally near to far, desirability-related information increases consumers' purchase intentions, while when the purchase is expected in the near future, feasibility-related information increases the purchase intentions.

Castano et al. (2008) show that the different levels of mental construal give different weight to cost- and benefit-related aspects in product evaluation. Specifically, they show that from a temporally distant perspective, consumers are more likely to consider product performance, whereas individuals are more concerned about learning costs associated with products than the performance of a product from a temporally

proximal perspective. In one of their studies, they considered an outcome simulation and a process simulation by manipulating the mindsets of how and why. Respondents were then asked whether they were willing to use a new technology that was expected either tomorrow or a year later. The results show that process simulation significantly lowers the level of switching cost uncertainty, affective uncertainty, and feelings of anxiety under the near transaction condition, while the outcome simulation effectively lowers levels of performance uncertainty and enhances feelings of optimism in the temporally distance condition.

Construal Level Theory and Perceived Value

The previous CLT literature has demonstrated that when consumers have higher mental construals, their willingness to pay increases, in that pros constitute a higher level of construal than cons, and higher-level construals pertain to the core benefits of a product rather than the costs associated with purchasing (Trope et al., 2007).

Pham, Hung, and Gorn (2011) employed mental construals in order to demonstrate the effect of relaxation on consumers' decision-making. They proposed that relaxed and non-relaxed people mentally construe products in different ways; when relaxed people evaluate products, they assess them at a higher construal level compared to non-relaxed people, leading relaxed people to perceive objects at a higher value. They found the underlying mechanism from two streams of research: a broader and more contemplative form of thinking and construal level theory. Relaxation encourages people to use a higher level of mental construal, which leads people to evaluate objects in terms of their potential advantages, in that pros constitute a higher level of construal than cons (Eyal, Liberman, Trope, & Walther, 2004).

Bornemann and Homburg (2011) used CLT in order to demonstrate how product evaluation varies along with high and low price, under different psychological distances. They propose that psychological distance alters the weight consumers attach to the different roles of price: information as an indicator of quality or as an indicator of monetary sacrifice. In study 1, they manipulated the proximal and distant consumption conditions by varying the information regarding the alleged availability of the product, stating that it would be available either in 2 days or after 6 months. Also, respondents had price information (either a high or low price). Participants subsequently wrote down all of their thoughts while they evaluated the product. The effect of different prices was measured by coding their thoughts in terms of whether they were close to monetary sacrifice or quality perception. The results show that when people have a future perspective, the mean indirect effect of construal level on price changes via quality perception is positive and significant, while there is no significant effect with the proximal perspective. In a similar vein, when participants have a proximal perspective, the mean indirect effect of construal level on price changes via sacrifice perceptions was negatively significant, while there is no significant effect with the future perspective. In other words, the perception of monetary sacrifice for a relatively high-priced product will be higher when the psychological distance is nearer than in the far condition.

Among different psychological dimension, this research focuses on temporal effect on psychological distance. Thus, for example, when there is a temporal distance, far distance events are more likely related to the abstract, and pro aspects of events while temporally close distance events are more likely related to the concrete and con aspect of

event. These temporal effects on construal level will influence people's perceived value and evaluations.

2.1.3 Temporal Effect on the Endowment Effect

As discussed beforehand, a broad range of economic and social behavior research has suggested how temporal distance from events influences cognitive processes, evaluation, and willingness to pay. When I examine the experimental process in temporal studies, I find one interesting common feature. When a transaction is expected in the immediate future, consumers are more likely to think about loss, whereas gain becomes salient as temporal distance increases, which is consistent with both the notion of intertemporal discounting and the CLT literature (e.g., Castano (2008); Thomas, Chandran, and Trope (2006); or Bornemann and Homburg (2011)). In particular, previous studies on the CLT stream of research have mainly focused, for instance, on how mental representation is related to feasibility versus desirability. However, interestingly the attributes of feasibility and desirability are related to different aspects of product evaluation or choice. For example, even in product evaluation or choice conditions, feasibility is more related to the cost of one's behavior, and desirability is more associated with the product itself.

Along similar lines, the intertemporal discounting literature also suggests that temporal distance will influence individuals' cognitive focus. For example under an immediate temporally close setting, the pain of loss is greater than the pleasure of a gain, but as temporal distance increases, the pain of loss will be undervalued; as a result, the gain aspect will become more salient (Soman, 1998, 2004). These findings support the idea that the temporal effect will change people's cognitive focus; under the near future

condition, money is salient to buyers, but it will shift to the product as time increases, whereas sellers' willingness to accept will change because their cognitive focus will shift from the product to money as time changes.

2.2 Theoretical Framework

In this research, I will extend previous research of the endowment effect; in particular, the temporal effect on the endowment effect will be discussed, based on two possible theories. One stable cause of the endowment effect is the discrepancy in cognitive focus between buyers and sellers. As endowment studies have suggested, sellers have an interest in their products, while buyers focus on their money in transactions (Carmon & Ariely, 2000). These different cognitive perspectives induce price gaps between sellers and buyers and increase loss aversion. However, despite the unsolved empirical question of the price gap between sellers and buyers for future consumption, limited research has examined the effect of time on consumers' willingness to pay and sellers' willingness to accept. Because the temporal effect influences consumers' information processing and different cognitive foci, I expect that the temporal effect will influence selling and buying prices. The main research question of this research is to investigate the temporal effects on the price gap between buyers and sellers by suggesting the underlying mechanism of the effect.

Then, how could temporal distance influence individuals' behaviors? As I have previously discussed, time is an interesting factor that can induce a complex range of psychological, emotional, and cognitive states by influencing individuals' mental construals and expected outcomes of utility. Temporal distance causes changes in individuals' construal levels and perceived value of the product. It is not easy to consider

the effects of construal level and temporal effect, such as intertemporal discounting separately, but combining insights from the two different research streams can lead to better predictions of the temporal effect on the endowment effect.

2.2.1 Construal Level on the Endowment Effect

One research stream on CLT has suggested how temporal distance changes consumers' willingness to pay and their cognitive focus (Bornemamm & Homburg, 2011). For example, as previously discussed, when consumers have a low level of mental representation, they think about the feasibility of products or objects; however, the attributes of feasibility are related to cost rather than to the product itself, even in product evaluation: for example, the cost of products (Castano et al., 2008), moving expenses (Kim, Park, & Wyer, 2009), costs associated with purchasing and using a product (Trope et al., 2007), or price discounts (Thomas, Chandran, & Trope, 2006). On the other hand, when consumers have a high mental representation, they focus more on the product or event itself because a high construal level is associated with desirability, such as a large living space in searching for an apartment (Kim, Park, & Wyer, 2009), core benefits of the product (Trope et al., 2007), or additional features of the product (Thomas, Chandran, & Trope, 2006). The other stream of the CLT literature that can influence cognitive focus change involves the pros and cons. At higher levels of construal, for example, the potential courses of action tend to be evaluated regarding their potential advantages, on the other hand under lower levels of construal, the potential disadvantages carry more weight (Eyal, Liberman, Trope, & Walther, 2004). According to Eyal et al. (2004), pros constitute a higher level of construal than cons. They argue that this occurs because cons are subordinate to pros.

2.2.1.1 Buyers' Willingness to Pay

Psychological distance encourages more abstract representations or construals of goal-relevant objects. When people perceive products at higher levels of abstraction, they perceive products as more valuable (Pham, Hung, & Gorn, 2011). Additionally, at higher levels of construal, potential courses of action tend to be assessed in terms of potential advantages; however at lower levels of construal, potential disadvantages carry more weight (Eyal, Liberman, Trope, & Walther, 2004).

Thus, buyers in the near future condition, who employ a low-level of construal to represent an exchange tend to focus on the disadvantages of a transaction (e.g., "I will have to give up money"); but in the far future condition, they tend to employ a higher and more abstract construal level, focusing on the advantages of the transaction (e.g., "I will gain the product"). In fact, Carmon and Ariely (2000) and Dhar and Wertenbroch (2000) show that in the immediate case, buyers and sellers focus on different aspects of the exchange because they both think about what they are foregoing. In the case of buyers, they focus on expenditures in the near future condition.

Thus, the buyer's price goes up when they start thinking about what they will gain and when they want to increase the probability that the transaction will occur; the reason the seller's price goes down, when they think about a transaction abstractly, is that they want to increase the probability that the transaction will occur.

2.2.1.2 Sellers' Willingness to Accept

Unfortunately, most CLT research has been conducted, based on the consumers' perspective. However, when I consider the sellers' role and CLT, I expect that sellers will think more about efforts to sell their products under the near future condition, while they will think more about the transaction gains in the far future. Thus, consistent with the buyers' case, psychological distance encourages more abstract representations or construals of goal-relevant objects. At higher construal levels, potential courses of action tend to be thoughts of as potential advantages, whereas under lower construal levels, potential disadvantages carry more weight because pros constitute a higher construal level than cons (Eyal, Liberman, Trope, & Walther, 2004).

Thus, sellers in the near future condition who employ low construal levels to represent exchanges tend to focus on the disadvantages of a transaction, namely giving up a product they own (Eyal et al., 2004; Carmon & Ariely, 2000) However, in the far future condition, they tend to deploy abstract construals and tend to focus on the advantages of the transaction, such as the money that they will gain from the sale. The seller may assign a lower selling price to the product they own in the future because they are thinking about the benefits of the transaction, such as gaining money to use in other exchanges, and they want to make sure that the sale occurs. It is also possible that when people perceive expenditures at higher levels of abstraction, they will perceive money as more valuable (Pham, Hung, & Gorn, 2011). If they perceive money as more valuable, then they will most likely sell an item for less.

In sum, temporal distance affects the level of abstraction or construal. Near distance leads to concrete construals, while far distance leads to abstract construals. The

different construal levels affect sellers and buyers to the extent that they perceive distinct values of the same product. This discrepancy happens because loss will be more salient when people think under a low level of construal, while gain is more salient under a high level of mental construal (see figure 1). For sellers, therefore, an owned product will be more salient, whereas money will become salient when they have high-level construal level. These differences in perspective induce price disparities. However, the willingness to accept will decrease because the sellers' cognitive perspective will move from the product to money; in contrast, willingness to pay will increase because buyers will give more weight to the products when their thoughts about the transaction are expected to be in reference to the far future. Thus, our specific hypotheses are as follows:

H1. As temporal psychological distance increases, the price difference between sellers and buyers will decrease.

H1a. When a transaction is temporally distant, buyers are willing to pay a higher price than when a transaction is temporally close.

H1b. When a transaction is temporally distant, sellers will be willing to accept a lower price than when a transaction is temporally close.

In a similar vein, because temporal manipulation influences changes in construal level, the low and high level of construal will affect people's willingness to pay and willingness to accept.

H2. As the construal level becomes more abstract, the price difference between sellers and buyers will decrease.

H2a. When a transaction is construed abstractly, buyers' willing to pay will be higher than when a transaction is construed concretely.

H2b.When a transaction is construed abstractly, sellers' willing to accept will be lower than when a transaction is construed concretely.

2.2.2 Temporal Effect on Cognitive Focus

As CLT and intertemporal choice suggest, loss and gain frames will make sellers attend to the product in the near transaction condition (low construal-level condition) so that they will think more about the product-related attributes than money-related information, but they will think more about the money in the future transaction condition (high construal-level condition). On the other hand, for buyers, money will be more salient under the near transaction condition (low construal-level condition), so that they will think more about the money-related information, while product-related thoughts will increase under the far transaction condition (high construal-level condition). Also, the different cognitive foci will mediate the temporal effects on price changes.

H3. Temporal distance will affect the salience of thoughts about product or money.

H3a. When a transaction is temporally distant, cash will be more salient in sellers' thoughts than the product. Whereas, when a transaction is temporally close, thoughts about the product will be more salient than thoughts about cash to sellers.

H3b. When a transaction is temporally distant, thoughts about the product will be more salient than thoughts about cash to buyers. Whereas, when a transaction is temporally close, thoughts about cash will be more salient than thoughts about the product to buyers.

H3c. Changes in salience will mediate the effect of transaction time on price.

H4. The construal level will affect the salience of thoughts about a product or money.

H4a. When a transaction is construed abstractly, thoughts about money will be more salient to sellers than thoughts about the product. However, when a transaction is construed concretely, thoughts about the product will be more salient than thoughts about money.

H4b. When a transaction is construed abstractly, thoughts about the product will be more salient than thoughts about money to buyers. However, when a transaction is construed concretely, thoughts about money will be more salient than thoughts about the product to buyers.

2.2.2 Intertemporal Discounting and the Endowment Effect

The early intertemporal discounting literature has been applied to find out individuals' behavior about monetary outcomes. However, recent research has demonstrated that consumers discount non-monetary and mixed outcomes, such as health outcomes (Chapman, 2003) or addictive substances (Bickel and Johnson, 2003). Among these interesting findings, Soman (1998, 2004) compared the discounted value of effort and monetary outcomes, along with intertemporal choices. The study suggests temporal effects on the endowment effect, in that it includes gain and loss components. His research implies that consumers discount money and effort differently. When a mixed outcome is expected in the distant future, it appears to be more attractive than when the mixed outcome is expected in the near future, which is consistent with previous findings in temporal studies. For example, Akerlof (1991) suggests that individuals are more likely to put off effort to a future date because the perceived the value of performing

effort in the distant future is more undervalued than performing the effort immediately. In sum, losses are discounted more quickly than gains; thus, gains appear to be more salient than losses when events are expected in the distant future (Shelley 1994). The findings imply that the discount rate for products and money may be different for sellers and buyers because the meanings of gain and loss are different for buyers and sellers in a transaction, which occurs when buyers pay money for the product, and sellers give up the product for money. Thus, the consumers' role in the transaction could influence the discount rate differences between sellers and buyers in terms of their different loss and gain perspectives.

2.2.2.1 Buyers' Willingness to Pay

This research investigates the effect of roles and temporal distance on discount rates. More specifically, I hypothesize that when the transaction is expected in the near future, buyers place more value on the loss (money) aspect of the transaction, and they have a higher discounte rate for the product than for money. However the differences are reduced as temporal distance increases because the value of losses (money) discounted faster than the value of gains (product) as temporal distance increases. Thus, the willingness to pay will increase as the temporal distance to the event increases.

2.2.2.2 Sellers' Willingness to Accept

Sellers have a higher discount rate for money than that of the product when the transaction is expected in the near future, resulting in heightened product value over money in the sellers' decision. The discounting rate gap, however, will decrease as temporal distance increases so that the transaction will appear to be more attractive in the

distant versus the near future. Thus, sellers' willingness to accept will decrease as temporal distance increases.

H5a. Buyers will have a higher discount rate for the product than money when the transaction is expected in the near future; however, the discount rate gap between the product and money will decrease as temporal distance to the transaction increases.

H5b. Sellers will have a higher discount rate for money than the product when the transaction is expected in the near future; however, the discount rate gap will decrease as temporal distance to the transaction increases.

CHAPTER 3: EXPERIMENTS

3.1 Experiment 1 Temporal Effect on Price

I test H1, H1a, and H1b about the effects of temporal distance on buyers' and sellers' willingness to pay and accept in study 1. I conducted a survey with customers in an online panel. Specifically, online panels (mTurk.com) were employed to test our main hypotheses using non-student subjects. The different roles, sellers and buyers, and transaction points, near and far, were manipulated by randomly assigning different situations to each participant.

3.1.1 Method

3.1.1.1 Participants

I recruited 128 participants from an online panel (Amazon Mechanical Turk, https://www.mTurk.com). The panelists were paid a token amount for their participation.

3.1.1.2 Materials and procedure

I randomly assigned participants into the seller or buyer roles by indicating that I was interested in investigating customers' and sellers' evaluations of two new products: a pen and a mug-cup set.

I also randomly assigned participants to temporally near (today) and far conditions (three months later), resulting in a 2 role (sellers vs. buyers) X 2 transaction time (near vs. far) X 2 products (pen and cup set) mixed factorial design, with the last factor within-subjects. The order of products (either pen or cup set) was randomized. The conditions were randomly assigned to respondents by the online website program (Qualtrics). After respondents agreed to participate in this research, they were asked to describe the role of a seller and a buyer in order to remind them of their roles. After they

described their roles, the respondents read brief information about a pen with a picture and a list of features of the pen (e.g. 1. Writes smoothly, 2. Clear base will tell you exactly how much ink is left, and 3. Strong but light new technology plastic construction). Every participant suggested either a selling or buying price for the pen, and then answered questions about their attitudes toward the pen. Regarding the price question, buyers, for example, found the following questions:

"If you could buy the pen through an on-line site today, how much would you pay for it? You don't need to consider shipping fee."

"If you could buy the pen through an online site three months from today, how much would you pay for it? You don't need to consider shipping fee."

Subsequently, they read a description about a mug-cup set with a picture of the set and a list of features (e.g. 1. Perfect for a wedding gift, or for a couple, 2. Perfect for coffee or tea fans, and 3. Safe for dishwashers and microwaves). Questions similar to the pen followed, asking about the suggested price and their attitudes. I also collected data about basic demographic information, such as age and gender of the participants. For the analysis, I subjected the buying and selling prices to a repeated –measure ANOVA in order to identify differences in willingness to pay and willingness to accept among the different groups and conditions.

3.1.1.3 Results / Discussion

Among 128 completed responses, 18 participants were excluded. Six respondents could not correctly answer whether their role was a seller or a buyer, and 12 respondents were excluded because their suggested prices were 3 SDs or more away from the mean

(Ruan, Chen, Kerre, & Wets, 2005). Finally, I used the remaining 110 responses for the analysis (M_{age} = 36.16 years, 41.8% male).

To test the hypotheses, I subjected the prices for the pen and the mug pair to a repeated-measure ANOVA with role and time as independent variables. In the price analysis, the distribution of prices was skewed (non-linear), which deviated from the ANOVA assumption. Thus, I log-transformed price as has been conducted in previous literature (e.g. Peters, Slovic, and Gregory(2003), or Mandel (2002)). The 2 (role) X 2 (time) subjects ANOVA on log-transformed price revealed a significant main effect for role ($F(1, 106)$= 8.963, p=.003, and a significant two-way interaction effect between role and temporal distance ($F(1, 106) = 12.211$, p < .001). Consistent with H1, as temporal distance increases, buyers' willingness to pay increases (t = 2.85 p <.01) and sellers' willingness to accept decreases (t=2.624 p<.05). A simple effect analysis showed that there was a significant price difference between sellers and buyers under the near transaction condition ($M_{penseller}$ = 6.17 vs $M_{penbuyer}$ = 3.49), $F(1 ,44) =11.201$, p < .01, $M_{mugseller}$ 10.95 vs $M_{mugbuyer}$ = 7.29), $F(1,44)=8.839$, p <.005,   whereas when the transaction was expected to happen in the future, there was no price difference between sellers and buyers ($M_{penseller}$= 4.74 vs $M_{penbuyers}$ 5.08, $F(1, 62) = .437$, ns, $M_{mugseller}$=8.37 vs $M_{mugbuyers}$=8.87, $F(1, 62) = .001$, ns) (See table A2). These results are consistent with H1, H1a, and H1b. There was no order effect between the two groups who evaluated the pen and mugs in that order and the group who evaluated the mugs and pen in that order (pen : t >.272 and mugs t>.286).

A feasible confound in this study is the duration of ownership. As the previous literature suggests, the more the owner uses a product, the more the owner asks for the

product price and the more the buyer expects to use a product, the more the buyer will pay for the product (Lowenstein, 1998). Thus, I asked about participants' willingness to use the products by asking them about their expected usage of the pen and mugs: "If you actually owned the pen/mugs, how much would you use it?" When I controlled for the willingness to use the pen and mugs by including usage of mug and usage of money as covariates, the repeated measure still showed a significant main effect of role ($F(1, 86)$ =5.019, $p<.05$) and a significant interaction effect between role and temporal distance $F(1, 86) = 7.538$, $p < .01$)(see figure A1). The two covariates, usage of mug ($F(1, 86)=.071$, ns) and usage of money($F(1, 86)=.832$, ns) were not significant. (See table C3 and figure C1).

