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The Endowment Effect:
What Helps Us Improve Our Perspective Taking?

A thesis presented by
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to the Department of Psychology
in partial fulfillment of the requirements
for the degree of
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Abstract

Two studies examine if people's inability to anticipate the endowment effect is a result of failed perspective taking. The first study examined the effect of a financial incentive on people's ability to anticipate the endowment effect, using 40 participants from psychology courses at Connecticut College. Analyses were conducted to test for egocentrism, and to determine how a financial incentive would affect people's ability to anticipate the endowment effect. The results indicated that buyers trended toward being egocentric in that they underestimated the sellers' average selling price ($p=.073$), and that a financial incentive was not effective at improving people's ability to anticipate the endowment effect ($p=.917$). The second study implemented similarity and difference priming in order to help improve people's ability to anticipate the endowment effect. This study used 81 participants from psychology courses at Connecticut College. The results indicated that the endowment effect only occurred in the control group ($p=.050$). Statistical tests were conducted in order to determine whether people lacked the ability to anticipate the endowment effect, and if they did, if similarity or difference priming improved their ability to anticipate the endowment effect. Analyses revealed that buyers in the control and similarity prime groups had the most difficulty anticipating the endowment effect ($p=.089$, $p=.060$, respectively), whereas sellers and those who were primed for differences tended to be the most accurate. People seem to need help remembering that other people may be different in order to overcome their inaccurate perspectives. The implications of the endowment effect, anticipating the endowment effect, and accurate perspective taking are discussed.

Keywords: endowment effect, perspective taking, egocentrism, financial incentive, similarity priming, difference priming

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The Endowment Effect: What Helps Us Improve Our Perspective Taking?

Perspective Taking: An Overview

Many kids are told “Put yourself in their shoes” when encountering a conflict, but the literature on perspective taking suggests this may not be such an easy task. Accurate perspective taking is essential to build social relationships and avoid conflict. People often have conflicts because they cannot understand someone else’s perspective. For example, workers may not understand a boss’s demands because they cannot imagine the boss’s responsibilities and pressures. Similarly, partners may not understand their partner’s perspective because they cannot imagine the situation that partner is facing.

Perspective taking is defined as “the active cognitive process of imagining the world from another’s vantage point or imagining oneself in another’s shoes to understand their visual viewpoint, thoughts, motivations, intentions, or emotions” (Ku, Wang & Galinsky, 2015, pp. 16-17). People often have trouble perspective taking, or relinquishing from their egocentric points of view. There are many examples of psychological phenomena that stem from egocentrically biased social judgments. For example, the spotlight effect—the tendency of people to think that others are paying more attention to them than they are—, or the illusion of transparency—the tendency to think one’s emotions are more obvious than they are— demonstrate how egocentric people tend to be (Gilovich, Medvec, & Savitsky, 2000; Gilovich & Savitsky, 1999). Poor perspective taking is just another example of how we tend to be egocentric in our judgments (Dunning, Van Boven, & Loewenstein, 2001; Epley & Caruso, 2009; Epley, Van Boven, & Gilovich, 2004; Kurt & Inman 2013; Todd et al., 2015; Todd et al., 2011; Van Boven, Dunning, & Loewenstein, 2000; Van Boven & Loewenstein, 2003, 2005).

Across the literature many manipulations have been done in order to see what improves our perspective taking and helps us overcome our egocentric approach (Epley et al., 2004; Gehlbach, Brinkworth, & Wang, 2012; Gehlbach et al., 2015; Kurt & Inman, 2013; Todd et al., 2011; Van Boven et al., 2000). However, there are individual differences with regard to perspective taking abilities. For example, certain dispositions that allow people to be less preoccupied with their own egocentric perspective (such as being able to regulate emotional responses) have been found to increase perspective taking and vice versa (Okun, Shephard, & Eisenberg, 2000). Dispositions that cause people to be more preoccupied with their own perspective (such as anxiety) tend to decrease perspective-taking abilities (Todd et al., 2015). Beyond that, perspective taking is influenced by motivation; people need to be motivated and willing to consider another's perspective (Epley & Caruso, 2009; Epley et al., 2004; Gehlbach et al., 2012; Kurt & Inman 2013; Todd et al., 2011; Van Boven et al., 2000).

Anchoring and adjustment heuristic

It has been speculated that this lack of motivation may lead to a failure in perspective taking. Epley and Caruso (2009) explain the mechanism under which they believe perspective taking operates and how lack of motivation causes that mechanism to fail. The mechanism is called anchoring and adjustment, which was defined by Tversky and Kahneman (1979). They explain, "different starting points yield different estimates, which are biased toward the initial values" (Tversky & Kahneman, 1979, p. 1128) and that proper adjustment often does not occur in order to reduce these biases. This mechanism had been applied to perspective taking; it is hypothesized that when trying to take someone else's perspective, we start by imagining our own perspective and then adjust from there to what we think the other's perspective might be (Dunning et al., 2001; Epley et al., 2009; Epley et al., 2004; Kurt & Inman, 2013; Todd et al.,

2011; Van Boven et al., 2000; Van Boven & Loewenstein, 2003, 2005). Beyond the fact that we are often inaccurate in our predictions of our own perspective (Blumenschein et al., 1998; Loewenstein & Adler, 1995; Van Boven & Loewenstein, 2005), we also are inhibited when we are not properly motivated to adjust away from our own perspective (Epley & Gilovich, 2005, 2006; Epley et al., 2004). Epley and Caruso (2009) suggest that three things can inhibit accurate perspective taking under the anchoring and adjustment heuristic: 1) a failure of activation, 2) a mis-calibrated adjustment, or 3) an inaccurate adjustment.

Failure of activation refers to the tendency of one's own perspective to come to mind more rapidly, so we may rely solely on this. In other words, when a situation calls for perspective taking we may fail to even engage in the process, and simply base our judgments on our own perspective (Epley & Caruso, 2009). A mis-calibrated adjustment refers to the fact that often when we adjust away from our own perspective we do not adjust far enough (Dunning et al., 2001; Epley & Caruso, 2009; Epley & Gilovich 2006; Epley et al., 2004). One example of when we tend to not adjust far enough involves time pressure. Time pressure has been found to inhibit our perspective taking abilities, suggesting that when we have more time (e.g., time to put in effort), we tend to adjust further away from our initial egocentric perspective (Epley et al., 2004) than when less time is available. Another example is reflected in our lack of ability to take into account our own privileged knowledge (or adjust away from our privileged perspective). Epley et al. (2004) had participants listen to an ambiguous message being left for them about a comedy show "their friend" had attended. The ambiguity was resolved for participants by giving them clarifying information about what the reaction to the comedy show was. The information either made it clear that the message was sincere (a positive reaction) or the message was sarcastic (a negative reaction). The participants were then either asked to evaluate whether they believed the

message was sincere or sarcastic, or asked whether they thought the uninformed listener would believe the message was sincere or sarcastic. The participants in the intention condition indicated the speaker's intended meaning. Participants in the interpretation condition anticipated how a person who lacked clarifying information would interpret the message. A 2 (condition: intention or interpretation) X 2 (reaction: positive or negative) mixed model ANOVA was performed with repeated measures on the last factor. The results show that those in the sarcastic event condition interpreted the message as significantly more sarcastic than did those in the sincere event condition when they were asked to evaluate their own interpretation (intention condition). The same pattern was present when asked to evaluate the uninformed listener's interpretation but significantly less so (interpretation condition). This outcome supports the authors' hypothesis that the anchoring and adjustment method was present; people were aware that the message would be more ambiguous to an uninformed listener, but were still influenced by their privileged information and adjusted insufficiently. There was also a strong correlation between the scores in the intention condition (indicate your own evaluation) and the interpretation condition (indicate the uninformed listener's evaluation). This result supports the authors' hypothesis that participants used their own interpretation of the ambiguous message as an anchor from which they adjusted to account for the participants' lack of information. In other words, the authors found that estimates of others' perceptions were consistent with the individual's own but differed in a manner consistent with serial adjustment. Additionally, there is evidence that adjustments tend to be insufficient because people stop adjusting when a plausible estimate is reached, indicating a lack of effort as the cause (Epley & Gilovich 2006; Epley et al., 2004).

The third possible cause of failed perspective taking, inaccurate adjustment, refers to the situation when we use stored information as a basis for our judgments instead of an egocentric

basis. In this situation, a judgment is inaccurate when the stored information is inaccurate. When another person seems dissimilar, we are more likely to use stored knowledge to take our perspective, as an egocentric approach does not seem fitting (Epley & Caruso, 2009). This situation was the case when students were asked either to list ways in which they were similar or different from MBA students. Pilot testing indicated that there were clear stereotypes about MBA students. Participants then indicated their own “yes” or “no” response and their estimate for the percentage of students who would say “yes” to questions that were consistent with stereotypes of MBA students and inconsistent with stereotypes of MBA students. A repeated measures ANOVA indicated that participants in the similarity condition, as opposed to the difference condition, appeared to engage in more projection (used themselves as an indicator of preferences) and less stereotyping (Ames, 2004). This result indicates that when we perceive ourselves as similar to our target (the person whose perspective we are trying to take), we are more likely to use ourselves to predict that person’s preferences. When we perceive ourselves as different than our target, we are more likely to use stereotypes (or stored knowledge) to predict preferences. Of course, when using stereotypes, predictions are only accurate to the extent that the stereotypes are accurate.