Study 1 provides support for our hypotheses, H1, H1a, and H1b. Specifically, the results of the online survey show that when the transaction is expected in the future, customers' willingness to pay increases, whereas sellers' willingness to accept decreases resulting in the price disparity disappearing as the temporal distance to the transaction increases.(see table a3). As figure A1 shows, these phenomena were found in both the evaluation of the pen and in the mugs set; buyers' willingness to pay consistently increases for both the pen and the mug and sellers' willingness to accept decreases for both products. Thus, changes in buyers' willingness to pay and sellers' willingness to accept were influenced by the transaction time.

Given the statistically robust findings from the two different types of products, the next question regards what is the underlying mechanism of these price changes.

As construal level theory and intertemporal discounting suggest the loss in a transaction will be more salient to sellers and buyers in the near future but the pain of

losses will decrease with increased temporal distance; CLT suggests that the cons of a transaction will be salient when the transaction is expected in the near future, while the pros will be more salient when the transaction is expected in the far future. Also sellers will have higher discount rate of money than product while buyers will have higher discount rate of product than money under a near transaction condition. However, the gap in discount rate will be reduced as temporal distance increases because I expect that different transaction times make money salient in the near transaction condition and products salient in the far transaction condition to buyers, while for sellers, money becomes salient as time increases. The following laboratory experiments manipulated the temporal differences and roles, and investigated consumers' thoughts about transactions so that I could delve deeper into the underlying phenomenon of the findings in study 1.

<div align="center">3.2 Experiment 2. Temporal Effect and Salience</div>

Our second study replicates study 1. I also study the underlying mechanism by collecting cognitive responses data. I predict that as temporal distance increases, buyers' willingness to pay will increase because they focus more on thoughts about their gain (product) than thoughts about their loss (money) (H4b), whereas sellers' willingness to accept will decrease because they focus more on their gain (money) than their loss (product)(H4a). Finally, I investigate whether these changes in salience mediate the effect of transaction time on price (H4c).

3.2.1 Method

3.2.1.1 Participants

A total of 122 undergraduate marketing students at a university in the Midwest participated in this study outside of class time. They earned partial fulfillment of course credit for an introductory marketing class.

3.2.1.2 Materials and procedure

In the experiment, subjects were randomly assigned to the seller or buyer role and to two different situations involving near and distant transactions, resulting in a 2 role (buyers vs. sellers) x 2 transaction time (near vs. far) between-subjects design.

The experiment was conducted via a paper-and-pencil survey. As the participants sat down, they found a pen that they used throughout the study. Participants were told that the research was part of a new product development study. At the beginning of the study, respondents were told that they were going to participate in a role playing game because I was interested in sellers' and buyers' perspectives in selling and buying situations. The administrator paired participants so that they could be randomly assigned to either the buyer or seller role by a coin toss. One student in the pair tossed a coin and if tails came up, the individual who tossed the coin was assigned to be a buyer, whereas if heads came up, he/she was assigned to be a seller. Temporal distance was manipulated by describing two different transaction situations: whether the transaction would be conducted today or in a month from today. Respondents were asked what price they would pay or what price they would accept (depending on their role). For example, buyers found either of the following two questions:

This pen is available today. If you buy the pen from the seller today, how much would you be willing to pay?

This pen won't be available until one month from today. If you buy the pen from the seller when it becomes available in one month's time, how much would you be willing to pay?

I used an actual pen produced by an Asian manufacturer. After participants suggested their selling and buying prices, they listed their thoughts about the transaction.

Then, participants were asked to go back to their thoughts and to indicate whether each thought was related to the product or money. After I asked about their attitudes toward the pen and demographic information, participants were debriefed.

3.2.2 Results / Discussion

Of the 122 participants, eight respondents could not correctly identify when the transaction was going to occur (3) or what their role was (5). Moreover, two additional respondents were excluded because their suggested prices were 3 times or more SDs away from the mean. Thus, I eliminated 10 participants and had 112 useable questionnaires.

For the analysis, an ANOVA was used to identify the difference in willingness to pay and accept among the different groups and conditions. The 2 (role) X 2 (time) between-subjects ANOVA on price revealed a significant main effect for role ($F(1, 108)$= 14.517, p<.001) and a significant two-way interaction effect between role and temporal distance ($F(1, 108)$ =6.682, p <.05)(see table A4). The price gap was significant in the present condition and was not significant in the future condition. (M_{seller} = 1.63 vs M_{buyer} = .901), F(1 ,54) 21.564, p <.001) (M_{seller} = 1.3196 vs M_{buyers} = 1.3536, F(1,53)=.713 , ns). As temporal distance increased, buyers' willingness to pay increased (t=-3.001, p <.05) and sellers' willingness to accept decreased (t=1.872, <.067)(see figure D1 and Table D1). These results replicate study 1 and are consistent with H1, H1a, and H1b.

In order to examine the underlying mechanism, respondents' thoughts were coded by a coder ignorant of the hypotheses. The coder's rating and the participants' rating correlated .95. Discrepancies between the coder and the participant were resolved through discussion. For example, one respondent coded "long lasting" as a money

thought; however, the coder coded it as a thought about the pen. Also some respondents, left responses blank, but the coder was able to code the thoughts as about money or the pen.

In order to analyze the buyers' and sellers' cognitive foci, I analyze the order of different thoughts. Thoughts order depends on how the choice situation or task is structured. Additionally, it is thought to reflect thought importance (Johnson, Häubl, & Keinan, 2006). According to the query theory, people initially query their memories based on the relevance to their decision. Thus, the first query receives more processing and is more influential for individuals' decisions. Salience differences were analyzed using the Standardized Median Rank Difference (SMRD) between money and the pen. The SMRD is defined as 2(MRP-MRM)/n, where MRP = the median rank of the product thought type in a participant's sequence of thoughts, MRM = the median rank of the money thought type in a participant's sequence of thoughts, and n= the total number of thoughts in the respondent's sequence (Johnson et al., 2006). This SMRD analysis is based on the query of thoughts by assigning more weights based on rank order. An analysis yielded the variable, "thought type," which approached 1 if thought about the product were more salient than thoughts about money, and which approached -1, if thoughts about money was more salient than thought about the product.

A 2 (role) X 2 (time) between-subjects ANOVA on thought type revealed significant main and interaction effects: a main effect of role (F1, 108) = 4.073, p <. 05) and a two-way interaction between role and time (F (1, 108) = 35.467, p < .001). In other words, the main effect shows that when sellers and buyers make price decisions, the salience of the product or money is different, based on their role in the transaction. The

two-way interaction occurred because as temporal distance from the transaction increased, thoughts about money became salient to the sellers, while thoughts about the product became more salient to the buyers. Also in the temporally near condition, thoughts about the product were more salient to sellers, while money thoughts were more salient to buyers ($M_{sellerpen}$=.5131 vs $M_{buyermone}$y = -.5920, t(55)=6.487, p <.001). On the other hand, under the distant transaction condition, money thoughts were more salient to sellers, but product thoughts were more salient to buyers ($M_{sellermoney}$-.2210 vs $M_{buyerproduct}$= .3247, t(53)=-2.479, p<.05). For sellers, as temporal distance increases, thoughts about money become more salient and thoughts about product become less salient based on mean changes in SMRD ($SMRD_{near\_seller}$:.5131 vs. $SMRD_{far\_seller}$:-.2210, t(53)=3.577, p<.001). On the other hand, as temporal distance increases, buyers' thought about product become more salient and thought about money become less salient ($SMRD_{near\_buyer}$:.-.5920 vs. $SMRD_{far\_buyerr}$:.3247, t(55)=-4.905, p<.001. These results are consistent with H4, H4a, and H4b (see Figure D2).

Mediator

To test whether the thought type (SMRD) mediated the effect of time on price, I conducted two separate analysis for buyers and sellers. In both analyses, I used Sobel's z-test and the bootstrapping method. The main differences between Baron and Kenny's tests(1986) and bootstrapping(Zhao, Lynch, and Chen, 2010) depends on whether I considered the one-dimensional mediation effect, as "full," "partial," and "non" classification, as employed by Baron and Kenny, or the two-dimensional mediation effect, - the indirect and the direct effect. Baron and Kenny measures the strength of mediation effect based on lack of the direct effect not by size of indirect effect; mediation

effect is strongest when indirect effect is significant but when direct effect is not found. Although, they claimed that "full mediation" to be the gold standard, the majority of studies find "partial mediation" with a significant direct path c. Zhao, Lynch, and Chen (2010) contend that the significant direct path can indicate an omitted mediator by considering the size of indirect effect and by suggesting five different types of mediation effects. In order to achieve a robust mediation effect, this research employed two different mediation approaches.

In general, our procedure followed the logic described regarding the nature of a mediating effect (Baron & Kenny, 1986). Full or partial mediation can be inferred, if and only if the following conditions are met: (1) temporal differences predict price; (2) time predicts SMRD ; (3) SMRD predicts price; (4) time and SMRD predict price; and (5) the effect of time on price declines (partial mediation) or disappears (full mediation) when the effects of SMRD are statistically controlled for in explaining price. In order to show the mediator effect, I separately performed the analysis for buyers and sellers.

As figure D3 shows, (1) the total effect of time on price change is significant for both sellers and buyers (seller : $t(55) = -1.8722$, $p < .07$; buyer : $t(57) = 3.011$, $p < .01$), (2) the effect of time on SMRD was statistically different from zero, (seller: $t(55) = -3.5767$, $p < .001$ vs. buyers :$t(57) = 4.9053$, $p < .001$). (3) When the time was controlled, there was a statically significant effect of SMRD on price changes (seller: $t(55) = 2.2709$, $p < .005$ vs. buyers : $t(57) = 2.5543$, $p = .05$). (5) For both sellers and buyer, the effect to time on price was insignificant when SMRD was controlled (seller : $t(55) = -0.6946$, ns, buyer : $t = (57) = 1.2736$, ns).(4) Lastly the indirect effect of Time and SMRD was examined by comparing the effect differences between effect of time on price (1) and the effect of

SMRD on price when time is controlled (3). The significant results of Sobel test from sellers and buyers directly addresses the indirect effect in this model; whether the total effect of time on price is significantly reduced by including SMRD to the model (seller: z=-1.8658, p=.01 vs. Buyers : z=2.2294, p=.05). (see figure D3)

The bootstrapping analysis was conducted based on 5,000 bootstrap samples. In terms of the buyers' side, the bootstrap estimates indicated that the total effect of time on price was significant (B=0.4525, t = 3.0110, t <.05) when the SMRD was included in the model. Furthermore, the indirect effect through the SMRD was significant, with a point estimate of .2421 and a 95% confidence interval of .0470 to .5243. This pattern of results indicates complementary mediation for buyers (Zhao, Lynch, & Chen, 2010). Regarding the sellers' case, I found that the mean indirect effect from the bootstrap analysis was negative and significant (a x b = -.15, z=-1.9797, p<.05), with a 95% confidence interval, excluding zero (-.3560 to -. 0150). In the indirect path, a unit increase in temporal distance increased the SMRD by a = - .7705 units; b = .2034, so by holding constant time distance, a unit increase in the SMRD increased liking by .2034 units on a -1 to 1 scale. The direct effect c (-.2615) was marginally significant (B=-.2615, t=-1.8722, p= .07). This pattern of results indicates competitive mediation for sellers (Zhao, Lynch, & Chen, 2010) which is discussed in the discussion. Buyers and sellers have different types of mediation effect, complementary and competitive mediation, because of the different direction of price changes. In sum, these findings suggest that the SMRD mediated the effect of time on price (see table D2).

These results both replicate and extend the findings of study 1. In both study 1 and study 2, the endowment effect disappears when the transaction is expected in the

future. Study 2 also suggests an underlying mechanism of the temporal effect on price: differences in the salience of thoughts about the product mediate the effect of time on sellers' willingness to accept and buyers' willingness to pay. Two different mediation effect analyses, the Sobel test and the bootstrapping analysis, suggest that SMRD mediates the effect of time on price.

Zhao et al. (2010) extended Baron and Kenny's (1986) research by suggesting five different types of mediators. They provide an overarching framework that considers two dimensions – the indirect and direct effects—rather than full, partial and non-classification. Regarding the mediation effect I found in this analysis, both complementary and competitive mediations have significant indirect and direct effects; however, the indirect and direct effects' directions are the same in complementary mediation while the directions are different in competitive mediation. This happens because the directions of willingness to pay(positive) and accept(negative) are different. Both complementary and competitive mediation implies that even though the mediator is consistent with the hypothesized theoretical framework, there could be an omitted mediator in the direct path besides the effect of the SMRD. As the mediator analysis suggests, the loss (money) was more salient than the gain (pen) to buyers under the near transaction condition, while the gain (pen) was more salient than the loss (money) in the future transaction condition. Consistent with buyers, gain (money) becomes salient to sellers as the transaction time increases. The shift of the gain and loss perspectives influences buyers' willingness to pay and sellers' willingness to accept.

Even though study 2 demonstrates the effect of salience on price changes, the SMRD measure has some limitations. SMRD is calculated based on the primacy of type

of thoughts. In other words, because the SMRD measure standardizes the number of thoughts and gives a weight based on the order of the thoughts, the measure does not show the proportion of thoughts in a protocol, which could also reflect salience differences. Therefore, I also investigate the proportion of thoughts. Regarding the total number of thoughts, I include the number of thoughts about the product, money and something else. Consistent with the SMRD, there was a two way-interaction between role and transaction time on the proportion of money and product thoughts (F_{money} (1, 108) =6.595, p<.01), $F_{product}$ (1, 108) =14.067, p<.001)). Under near transaction conditions, sellers had a higher proportion of product thoughts (M_{seller}:.6043 vs M_{buyer} :.4736, t(55)=2.239, p=.05) but a lower proportion of money thoughts (M_{seller} : .3282 vs M_{buyer} : .4504, t(55)=-2.195, p<.05) and the buyers had a higher proportion of money thoughts but a lower proportion of product thoughts than sellers. Under temporally distant condition, the buyers' proportion of money thoughts was higher than the sellers' (M_{seller}:.4067 vs M_{buyer} :.6264, t(53)=-2.995, p<.01), but the proportion of product thoughts was the same for buyers and sellers (M_{seller}:.4078 vs M_{buyer} :.3069, t(53)=1.505, ns). The results also show that as temporal distance increases sellers' proportion of thoughts about the product in the thought protocol decrease from .60 to .41(t(53)=3.910, p<.005); however, the proportion of money thoughts were not changed(t(53)=-1.315, ns). Regarding temporal effects on buyers' thought, the proportion of though about the money in the thought protocol decreased from .4504 to .3069 (t(55)=2.306, p<.05) while the proportion of thought about the product in the thought protocol increase from .4736 to .6264 (t(55)=-2.382, p=.05) (see tale D3 and D4). The consistent results suggest the effect of time on salience changes.

For a better understanding of the effect of salience on sellers' willingness to accept, and buyers' willingness to pay, study 3, thus, measured salience by considering memory traces and information structure differences between sellers and buyers.

3.3 Experiment 3. Systematic Salience Differences and Time

In study 2, I inferred salience by measuring the order of thoughts. However, there are other ways to infer salience. One method, which I use in this study, is to infer salience by measuring the accuracy and retrieval speed for different types of thoughts.

Specifically in Study 3, I directly measure the salience of product and money thoughts by examining recognition error rates and response latencies to previously presented statements. Patterns of response latencies and of errors in responses to true/false statements about products and money are a nonreactive means of examining whether buyers and sellers are attending to different types of information (Bassili 1996; Nayakankuppam and Mishra 2005). I expect that both roles and transaction time should affect recognition error rates and response latencies. As the previous Study 2 suggests, under a near transaction condition, the loss will be more salient to both buyers and sellers, so the product will be more salient to sellers than buyers, and money will be more salient to buyers than sellers. Thus, in the immediate condition, sellers should make fewer errors on and respond more quickly to product statements than buyers and sellers should make fewer errors on and respond more quickly to money statements than buyers. I am also predicting that as sellers' attention shifts from the loss to the gain as temporal distance increases, the sellers' error rates and response latencies to product statements s will increase and their error rates and response latencies to money statements   will decrease as temporal distance increases. Similarly, as the buyers' attention shifts from the

loss to the gain as temporal distance increases, the buyers' error rates and response latencies to product statements will decrease and their error rates and response latencies to money statements will increase as temporal distance increases.

3.3.1 Method

3.3.1.1 Participants

One hundred and forty-two students in an Introduction to Marketing class were recruited. Participants received partial class credit for completing this experiment.

3.3.1.2 Materials and Procedure

I randomly assigned participants to temporally near and far conditions (three months later) and two roles, resulting in a 2 role (sellers vs. buyers) X 2 transaction time (near vs. far). In addition, I asked participants to make true/false judgments about 8 products and money- related statements.

Specifically, this experiment consisted of two phases. In the first phase, when participants sat in front of a computer, they were instructed that there was a plan to create an online market. Half of the students were assigned to selling a mug with a University logo, and half were assigned to buying the mug. After being assigned to their roles, all participants found an image of a coffee mug with a University logo. They also read information about two benefits of having money and two benefits of having a mug (see Table A6). For the manipulation of temporal distance, I told them that the online market would open either tomorrow or in three months. Based on their temporal conditions, the sellers (buyers) were asked to suggest their selling price (buying price) for a transaction to be conducted either tomorrow or in three months. After the first phase, all participants performed a filler task for five minutes. The second phase was designed to investigate the

differences in memory traces and information structure between sellers and buyers (Anderson 1983; Anderson and Bower 1973). All participants found statements that they had seen in the first phase, but either in true or false form. They were asked to recognize new and old information. They were instructed, "If you have ever seen these statements before, please click 'YES,' but if you have not, then please click 'NO' as quickly and as accurately as possible." In the following screen, 16 probes (8 in true form and 8 in false form) appeared, one by one(see table F1). The media lab software stored the response time about each probe. Lastly, the participants were requested to provide demographic information and were then debriefed.

3.3.1.3 Analysis

Buying and selling prices: Among the 142 completed responses, 15 were excluded from the analysis because their response times about the statements were 3 SDs or more away from the mean (Ruan et al., 2005). Finally, 127 responses were used for the analysis. Consistent with previous Study 1 and Study 2, the 2(role) x 2(time) subject ANOVA on log transformed price revealed a significant main effect for role ($F(1, 123)= 5.624$, $p<.05$) and a two-way interaction between role and time ($F(1, 123) = 6.646$, $p< .05$). The endowment effect differentiated the price between sellers and buyers under the near transaction conditions ($F (1, 55) =7.922$, $p< .01$); however, the effect disappeared when the transaction was expected in the future ($F (1, 68) = .035$, ns) Buyers' willingness to pay marginally increased ($t=-1.608$, $p<.1$) and sellers willingness to accept decreases as temporal distance increases. ($t=2.803$, $p<.05$) (see figure F2).

Error analysis. In order to investigate the systematic salience differences between sellers and buyers, as well as the temporal influences, the patterns of errors were analyzed.

All participants were asked to recognize 8 probes (4 product-related and 4 money-related probes). Among 1,016 total responses, participants made 156 (15.4%) errors. Buyers made 85 errors (16.6%) among 512 total responses, while sellers made 71 errors (14.1%) among 504 responses.

For a better understanding of buyers' and sellers' systematic salience differences and the effect of time, repeated measures of error patterns were analyzed. Specifically, in this analysis, error rates served as a dependent variable. The patterns of errors made by buyers and sellers across the near and far transaction conditions were tested through an error analysis with a logit link function to accommodate the binary nature of the dependent variable. (i.e., 0 for correct and 1 for incorrect). In order to test the proposed H6, H6a and H6b, hierarchical linear modeling (HLM) was used because this modeling method allows us to account for the hierarchical nature of our data in which micro-level individual observations (level 1) are nested within macro-level different roles and transaction conditions (level 2). HLM is a powerful method to investigate nested data with repeated measures for the following two reasons: 1) HLM takes into account the different variances and covariances at different level analyses; and 2) HLM incorporates heterogeneity in individual and group effects into the regression model.

In HLM analysis, level 1 refers to all of the participants in this study, and level 2 refers to 8 possible transaction conditions; two different roles (seller vs. buyer) X temporal effect (temporally close vs. temporally distant transaction) X 2 forms (probes about product vs. probes about money). At level 1, I express the participant error rate as the sum of an intercept for the transaction conditions (β_{jk}) and the random error (δ_{ijk}). In

the level 2 equation for each participant, a level 1 coefficient is modeled as a function of an intercept, seven fixed effects (e.g., τ_{p1}, τ_{p2},…, τ_7), and a random effect (e.g., μ_{jkl}) to capture differences within various transaction conditions. Thus, the aggregated model allows us to determine whether the results of the error rate vary among different transaction conditions.

LEVEL 1
$$LogitY_{ijk} = \beta_{jk} + \delta_{ijk} \tag{1}$$

LEVEL 2

$$\beta_{jkl} = \tau_{0i} + \tau_1 ROLE_j + \tau_2 TIME_K + \tau_3 FORM_l + \tau_4 ROLE_j TIME_K + \tau_5 ROLE_j FORM_l$$

$$+ \tau_6 TIME_k FORM_l + \tau_7 ROLE_j TIME_k FORM_l + \mu_{jkl} \tag{2}$$

Augmented model

$$LogitY_{ijk} = \tau_0 + \tau_1 ROLE_j + \tau_2 TIME_K + \tau_3 FORM_l + \tau_4 ROLE_j TIME_K + \tau_5 ROLE_j FORM_l$$

$$+ \tau_6 TIME_k FORM_l + \tau_7 ROLE_j TIME_k FORM_l + \mu_{jkl} + \delta_{ijk} \tag{3}$$

$i = 1,\ldots,$ I identifies the participants

j = seller(1) or buyer(0)

k = Near future transaction(0) or Distant future transaction(1)

l=product(1) or money(2)

$ROLE_j$= dummy variable equal to 1 if the role was the seller; the role was the buyer

$TIME_k$= dummy variable equal to 1 if the transaction time was the near future; 0 if the transaction was the distant future

$FORM_l$= dummy variable equal to 1 if the probes were about money; 0 if the probes were about the product

δ_{ijk} = error term, which is distributed normally with a mean of 0 and variance σ^2

μ_{jkl} = normal error terms with a mean of 0, variance and covariance σ^2

3.3.2 Results

The goodness of fit regarding this model was accessed using the Akaike Information Criterion (AIC). The augmented model shows a higher value than that of the basic model (AIC: Base=875.26 vs. Augmented=866.07). Table F2 shows the augmented-level estimates from the hierarchical model. The estimated regression coefficients represent that role (b=-0.4112, t(885)=-1.99, p<0.05, temporal distance (b=0.1974, t(885)=-0.5006, p<0.05), role*temporal distance(b=0.6069, t(885)=2.25, p<0.05), statement type*temporal distance(b=0.7201, t(885)=2.46, p<0.05 and role*statement type*temporal distance (b= -1.006, t(885)=-2.52, p<.05) are significant predictors of the error rate (see table E2). In order to investigate whether the predictors significantly predict error rates, I conducted a hypothesis test.

As anticipated in H6, the three-way interaction among role, time, and statement type was significant (F(1, 885) = 6.37, p<0.001). I also analyzed the order of the statement and the format of questions (either true or false forms) as possible factors that could influence the error rates. There was a main effect of statement format (F(1, 861)=6.89, p<0.01) and order (F(1, 861)=5.79, p<0.01), but the three-way interaction of role, time, and form was not qualified by order (F(1, 861)=2.52, ns) or statement format (F(1,861)=0.97, ns)(see table F3). I investigated this three-way interaction further by considering 1) the probability of making errors on product versus money statements and 2) the distribution of errors in each of the conditions (see table F3)

The significant variables in the augmented model infer that the error rates vary across transaction conditions. Based on the significant relationship between the dependent variable (error rate) and predictors, the probability of making errors in each condition was investigated. For example, when the sellers who were assigned to the future transaction condition responded to the product-related statements, the probability of making error was calculated by converting the odds to a simple probability (4). The error rate was 0.3319 (see table F4)

$$\ln(\frac{P}{1-P}) = \tau_0 + \tau_1 ROLE_j + ... + \tau_6 TIME_k FORM_l + \tau_7 ROLE_j TIME_k FORM_l + \mu_{jkl} + \delta_{ijk} \qquad (4)$$

I conducted a frequency test to investigate the distribution differences among each condition. For example, under the near transaction condition, I compared whether there were differences between sellers and buyer regarding money-related errors. A chi-square test showed that sellers' and buyers' mistakes were distributed evenly. However, when the transaction was expected in the future, sellers' and buyers' mistakes were differently distributed about money-related errors. In the temporally distant condition buyers make more errors on money statement than would be expected if the errors were made by chance (21 vs. 16 χ^2 (1)=3.528, p<.10). The positive standard residual of buyers, (Std.r =1.3, suggests that under the temporally distant condition, buyers were marginally (when the critical value was 0.1) more likely to make mistakes about money-related statements than the expected frequency[1]. However, sellers made fewer errors (Std.r =-1.3) than the

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[1] Expected frequency refers the expected number of errors presumed to occur on average in each condition. The expected frequency for each cell was calculated based on the following formula, $f_e = \frac{n_r n_c}{n}$, where n_r = number of errors in the row, n_c=number of errors in the column (sellers vs. buyers), n= total sample size

expected frequency. Buyers are more likely to make money errors than sellers in the distant future; therefore we have preliminary evidence that money is less salient for buyers than sellers in the distant future, which we would expect if both buyers and sellers focus on their gains instead of their losses in the distant future.

Regarding product-related questions, buyers' and sellers' mistakes were differently distributed under near transaction conditions. In the temporally near conditions sellers make marginally fewer errors on product statements than would be expected if the errors were made by chance (25 vs 19.3, (χ^2 (1) =4.057, p<0.05). The positive standardized residual (Std.r =1.3) infers that when buyers make decisions, they are more likely to make mistakes, compared to the expected frequency. On the other hand, the negative standard residual (Std.r =-1.3) indicates that when sellers make decisions about product-related probes under near transaction conditions, they are marginally less likely to make mistakes than the expected frequency. However, no distribution difference was found under the temporally distant transaction condition regarding product-related questions (χ^2 (1) =1.039, ns)(see table F5). In other words, buyers are more likely to make product errors than sellers in the immediate transaction; therefore we have evidence that the product is more salient to sellers than buyers in the immediate condition, which we would expect if both buyers and sellers focus on their loss in the near condition.

In order to examine the mediation effect of salience on price changes, the 5000 bootstrap samples were analyzed for both sellers and buyers. The estimated probability of making errors on money and product related questions were tested separately as

mediators. The estimated probability of making errors on money related questions does not mediates the effect of time on buyers' and sellers' price changes (Sellers : axb=.0690, z=1.2701, ns vs. Buyers : axb=-.2079, z=-.9770, ns).

Regarding errors on product-related questions, the estimated probability of making errors on product related questions mediated the effect of time on sellers willingness accept. (axb = -.3719, z=-2.1705, p<.05). The indirect effect was negative and significant with 95% confidence interval. In terms of indirect path, the time decreases the probability of error rate by $a_{sellers}$=.1255 units and the error rate decreases sellers' willingness to accept by b = -2.9670 unit when time is holding constant. The direct effect c_{seller}(-.2531) was also significant (Seller : t=-4.3524, p<.001). In summary, the probability of product errors marginally mediates the effect of time on buyers' and sellers' prices (see Figure F3). But error rate on product-related questions does not mediate the temporal effect on buyers' willingness to pay (axb=.0206, z=1.3573, ns)

Latency Analysis. In order to investigate the different information structure between sellers and buyers, response latencies (response times for the questions, "Have you ever seen this statement before?") were used as a dependent variable. However, before the analysis, logarithmic transformation was conducted to normalize the distribution of latencies (Fazio 1990). The transformed latencies were regressed on role (seller vs. buyer), statement type (product vs. money), and time (near future vs. distant future). The latency analysis revealed a significant main effect of statement type $(F_{(1,123)}=34.82, p<.001)$ and a three-way interaction of role, time, and statement type $(F_{(1, 123)}=13.29, P<.001))$. The main effect of statement type was found because all

participants took more time to access money-related probes than product-related ones. The two-way interaction between time and role was qualified by statement type.

Turning to the latency analysis for product and money statements, I found that there was a two-way interaction between time and role for both the money $(F=(1,123)=7.48$ $p<.001)$ and product statement latencies $(F(1, 123)=3.60$ $p<.10)$. For money statements in the near future condition, buyers' response latencies were faster than those of the sellers $(M_{buyer\_near\_money}=2923.68ms$ vs. $M_{seller\_near\_money}=3553.19ms$, $F(1, 55)=5.44$, $p<0.05)$, indicating that money is more salient to buyers than sellers in the near future. For buyers, response latencies became slower as the temporal distance increased $(M_{buyer\_near\_money}=2923.68ms$ vs. $M_{buyer\_far\_money}=3490.85ms$ $F(1, 62)=6.22$, $p<0.05)$ however, sellers' response latencies was not influenced by time $(M_{seller\_near\_money}=3553.19ms$ vs. $M_{seller\_for\_money}=3201.58$, $F(1, 61)=1.821$, ns).

On the other hand, for the product statements, sellers' response latencies marginally increased as the temporal distance increased $(M_{seller\_near\_product}=2603.47ms$ vs. $M_{seller\_far\_product}=2881.89ms$, $F(1.61)=2.99$, $p<.10)$, indicating that the sellers were paying less attention to the product in the distant future than in the near future. This means a marginal differences emerged in product response latencies for sellers and buyers in temporally distant transaction condition $(M_{seller\_far\_product}=2881.88ms$ vs. $M_{buyer\_far\_product}=2650.49ms$, $F(1, 68)=2.81$, $p<.10)$ (see table F8 and figure F4).

For better understanding of salience, the mediation effect of response latencies on the effect of time on price changes was investigated. Regarding product-related questions, the response latency does not mediate the temporal effect on sellers' willingness to pay and buyers' willingness to pay (Sellers : axb=-.0088, z=-1.0448, ns

vs. Buyers : axb=-.0260, z=-1.20, ns). However, regarding money-related questions, the response latency marginally mediates the temporal effect on buyers' willingness to pay (axb = -.0214, z=-1.7757 p<.10.) with 95% confidence interval. In terms of indirect path, the time increases buyers' response latency by a=.1773 units. The buyers' response latency increase the price by b=.1207 unit when time is holding constant. The direct effect was also significant for buyers (sellers c= .1938, t=3.5255, p<.001). However, mediation effect of response latencies was not found from sellers (seller : axb=.0302, Z=1.4675, ns) (see Figure F5).

Three factors that are able to influence response latencies were also examined, such as new statements (false forms of statements), the statements order, and error pattern (errors). I, thus, investigated whether these variables moderated the three-way interaction between role, time and statement type. However, the question order (F(1, 829)=0.28, ns), questions format, either true or false statements, (F(1, 123) =0.45, ns), and the error in responses (RESP) (F(1, 27)=0.72, ns) did not moderate the three-way interaction.

Additionally, I investigated the differences in response latencies with the samples that made correct answers by excluding the error responses. Consistently, there was a main effect of statement type (F1,123)=39.60, p<.0001) and three way interaction among role, statement type, and time (F1, 123)=6.79, p<.05). Within product and money context behaviors, there was a two-way interaction between time and role for both money (F=(1,123)=5.14 p=.0252) and product contexts (F(1, 123)=6.53 p<.05). Consistently, sellers' response latencies about product was faster than buyers under immediate transaction condition ($M_{seller\_near\_product}$=2743.21ms vs. $M_{buyer\_near\_product}$=3299.81ms, F(1, 55) =4.91 p<.05). However, sellers' response latencies about product was not different

from that of buyers' under temporally distant condition (F(1, 68)=1.12, ns). Sellers' response latencies about product became slow as temporal distance increased ($M_{seller\_near\_product}$: 2984.82ms vs. $M_{seller\_far\_product}$= 2729.59ms, F(1, 61)=6.24, p<.05). On the other hands, buyers response latencies about money was faster than that of sellers' under immediate transaction condition ($M_{buyer\_near\_money}$=3299.28ms vs. $M_{seller\_near\_money}$=4181.48ms (1, 55)=5.10, p<0.05) and the response latencies became slow as temporal distance to the transaction increases ($M_{buyer\_money\_near}$=3299.28ms vs. $M_{buyer\_money\_far}$=4110.27ms, (1, 62)=5.21, p<0.05) The consistent results between pooled data and no error condition provide concrete evidence of the systematic salience differences between sellers and buyers and temporal effects on it (See F3).

3.3.3 Discussion

In this study, the temporal effect on price change is consistent with the results of previous studies: the price gaps – the endowment effect – disappeared as temporal distance increased. Regarding the salience effect, the results of a three-way interaction from the error analysis and latency analysis support H6 and H7. Sellers and buyers showed different systematic error patterns and response latencies under temporally different transaction conditions.

This study was designed to suggest a better understanding of the causal relations between salience and price changes for buyers and sellers, and the influence of temporal distance on the patterns of salience and its effect on price changes. Two different analyses were employed to test the casual relations among role, salience, and time. Even though the two different analyses show different aspects of the effects, a combination of the findings suggest a clue of the temporal effect on systematic salience differences

between sellers and buyers: sellers appear to have a better representation of product-related information under temporally close conditions than temporally distant conditions (the result of error analysis), and better representations of money related information under temporally distant conditions than temporally near conditions (error and latency analysis). Buyers appear to have a better representation of money-related information under the near transaction condition than the distant conditions (latency analysis). Mediation analysis confirms the importance of money thoughts for buyers and product thoughts for sellers. These process measures of salience, thus, showed why the endowment effect decreases or disappears, and how salience changes as temporal distance increases. This would be the prediction made by construal level theory and intertemporal discounting. The following study discusses the fundamental underlying mechanism of the temporal effect.

3.4 Experiment 4. Construal Level vs. Intertemporal Discounting

Study 1 suggests how temporal distance changes sellers' willingness to accept and buyers' willingness to pay. Furthermore, studies 2 and 3 suggest that the temporal effect influences changes in the salience of the product (money) and mediates consumers' and sellers' price changes. In study 4, I investigated possible theoretical explanations for temporal distance changes in salience: construal level (Study 4a) and intertemporal discounting (Study 4b).

3.4.1 Experiment 4a. Construal Level

In the previous studies, I have manipulated the transaction time; however, I did not measure construal level, which I hypothesize is the underlying mechanism for my

findings. Thus, in study 4a, I directly investigate the effects of construal level on salience differences and price differences.

In this study, I examined whether the changes in cognitive focus are caused by psychological distance or by temporal distance. I expect that temporal distance leads people to have different levels of construals, which makes people focus on different aspects of the transaction. Thus, in this study I directly manipulate construal level and test the effect of construal level on price changes (H2, H2a, and H2b) and salience changes (H4, H4a, and H4b).

3.4.1.1 Method

Pretest**.** For the manipulation check associated with the construal level manipulation, a pre-test was performed prior to the main study. Forty-three respondents from an online panel (mTurk) completed the pre-test. They were randomly assigned to either a global or a local perception condition. After the respondents finished Navon's task (1977), they then completed the behavior identification form (BIF) scale to measure their construal level. While the BIF measure was originally designed to assess personality differences (Vallacher and Wegner 1989), recent studies suggest that psychological distance also affects the response on this BIF measure (Forster, Liberman, and Shapira 2009). The BIF presents twenty-five activities, each followed by two restatements, one representing the concrete aspect of the behavior, and the other one corresponding to the abstract aspect of the behavior. For example, about the behavior of "locking a door," two restatements follow: 1) "putting a key in the lock," which is related to a more concrete aspect of locking a door; and 2)"securing the house," which is related to a more abstract aspect of locking a door. For the analysis, each high-level behavior construal was scored

as 1, and each low-level behavior construal was scored as -1. Mean scores, computed for each participant, ranged from -1 to 1 (Forster, Liberman, and Shapira 2009). As expected, when respondents were construed to global thinking, they indicated a higher score on the BIF than locally construed ($M_{Highlevel}$=0.1761vs. $M_{lowlevel}$=-.0136, t(41)=3.865, p<.001).

Participants. Ninety-five participants were voluntarily recruited from an undergraduate marketing program in the Midwest. Students received partial course credit for their participation.

Materials and Procedure. The basic procedures was similar to those of study 2, with the exception that construal level was manipulated instead of temporal distance. A 2 (seller vs. buyer) X 2 (high construal vs. low construal) between-subjects design was used.

In this experiment, 95 subjects were assigned into two groups—sellers and buyers—and into two different conditions: low and high construals. All participants were endowed with a mug and were asked to indicate selling/buying prices and their evaluations. This research was conducted based in two phases: 1) the manipulation of construal levels; and 2) the evaluation of a mug.

When all of the participants sat in front of a computer, they were informed that they were going to participate in a study with many different parts. After they received the instructions, the first phase started, designed to manipulate construal level. Participants completed one of two versions of the Navon task (Navon, 1977). In the task, respondents view large letters made up of small letters. If they were assigned to the low construal level condition, they answered the question "The small letter that the figure is made up of is _____, " while if respondents were assigned to the high level construal

condition they answered the question, "The large letter formed by the overall shape of the figure is _____" (see Appendix G). Pparticipants responded to 20 figures. After participants completed the Navon task, they learned that the next study was designed to understand how people select prices for items to sell or buy. The role of either seller or buyer was randomly assigned. After they had time to look at the mug on their table, participants were asked to list their selling (or buying) price, based on their role. For example, when a participant was assigned to the sellers' group, they answered the question, "What is the minimum amount you would be willing to accept to sell this mug? You don't need to consider shipping fees," while the buyers' group was asked to suggest the maximum amount of money that they would be willing to pay for this mug. After they listed their thoughts about what they were thinking as they were deciding on their prices, they evaluated their thoughts as to whether they pertained to money, the product, or something else. After they evaluated the mug and provided demographic information, they were debriefed.

3.4.1.2 Results

Of the 95 participants, 3 respondents were excluded from the analysis because their suggested prices were 3 times or more SDs away from the mean. Thus, 92 participants were used for the analysis.

Price. An ANOVA was used to identify the differences in willingness to pay and accept among the different groups and conditions. The 2 (role) X 2 (construal level) between-subjects ANOVA on log transformed price revealed a significant two-way interaction effect between role and construal level ($F(1, 91) = 3.906$, $p<.05$). The price gap was significant in the low construal level condition ($M_{seller} = 5.46$ vs. $M_{buyer} = 3.93$,

t(44)=2.374, p<.05) and was not significant in the high construal level condition (M_{seller} = 3.98 vs. M_{buyers} = 4.35, t(44)=-.439, ns). As the construal level changed from low to high, sellers' willingness to accept significantly changed (t(44)=2.450, p=0.05); however, buyers' willingness to pay stayed the same (t(44)=-.479, ns) (see Figure I1 and Table I1).