In summary, the anchoring and adjustment heuristic explains how we take others’ perspectives. When we attempt to take someone else’s perspective, we have a tendency to anchor at our own perspective and then try to adjust to someone else’s perspective from there. However, this mechanism often leads to poor perspective taking. Sometimes this mechanism fails to be activated when necessary, but even when it is activated it often falls short of creating accurate perspective taking. Poor perspective taking occurs when we anchor, and then do not adjust

sufficiently, or when we neglect our anchor and substitute it for incorrect stored information (Epley & Gilovich, 2006; Epley et al., 2004; Epley & Caruso, 2009).

Improving perspective taking: A financial approach

There is evidence however that people can be motivated to adjust sufficiently and therefore reduce their egocentric biases (Epley & Gilovich 2005, 2006; Epley et al., 2004). Epley et al. (2004) found that participants who had the potential to receive a financial incentive put more effort into their adjustment and as a result were more accurate in their predictions of others' perceptions than were those who were not offered a financial incentive. Participants were told that they would taste Coke and Pepsi from two different cups labeled "A" and "B." Participants were then informed which cola was which, but were told that some participants in this experiment would remain uninformed before tasting the cola. Participants then estimated the percentage of these uninformed participants who would correctly identify the two drinks. Participants randomly assigned to the incentive condition were told that the participant who made the most accurate estimate would receive a \$50 gift card. Participants who were told there was a financial incentive for accuracy were significantly more accurate in their predictions of the uninformed tasters' ability to taste the difference between the colas than were participants who received no financial incentive, indicating that those participants who were told about the financial incentive adjusted further away from their own perspective than those who were not. This study provides evidence that offering financial incentives is one way to motivate people to adjust with more effort and accuracy (Epley & Gilovich 2005; Epley et al. 2004).

Improving perspective taking: Group relations

Evidence indicates that we are also motivated to take another's perspective when we feel we are more similar to the person whose perspective we are trying to take (Gehlbach et al., 2012;

Kurt & Inman, 2013; Williams, Parker, & Turner, 2007). In Williams et al. (2007) the researchers found that dissimilarity was negatively related to indicators of perspective taking. Participants were asked to evaluate their work-style dissimilarity to the style of other team members, as well as their positive attributions of, and empathy for, other team members. Perspective taking has been shown to incorporate both these cognitive and affective responses (Galinsky et al., 2008; Ku et al., 2015; Kurt & Inman, 2013; Parker & Axtell, 2001; Williams et al., 2007). Team member empathy is classified an indicator of the affective dimension whereas attribution is classified as an indicator of the cognitive aspect. A hierarchical regression analysis revealed that perceived work-style dissimilarity had a significant negative relationship to both positive attributions and empathy. This finding suggests that perspective-taking abilities will be reduced the more dissimilar from their team members people judge themselves to be (Williams et al., 2007). It seems important that people feel connected to people whose perspective they are trying to take. Not only are people better perspective takers when they feel they know the target better, but also when they are motivated by the desire to help (Gehlbach et al., 2012).

However, similarity has also been found to inhibit perspective taking. In Todd et al. (2011), some participants were initially primed with a difference mind-set and some participants were primed with a similarity mind-set using a picture comparison task. A difference mind-set is defined as “a cognitive orientation wherein distinctive self-referential information is activated and used as a comparison standard to draw inferences about other people” (Todd et al., 2011, p. 135). Participants then read a scenario where “Vicki” put her violin in a blue container (there were also red, green, and purple containers present). Then, some participants were told it was moved to a red container while Vicki was not present, whereas some participants were told it was moved to another container while Vicki was not present (i.e., the location of the violin was

left ambiguous). Then participants were told that when Vicki comes back the containers have been rearranged. Participants are then asked to indicate the chances that Vicki looks first in each of the containers in the room. A 2 (mind set: similarity, difference) X 2 (location knowledge: informed, ambiguous) analysis was then conducted. Participants who knew the violin was moved to the red container, and who were primed with a difference mindset, were more likely to say Vicki would look in the blue container than the red container, compared to those who were primed with a similar mind set. In this way, Todd et al., (2011) provide evidence that priming a difference mind set causes people to be less influenced by their own privileged knowledge, and therefore more likely to acknowledge the protagonist's false belief, than is true of participants primed with a similarity mind-set. In other words, priming people with a difference mind-set helps improve their perspective taking, because it reminds them to step away from their own perspective. These results likely occur because those primed with a difference mind-set do not anchor on their own perspective (or anchor less on their own perspective), and are therefore more accurate in predicting another person's perspective than are people primed with a similarity mind-set.

Implications

Perspective taking has been shown to be associated with a range of positive effects (see Ku et al., 2015 for a comprehensive overview). Some examples of the positive effects described in Ku et al. (2015) include how perspective taking increases liking and closeness for the person whose perspective is being taken. Perspective taking has also been shown to increase satisfaction and closeness with romantic partners, customer satisfaction, and patient satisfaction with physicians. Additionally, perspective taking can increase people's willingness to approach and interact with others, which then increases the target's satisfaction with the interaction and it has

also been shown to increase generosity and helping behavior. Furthermore, perspective taking can create a level of cognitive complexity that is beneficial. For instance, superior perspective takers can recall more stereotype inconsistent behaviors, have reduced prejudice and stereotyping, as well generate more disconfirming evidence in comparison to those who are not as skilled at perspective taking. In terms of employment, perspective taking has been shown to facilitate team effectiveness as well as increase creativity and performance.

Superior perspective taking abilities have also been found to help people come to more efficient solutions in negotiations. When participants are placed in a buyer-seller negotiation, their ability to take the other's perspective appears to be a more important factor than does empathy, or any of the Big Five personality traits in coming to a resolution. In one study, participants were randomly assigned to be either a buyer or seller in a negotiation over the sale of a gas station. The buyer's maximum amount he/she was allowed to pay, however, was higher than the seller's minimum amount he/she was allowed to accept. The buyer was instructed s/he needed to hire a manager and the seller was instructed s/he needed to obtain employment. To reach a successful deal the buyer and seller needed to come to the alternative solution that the seller would sell at a lower price in exchange for future employment. Prior to participating in the negotiation process the participants completed a survey that measured their perspective taking tendencies, empathy, and the Big Five personality inventory. A simultaneous logistic regression revealed that of those measurements, only perspective taking abilities were a significant predictor of whether a successful deal was reached (Galinsky et al., 2008).

Perspective taking plays a particularly important role with regard to economic misunderstandings. There are many situations where a buyer engages with a seller about a price, and if neither can come to an agreement, neither can benefit. Kahneman, Knetsch, and Thaler

(1990) found that number of times buyers and sellers reached an agreement was lower than would be expected if the endowment effect did not exist, and that these low rates of trading reduced the gains possible from the efficient amount of trades.

Existing research indicates that there may be ways to reduce the poor perspective taking that disadvantages us. In that way, we may be able to improve the economics that are a part of our daily lives. A specific example of failed perspective taking related to economics is our inability to anticipate the endowment effect.

The Endowment Effect: An Overview

The endowment effect is the tendency to value something more when you own it. When a person is endowed with an object (making them the seller), they tend to value it more than someone who was not endowed with the object (the buyer). In Kahneman et al.'s (1990) classic endowment effect experiment, half of the participants are given a mug and told they are sellers, and half of the participants are told they are buyers. Then both evaluate how much they are either willing to pay to own the mug or the price they would set to sell it. The results indicated that students who were evaluating how much they were willing to pay for a mug had a mean valuation of \$2.21, but students who were endowed with a mug had a mean valuation of \$5.78 (more than twice the valuation). Why would students evaluate this mug as having significantly different values? The answer to this question is often explained as a result of loss aversion. Loss aversion is the term used to communicate that people are more sensitive to losses than gains- a loss is more painful than a gain of the same magnitude is enjoyable (Kahneman & Tversky 1979). In terms of the endowment effect, sellers are considered loss averse (the pain of giving up the mug is large), which causes their price to be higher than the price of someone who does not have to experience that loss. The endowment effect has been replicated across many studies (see

for example, Kahneman et al., 1990; Kurt & Inman, 2013; Loewenstein & Adler, 1995; Maddux et al., 2010; Mowredge & Giblin, 2015; Nayakankuppam & Mishra, 2005; Van Boven et al., 2000).