To assess the impact of the construal level on salience, the SMRD, the order of thoughts was considered. The SMRD refers to the median rank differences between the product and money thoughts by standardizing the total number of thoughts. An analysis yielded the variable, "thought type," which approached 1 if the product was more salient than money, whereas if the value approached -1, money was more salient than the product. The 2 (role) X 2 (construal level) between-subjects ANOVA on thought type revealed a two-way interaction between construal level and role (F(1, 91)=4.213, p<0.05). There was a difference in thought type between sellers and buyers under the low construal level condition ($M_{seller\_lowconstual}$=.2263 vs. $M_{buyer\_lowconstrual}$=-.0619, t(44)=1.983, p<.10), but no difference under the high construal level condition($M_{seller\_highconstrual}$=-.1052 vs. $M_{buyer\_highconstraul}$=.0243, t(44)=-.910, ns). Also for sellers, when a transaction was construed concretely, product thoughts were listed earlier than money thoughts; however, money thoughts were listed earlier than product thoughts when the transaction was construed abstractly ($M_{seller\_lowconstrual}$=.2263 vs. $M_{seller\_highconstrual}$=-.1052, t(44), p<0.05). No changes were found from buyers ($M_{buyer\_lowconstraul}$=-.0619 vs. $M_{buyer\_highconstrual}$=.0243, t(44)=-.609, ns). This pattern of results is consistent with significant price decreases for sellers but non-significant price increases for buyers (See Figure I2).

Mediation effect

In order to examine the mediation effect of SMRD on price changes, the 5000 bootstrap samples were analyzed for sellers. I did not test mediation of SMRD for buyers because there was not effect of time on price. . Regarding sellers' case, I found that the direct effect was negative and significant (a xb = -.1949, z=-1.9223, p<.10), with a 95% confidence interval, excluding zero (-.5007 to -.0376). In terms of indirect path, the time decreases the SMRD by a=-.3314 units and SMRD increases the price by b=.5882 unit when time is held constant. The direct effect c(-.4525) was also significant (t=-2.4499, p<.05) (See Figure I3).

3.4.1.3 Discussion

In study 4a, I directly examined the effect of construal level on price changes mediated by the salience of the product and money, and I found that sellers in the low construal level had a higher asking price for the mug than buyers, which was consistent with previous endowment studies; however, the price disparity between sellers and buyers disappeared for individuals in the high construal level condition, which provides supporting evidence for H2 and H4. As the transaction is construed to be abstract, sellers' willingness to accept decreases H2a. However, buyers' willingness to pay is not influenced by changes in the construal level (H2b). These price changes are consistent with the patterns of thought type listings (H4). When sellers were in the low level construal condition, product-related thoughts came to their minds first, compared to money-related thoughts, whereas when sellers were in the high level construal condition, money-related thoughts were relatively queried first, compared to the low level construal

condition. Also the SMRD mediates the effect of time on price. However, the levels of construal did not influence buyers' processed queries.

Without the time manipulation, I expected that consumers' willingness to pay would increase as mental construals became more abstract because buyers would shift their focus from the loss (money) to the gains (product). On the other hand, sellers' would think more about the loss (product) under the low construal level condition, and gains (money) would be more salient under the high construal level condition when sellers would think more about the gains from the transaction. Thus, I predicted that the salience of the product/money would be the true mediator of the price shift between different construal levels. The findings in this study (4a) are consistent with the general prediction of this study concerning the effect of construal level on individuals' price decisions and cognitive focus. However, 4a provides strong evidence of the effect of construal on sellers' behaviors, but weaker evidence about this effect on buyers.

These inconsistent results are possibly attributable to two possible causes: 1) the characteristics of the product; and 2) the possibility that the temporal effects I have observed are due to both differences in construal and to differences in temporal discounting. In this study, I used a plain white mug, which could have led buyers to have low interest in buying it. Thus, even if the high construal level led consumers to focus on the gain aspect of the transaction (mug), the low motivation for acquiring the mug may have caused any price or salience change in the buyers' mind.

3.4.2 Experiment 4b. Intertemporal Discounting

Studies 1, 2, and 3 show that temporal distance influences buyers' willingness to pay and sellers' willingness to accept, and that changes in salience of losses and gains

mediates these price changes. Study 4a suggests that one reason may be temporal distance effects on construal level. However, there is another possible factor that influences changes in cognitive focus: discount rate differences between sellers and buyers and between product and money.

Traditional intertemporal studies cover various monetary choice situations. The general consensus from this research stream is that receiving money today is more valuable than receiving money at a temporally distant time. e.g. when there is a choice between receiving $10 today or $14 in a week, people are more likely to choose receiving $10 today (Homic, 1984). The observed changes in buyers' willingness to pay are consistent with, but the changes in sellers' willingness to accept are inconsistent with the general consensus about the temporal effect on monetary value. For example, because the immediate monetary value is higher than in the distant future, buyers should be willing to pay more for a good as temporal distance increases, which is consistent with our finding in previous studies. However, sellers' willingness to accept should also increase as temporal distance increases, which is inconsistent to our findings in previous studies. For example, in study 2, sellers' willingness to accept a pen decreases from $1.63 to $1.32 in a three month period. Why are there, then, inconsistencies between predictions from traditional intertemporal perspective and findings in this study? One possible explanation is that in transaction conditions, buyers and sellers consider both gains and losses. The monetary value changes have been the main issue in traditional intertemporal choice study. However, when the outcome is mixed, temporal distance not only discounts the future monetary value but it also discounts the value of the product simultaneously

(Soman, 1998). Different roles will lead sellers and buyers to different loss and gains and different discount rates for product and money.

In this experiment, I study how discount rates underlie the temporal effect observed so far by considering discounted value of product and money between sellers and buyers.

3.4.2.1 Method

Participants. A total of 67 subjects were voluntarily recruited from an undergraduate marketing program at a university.

Materials and procedure. Sixty-seven subjects were randomly assigned to either a buyer or seller role. All participants made a choice about a products or money under three temporally different transaction situations, resulting in a 2-role (seller vs. buyer) X 3-time (tomorrow vs. one month vs. three months) X 2-transaction type (product vs. money) mixed factorial design. The role was between-subjects, and time and transaction type were within-subjects.

At the beginning of the experiment, respondents learned that they would be randomly assigned to either a seller or a buyer role to develop appropriate marketing strategies. Each participant had three money scenarios and three product scenarios. Participants assigned to the buyer group were asked about their perceptions of gaining a mug and losing money, those in the selling group were asked about losing a mug and gaining money. After a practice question, buyers responded to a question like the following:

> As a buyer, you pay the seller $5.00 for the mug today. You can get the mug today, or the seller will use the mug one more day and then give you the mug and some tea bags. How many tea bags would it take to make you indifferent between

receiving the mug today and receiving the mug tomorrow?"(in one month and in three months)

Before their selection, they were informed the value of teabag, 5-cents. Participants selected the values from a pull down menu that ranged from $5.00 to $5.30 with 5-cent increments.

After the buyers answered the three choice scenarios which varied by time, they faced money scenarios. The scenarios instructed the buyers that they would receive the mug shown on the screen today. They could either pay the seller $5.00 today or they could get a line of credit from the seller and pay that individual some amount of money at some time in the future. Buyers responded to a question like the following.

> As a buyer, you receive the mug today. You can pay the seller $5.00 today for the mug, or you can pay five dollars plus a little extra tomorrow. How much would you be willing to pay tomorrow so that you are indifferent between paying today and paying tomorrow?

The buyers then saw a drop down menu with choice options ranging from $5.00 to $5.30 with 5-cent increments. Participants responded to two mug questions scenarios: about a mug and money conditions. For the mug questions, sellers learned that the buyer would pay them $5.00 today. They could surrender the mug today or they could continue using the mug for a while and surrender it to the buyers at a later date. If they waited to surrender the mug, they should be willing to throw in extra tea bags, which are worth about 5 cents apiece because they would be using the mug until the surrender date. After the practice scenario, they indicated how many tea bags would make them indifferent between surrendering the mug today and surrendering it in the future (tomorrow, in a month and in three months). The choices ranged from no teabags to 6 tea bags.

> The buyer pays you, the seller, $5.00 for the mug today. You can surrender the mug today, or you can use the mug one more day, and then include some tea bags

> when you surrender the mug tomorrow (for a month, for three months). How many tea bags would make you indifferent between surrendering the mug today and surrendering it tomorrow (for a month, for three months) ?

For the money scenario, sellers were instructed that they could surrender the mug today or they could offer the buyer a line of credit and get $5.00 plus some amount in the future (tomorrow, one month, or in three months). After a practice, they were asked to indicate a price choice that would make them indifferent between getting $5.00 today and getting paid in the future (tomorrow, in one month, and in three months). The choices ranged from $5.00 to $5.30 with 5-cent increments. After collecting demographic information, they were debriefed.

> As a seller, you surrender the mug today. You can receive $5.00 from the buyer today or you can offer the buyer a line of credit and get $5.00 plus some amount tomorrow(for one month, for three months). How much would you be willing to ask for the mug tomorrow to make you indifferent between getting $5.00 today and getting paid tomorrow(for a month, for three months)?

3.4.2.2 Results

A total of 67 participants completed this study as buyers (33) and sellers (34). The collected responses were analyzed via a 2 role (buyers vs. sellers) x 2 transaction type (product vs. money) X 3time (tomorrow vs. one month vs. three months) mixed analysis of variance (ANOVA). Role was between-subjects, and the transaction type and time were within subjects. Regarding the dependent variable, compounded discount rates (e.g., Thaler 1981) were calculated for the product and money. To calculate the discount rates of the product and money, I used the following formula, which specifies the relationship between the present value of a cash flow X(P) and its future value (F) (5).

$$F = P(1+R)^t \tag{5}$$

R represents the discount rate and t is the expected transaction time in days in this experiment. Present value (P) and transaction time were information given to the respondent during the experiment. Participants specified F, the future value, during the experiment. For example, the present value, \$5.00 and expected transaction time, 1(tomorrow), (or 30(one month), 90(three months)) were given. When a seller chose \$5.30 as his/her selling price, F is 5.30. Based on these information, I calculated discount rate, which is 6%.

$$R = \left(\frac{F}{P}\right)^{\frac{1}{t}} - 1 \tag{6}$$

In order to test the hypothesis that sellers and buyers have different discount rates for products and money, equation (6) was used to infer separate discount rates for each subject. For the analysis, a daily based t was used to compare the discount rate among tomorrow, one month, and three-month time periods.

As can be seen, table K1 shows the buyers' and sellers' daily discount rates for products and money with a one day delay. (I do not discuss the one- month and three-month discount rates here. With the benefit of hindsight, it is clear that the stimuli were not calibrated appropriately for these delay conditions since the maximum number of teabags that could be asked for in compensation for a delay was 6 and almost all participants demanded the maximum allowable amount – in other words, there was a ceiling effect – the data for the one day delay condition, however is still informative and I return to this issue in the future research section of my thesis). The two-way interaction between 2(role) x 2(product or money) on daily discount rates at a time delay of one day was significant $(F(1, 130) = 9.6, p<0.05)$, suggesting that buyers have a higher discount rate for products than for money, whereas sellers have a higher discount rate for money

than for products. Buyers show a higher discount rate for products than for money (1 day) ($M_{buyer\_near\_product}$=0.0227 vs. $M_{buyer\_near\_money}$=0.0127, t(66)=2.216, p<0.05). Whereas sellers have a higher discount rate for money than for products (1day) ($M_{seller\_near\_product}$=0.0156 vs. $M_{seller\_near\_money}$=0.0265, t(64)=-2.249, p<0.05) (see figure K1). These results are consistent with H5a and H5b.

3.4.2.3. Discussion

The primary motivation of study 4a was to understand the effect of mental construal on price changes. How do we conclude this? One of the variables may be mediating or moderating the mechanism.

Study 4b shows that buyers have a higher discount rate for products than for money. Similarly, sellers show a higher discount rate for money than for products. These different discount rates of products and money for sellers and buyers mean that the price buyers are willing to pay and that sellers are willing to accept will change across time. We know from the vast amount of research on the endowment effect that when sellers and buyers contemplate a trade, both focus more on what they stand to lose – that is, sellers focus on the product and buyers focus on the money, a set of foci that reliably generates an endowment effect with sellers having higher reservation prices than buyers. However, since sellers and buyers discount the value of the money and the product differently, this changes dynamically over time. For sellers, the future value of products decreases at a greater rate than the future value of money, which would imply that their reservation prices for the product will decrease (i.e., sellers' WTA will decrease). In contrast, for buyers, the future value of money decreases at a greater rate than the future value of the product, which implies that their reservation prices will increase (i.e., buyers

WTP will increase). These predictions are consistent with previous temporal and intertemporal literatures (Akerlof, 1991; & Soman et al 1998, 2004). When there is temporal distance, the perceived loss is undervalued compared to the immediate future, resulting in the concrete (loss aspect) aspect of the transaction, which is discounted more quickly than the abstract aspect of the transaction. Thus, for buyers, the value of money is discounted more quickly than it is for products, while the value of products is discounted more quickly than money to sellers.

In fact, the previous literatures raise a question about the similarity between construal level theory and intertemporal discounting, in that both theories suggest the effect of time on the utility of outcome (e.g., Soman et al. 2004, Leiser, Azar, and Hadar 2008). Studies 4a and 4b imply that both intertemporal discounting and construal level theory influence individuals' temporal decision-making; the temporal distance to a transaction leads individuals to have a different utility of outcome, either money or a product, and one's role in a transaction moderates this effect, resulting in changes in buyers' willingness to pay and sellers' willingness to accept.

CHAPTER 4: GENERAL DISCUSSION

4.1 Conclusion and Discussion

I suggest that perceived temporal distance to the transaction changes consumers' and sellers' price for products. I study the phenomenon using laboratory experiments. I proposed that when transactions are expected in the future, the gain of the transaction will be more salient than its loss, whereas when the transaction is about to happen, the loss will be more salient than the gain. Because sellers and buyers play different roles, their perceptions about losses and gains will differ. Consistent with this notion, study 1 shows that when sellers adopt the far future perspective, their willingness to accept decreases compared to the near future transaction perspective, whereas when buyers adopt the far future perspective, the willingness to pay increases. Study 2 replicated the findings of study 1. More importantly, study 2 suggests that temporal changes in cognitive focus underlie this result. As temporal distance to the transaction increases, buyers shift their cognitive focus from money to products, and sellers shift their cognitive focus from the product to money. I measured salience by analyzing a list of buyers' and sellers' thoughts. Two different analyses – 1) the SMRD, which assesses the primacy of different types of thoughts; and 2) the proportion of money and product thoughts – provided evidence of the temporal effect on the shifting cognitive focus.

For a better understanding of systematic salience differences between sellers and buyers, an alternative measure of salience was employed in study 3. Specifically, study 3 was designed to investigate systematic memory traces and information structure differences between sellers and buyers across the different transaction times. The error rates and response latencies about product- and money-related information varied across

different role and temporal conditions. For instance, in the near future condition, consistent with study 2, buyers were less likely to make mistakes about money-related information with quicker response latencies than sellers, while sellers were less likely to make mistakes about product-related information than buyers. However, as temporal distance increased, buyers' accessibility of the product-related information increased, but the accessibility of money-related information decreased. Similarly, sellers' accessibility of money-related information increased, while the accessibility of product-related information decreased as temporal distance increased.

Studies 2 and 3 suggest the influence of time on individuals' cognitive focus. Study 4a was designed to investigate whether construal-level theory explained the temporal shifts in cognitive focus. In study 4a, I manipulate construal level with Navon's task. In this study, sellers' willingness to accept and their cognitive focus significantly changed as the level of construal increased. Even though buyers' behaviors were not influenced by changes in construal level, it was directionally consistent with the temporal manipulation.

Study 4b was designed to investigate whether differences in the discount rates for products and money explained temporal shifts in price changes. Sellers and buyers showed different discounting rates for products and money. Buyers discount products more than money, while sellers discount products more than money under the immediate transaction condition. These different discount rates for products and money between sellers and buyers parallel the changes in sellers' willingness to accept and buyers' willingness to pay. When a transaction was expected in the near future, buyers placed more value on money than on the product because the product was discounted more than

the money, but sellers placed more value on the product than on the money because the money was discounted more than the product. At the same time, these different discount rates for products and money based on role can generate predictions of price changes. For sellers, the future value of money is higher than the future value of the product; thus, the willingness to accept will go down with the passage of time. On the other hand, buyers' willingness to pay will increase because the future value of the product is higher than that of the money. The consistent directions of price change in studies 4a and 4b imply that temporal distance not only influences psychological distance to the transaction, but it also affects the perceived value of products and money. These systematic cognitive differences coming from roles and time provide us with a better understating of the endowment effect.

4.2 Theoretical Contribution

First of all, the research contributes to the endowment literature. All endowment studies have focused on immediate transactions. However, empirically there are many types of situations; I purchase pre-released CDs or books, I pre-order new electronic devices, or I make plans to buy a future house. Also, people have different psychological distances with respect to products, even in immediate transactions. For example, when people buy products for themselves, the psychological distance would be close, whereas if people buy product for others, the psychological distance may be far. These psychological distances to the product could also influence consumers' willingness to pay.

This study extends the endowment research by considering the temporal effects on price discrepancy between sellers and buyers. The previous literature has shown that

sellers and buyers have different cognitive foci, which is one of the important factors inducing the endowment effect (Carmon et al., 2000). Moreover, this study extends previous research by showing that sellers and buyers shift their cognitive focus as they decide on prices for a future transaction; the salience of a product increases in buyers' minds, while the salience of money increases in sellers' minds as temporal distance to the transaction increases. These findings demonstrate the importance of cognitive focus in the endowment effect by showing consistent results with the previous literature. The findings also suggest the important role of time in shifting the cognitive focus as it relates to sellers' willingness to accept and buyers' willingness to pay.

Furthermore, the previous endowment literature has found that the cause of loss aversion and different cognitive foci originate from human nature, in that people do not want to lose what they have (Carmon et al., 2000, Novemsky & Kahneman, 2005). However, this research has proposed a possible underlying mechanism of salience through construal level and intertemporal discounting. Immediate transactions lead sellers to think more about the cons (losses) of transactions (giving up products). In doing so, their perceived value of losses is higher than that of their gains (gaining money). However, as temporal distance increases, the pros of the transaction become more salient in sellers' minds, which mediate the effect of time on decreasing sellers' willingness to pay. Also the temporal distance to the transaction influences the perceived value of a product and money. Sellers have a higher discount rate of money than products, whereas buyers have a higher discount rate of products than money. These opposite discount rate patterns between sellers and buyers suggest why products are more salient to sellers, why money is more salient to buyers under the immediate condition, and why the price gaps

between sellers and buyers decreases in the distant future; for buyers, the future value of money decreases at a faster rate than the future value of the product, while the future value of the product decreases at a faster rate than the future value of money to sellers. As such, this research provides new insights into understanding why sellers and buyers have different cognitive foci in transactions, and how they may be influenced by psychological distance and time.

The results also contribute to the research stream of temporal studies by considering both construal-level and intertemporal discounting literatures. Most of the construal-level literature has tried to show the relevance between construal levels and different types of information, including the relevance between feasibility/desirability and construal levels, between the pros/cons and construal levels, and primary/secondary information and construal levels. However, the interaction effect between roles and construal level has been understudied. This research examines how construal level influences the cognitive focus of the event, and extends the interaction effect between role and construal level on individuals' price decisions. In particular, this research suggests that strong evidence exists concerning the effect of construal level on sellers' decisions. With a low level of construal, the loss aspect of a transaction is salient to sellers' minds, but with the increment of construal level, the loss aspect of transactions becomes less salient than the low level of construal.

Recently intertemporal discounting studies have shown that the discount rate differs under various non-monetary choice conditions. For example, Chapman (1996b) compared monetary gain and health gain, and Soman (1998 and 2003) discusses the discount rate differences between the gains of effort and monetary gain. However, this

study provides a better understanding of the role of "gain" and "loss" in intertemporal behaviors by considering two different roles – sellers and buyers – who systematically have opposite perceptions of gain and loss. For example, buyers have a higher discount rate of products than money, while sellers have a higher discount rate of money than products. Moreover, this study explains how these intertemporal behaviors influence changes in salience and their effect on sellers' willingness to accept and buyers' willingness to pay.

Lastly, one of the most interesting things about this study is the similar result obtained from construal manipulation and intertemporal discounting settings. One research stream between behavior and economics has suggested a relationship between intertemporal discounting and construal-level theory, with the notion that both studies suggest a temporal effect on the utility of an outcome (e.g., Soman, Ainslie, Frederick, Li, Lynch, Moreau, Mitchell, Read, Sawyer, Trope, Wertenbroch, & Zauberman (2005); and Leiser, Azar, & Hadar (2008)). In fact, there are common features between the two prominent theories. For example, Leiser et al. (2010) propose that the value of the outcome is a high-level construal, while temporal distance, in which individuals wait for the outcome, is a secondary low-level construal. Thus, individuals tend to prefer immediate gratification under a temporally close future condition, but the expected outcome will be more preferred when the event is expected in the far future. Based on these arguments, I expect similar effects from construal-level theory and intertemporal choices; however, there is no research suggesting these findings with empirical analysis. This study provides a clue as to how temporal distance affects construal level and the perceived value of a product and money in similar directions.

4.3 Practical Implications

Understanding temporal effects on price decisions and changes in cognitive focus provides significant implications for both online and traditional marketers. When navigating online shopping sites, consumers often find pre-order options about products that will be released in the future. Marketers provide these pre-order options to accept consumers' orders before the release date of the products. Recently, pre-ordering has become a widespread concept in marketing, especially in the product categories of electronic products, music CDs, and books. This pre-order option is beneficial for both sellers and buyers. For buyers, the pre-order option provides prompt delivery and reduces waiting times. For instance, when the iPad^{TM} was introduced, it was sold out before the product was actually released (Berdtson, 2010); in another case, consumers had to wait almost half a year to get a Wii in 2006 (Martin 2006). On the other hand, pre-ordering is a good standard to understand consumers' interests about marketers' products because sometimes it is not easy to predict the popularity or demand of new products. The pre-order option helps sell the product in its early stages and prepares the inventory of the products. What, then, would be the appropriate strategies for the pre-order option? Based on the findings in this research, if immediate transactions are expected, managers will reap benefits by emphasizing the benefits of saving costs or providing monetary promotions. On the other hand, if the transaction is expected in the future and increases the pre-orders, the amount of product information will be more effective in increasing consumers' willingness to pay. For the traditional marketer, this research will help understand consumers' information processing. The endowment effect is important in understanding the social phenomenon that transactions occur far less often than what

economic theory suggests; individuals feel more pain about losses than gains. Thus, the endowment effect has been regarded as one of the representative irrational human behaviors. However, this research suggests that there exist temporal effects on the endowment effect. The findings in studies 2, 3, and 4b imply that as temporal distance increases, people are less likely to think about losses, and buyers' willingness to pay increases. Encouraging the future perspective of consumers' purchasing could decrease their feeling of losses. For example, travel agencies may promote the expected future value of destinations, or realtors may emphasize the expected future value of houses to reduce the salience of money and increase consumers' willingness to pay.

This research, thus, can be applied to online marketing, which has temporal distance until customers obtain their ordered products, or pre-released products, such as game DVDs, music CDs, and movies. Also, this research provides good insights into future consumption situations, such as buying a house or planning travel schedules.

4.4 Limitations and Future Research

Despite several important theoretical and managerial contributions of this study, future research would benefit from using real transactions. In order to investigate the willingness to pay and accept, I used samples of real products and images. No actual transactions were employed in this study. In particular, because this research investigates people's behavior caused by gain and loss frames, conducting real transactions would have greatly reduced gaps between laboratory findings and the real market.

Another limitation of this research is that only a single item was considered throughout the studies. In the real market, there are many competitors and more options from which to choose. For example, I expect the high/low quality of products and the

comparison processes to influence the salience of products in sellers' or buyers' minds. Such findings would provide stronger managerial implications and theoretical contributions.

In study 4a, I expected the increment of buyers' willingness to pay under the distant future condition, but the differences between the low and high level of construal were insignificant. One possible reason for this result is that the plain white mug used in the experiment reduced the buyers' willingness to pay. Thus, an alternative experiment could be conducted with a product to increase the participants' involvement.

The analysis in study 4b was conducted based on a transaction delay of one day. Thus, the prediction of price changes were made based on an assumption that the discount rate was constant across time. However, many recent temporal studies have shown dynamically inconsistent preferences (e.g. Ainslie & Haslam, 1992; Hoch & Loewensten, 1991). For a better understating of the dynamic effect on preference changes between sellers and buyers, I will use more time periods than just "tomorrow." In study 4b, I allowed buyers and sellers to charge only $5.30 for a mug and six tea bags in the distant future. As a result, discount rates approached zero in the distant future; almost all of the respondents chose the maximum available amounts in the one-month and three-month delayed conditions.

Another issue in study 4b was the possibility that individual buyers and sellers didn't like tea bags. In order to exclude the monetary value in calculating the discounted value of the product, tea bags were used in study 4b. Even though participants were informed of the value of the tea bags, their preference for the tea bags could have influenced the discounting value of the mug. Also study 4b was conducted to investigate

the moderating effect of the role on the discounting value of money and products; however, the control condition was not considered in the study: whether individuals have different discount rates for products and money. For a better understanding of ownership effects, it would be interesting to examine individuals' discount rate differences between money and products, along with the moderating effect of role on the discount rates. Thus, in future research, I plan to redo study 4b with more options, such as tea bags or coffee, to measure the discounted value of a product. However, the limits on price will not be considered to exclude the ceiling effect under different temporal delays. Also the non-ownership condition will provide a better understanding of ownership effects on discount rates.

This research suggests future directions in the research streams involving the relevance between construal level and intertemporal discounting. Some researchers have discussed similar tenets between the two prominent theories, both of which have unanswered questions. In this study, directionally similar results were found from construal manipulation, especially from the sellers' group, and intertemporal discounting. This happened because temporal manipulation differentiates the level of construal and the perceived pain of loss, both of which influence the shifting cognitive focus. This research has focused on showing the effect of time on salience and price changes rather than on the relationship between construal-level theory and temporal discounting, but the results imply the possible connection between two prominent theories in psychology and economics. If construal level leads to changes in cognitive focus, the different levels of mental construal would influence the discounted value of gains and losses.

Another interesting research question concerns the temporal distance between gains and losses. In this study, one-day and three-month delays were used to investigate the temporal effects on changes in price and cognitive foci. In this study, I assumed that transactions, losses and gains happen at the same time; however, in many cases in real markets, there are temporal distances between losses and gains. For example, when buyers make a purchase through an online market, buyers need to wait certain amounts of time to obtain the products. The temporal distance between losses and gains and the order of the gains and losses would influence buyers' willingness to pay and sellers' willingness to accept. The findings could contribute to the literatures in temporal studies and the endowment effect.

In this research, I conducted several studies to discuss the temporal effects on sellers and buyers' price decisions. The findings suggest how temporal distance influences buyers' and sellers' behaviors differently. We have multiple experiments showing that sellers' willingness to accept decreases across time and across construal levels. In the present, when the endowment effect appears, sellers are focused on their loss (the product) and sellers have a higher discount rate for money than products. We show that as transactions move into the distant future, sellers shift their focus to their gain (money) and lower their selling price.

On the other hand, buyers' willingness to pay increases across time, but is not influenced by construal level. In the present, when the endowment effect appears, buyers are focused on their loss (money) and buyers have a higher discount rate for the product than money. We show that as the transaction moves into the distant future, buyers shift their focus to their gain (the product) and raise their buying price.

The endowment effect is one of the most widely recognized irrational human behaviors (Ariely, 2008). However, interestingly, when people adopt a future perspective, the endowment effect disappears. Investigating temporal effects or intertemporal behaviors would be beneficial to help people make rational decisions.

APPENDIX A

HYPOTHESIS AND SUMMARY

Table A1. Summary of Selected Endowment Literature

Author(Date)	Context	Moderating Factors	Underlying Mechanism
Daniel kahneman and Amos Tversky (1979)	Medicare		Loss aversion
Richard Thaler (1980)	Trading a wine		Loss aversion
Daniel Kahneman, Jack Knetsch, Richard, Thaler (1990)	Trading a mug and a chocolate		Loss aversion
Daniel Kahneman, Jack Knetsch, and Richard Thaler (1991)	Trading a pen		Status Quo Bias Loss aversion
Guido Ortona and Francesco Scacciati (1992)	Working time	Rational behavior	Psychological transaction costs
Eric van Dijk , Daan van KnippenbergEric van Dijk , Daan van Knippenberg(1996)	Fixed value VS unfixed value tocken	Uncertainty	Loss aversion
Michal A. Strahilevitz and George Loewenstein (1998)	Trading a mug	Duration of ownership	Loss aversion
Leaf Van Boven and David Duning, Goerge Loewenstein (2000)	Trading a mug	Egocentric empathy gap	Loss aversion
David Mandel (2002)	Trading a wine	Transaction demand	Loss aversion

Table A1 - continued.

Author(Date)	Context	Moderating Factors	Underlying Mechanism
Jennifer S, Lerner, Deborah A. Small, and George Loewenstein (2004)	Trading a highlighter set	Emotion (Sadness, Disgusting, Neutral)	Appraisal-tendency theory
Hathan novemsky and Daniel Kahneman (2005)	Trading a mug	Risky choice condition	Loss aversion
Dan ariely, Joel Huber, and Kaus Wertenbroch (2005)	Review paper	Emotional attachment Cognitive perspectives	Loss aversion
Robert Watson and John Winkelman (2005)	Trading a pen	Cognitive dissonance	Perceived ownership
Pankaj Agarwal and Meng Zhang, 2006).	Trading a mug	Relationship norm salience	Loss aversion
Dhananjay Nayakankuppam (2005)	Trading a pen and a mug	Thought valence	Loss version
Eric Johnson, and Gerald Haubl, Anat Keinan (2007)	Trading a mug	Query order	Loss aversion
Joann Peck, Suzanne B. Shu (2009)	Trading a slinky and a mug	Mere-touch	Perceived ownership

Table A2. Experiment hypothesis

		Hypothesis	Study
H1		As temporal psychological distance increases, the price difference between sellers and buyers will decrease.	1,2,3
	A	When a transaction is temporally distant, buyers will be willing to pay a higher price than when a transaction is temporally close.	1,2,3
	B	When a transaction is temporally distant, sellers will be willing to accept a lower price than when a transaction is temporally close.	1,2,3
H2		As the construal level becomes more abstract, the price difference between sellers and buyers will decrease.	4a
	A	When a transaction is construed abstractly, buyers' willing to pay will be higher than when a transaction is construed concretely.	4a
	B	When a transaction is construed abstractly, sellers' willing to accept will be lower than when a transaction is construed concretely.	4a
H3		Temporal distance will affect the salience of thoughts about product or money.	2,3
	A	When a transaction is temporally distant, cash will be more salient in sellers' thoughts than the product. On the other hand, when a transaction is temporally close, thoughts about the product will be more salient than thoughts about cash to sellers.	2,3
	B	When a transaction is temporally distant, thoughts about the product will be more salient than thoughts about cash to buyers. On the other hand, when a transaction is temporally close, thoughts about cash will be more salient than thoughts about the product to buyers.	2,3
	C	Changes in salience will mediate the effect of transaction time on price.	2,3

Table A2 - continued

H4		The construal level will affect the salience of thoughts about a product or money.	4a
	A	When a transaction is construed abstractly, thoughts about money will be more salient to sellers than thoughts about the product. However, when a transaction is construed concretely, thoughts about the product will be more salient than thoughts about money.	4a
	B	When a transaction is construed abstractly, thoughts about the product will be more salient than thoughts about money to buyers. However, when a transaction is construed concretely, thoughts about money will be more salient than thoughts about the product to buyers.	4a
H5	A	Buyers will have a higher discount rate for the product than money when the transaction is expected in the near future; however, the discount rate gap between the product and money will decrease as temporal distance to the transaction increases.	4b
	B	Sellers will have a higher discount rate for money than the product when the transaction is expected in the near future; however, the discount rate gap will decrease as temporal distance to the transaction increases.	4b

APPENDIX B

STIMULI USED FOR EXPERIMENT 1

Maha Pen 2011

From its initial 2010 release, the Original Maha Pen became an instant classic. Encouraged by this popularity, Maha 2011 has been created. Maha 2011 represents a new breakthrough in writing technology. Included are unique, never before seen features, that will provide you with the edge to mastering the art of writing and drawing.

Brand new features
- Writes smoothly
- Clear base will tell you exactly how much ink is left
- Strong but light new technology plastic construction

Smile Couple Cups

This cute pair of mugs is perfect for a couple. The cups are shaped by hand using a wheel. They are very light because they are only a couple of millimeters-thick. They give a smooth, warm touch on your lips.

Features:
Perfect for a wedding gift, or for a couple.
Perfect for coffee or tea fans
Safe for dishwashers and microwaves
Come in several sunny colors (yellow, orange, and blue)

APPENDIX C

FIGURES AND TABLES FOR EXEPRIMENT 1 RESTULS

Table C1. Experiment 1 : MTurk data analysis

Product	Mean of price	Median	Std. Deviation	N
Pen	4.82	4.99	2.743	110
Mug	8.75	9.99	3.735	110

Table C2. Experiment 1. ANOVA table

Source	d.f.	MS	F	P
Between Subject				
Intercept	1	628.906	1454.344	<.001***
Role	1	2.442	5.019	.028**
Time	1	.038	.087	.769
Role x Time	1	5.281	12.211	.001***
Error	106	.432		
Within Subject				
Product_type	1	22.188	82.546	.000
Product_type x Role	1	.001	.006	.941
Product_type xTime	1	.231	.860	.356
Product_type x Role x Time	1	.145	.539	.464
Error	106	.269		

$*p < .10.$ $**p < .05.$ $***p < .01.$
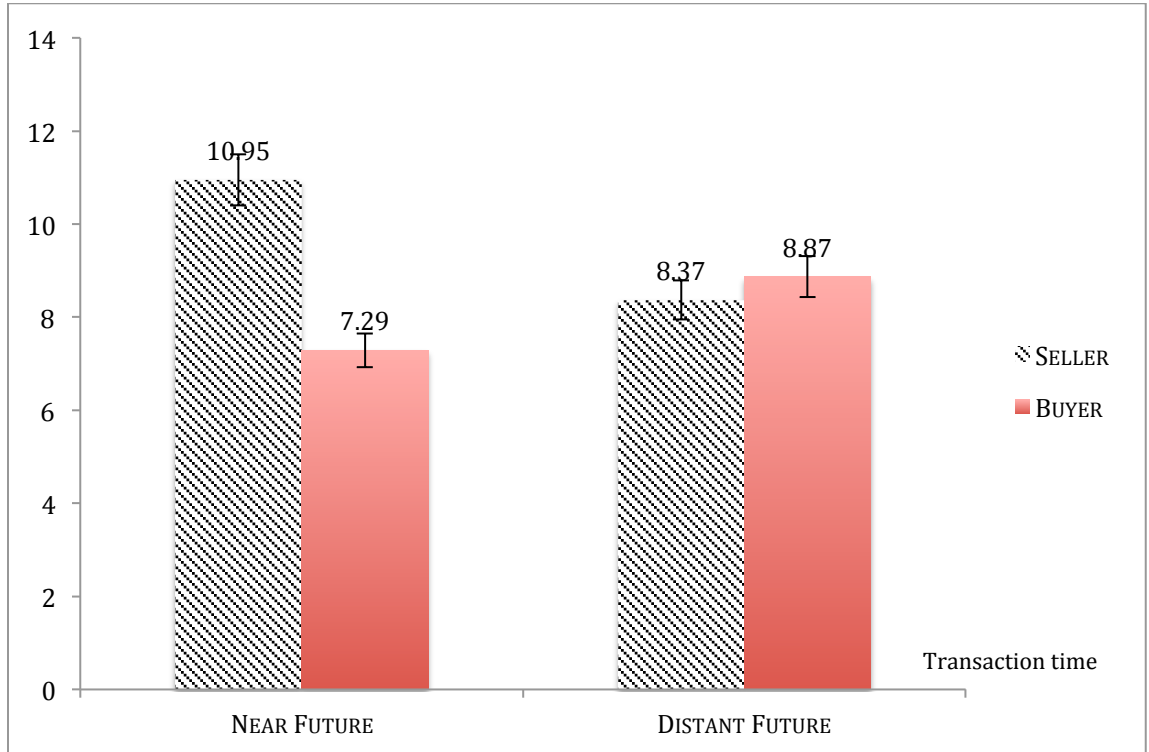
DV: Price of pen($)
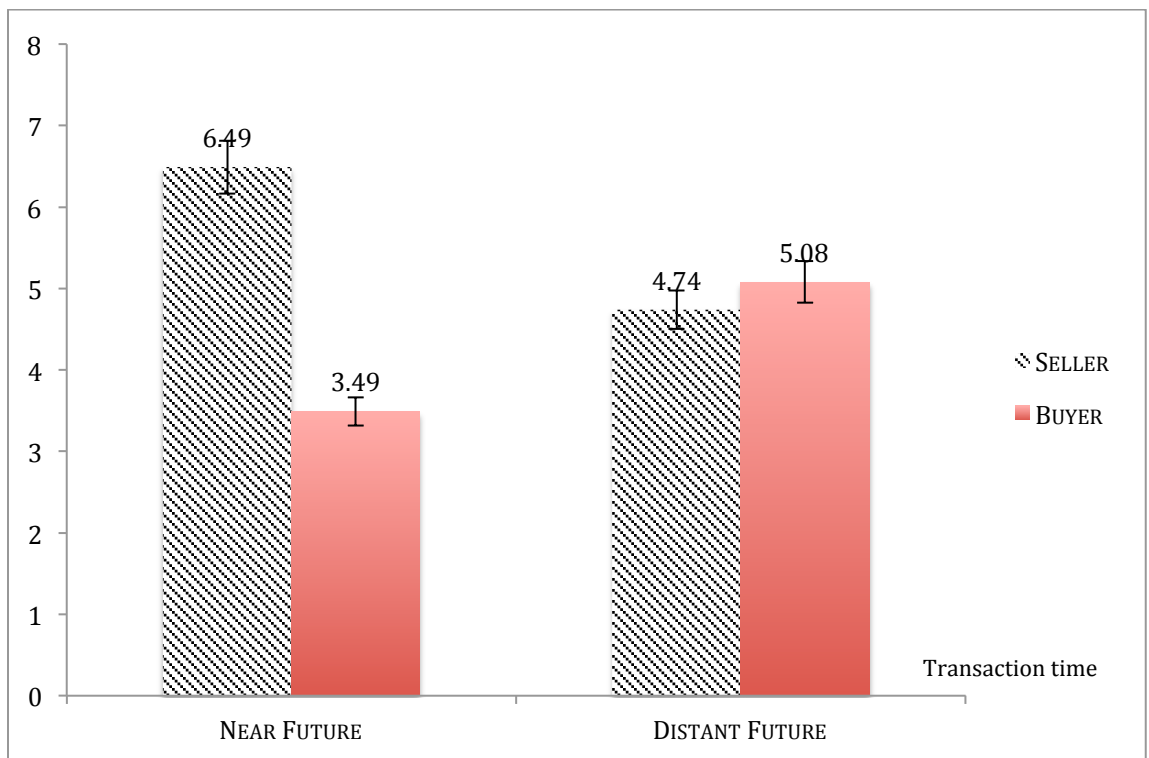
DV: price of mugs($)