The endowment effect is problematic because it is a violation of the Coase theorem. The Coase theorem states “subject to income effects, the allocation of resources will be independent of the assignment of property rights when costless trades are possible” (Kahneman et al., 1990, p. 1326). This theorem states that whether or not someone owns a good will not affect the person’s valuation (subject to income effects and costless trades). The Coase theorem is an assumption that is held in order to model indifference curves, which are widely used in microeconomics. The violation of this assumption means that indifference curves are not drawn properly. Specifically, indifference curves are drawn without reference to current endowment. Indifference curves show the preference between two goods at a given budget (e.g., one person may prefer two mugs to two candy bars). If this preference is altered by the endowment effect then the model of indifference curves needs to take this effect into consideration. Specifically, the indifference curve should have a kink at the endowment or reference point (Kahneman et al., 1990).

Given that the endowment effect is such a widely documented phenomenon, as well as an impactful one, it is surprising that people do not anticipate the effect. Research has indicated that people do not anticipate the endowment effect due to a lack of perspective taking (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000). Buyers anticipate some difference between their own valuation and the sellers’ valuation but largely underestimate the difference (and vice versa) (Van Boven et al., 2000). A buyer does not accurately take the seller’s perspective and the

seller does not accurately take the buyer's perspective, and this leads to inaccurate estimations of the other role.

It can be costly not to anticipate the endowment effect. Van Boven et al. (2000) found that people will be poor perspective takers even if it is costly. In their study, they asked some participants to be buyers' agents and some participants to be sellers. The buyers' agents were to act on behalf of the buyer who had given them \$10.00. If the buyers' agents were able to purchase a mug (offer an amount that the seller was willing to accept), they were allowed to keep whatever was leftover of the \$10.00. Buyers overall had the potential to earn \$2.75 on average, but instead earned a significantly lower amount of \$0.75. Because the buyers' agents failed to take the perspective of the seller and make a realistic offer (i.e., anticipate the endowment effect), they did not maximize their profits. A real-life example of buyers' agents is stockbrokers. If stockbrokers underestimate the value of a stock to its owner, and make too low an offer, and if there are other interested buyers who instead purchase the stock, a broker may miss out on a substantial profit, as well as upset his/her client.

Van Boven et al. (2000) also found that when people do not anticipate the endowment effect, and later find that a seller/buyer is unwilling to accept their offer, they rate greedy dispositions as a more likely explanation of the behavior than an explanation of the endowment effect (when given both explanations). This outcome is extremely problematic because it can cause people to act irrationally due to their aggravation. People may incur a cost to themselves, just to hurt someone who is aggravating them (Fehr & Gächter, 2000). This behavior is costly in that it can prevent a profitable transaction as well as cause animosity between buyers and sellers (Van Boven et al., 2000).

We do not anticipate the endowment effect: A result of egocentric perspective taking

Failed perspective taking can explain why we do not anticipate the endowment effect. People incorrectly predict how someone else may value a mug because they cannot imagine what it is like not to own the mug, and therefore how someone in that position would value it. People tend to incorrectly predict what their own valuation would be if they were in the other role (e.g., if the buyer were the seller and vice versa) because they are in a different psychological state of ownership, and then use their incorrect prediction of themselves to predict how another person is feeling, or what that other person may be thinking (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000). This situation is referred to as an egocentric empathy gap--or the tendency to perceive that the preferences and reactions of other people are more similar to one's own than those preferences and reactions actually are (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000; Van Boven & Loewenstein, 2005). With regard to the endowment effect, an egocentric empathy gap simply means people overestimate the similarity between their own valuation of a commodity and the valuation of people in the other role (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al. 2000). If the egocentric empathy gap is the reason why we do not anticipate endowment effect, we would expect that people would inaccurately predict how the other role would value a commodity; in other words, those people would not be good at taking the perspective of the person in the other role.

Van Boven et al. (2000) find evidence that poor perspective taking can explain why we do not anticipate the endowment effect by extending the classic endowment effect experiment performed by Kahneman et al. (1990). Van Boven et al. (2000) endowed half of their participants with a mug, and told half of them that they had the opportunity to buy a mug. Participants were then asked to indicate on a list of prices all the prices at which they would be willing to buy/sell the mug. They were then asked to estimate the valuation of the average participants in the other

role in the same way they indicated their own valuation (using the list of prices). Van Boven et al. found that there was an endowment effect such that students' lowest amount they were willing to accept for the mug was more than three times higher than was the amount other students indicated they would be willing to pay for it, a finding similar to that in Kahneman et al. (1990). In order to find evidence of the egocentric empathy gap however, the researchers analyzed participants' estimated valuations. Sellers overestimated buyers' highest purchase price and buyers underestimated sellers' lowest selling price. There was also a positive partial correlation between their own valuation of the mug and their estimate of the mug's value to the participants in the other role, controlling for participants' own role. In other words, it seems that participants' estimations of the other role are highly influenced by their own perspective and are therefore biased in the direction of their own valuation. Furthermore, the positive partial correlation suggests that people may derive the others' value of the mug from their own estimation, that is, their own point of view.

People's biased assessments of the other role stem from their biased and egocentric assessments of how they themselves would feel in that role (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven & Loewenstein, 2003; Van Boven et al., 2000). Not only do people tend to be inaccurate in their assessments of how other people will feel in a given role, but also in how they themselves would feel in that same role (Blumenschein et al., 1998; Dunning et al., 2001; Kurt & Inman, 2013; Loewenstein & Adler, 1995; Van Boven & Loewenstein, 2003, 2005; Van Boven et al., 2000). One study found that participants predicted they would sell an endowed mug for \$3.27-\$3.73 in a hypothetical situation. However when the situation changed and was no longer hypothetical, they were actually willing to sell for somewhere in the \$4.56-\$5.40 range (Loewenstein & Adler, 1995). These results indicate that people are unable to predict how much

they are really willing to pay for an item. This outcome is problematic for predicting others' valuations because we tend to base our estimates of others' valuations on how we believe we would feel in the same situation. However, if we cannot accurately predict how we would feel in a given situation, this will make our estimate of others inaccurate as well. This inability to predict creates the egocentric empathy gap.

Kurt and Inman (2013) replicated the Van Boven et al. (2000) study (in which they ask participants to predict the other role's valuation of a mug), but with an important addition. Kurt and Inman (2013) primed participants for similarity by asking them to list three ways in which they were similar to the average undergraduate student. Participants then followed Van Boven's procedure in valuing the mug and predicting the other role's valuation of the mug. Not only did Kurt and Inman replicate the results in the Van Boven et al. (2000) study, they also found that when participants are primed to pay attention to how they are similar to the person in the other role, they are more likely to be accurate in their prediction of the valuation made by the person in the other role. Priming participants for similarity reduced prediction errors significantly (by 59%), compared to those who were not primed for similarity. In terms of anchoring and adjustment, it may be the case that similarity causes a greater adjustment (a reduced empathy gap), which results in a more accurate prediction of the other role's valuation than is true without such priming. This outcome also provides further support for the hypothesis that the lack of anticipation of the endowment effect operates under a perspective taking model, in that perspective taking has also been shown to improve when participants perceive themselves to be similar (Williams et al., 2007).

One proposed reason to explain why buyers' and sellers' views may differ so drastically is that sellers may over-represent positive features and under-represent negative features of an

item relative to buyers. In one experiment, researchers had participants sit at a computer and told participants they either owned or did not own a mug. Participants were then shown four features of the mug (two positive and two negative). Participants were then told that attributes of the mug would appear on the computer screen and their task was to press the appropriate keys to indicate whether the attribute was a real attribute of the mug or a false attribute of the mug. The four attributes that had been provided earlier all appeared in both true and false form. The analyses revealed that sellers made fewer errors than did buyers on positive items but more errors on negative items (Nayakankuppam & Mishra, 2005). This finding indicates that sellers tend to overrepresent their item to be better than it actually is and therefore place more value on it than do buyers. These different states of mind create drastically different views, therefore making it hard for the seller to imagine the psychological state of ownership and vice versa for the seller (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000).

Furthermore, this result aligns with research that states that the endowment effect stems from the seller overestimating the buyer's willingness to pay, or the seller overvaluing the good (Frederick, 2012; Kahneman et al., 1990). In one study, students indicated the most they would pay for eight imaginary goods and predicted how much the person who was handed the survey immediately before (or after) them would also be willing to pay for the same eight goods. For all eight goods, participants indicated a higher willingness to pay for the other student compared to themselves, and for four of those eight goods the difference between what the participant was willing to pay and what he/she believed the other person was willing to pay was significant to the .0001 level (Frederick, 2012). The tendency for people in general to overestimate what others are willing to pay could contribute to people not anticipating the endowment effect in that it causes the seller to overestimate what the buyer would be willing to pay.

Typically, sellers do not cognitively take the viewpoint of the buyer nor do they experience the buyer's feelings. Buyers also do not understand the seller's viewpoint or the seller's feelings at the time. Due to the lack of perspective taking, buyers and sellers do not accurately predict each other's valuations (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000).