Figure C1. Experiment 1 : Price difference between buyers and sellers

APPENDIX D

FIGURES AND TABLES FOR EXPERIMENT 2 RESULTS

Table D1. Experiment 2. ANOVA table

Source	d.f.	MS	F	P
Between Subject				
Intercept	1	2.759	11.158	.001***
Role	1	3.590	14.517	.001***
Time	1	.256	1.034	.312
Role x Time	1	1.652	6.682	.011***
Error	108	.247		

*$p < .10$.   *$p < .10$.   **$p < .05$.   ***$p < .01$.
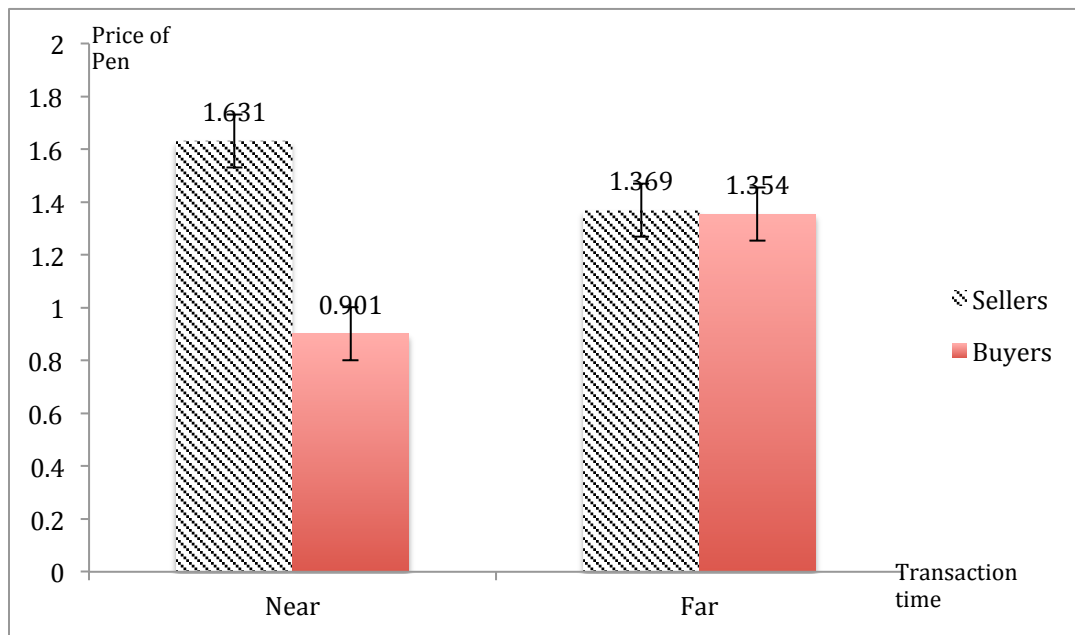
Dependent Variable: price($)

Figure D1. Experiment 2 : Price differences between sellers and buyers
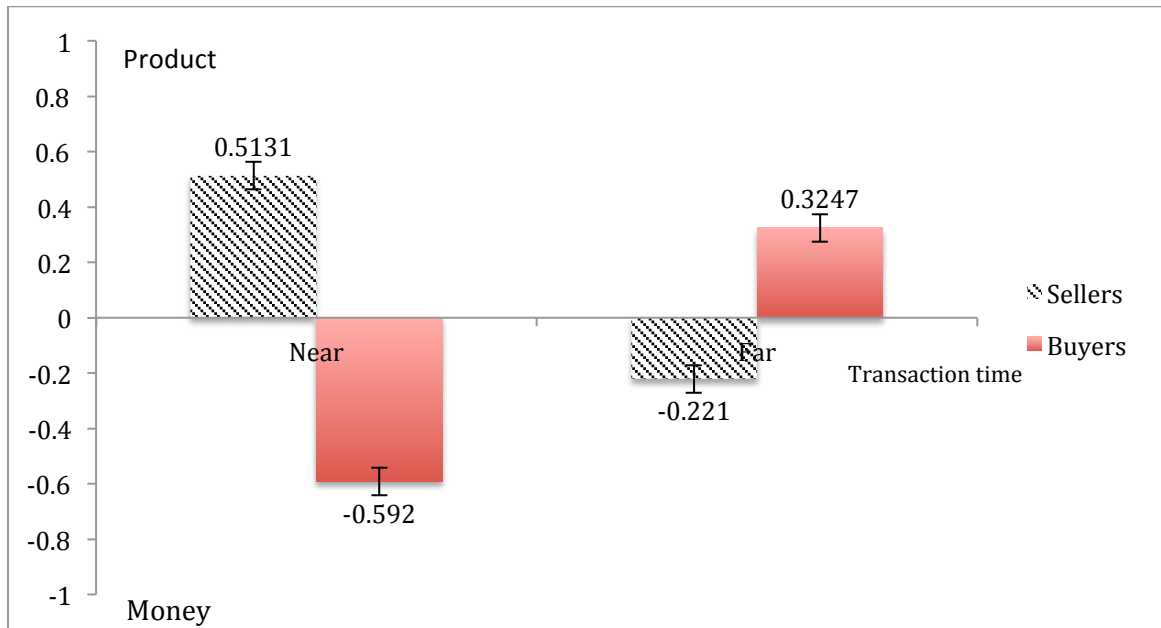
Dependent variable: SMRD (Thought Type)

Figure D2. Experiment 2 : Salience differences between sellers and buyers

SELLER
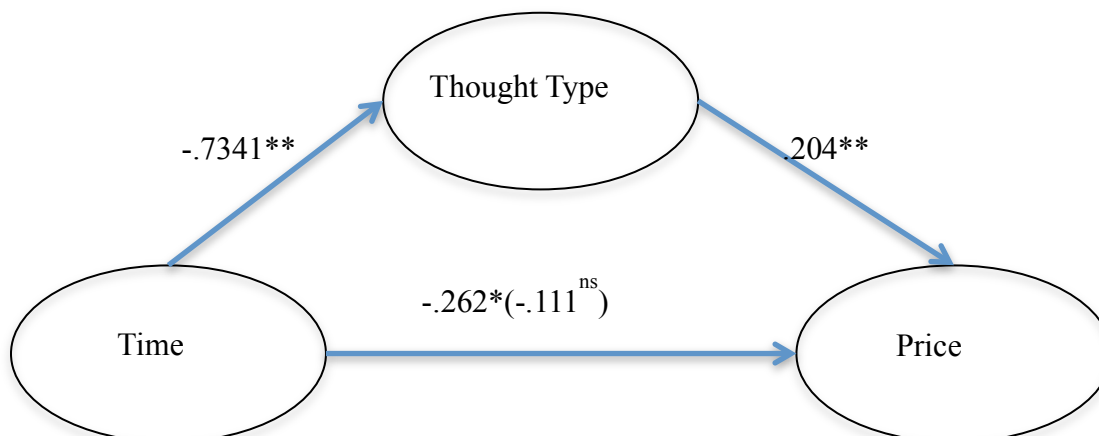
BUYER
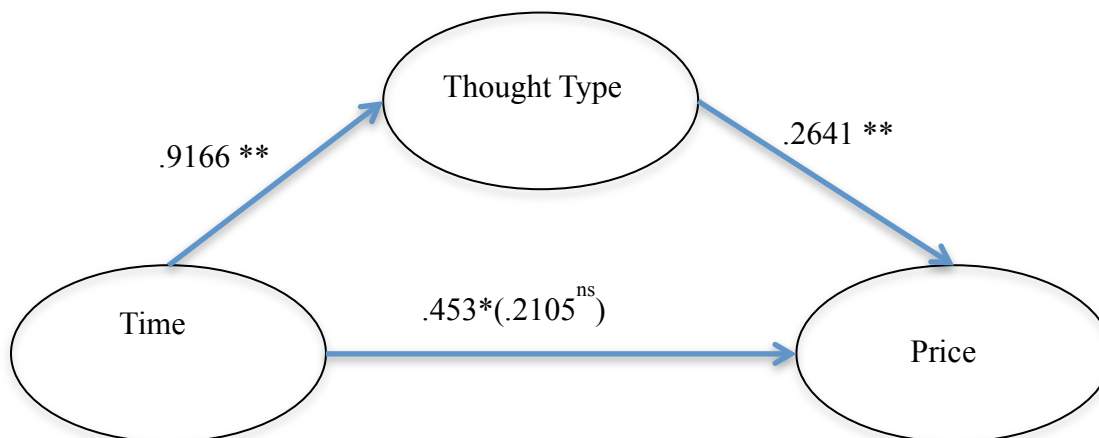
Note :*significant at p<.05; **significant at p<.01; ns=not significant

Figure D3. Experiment 2 : Mediation effect of SMRD (Baron and Kenny, 1986)

Table D2. Experiment 2 : Mediation model for the influence of time on price.

	Regression analysis		Bootstrap analysis	
Effect	b	p	Indirect effect	95% CI
Seller(N=55)				
a	-.7705	.001**	a x b = .0251	.0470, .5243
b	.2034	.026**		
c	-.2615	.026**		
Buyer(N=57)				
a	.9209	.000***	a x b = .0477	-.3560, -.0150
b	.2535	.016**		
c	.4525	.004**		
Note. bootstrapping based on 5000				

$*p < .10.$ $**p < .05.$ $***p < .01.$

Table D3. Experiment 2 : Proportion of Thoughts about Product and Money

Role	Buyer		Seller	
Type	Product	Money	Product	Money
Near	.4736	4504	.6043	.3282
Far	.6264	.3069	.4097	.4073

Table D4. Experiment 2 : MANOVA Table for Proportion of Thoughts Type

Source	DV	d.f.	MS	F	P
Intercept	Proportion of Product	1	31.264	521.065	.001***
	Proportion of Money	1	15.599	295.603	.001***
Role	Proportion of Product	1	.052	.865	.354
	Proportion of Money	1	.003	.060	.807
Time	Proportion of Product	1	.012	.203	.653
	Proportion of Money	1	.029	.543	.463
Role x Time	Proportion of Product	1	.844	14.067	.001***
	Proportion of Money	1	.348	6.595	.012**
Error	Proportion of Product	108	.060		
	Proportion of Money	108	.053		

*$p < .10$.   *$p < .10$.   **$p < .05$.   ***$p < .01$.

APPENDIX E

STIMULI USED FOR EXPERIMENT 3

Buyer

> You are going to have an opportunity to buy the mug
> Please imagine that you are going to buy the mug through an online market website, which will open tomorrow. As a buyer, you can keep your money or buy the mug.

Please read the following benefits of having money or having a mug.

- **You can save the money and use it later in the semester**

- **You can use the mug in the microwave safely tonight**

- **The mug is made out of a durable material and will last a long time**

- **You can buy lunch today with the money**

APPENDIX F

FIGURES AND TABLES FOR EXPERIMENT 3 RESULTS

Table.F1 Experiment 3 : False and true form of money and product statements

Question type	Order	Form	Number of Error	Percentage of error
Money 1 You can save money and use it later in the semester	2	True	11	8.66%
Money 2 You can buy lunch today with the money	3	True	7	4.72%
Money 3 You can save money to pay off future debt	4	False	21	16.54%
Money 4 You can buy a snack today with the money	7	False	19	14.96%
Product 1 You can use the mug in the dishwasher safely	1	False	57	44.88%
Product 2 The cup will keep the coffee warm	6	False	16	12.59%
Product 3 The mug is made out of a durable material and will last a long time	5	True	10	7.87%
Product 4 You can use the mug in the microwave safely tonight	8	True	15	11.81%

Table F2. Experiment 3. ANOVA table for price

Source	d.f.	MS	F	P
Intercept	1	215.848	1045.029	<.001***
Role	1	1.195	5.785	.018**
Temporal Distance	1	.257	1.245	.267
Role x Temporal Distance	1	.1768	8.562	.004**
Error	123	.207		

*p < .10.   **p < .05.   ***p < .01.

Table F3. Experiment 3 : Effect of Role, Time, and Product or Money salience on Error rate

Parameter	b	SE	t
Basic model:			
Intercept	1.7197	0.1002	17.17***
Augmented model			
Intercept	1.2021	0.1578	7.62***
Role	-0.4112	0.2066	-1.99**
Time	-0.5006	0.1974	-2.54**
Form	-0.00004	0.2198	0
Role x Time	0.6069	0.2692	2.25**
Time x Form	0.7201	0.2933	2.46**
Role x Form	0.7201	0.2933	2.46**
Role x Time x Form	-1.006	0.3965	-2.52**

NOTE.—Goodness of fit (AIC): base p875.26; augmented p866.07

$*p < .10.$ $**p < .05.$ $***p < .01.$

Table F4. Experiment 3. Type III Tests of Fixed Effects for error rate

Source	Num DF	Den DF	F-value	Pr>F
Role	1	885	1.99	0.1591
Time	1	885	0.75	0.3852
Role x Time	1	885	0.26	0.6114
Form	1	885	10.53	0.0012***
Role x Form	1	885	0.13	0.7144
Form x Time	1	885	1.19	0.2756
Role x Form x Time	1	885	6.38	0.0117***
Order	1	861	5.76	.0166**
Role x Form x Time x Order	1	861	2.52	.1129
Type	1	861	6.89	.0088***
Role x Form x Time x Type	1	861	.97	.3261

$*p < .10.$ $**p < .05.$ $***p < .01.$
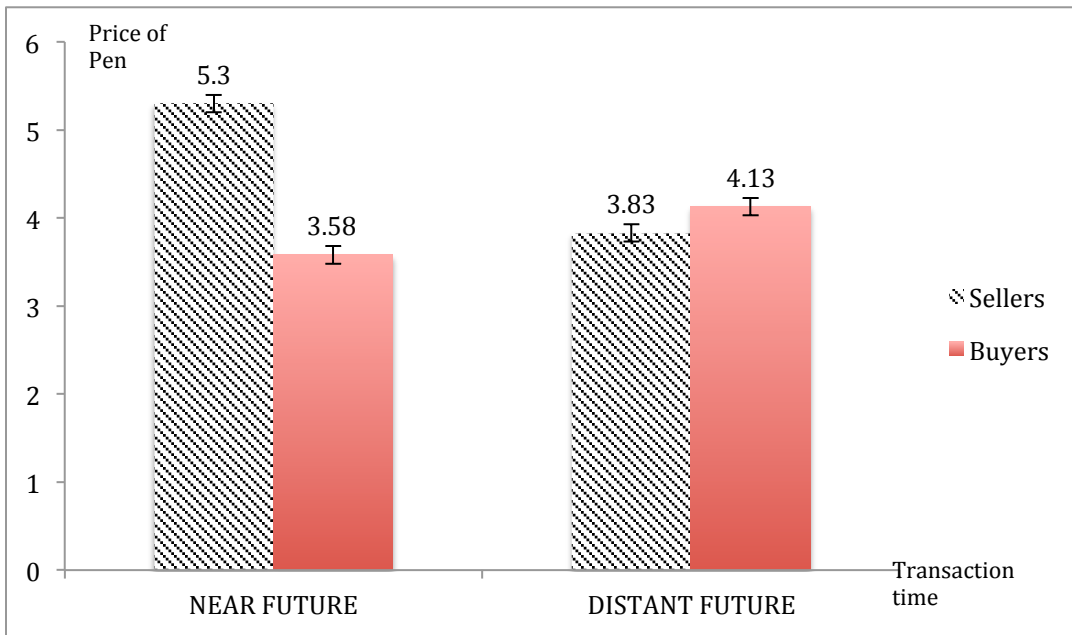
Dependent Variable: price($)

Figure F1. Experiment 3 : Price differences between sellers and buyers

Table F5. Experiment 3 : The probability of making error on three-way interaction

Role	Form	Time	Mean	Probability Of making error
Buyer	Money	Far	1.03976	0.2612
Buyer	Money	Near	1.21936	0.2280
Buyer	Product	Far	0.7188	0.3277
Buyer	Product	Near	0.7888	0.3124
Seller	Money	Far	1.41946	0.1947
Seller	Money	Near	1.19996	0.2315
Seller	Product	Near	1.2	0.2315
Seller	Product	Far	0.6994	0.3319

Money Context
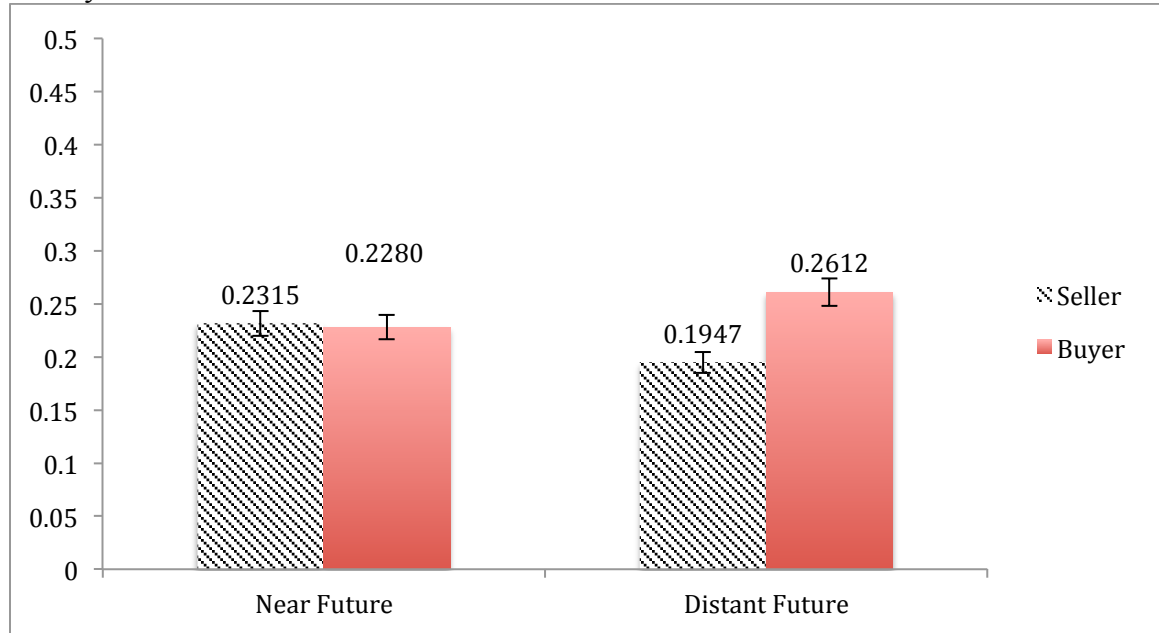
DV: Probability of making error