Improving the endowment effect: A financial approach

If the endowment effect is not anticipated because of egocentric perspective taking, and egocentric perspective taking operates under anchoring and insufficient adjustment, then we do not anticipate the endowment effect because of egocentric anchoring and insufficient adjustment. When people try to imagine how the person in the other role would value the mug, they start at their own valuation, and then insufficiently adjust because they cannot accurately imagine being in the other role. Because there is evidence that offering financial incentives motivates people to effortfully adjust (Epley & Gilovich 2005; Epley et al. 2004), it seems plausible that offering a financial incentive could improve people's anticipation of the endowment effect. Offering a financial incentive should cause people to put more effort into their predictions of the other role's valuation, and therefore create a more realistic estimation. While other studies did offer a financial incentive to see if it improved the endowment effect (Kurt & Inman, 2013; Van Boven et al., 2000), it seems plausible that the amount might have been too low to motivate people sufficiently. Van Boven et al. (2000) and Kurt and Inman (2013) offered a \$2.00 incentive if the participants' estimate was within 50 cents of the actual average valuation and found that while this did make the valuations more accurate, there was not a significant difference between those who were incentivized and those who were not. Incentives for \$50 that are only rewarded if the participant is the most or one of the most accurate perspective takers have been demonstrated to

improve perspective taking (Epley & Gilovich 2005; Epley et al, 2004), suggesting that this approach as well as a more substantial amount of money may be superior at manipulating participants' effort. With regard to the endowment effect, if the reason buyers and sellers tend to be inaccurate in their predictions of the other role is insufficient adjustment, and offering a substantial financial incentive motivates people to adjust further, then the predictions should be more accurate given a more generous financial incentive.

Improving the Endowment Effect: Group Relations

If we do not anticipate the endowment effect because of poor perspective taking, then manipulations to improve perspective taking should also improve anticipation of the endowment effect. Both perspective taking and anticipation of the endowment effect have been found to improve when the perspective taker perceives himself/herself as similar to the target. Dissimilarity is related to less perspective taking (Williams et al., 2007), whereas prosocial goals and similarity have been found to be positive motivation for perspective taking (Gehlbach et al., 2012). With regard to the endowment effect, priming similarity has been found to reduce prediction errors, meaning the buyer/seller is being more realistic about the valuation the other role has of the good (Kurt & Inman, 2013). It seems possible that perceived similarity is improving the anticipation of the endowment effect by reducing the egocentric empathy gaps. People are perhaps more empathetic toward people they perceive themselves as similar to (the target in this case), and therefore put more effort into their perspective taking of that person in the other role.

It is important to recall however, that perspective taking has also been shown to improve by priming a difference mind-set (Todd et al., 2011). People can improve their perspective taking when primed with a difference mind-set because they are able to step away from their own

perspective-or perhaps eliminate the egocentric anchor. Recall that Epley and Caruso (2009) state that if people do not feel it is appropriate to use an egocentric anchor (due to a perceived difference) they rely on stored information. It is possible then that the anticipation of the endowment effect could also be improved by creating a difference-mind set, in that it could get buyers/sellers to step away from their own egocentric viewpoint.

If people could step away from their own egocentric viewpoint, their tendency to incorrectly predict others' valuations would be reduced. However, people tend to be egocentric in their valuations, and therefore have trouble correctly predicting others' valuations. Given this tendency, people do not predict the endowment effect. If manipulations are put in place to improve people's predictions of the other role, or in other words, their perspective taking abilities, the anticipation of the endowment effect should be improved.

Hypotheses

In summary, the aim of this study was to determine how people could improve their perspective taking and therefore improve their anticipation of the endowment effect. In a buyer-seller situation, people inaccurately predict how the person in the other role values the commodity because of their egocentric biases. We do not anticipate the endowment effect because of egocentric empathy gaps that cause poor perspective taking (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000). Therefore, it was proposed that the same motivations that have been shown to eliminate egocentric biases and insufficient adjustment should improve the anticipation of the endowment effect. In other words, the seller should have a realistic expectation of the buyer's valuation and vice versa if both are influenced to eliminate their egocentric biases or adjust sufficiently. Financial incentives have reduced these biases (Epley & Gilovich 2005; Epley et al., 2004). If people are motivated by a financial incentive to

put more effort into their perspective taking, they will adjust sufficiently and therefore improve their perspective taking. Furthermore, the literature has shown that both perceived similarities and a difference mind-set can improve perspective taking (Gehlbach et al., 2012; Todd et al., 2011; Williams et al., 2007). Ku et al. (2015) provide a comprehensive overview of different cases in which perspective taking has improved in relation to perceived similarities as well perceived differences between the perspective taker and the target. It has also been found that priming similarities can reduce prediction errors when a buyer is asked to estimate a seller's valuation and vice versa (Kurt & Inman, 2013), but there has yet to be research to demonstrate that perceived differences could also improve the anticipation of the endowment effect. Creating a difference mind-set improved perspective taking in that it seems to eliminate the use of an egocentric anchor. In the same way, priming differences could improve the anticipation of the endowment effect in that people may not anchor their prediction of the person in the other role's valuation at their own valuation (eliminate their egocentric anchor). The purpose of this study was to examine how to improve economic perspective taking.

The specific hypotheses were as follows:

- 1) The endowment effect would exist. Those who were sellers would believe a product was worth more than would those who were buyers, indicating that being endowed with something causes us to assign more value to it.
- 2) Our lack of anticipation of the endowment effect would be related to egocentric biases; specifically, the data would show a significant and positive correlation between how the participants value the endowed object (candy) and their estimation of how others would value the endowed candy.

3) People would mispredict the valuation of the person in the other role. Sellers would predict a significantly higher buyer's valuation than buyers' actual valuation and buyers would predict a significantly lower seller's valuation than sellers' actual valuation.

4) A financial incentive would be effective at improving the anticipation of the endowment effect. Participants estimations' of the others' valuations would be significantly more accurate if they were told they would receive a financial reward for accuracy than if they did not have that incentive.

5) Participants estimations' of the others' valuations would be significantly more accurate if they were primed for differences. Participant's estimations of the others' valuations would also be significantly more accurate if they were primed for similarities.

Method: Study 1 (Hypotheses 1-4)

Participants

Connecticut College students enrolled in Psychology classes participated in this study for class credit. Forty participants were used for this study. Of those 40 participants, 39 participants were between the ages of 18-21, and one participant was 32. Of the participants, 87.5% identified as female; 72.5% identified as White or Caucasian, 7.5% identified as Black or African American, 7.5% identified as Hispanic or Latina, 7.5% identified as Asian, and 5% identified as Biracial. None of the participants were excluded from the analyses, however one participant did have one missing answer.

Materials

Commodities

Tootsie Pops, of varying flavors, were used as the endowed good for this experiment. The Tootsie Pops were given to participants randomly out of a bag of approximately 17 Tootsie Pops that was purchased for \$2.61, meaning the Tootsie Pops individually are worth about 15 cents.

Evaluation sheets

For every price on a list of prices that increase in 5-cent increments from 0 cents to \$1.00, sellers indicate whether they would sell their candy. For every price on a similar list, buyers indicate whether they would purchase the candy at that price. Sellers' valuation of the candy is the lowest price at which they would be willing to sell their candy; buyers' valuation of the candy is the highest price they would pay to purchase the candy. Following Van Boven et al. (2000), the same sheet of 5-cent increments is used when participants evaluate how they believe the people in the other role would have filled out the sheet.

Egocentrism score

The egocentrism score measures the extent to which participants think the valuation made by the person in the other role is closer to their own than it is. The average buyer's valuation will be subtracted from the average estimate of the buyer's valuation. The average estimate of the seller's valuation will be subtracted from the average seller's valuation. This procedure creates a score such that positive scores indicate participants are estimating the valuation by the person in the other role, to be closer to their own than it actually is, on average (Van Boven et al., 2000).

Research Design

This experiment is a 2 (Role: buyer or seller) X 2 (Incentive: told about financial incentive or did not know about financial incentive) between-subjects design, where participants were assigned randomly to one of four conditions. The two independent conditions were being incentivized

financially or not, and role (buyer or seller). The dependent variable is the egocentrism score (described in the materials section).

Procedure

Participants signed up for the study through the SONA system if they intended to use the study for course credit. In SONA it was a disqualifier if the participant was allergic to Tootsie Pops (the candy used). Several sessions were run. Half of the participants were assigned buyers and half of the participants were assigned sellers. All participants received an informed consent to sign in order to continue with the study (see Appendix A). All participants were told they were randomly assigned to either the buyer or seller condition. Sellers received the following written instructions:

For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher. During this experiment you may gain more money. If you do, the amount you gain will be added to the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in cash. (see Appendix B for voucher)

After receiving the voucher, sellers were handed a Tootsie Pop and received the following instructions on the evaluation sheet:

You have been randomly assigned to the seller condition. Please read the scenario below and follow the instructions given.

You now own the candy in front of you. It is yours to keep and take home. In a few minutes, however, you will have an opportunity to sell the candy to the experimenter in exchange for cash (in addition to the \$1.00 you have already earned). For each of the prices below, please indicate whether you choose to: 1) receive that amount of money and return the candy to the experimenter, or 2) not sell the candy at that price. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the

randomly selected price is a price you indicated you would sell the candy at, that amount will be added to your voucher and you will return the candy to the experimenter. If the randomly selected price is a price you indicated you would keep the candy at, you will keep the candy. (see Appendix C for full evaluation sheet)

Buyers received the following written instructions:

For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher. During this experiment you may spend money. If you do, the amount you spend will be deducted from the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in cash. (see Appendix D for voucher)

After receiving the voucher, buyers were handed a Tootsie Pop and received the following instructions on the evaluation sheet:

You have been randomly assigned to the buyer condition. Please read the scenario below and follow the instructions given.

At this time you do not own the candy in front of you. It is not yours to keep and take home. In a few minutes, however, you will have an opportunity to purchase the candy from the experimenter using the \$1.00 you have already earned. For each of the prices below, please indicate whether you choose to: 1) pay the experimenter that amount of money in exchange for the candy, or 2) not pay the experimenter that amount of money and receive no candy. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the randomly selected price is a price you indicated you would buy the candy at, that amount will be deducted from your voucher and you will receive the candy and the amount left on your voucher. If the randomly selected price is a price you indicated you would not buy the candy at, nothing will be deducted from your voucher and you will receive no candy. (see Appendix E for full evaluation sheet)

Sellers were instructed to indicate on the sheet whether they would sell their candy at each price. Buyers were instructed to indicate on the sheet every price at which they would purchase the candy. Sellers were then asked to estimate the maximum price they believe an average buyer would pay to acquire the candy by completing a sheet identical to the one the actual buyers completed (see Appendix F).

Buyers were then asked to indicate the minimum price for which they believe the average owner would sell the candy by completing a sheet identical to the one actual sellers completed (see Appendix G). However, for half of the buyers the evaluation sheet that is handed to them to fill out as if they were the seller will have the following message on top:

In this experiment, you also have the chance to win a **\$40 AMAZON GIFT CARD**. One participant in the experiment will win the gift card. The participant whose estimate is *the closest to the price the actual sellers, on average, set for the value of the candy* **WILL RECEIVE A \$40 AMAZON GIFT CARD**. In the case of a tie, a winner will be randomly selected from those who tied. The winner will be determined and contacted after all of the sessions have been run.

Half of the sellers received a similar message on top of the sheet that was handed to them to fill out as if they were the buyer:

In this experiment, you also have the chance to win a **\$40 AMAZON GIFT CARD**. One participant in the experiment will win the gift card. The participant whose estimate is *the closest to the price the actual buyers, on average, set for the value of the candy* **WILL RECEIVE A \$40 AMAZON GIFT CARD**. In the case of a tie, a winner will be randomly selected from those who tied. The winner will be determined and contacted after all of the sessions have been run.

Then the randomly selected price was chosen and transactions were conducted as the participants handed in their sheets. Then they were asked to fill out a demographics sheet (see Appendix H).

They were thanked for their time and debriefed (see Appendix I). The participants received a full debriefing via email once all relevant studies were completed (see Appendix J). Once all groups were run, the participant whose estimate was the closest received the \$40 Amazon gift card.

Ethical Issues

This was a confidential study, not an anonymous study. Due to the fact that it was necessary to distribute the money/candy following the evaluations, it was necessary to know the responses to the evaluations in order to give them the correct money/candy. It was also necessary to know who evaluated most accurately in order to award the \$40 Amazon gift card to that person.

Results: Study 1

In order to determine if the endowment effect occurred (sellers valued the candy significantly more than did buyers) a *t*-test was conducted, which compared to the sellers' average lowest selling price to the buyers' average highest purchase price. As expected, sellers valued the candy significantly more, in dollars ($M=0.50$ $SD=0.20$) than did buyers ($M=0.34$, $SD=0.22$), indicating a significant endowment effect, $t(38)=-2.28$, $p=.029$. The sellers' average lowest selling price is almost 45% higher than the buyers' average highest purchase price. The effect size for the endowment effect was found to be moderate to large ($d=0.76$). In order to determine if sellers' and buyers' estimates of the valuation of the person in the other role was egocentric, two independent *t*-tests were conducted. It was expected the results of the *t*-tests would reveal that sellers would significantly overestimate the average buyers' purchase price because, on average, sellers value the candy more and would therefore have trouble overcoming their own biases. The sellers' estimates of the buyers' average purchase price in dollars ($M=0.42$, $SD=0.19$) was higher than the actual buyers' average purchase price in dollars ($M=0.34$,

$SD=0.22$, $t(37)=-1.17$, $p=.249$), however the values were not significantly different. Furthermore it was expected that buyers would significantly underestimate the average sellers' purchase price because, on average, buyers value the candy less, and again would have trouble moving away from their own biases. The buyers' estimates of the sellers' average selling price in dollars ($M=0.38$, $SD=0.18$) was lower than the actual sellers' average selling price in dollars ($M=0.50$, $SD=0.20$, $t(38)=-1.84$, $p=.073$), and the values approached being significantly different. Following Van Boven et al. (2000), a partial correlation was run between participants' own valuation of the candy and their estimate of the candy's value to the participants in the other role, controlling for the participants' own role. Unlike Van Boven et al. (2000), who found a significant correlation of .42, this correlation was not significant, $t(36)=-0.04$ $p=.823$.

In order to determine if a financial incentive can motivate a person to be significantly better at perspective taking (i.e., estimate the valuation by those in the other roles more accurately), a 2 (Role: buyer or seller) X 2 (Incentive: knew about the financial incentive or did not know about the financial incentive) ANOVA was conducted. The egocentrism score was calculated as described in the materials section, and those were the scores used in the ANOVA. Table 1 presents the means and standard deviations. As expected, there was no main effect for role (no difference between buyers and sellers), $F(1,35)=0.26$, $p=.614$ and no interaction effect, $F(1,35)=0.01$, $p=.917$. The expected difference was between those who were financially incentivized and those who were not. It was expected that for both buyers and sellers, those who were financially incentivized would have significantly lower egocentrism scores than would those who were not financially incentivized, however this is not what the results indicated. There was no significant difference in the egocentrism scores for those who were incentivized and those who were not, $F(1,35)=0.01$, $p=.917$.

Table 1

Means and Standard Deviations of Egocentrism Scores

Role	Incentive					
	<u>Incentivized</u>			<u>Not Incentivized</u>		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Buyer	10	0.11	0.06	10	0.11	0.06
Seller	9	0.09	0.06	10	0.07	0.06

Egocentrism scores for sellers were calculated as follows: Estimated price for buyers-actual price for buyers (the actual price for buyers was .34)

Egocentrism scores for buyers were calculated as follows: Actual price for sellers-estimated price for sellers (the actual price for sellers was .50)

Study 2: Hypotheses 1-3 & 5

Given that a financial incentive was not successful at improving estimations' of the other role's valuations, a second manipulation was attempted in order to try to improve estimations. It seems possible that even when participants put more effort into their estimations, they still have trouble overcoming their egocentric empathy gaps. In order to address this possibility, two manipulations were implemented. Some people were primed for similarity (in order to increase empathy), and some people were primed for differences (in order to decrease egocentrism). As discussed previously, this aligns with the perspective taking literature as both similarity and differences are related to better perspective taking (Gehlbach et al., 2012; Kurt & Inman, 2013; Todd et al., 2011; Williams et al., 2007). Kurt and Inman (2013) showed that when participants were primed for similarity they were more accurate in their predictions of the other role (i.e., were better at anticipating the endowment effect). Correspondence with Kurt revealed that priming for differences in their study did not create more accurate predictions of the other role. However, the prime used in Kurt and Inman (2013) placed the focus on how the individual may be similar or different to the average undergraduate. They asked their participants to write down "Three ways in which you are similar <different> compared to the average undergraduate student at <school name>". However, it would be reasonable to assume that in order to help people move away from their egocentric biases, it would be more appropriate to prime participants in a way that puts the focus on how others are different (or similar) to them, instead of asking how they are unique (or not unique) compared to others. Menon, Kyung, and Agrawal (2009) used the manipulation as Kurt and Inman (2013) and found that while the similarity prime participants did significantly differ in perceived similarity compared to the control group, the difference prime participants did not, indicating perhaps that the difference prime was not strong

enough and therefore may need to be changed. This study used a revised version of the prime for similarities/differences that put the focus on others, in order to create a stronger prime that would help participants move away from their egocentric biases.

Method: Study 2

Commodities

The same Tootsie Pops that were used in Study 1 were used in Study 2.