Product Context
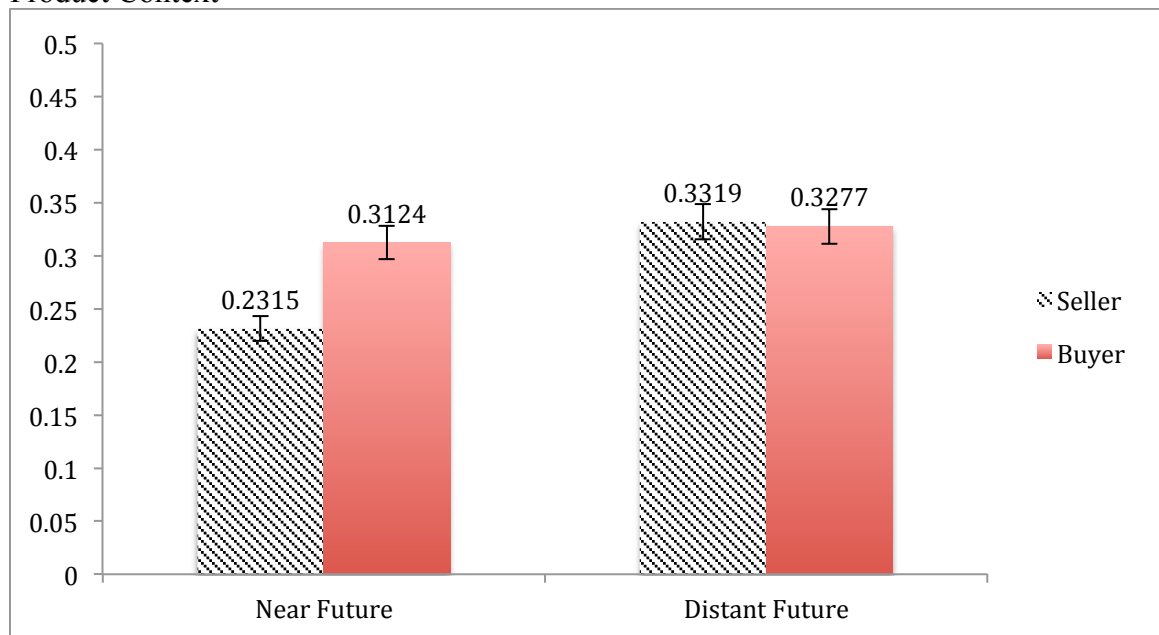
DV: Probability of making error

Figure F2. Experiment 3 : The probability of making error between seller and buyer

Table F6. Experiment 3. Cross tabulation for Frequency of Error

Money Near	Buyer	Seller	Total	Money Far	Buyer	Seller	Total
Error	13	13	26	Error	21	11	32
	(50%)	(50%)	(100%)		(66%)	(34%)	(100%)
Correct	103	99	202	Correct	119	129	248
	(50.9%)	(49.1%)	(100%)		(48%)	(52%)	(100%)
Total	116	112		Total	116	112	

Pearson Chi-Square= 0.009
DF=1 p-value=0.545

Pearson Chi-Square= 3.528
DF=1 p-value=0.09**

Product Near	Buyer	Seller	Total	Product Far	Buyer	Seller	Total
Error	25	13	38	Error	26	34	60
	(66%)	(34%)	(100%)		(43.3%)	(56.7%)	(100%)
Correct	91	99	190	Correct	114	106	220
	(48%)	(52%)	(100%)		(51.8%)	(48.2%)	(100%)
Total	116	112		Total			

Pearson Chi-Square= 4.057
DF=1 p-value=0.051*

Pearson Chi-Square= 1.039
DF=1 p-value=0.308

$^*p < .10.$

$^{**}p < .05.$ $^{***}p < .01.$

BUYER MONEY

$.0379^{**}$

Probability of Making Error About Money

$-.7364^{ns}$

Time

Price

$.1938^{**}(.2217^{**})$
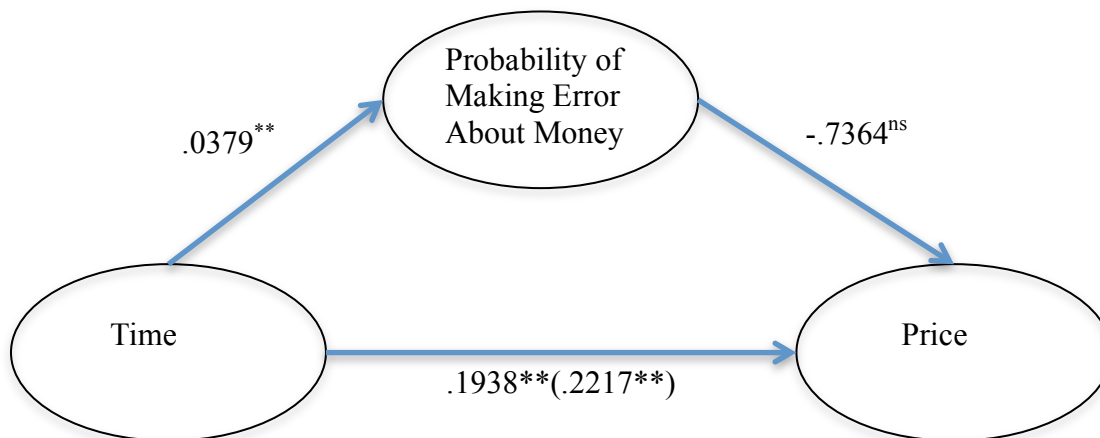
$a*b=-.0279, z=-.9770, p=.32585^{ns}$

SELLER MONEY

$-.0375^{**}$

Probability of Making Error About Money

-1.8393^{ns}

Time

Price

$-.2485^{**}(-.3175^{**})$
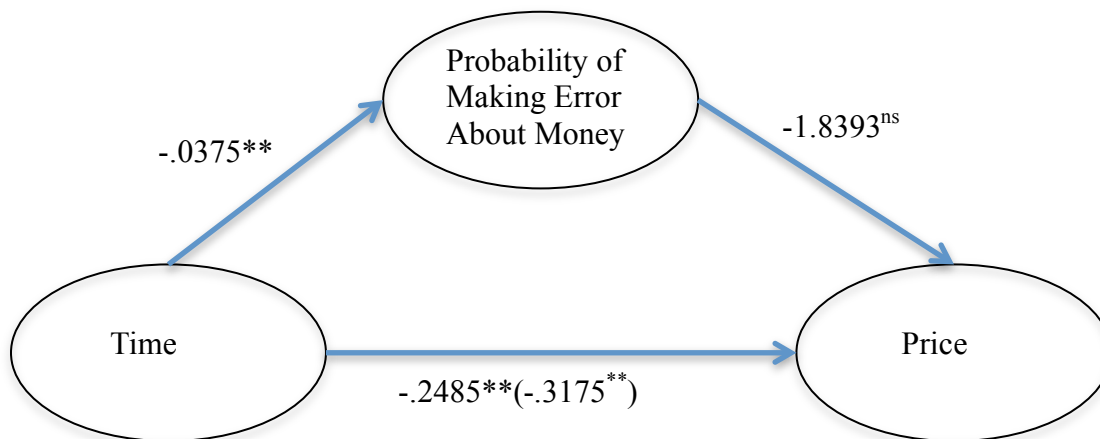
$a*b=.069, z=-1.2701, p=.2041^{ns}$

BUYER PRODUCT

Diagram: Time → Probability of Making Error About Product ($-.0298^{**}$) → Price ($-.6927^{ns}$); Time → Price ($.1938^{**}(.1732^{**})$)

$$a*b=-.0206, z=1.3573, p=.1747^{ns}$$

SELLER PRODUCT

Diagram: Time → Probability of Making Error About Product ($.1253^{**}$) → Price (-2.9670^{**}); Time → Price ($-.2531^{**}(.1188^{ns})$)

$$a*b=-.3719, z=-2.1705, p=.030^{**}$$
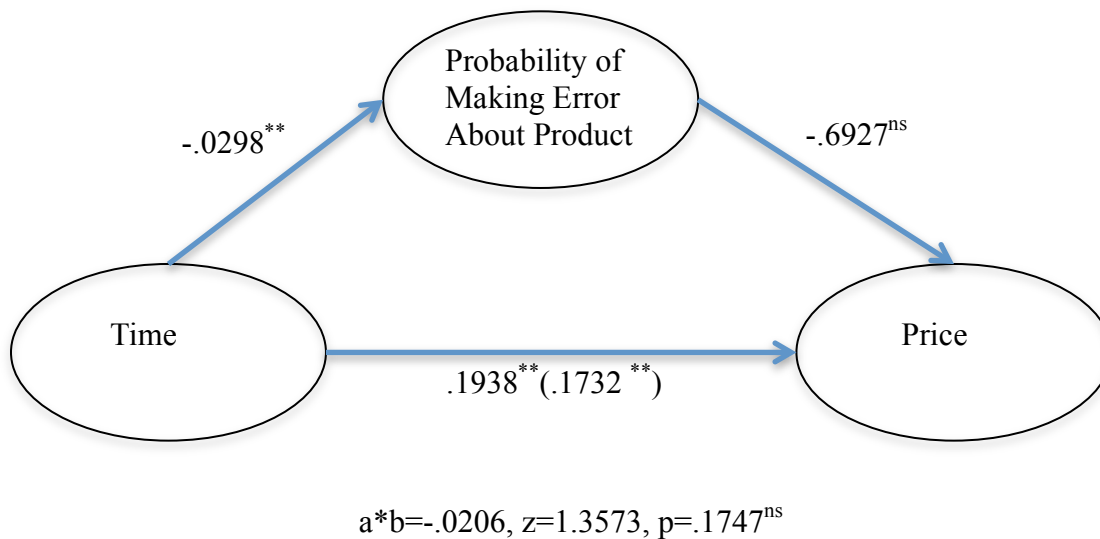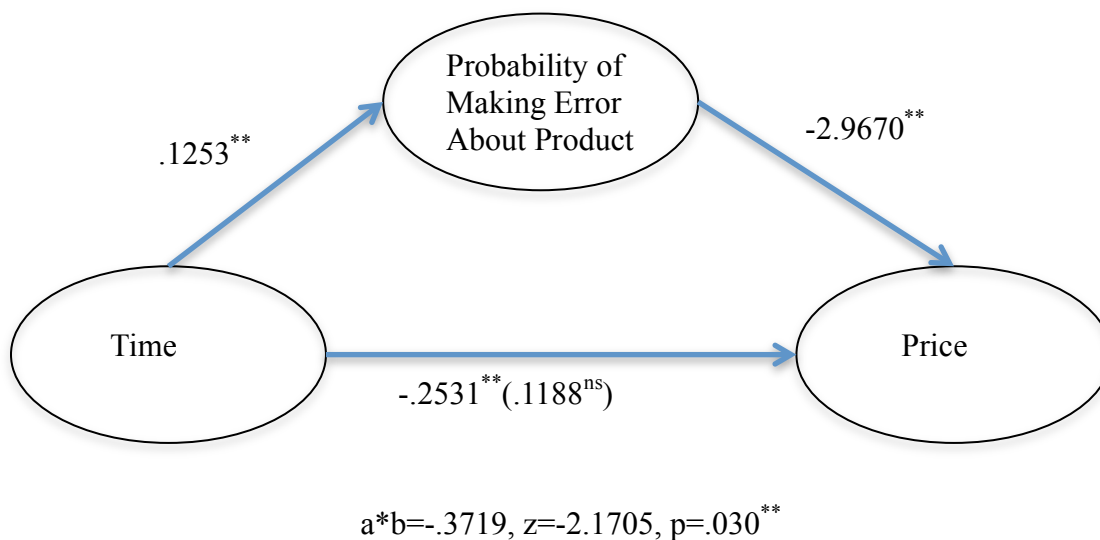
Note : *significant at p<.05; **significant at p<.01; ns=not significant

Figure F3. Experiment 3 : Mediation effect of Probability of Making Errors

Table F7. Experiment 3. Mean of Latencies

| Product | Pooled data | | | | No error condition | | | |
| | Seller | | Buyer | | Seller | | Buyer | |
	Mean(Std)	N	Mean(Std)	N	Mean(Std)	N	Mean(Std)	N
Near	2864.62 (1618.49)	112	3199.62 (1903.04)	116	2500.51 (861.62)	99	2984.83 (1620.98)	91
Far	3179.28 (1570.79)	140	2857.00 (1209.09)	140	3027.69 (1640.20)	106	2729.59 (1101.61)	114
Money								
Near	4342.33 (3859.27)	112	3412.78 (2133.71)	116	4181.48 (3904.11)	99	3299.28 (1954.96)	103
Far	3704.31 (2468.81)	140	4227.24 (3348.80)	140	3704.41 (2459.48)	129	4110.27 (3441.95)	119

Table F8. Experiment 3: ANOVA table for latency

Source	Num DF	Den DF	F-value	Pr>F
Role	1	123	.69	.4075
Time	1	123	0.78	.379
Role x Time	1	123	0.76	0.3839
Statement Type	1	123	34.82	0.001***
Role x Statement Type	1	123	0.19	0.3759
Statement Type x Time	1	123	0.07	0.7896
Role x Statement Type x Time	1	123	13.29	0.0004***
Order	1	829	5.76	.0166**
Role x Statement Type x Time x Order	1	829	0.28	.5989
Form	1	123	0.01	.9343
Role x Statement Type x Time x Form	1	123	.45	.5040
RESP	1	86	1.89	.1727
Role x Statement Type x Time x RESP	1	27	.72	.4029

*$p < .10$.   **$p < .05$.   ***$p < .01$.

Money Context
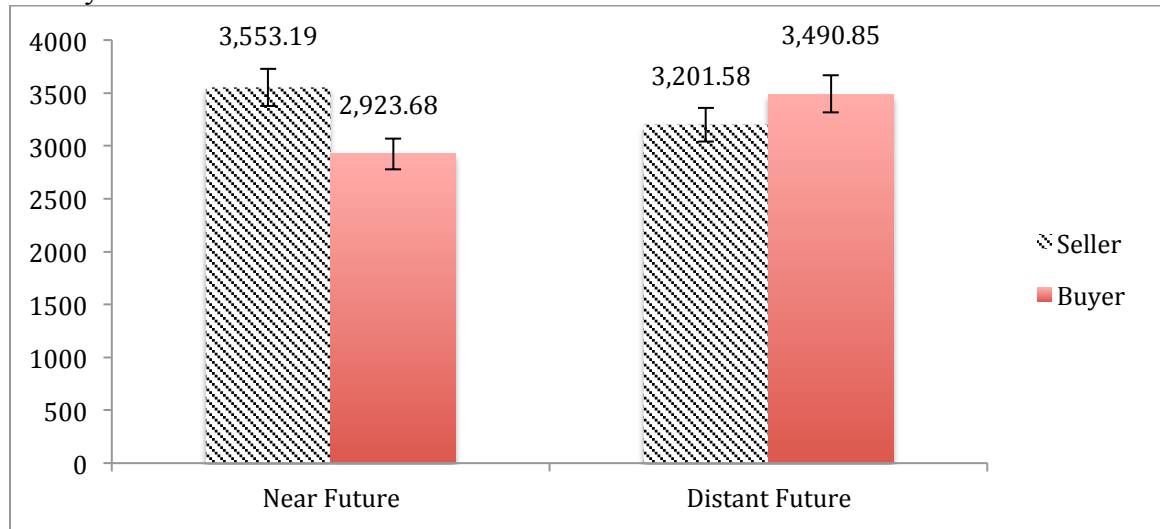
DV : Response Latency (ms)

Product Context
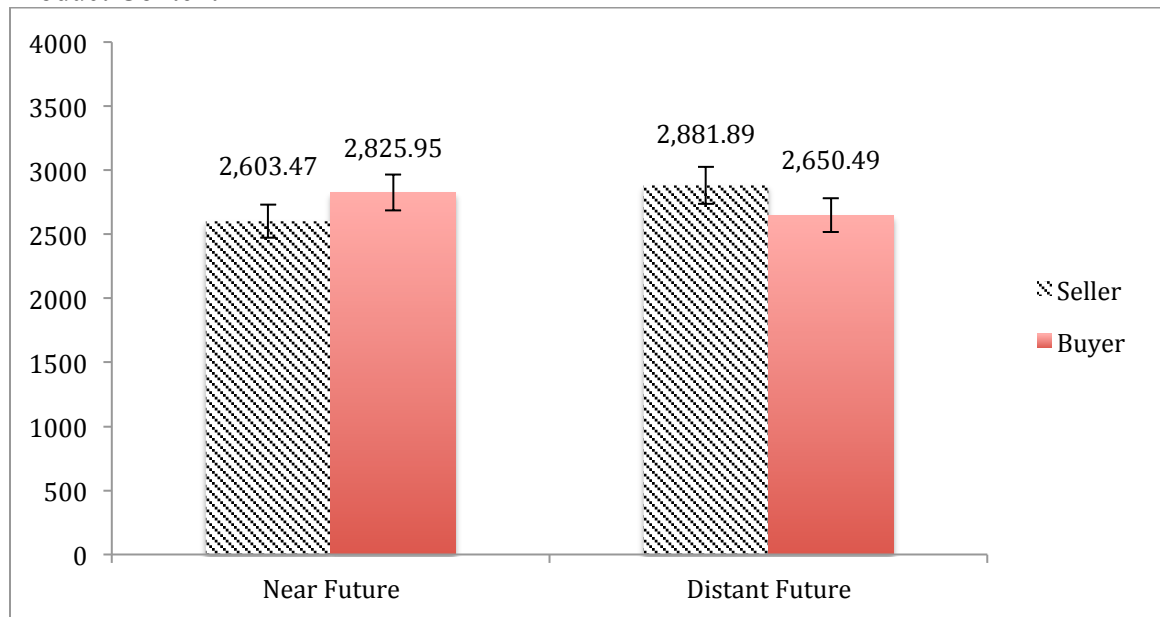
DV: Rosponse Latency (ms)

Figure F4. Experiment 3 : The response latency differences.