Participants

The majority of participants in this study were Connecticut College students enrolled in Psychology courses who participated for course credit. Two participants were Connecticut College students who voluntarily participated. Eighty-one students participated in the study, however nine participants were excluded due to expressed confusion about the directions, and one participant was excluded because that individual was allergic to tootsie pops, leaving 71 participants included in the analysis. Of the 71 participants included in the analysis, 87.3% identified as female. All of the participants were between the ages of 18 and 23. Students who identified as White made up 74.6% of the participants; 7% identified as Hispanic or Latina, 7% identified as Biracial, 5.6% identified as Black or African American, 4.2% identified as Asian, and 1.4% identified as Middle Eastern.

Materials

Similarity/difference priming

In order to prime perceived similarities or differences between the perspective taker and the target, participants were instructed to “Please write down three ways in which other undergraduate students at Connecticut College are similar <different> to <from> you?”

Manipulation checks for similarity/difference priming

In order to test whether the priming technique was successful for creating perceived similarities/differences, participants rated the extent to which they see other undergraduate students as similar or different from them on a scale from 1 (Not at all similar) to 7 (Very similar). In order to ensure there was no difference between the difficulty of retrieving similarities compared to differences, which could create a confound, participants also rated how easy or difficult it was to list three similarities/differences between other undergraduates and themselves on a scale from 1 (Easy) to 7 (Difficult).

Evaluation sheets

The same evaluation sheets will be used as described for Study 1.

Research Design

This experiment involves two independent variables. The first independent variable is role (buyer or seller), and the second independent variable is prime (control, similar, different). The participants were randomly assigned to one of the six conditions created by this design. The dependent variables are the valuation of the candy and the estimated valuation of the candy.

Procedure

Participants signed up for the study through the SONA system or in person prior to or after a class. In SONA it was a disqualifier if the participant was allergic to Tootsie Pops (the candy used). All participants received an informed consent to sign in order to continue with the study (see Appendix A). Participants were randomly assigned to one of the three conditions: similarity prime, difference prime, control. Those assigned to the similarity prime or difference prime completed the “Similarity Priming/Difference Priming” described in the materials section (see Appendix K). Those assigned to the control condition were not asked to do this task, and therefore attended separate sessions than did those who were asked to complete the priming task.

This step was taken so as not to create confusion about why some participants were doing a task and others were not. Next, all participants were told they were randomly assigned to either the buyer or seller condition. Sellers received the same instructions that sellers in Study 1 received:

For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher. During this experiment you may gain more money. If you do, the amount you gain will be added to the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in cash. (see Appendix B for voucher)

Given that in a pilot study, multiple participants indicated confusion about whether they actually got to keep the money at the end of experiment, participants in this experiment were prompted to put a check next to their name on the voucher if they understood that the experiment involved them receiving actual money. Then sellers were handed a Tootsie Pop and received the following instructions on the evaluation sheet (see Appendix C for full evaluation sheet):

You have been randomly assigned to the seller condition. Please read the scenario below and follow the instructions given.

You now own the candy in front of you. It is yours to keep and take home. In a few minutes, however, you will have an opportunity to sell the candy to the experimenter in exchange for cash (in addition to the \$1.00 you have already earned). For each of the prices below, please indicate whether you choose to: 1) receive that amount of money and return the candy to the experimenter, or 2) not sell the candy at that price. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the randomly selected price is a price you indicated you would sell the candy at, that amount will be added to your voucher and you will return the candy to the experimenter. If the randomly selected price is a price you indicated you would keep the candy at, you will keep the candy.

Buyers received the same instructions that buyers in Study 1 received:

For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher. During this experiment you may spend money. If you do, the amount you spend will be deducted from the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in cash (see Appendix D for voucher)

Again, participants at this point in the experiment were prompted to put a check next to their name on the voucher if they understood the experiment involved receiving actual money. Then buyers were handed a Tootsie Pop and received the following instructions on the evaluation sheet:

You have been randomly assigned to the buyer condition. Please read the scenario below and follow the instructions given (See Appendix E for full evaluation sheet).

At this time you do not own the candy in front of you. It is not yours to keep and take home. In a few minutes, however, you will have an opportunity to purchase the candy from the experimenter using the \$1.00 you have already earned. For each of the prices below, please indicate whether you choose to: 1) pay the experimenter that amount of money in exchange for the candy, or 2) not pay the experimenter that amount of money and receive no candy. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the randomly selected price is a price you indicated you would buy the candy at, that amount will be deducted from your voucher and you will receive the candy and the amount left on your voucher. If the randomly selected price is a price you indicated you would not buy the candy at, nothing will be deducted from your voucher and you will receive no candy.

All participants were then instructed to put a check next to their name on the evaluation sheet if they understood that the decisions they made in the experiment would affect what they received at the end of the experiment (in terms of money and/or candy) (see Appendix M for full script).

Sellers were instructed to indicate on the sheet every price at which they would sell their candy. Buyers were instructed to indicate on the sheet every price at which they would purchase the candy. Sellers were asked to estimate the maximum price they believed an average buyer would pay to acquire the candy by completing a sheet identical to the one the actual buyers completed (see Appendix F). Buyers were asked to indicate the minimum price for which they believed the average owner would sell the candy by completing a sheet identical to the one actual sellers completed (see Appendix G). Then participants filled out the “Manipulation Check for Similarity/Difference Priming” (see Appendix L) described in the materials section. Then they were asked to fill out a demographics sheet (see Appendix H). Then the randomly selected price was selected and transactions were conducted when participants handed in their sheets. Transactions were conducted individually and privately, and participants had the choice to leave with a brown paper bag for their acquired items in order to ensure their decisions remained private. They were thanked for their time and debriefed (see Appendix I). The participants received a full debriefing via email once both studies were completed (see Appendix N).

Ethical Issues

This was a confidential study, not an anonymous study. Due to the fact that it was necessary to distribute the money/candy following the evaluations, it was necessary to know the responses to the evaluations in order to give them the correct money/candy.

Results: Study 2

First, the data were analyzed to determine if the endowment effect was occurring. The endowment effect did occur, however, it surprisingly only occurred in the control group. The literature did not indicate that priming should have any effect on the endowment effect itself (Kurt & Inman, 2013), only on the prediction of the endowment effect, however the results

indicated otherwise. In the control group, an independent t -test revealed the sellers' average lowest selling price in dollars ($M=0.58$, $SD=0.30$) was significantly higher than the buyers' average highest purchase price in dollars ($M=0.34$, $SD=0.25$, $t(23)=-2.07$, $p=.050$), indicating a significant endowment effect in the control group. The endowment effect's effect size in the control group was found to be large ($d= 0.87$). However, in the similar prime group, an independent t -test revealed the sellers' average lowest selling price in dollars ($M=0.35$, $SD=0.21$) was actually lower than the buyers average highest purchase price in dollars ($M=0.38$, $SD=0.30$, $t(21)=0.26$, $p=.795$); however the values were not significantly different. In other words, the endowment effect did not occur in the similar prime group. Additionally, in the difference prime group, the sellers' average lowest selling price in dollars ($M=0.46$, $SD=0.29$) was higher than the buyers' average highest purchase price in dollars ($M=0.36$, $SD=0.31$, $t(21)=-0.82$, $p=.421$) however this difference was again not significant. No endowment effect occurred in the difference prime group. Figure 1 summarizes the buyers' and sellers' prices in the control, similar prime, and difference prime groups.

Due to the fact that the endowment effect did not occur in all the groups as anticipated, it was deemed inappropriate to conduct an analysis of egocentrism, since there was not the clear conclusion that sellers value goods differently than buyers in all groups (and it would therefore not be clear how participants were being egocentric). For example, if sellers value the candy more, and then they overestimate the value of the candy to the buyer, they are being egocentric because their estimation is biased in the direction of their own valuation. However, if it is the case that the sellers do not value the candy significantly more or differently than buyers, and then they overestimate the value of the candy to the buyers, it would not make sense to call them egocentric because their estimation is not biased in the direction of their own valuation.

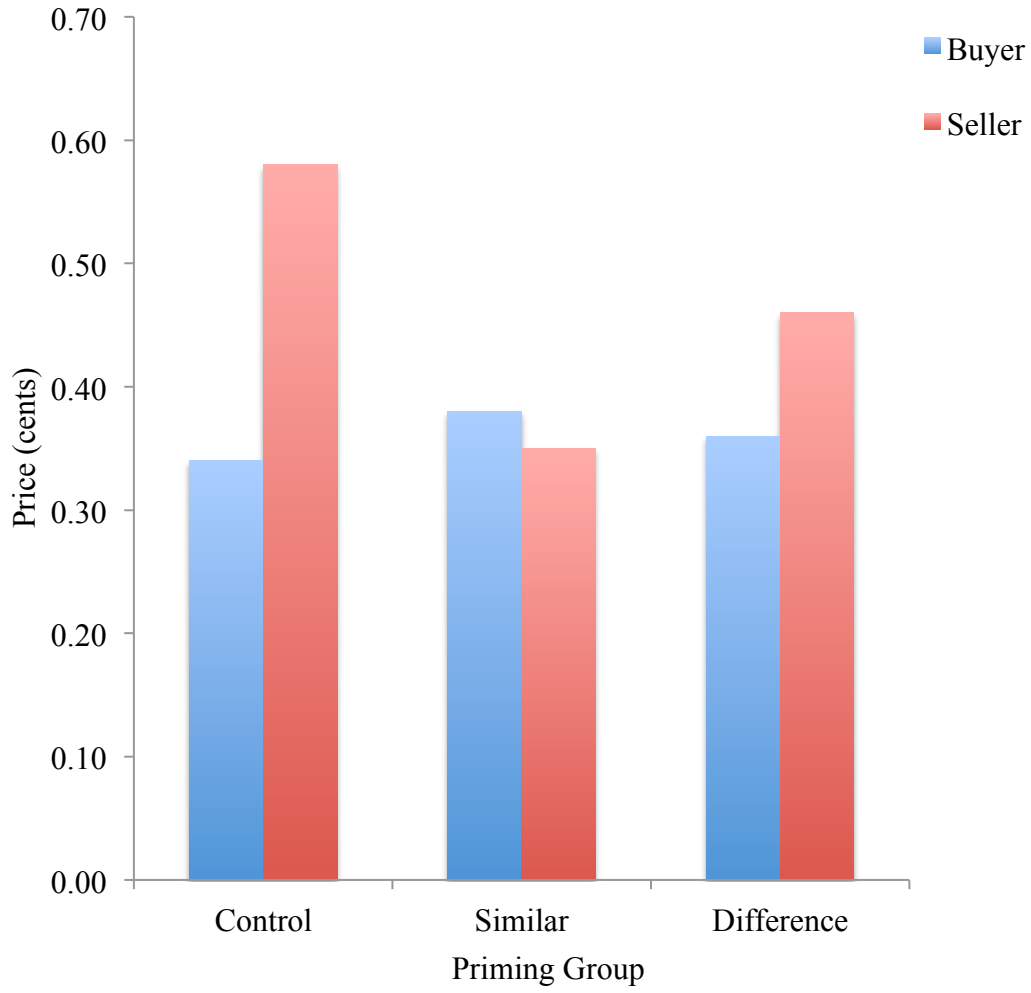


Figure 1. Buyers' and sellers' prices in the control, similar prime, and difference prime groups.

Therefore, instead of calculating egocentrism scores as in Study 1, six independent *t*-tests were conducted to see if in each group participants accurately predicted the other roles' valuation of the candy. A Bonferroni correction was used to adjust for Type I error, making the relevant *p* value .008.

In the control group, the sellers overestimated the buyers' average purchase price but not significantly, and the buyers underestimated the sellers' average selling price with the values approaching significance¹. Specifically, sellers' estimates of the buyers' average purchase price in dollars ($M=0.39$, $SD=0.13$) was five cents higher than the actual buyers' average purchase price in dollars ($M=0.34$, $SD=0.25$, $t(23)=-.54$, $p=.594$). The buyers' estimates of the sellers' average selling price in dollars ($M=0.40$ $SD=0.18$) was 18 cents lower than the actual sellers' average selling price in dollars ($M=0.58$ $SD=0.30$, $t(23)=1.77$, $p=.089$). The finding that the approaching significant¹ difference is only occurring with the buyers' estimates of the sellers' average selling price is consistent with Study 1. Additionally, in the control group, a partial correlation was run between participants' own valuation of the candy and their estimate of the candy's value to the participants in the other role, controlling for the participants' own role. There was a weak positive correlation, $t(22)=.25$ $p=.240$, that did not reach significance.

In the similar prime group the same pattern emerges. The sellers' estimates of the buyers' average purchase price was not significantly different than the buyers' actual average purchase price, but the buyers' estimates of the sellers' average selling price approached¹ being significantly different. However, unlike in the control group, the buyers overestimated (instead of underestimated) the sellers' average selling price. Specifically, the sellers' estimates of the buyers' average purchase price in dollars ($M=0.49$, $SD=0.16$) was 11 cents greater than the actual

¹ Prior to the Bonferroni correction (making the relevant *p* value .05)

buyers' average purchase price in dollars ($M=0.38$ $SD=0.30$, $t(21)=-0.99$, $p=.329$). The buyers' estimates of the sellers' average selling price in dollars ($M=0.52$ $SD=0.18$) was 17 cents greater than the actual sellers' average selling price in dollars ($M=0.35$ $SD=0.21$, $t(21)=-1.98$, $p=.060$). Among the similar prime group, a partial correlation was run between participants' own valuation of the candy and their estimate of the candy's value to the participants in the other role, controlling for the participants' own role. There was a moderate positive correlation, $t(20)=.25$ $p=.062$, that approached significance.

In the difference prime group, neither the sellers' estimates of the buyers' average purchase price nor the buyers' estimates of the sellers' average purchase price were significantly different. The sellers' estimates of the buyers' average purchase price in dollars ($M=0.42$, $SD=0.24$) was only six cents greater the actual buyers' average purchase price in dollars ($M=0.36$ $SD=0.31$, $t(21)=-0.54$, $p=.598$). The buyers' estimates of the sellers' average selling price in dollars ($M=0.41$ $SD=0.29$) was only five cents less than the actual sellers' average selling price in dollars ($M=0.46$ $SD=0.29$, $t(21)=0.401$, $p=.693$). Among the difference prime group, a partial correlation was run between participants' own valuation of the candy and their estimate of the candy's value to the participants in the other role, controlling for the participants' own role. There was a weak positive correlation, $t(20)=.14$, $p=.531$, that was not significant. Figure 2 summarizes the sellers' predictions of the buyers' purchase price compared to their actual purchase price. Figure 3 summarizes the buyers' predictions of the sellers' selling price compared to their actual selling price.

Last, a one-way ANOVA was performed to see whether the similarity/difference prime was successful in creating perceived similarities or differences. Table 2 presents the means and standard deviations. It was revealed that there was a significant overall effect of

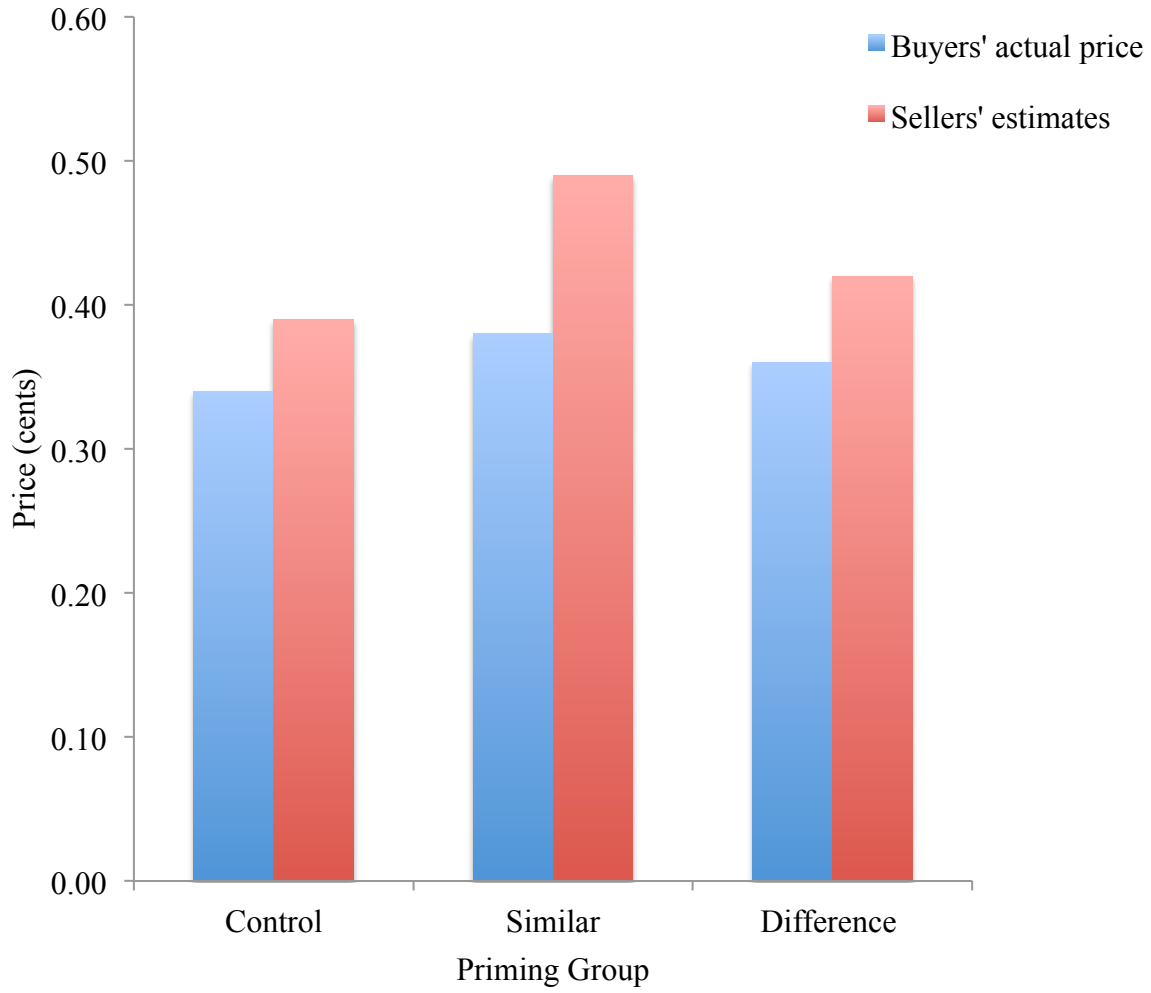


Figure 2. Sellers' estimates of buyers in the control, similar, and difference prime groups.