BUYER MONEY

$.1773^{ns}$

Response Time About Money

$.1207^{**}$

Time

$.1938^{**}(.2152^{**})$

Price
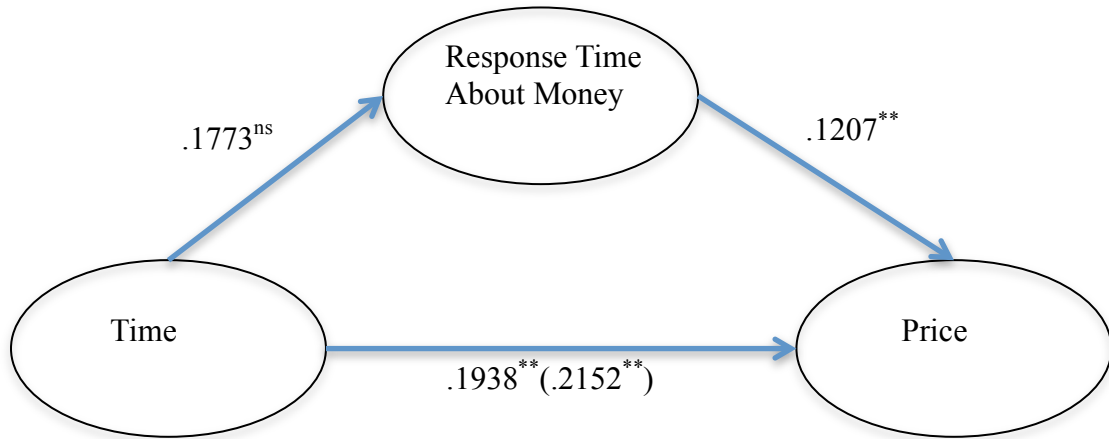
a*b=-.0214, z=-1.7757, p=$.0758^{*}$

SELLER MONEY

$-.1038^{ns}$

Response Time About Money

$-.2907^{**}$

Time

$-.2485^{**}(-.2787^{**})$

Price
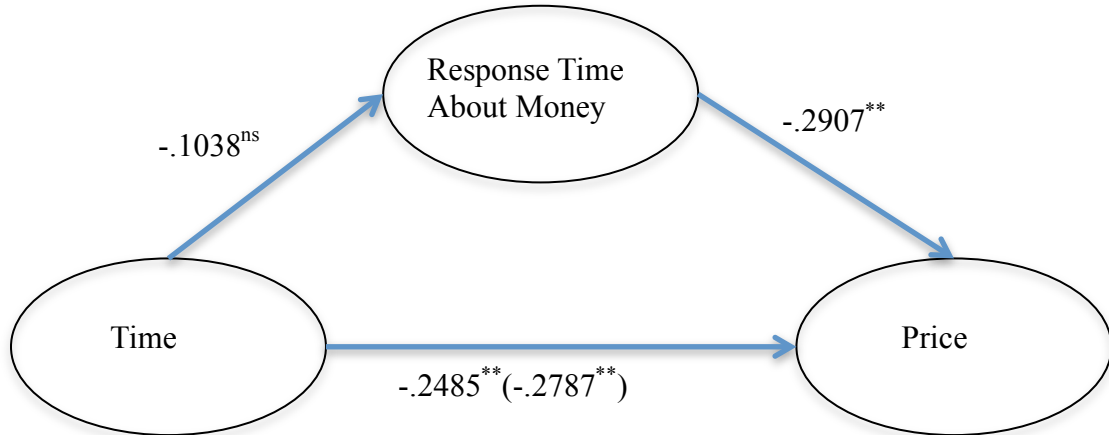
a*b=.0302, z=-1.4675, p=$.1422^{ns}$

BUYER PRODUCT

-0642^{ns}

Response time About Product

$.4054^{**}$

Time

$.1938^{**}(.2198^{**})$

Price

a*b=-.0260, z=-1.20, p=.2301^{ns}

SELLER PRODUCT

$.1045^{*}$

Response Time About Product

$-.0846^{ns}$

Time

$-.2531^{**}(-.2443^{**})$

Price

a*b=-0088, z=-1.0448, p=.2961^{ns}
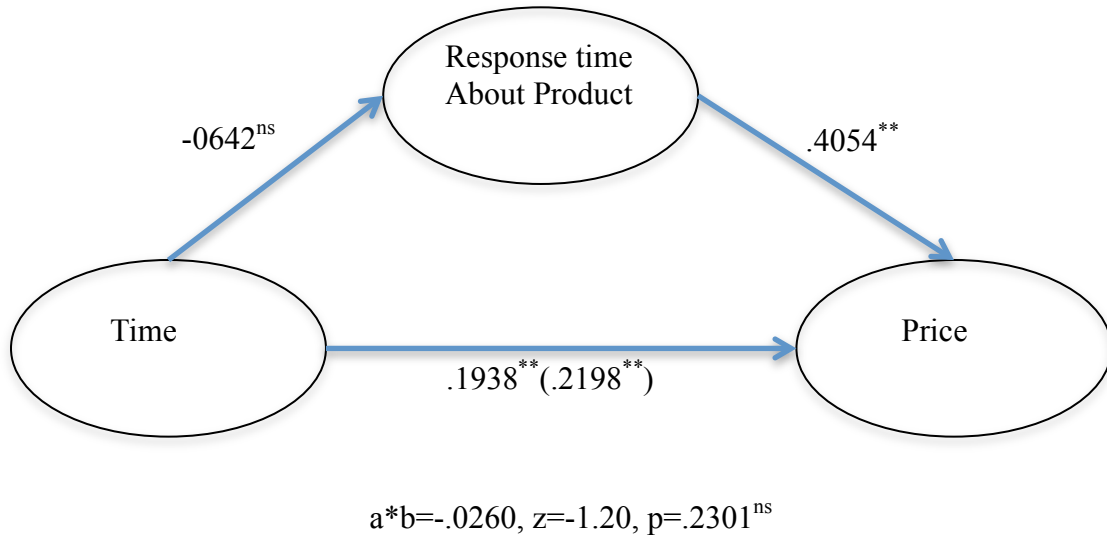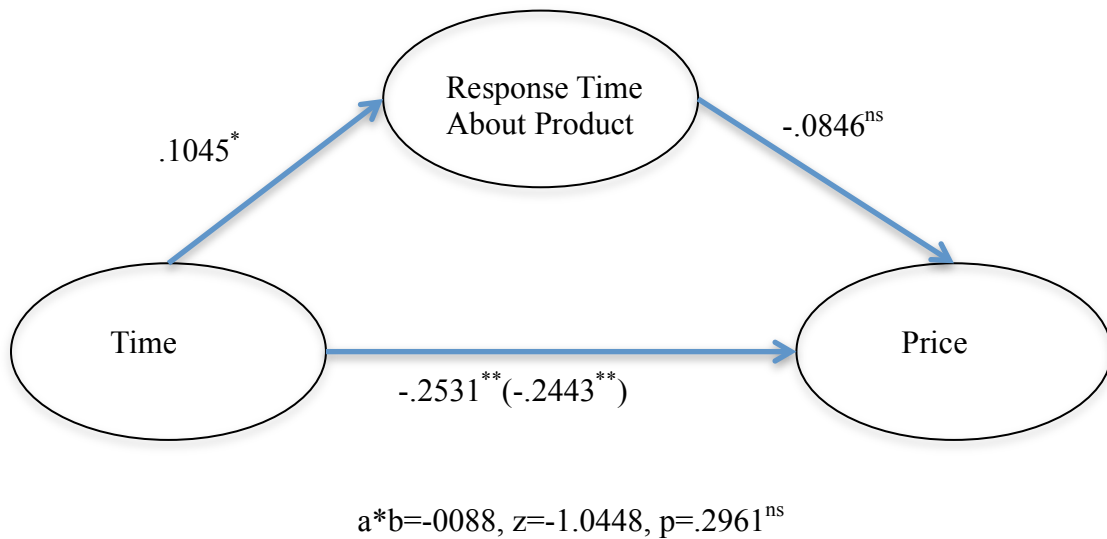
Note :*significant at p<.05; **significant at p<.01; ns=not significant

Figure F5. Experiment 3 : Mediation effect of Response Latencies

APPENDIX G

NAVON'S TASK

In this section, you are going to see a large letter made up of many smaller letters. Please read the instructions and look at the example. When you are ready to start the task, click the next button.

Instructions

On the next screens, you will see different large alphabet letters presented one at a time. These large letters will be made up of small alphabet letters. Your task will be to identify the *large* letter that is formed by the overall shape of the figure. Each large letter will be on the screen for 5 sec. You will see the large letter and the fill in the blank statement: "The large letter formed by the overall shape of the figure is _____"

Example

```
RR RR                              RR RR
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You would fill in the blank with an "H"

After you answer each question, please click on the next button to see the next letter.

When you are ready, please click the Next button to move on to the next step.

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APPENDIX H

THE BEHAIVOR IDENTIFICATION FORM

Any behavior can be described in many ways. For example, one person might describe a behavior as "writing a paper," while another person might describe the same behavior as "pushing keys on the keyboard." Yet another person might describe it as "expressing thoughts." This form focuses on your personal preferences for how a number of different behaviors could be described. Below you will find several behaviors listed. After each behavior, there will be two different ways in which the behavior might be identified. Please mark only one alternative for each pair. Remember, mark the description that you personally believe is more appropriate for each pair.

1. Making a list
   a. Getting organized
   b. Writing things down

2. Reading
   a. Following lines of print
   b. Gaining knowledge

3. Joining the Army
   a. Helping the Nation's defense
   b. Signing up

4. Washing clothes
   a. Removing odors from clothes
   b. Putting clothes into the machine

5. Picking an apple
   a. Getting something to eat
   b. Pulling an apple off a branch

6. Chopping down a tree
   a. Wielding an axe
   b. Getting firewood

7. Measuring a room for carpeting
   a. Getting ready to remodel
   b. Using a yardstick

8. Cleaning the house
   a. Showing one's cleanliness
   b. Vacuuming the floor

9. Painting a room
   a. Applying brushstrokes
   b. Making the room look fresh

10. Paying the rent
    a. Maintaining a place to live
    b. Writing a check

11. Caring for houseplants
    a. Watering plants
    b. Making the room look nice

12. Locking a door
    a. Putting a key in the lock
    b. Securing the house

13. Voting
    a. Influencing the election
    b. Marking a ballot

14. Climbing a tree
    a. Getting a good view
    b. Holding on to branches

15. Filling out a personality test
    a. Answering questions
    b. Revealing what you're like

16. Tooth brushing
    a. Preventing tooth decay
    b. Moving a brush around in one's mouth

17. Taking a test
    a. Answering questions
    b. Showing one's knowledge

18. Greeting someone
    a. Saying hello
    b. Showing friendliness

19. Resisting temptation
    a. Saying "NO"
    b. Showing moral courage

20. Eating
    a. Getting nutrition
    b. Chewing and swallowing

21. Growing a garden
    a. Planting seeds
    b. Getting fresh vegetables

22. Traveling by car
    a. Following a map
    b. Seeing the countryside

23. Having a cavity filled
    a. Protecting your teeth
    b. Going to the dentist

24. Talking to a child
    a. Teaching a child something
    b. Using simple words

25. Pushing a doorbell
    a. Moving a finger
    b. Seeing if someone's home

APPENDIX I

FIGURES AND TABLES FOR EXPERIMENT 4A RESULTS

Table I1. Experiment 4a. ANOVA table

Source	d.f.	MS	F	P
Between Subject				
Intercept	1	149.989	2.777	.085*
Role	1	0.547	1.218	.273
Construal level	1	.711	1.581	.212
Role x Construal Level	1	1.756	3.906	.051*
Error	88	.449		

$*p < .10.$ $**p < .05.$ $***p < .01.$
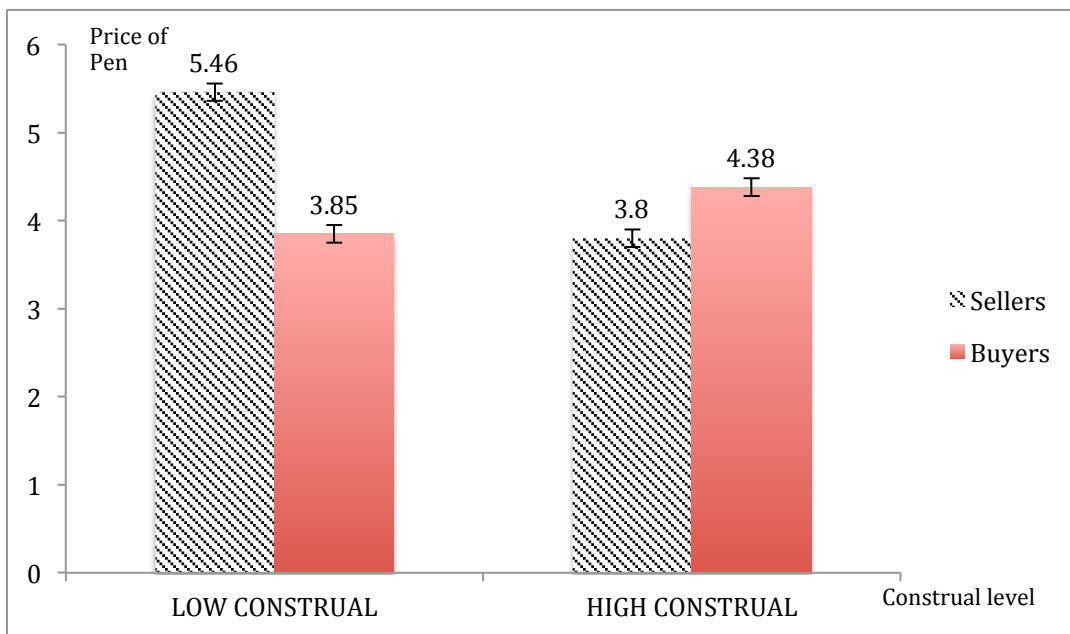
DV : Price of mug

Figure I1. Experiment 4a : The effect of construal level on price changes
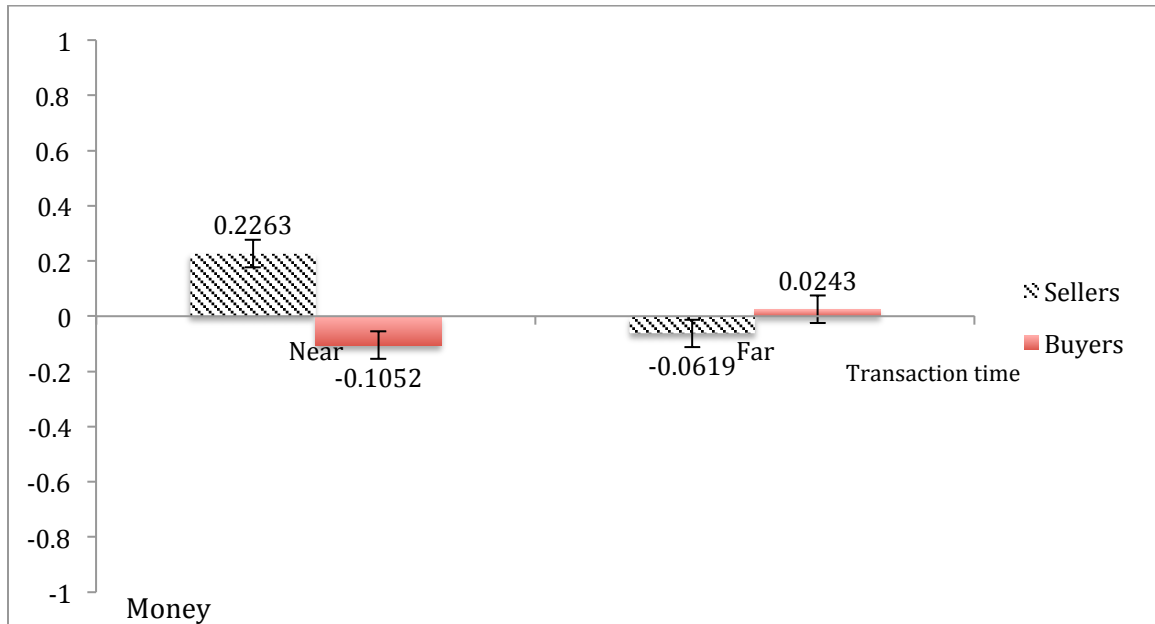
DV : Thought type (SMRD)

Figure I2. Experiment 4a : Though type difference between sellers and buyers (SMRD)

Table I2. Experiment 4a : Mediation Model for the Influence of Time on Price.

	Regression analysis		Bootstrap analysis	
Effect	b	p	Indirect effect	95% CI
Seller(N=46)				
a	-.3314	.0284**	a x b =--.1949*	-.5007 -.0376
b	.5882	.0013		
c	-.4525	.0183**		
Buyer(N=46)				
a	.0862	.5454	a x b = .7724	-.1339, 0326
b	-.0725	.7504		
c	.1006	.6346		
Note. bootstrapping based on 5000				

*$p < .10.$ **$p < .05.$ ***$p < .01.$

SELLER

$$a*b=-.1949, z=-1.9223, p=.0546^*$$
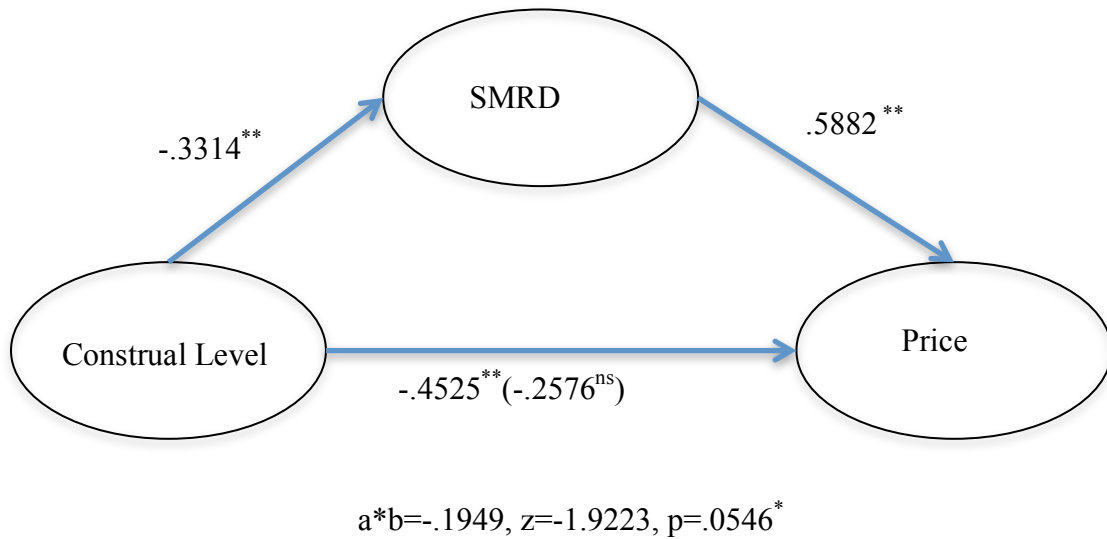
Note :*significant at p<.05; **significant at p<.01; ns=not significant

Figure I3. Experiment 4-a : Thought Type Difference Between Sellers and Buyers

APPENDIX J

STIMULI USED FOR EXPERIMENT 4B

Your Task

Please look at the image of mug below. The seller of the mug originally purchased it for $10 at a mall six months ago, so the seller has owned the mug for six months. As you can see, it is still in good condition and there is nothing wrong with the mug. Please read the scenarios and answer the following questions.

APPENDIX K

FIGURES AND TABLES FOR EXPEIRMENT 4B RESULTS

Table K1. Experiment 4b : Discounting rate difference between sellers and buyers.

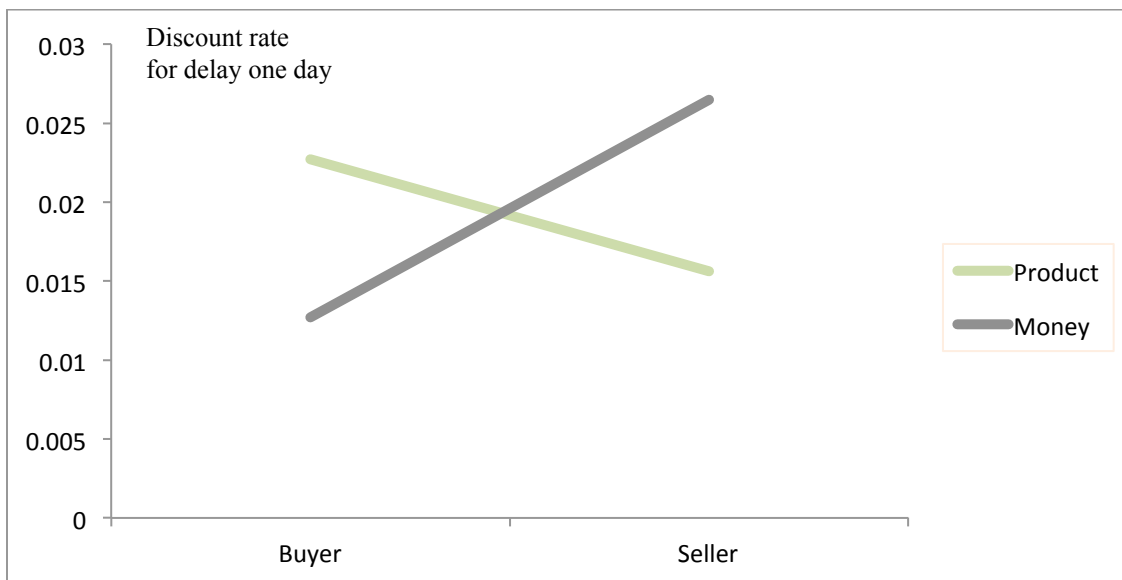|	Product	Money
	Tomorrow	Tomorrow
Buyer	0.0227	0.0127
Seller	0.0156	0.0265

Figure K1. Experiment 4b : Different disounting rate of product and money(1day delay) between roles

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