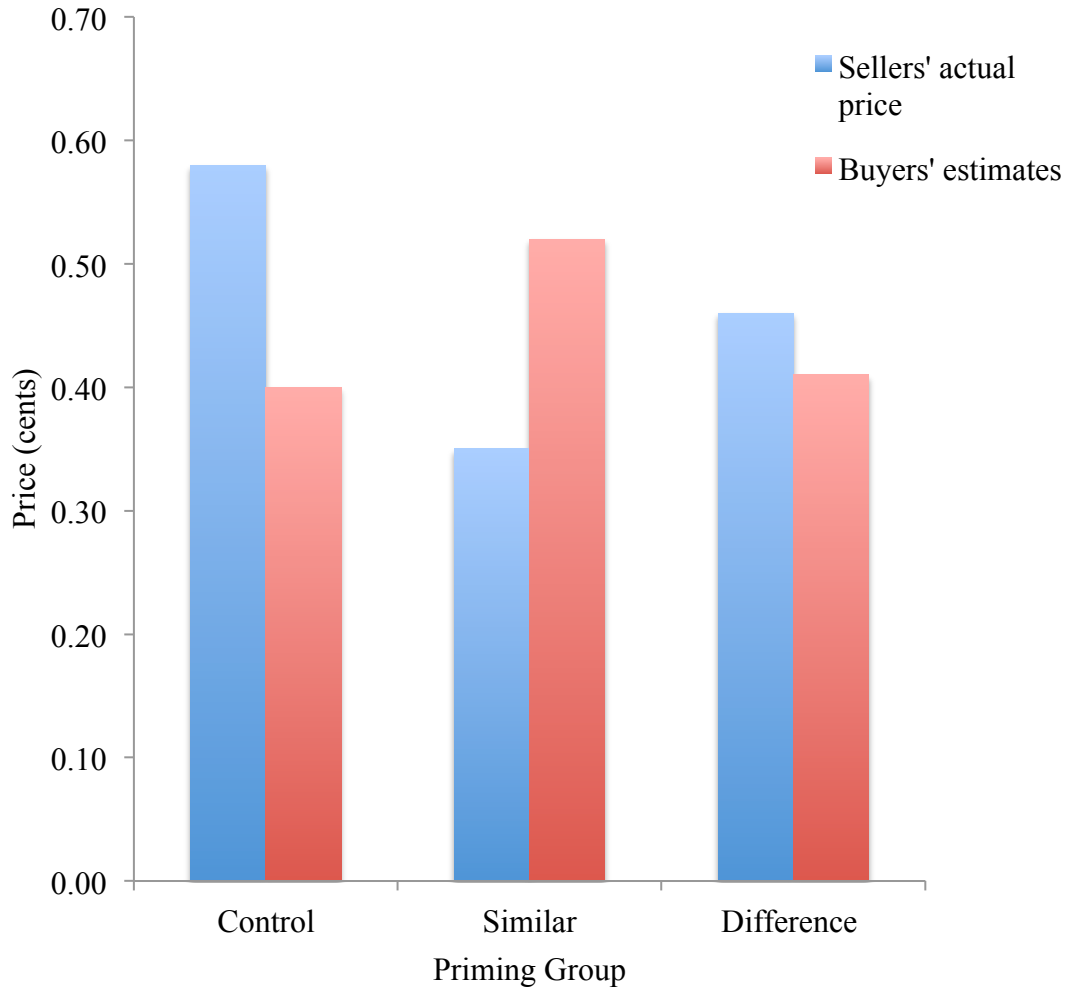


Figure 3. Buyers' estimates of sellers in the control, similar, and difference prime groups.

Table 2

Means and Standard Deviations of Similarity Ratings

Prime Condition								
<u>Control</u>			<u>Similarity</u>			<u>Difference</u>		
<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
25	4.80	1.08	23	4.47	1.27	23	3.65	0.93

Scale for similarity rating ranged from 1 (Not at all similar) to 7 (Very similar)

the prime, $F(2,68)=6.80, p=.002$. Post-hoc tests revealed that the difference prime group rated other undergraduate students as significantly less similar to themselves compared to both the control group ($p=.002$) as well as the similar prime group ($p=.036$), whereas the similar prime group and the control group did not differ significantly ($p=.574$).

Participants in both the similar prime group and the difference prime group rated the difficulty of the priming activity, in order to ensure there was not a confound. The similar prime did not significantly differ in difficulty ($M=4.26, SD=1.51$) from the difference prime ($M=3.70, SD=1.72$), $t(44)=1.18, p=.243$.

A content analysis was run in order to see the chief ways people identified themselves as similar compared to the ways people identified themselves as different. The most common responses to “ways in which other undergraduate students at Connecticut College are similar to you” were related to being a student at Connecticut College (e.g., taking classes, getting a degree, living on campus), being passionate about their interests (academic or otherwise), being involved in extracurricular activities (e.g., sports, clubs) and their future goals (e.g., having a career). The most common responses to “ways in which other undergraduate students at Connecticut College are different from you” were related to being from a different geographical location (e.g., hometown, state, region), having a different family structure or background, having a different ethnicity, and having a different upbringing. The inter-rater reliability for the coding of these responses was 94% (see Table 3 for the frequencies of all responses).

Table 3

Frequencies of Responses to the Similar/Difference Prime

Similar	Frequency	Different	Frequency
Related to them being a college student (e.g., getting a degree, taking classes, living on campus)	70%	Home town/state/area	43%
Passionate about interests	35%	Family background/structure	35%
Involved in extra curricular activities	30%	Ethnicity	26%
Future goals	26%	Upbringing	26%
Upbringing	22%	Involved in extra curricular activities	22%
Home town/state/area	17%	Race	22%
Personality traits	17%	Academic interests (Major)	22%
Age	9%	Interests outside of academics	22%
Academic interests (Major)	9%	Socioeconomic	17%
Race	4%	Appearance	17%
Interests outside of academics	4%	Personality traits	13%
Socioeconomic	4%	Related to them being a college student (e.g., getting a degree, taking classes, living on campus)	9%
Appearance	4%	Gender	9%
Gender	4%	Future goals	9%
Family background/structure	0%	Views	4%
Ethnicity	0%	Age	0%
Views	0%	Passionate about interests	0%

Percentages represent the percentage out of the 23 participants in each of the conditions that mentioned the relevant theme

Discussion

The Endowment Effect: Hypothesis 1

The initial hypothesis that the endowment effect exists was supported in both studies. In Study 1 and in Study 2's control group the sellers valued the candy significantly more than the buyers, indicating that being endowed with something causes us to assign more value to it. This outcome is not surprising given the extensive literature that supports the existence of the endowment effect (see for example, Kahneman et al., 1990; Kurt & Inman, 2013; Loewenstein & Adler, 1995; Maddux et al., 2010; Mowredge & Giblin, 2015; Nayakankuppam & Mishra, 2005; Van Boven et al., 2000). This study specifically highlights just how powerful the endowment effect is. In Study 1 the endowment effect was found with just 40 participants (the effect size was found to be .76) and in Study 2's control group the endowment effect was found with just 25 participants (among this group, the effect size was found to be .87). This study additionally demonstrates that the endowment effect can be found even when the maximum value of the good is as low as \$1.00 and the choices only differ by 5-cent increments. Even when the value of the product is very low, buyers and sellers still do not agree upon a value.

Unexpectedly, a manipulation that was intended to improve the anticipation of the endowment effect ended up eliminating the endowment effect itself. In Study 2, a significant endowment effect was found in the control group, but there was not a significant endowment effect in the similar prime group, nor was there a significant endowment effect in the difference prime group. It should be noted that the results for the similarity prime group could not be clearly interpreted as the manipulation check found that there was not a significant difference in perceived similarity between the similar prime and control group. However, as this was not an issue with the difference prime group, we can clearly conclude that difference priming is

effective at eliminating the endowment effect. This outcome could indicate that those who went through the difference priming could more easily move away from their egocentric anchors than was true of those in the similarity prime group, which helped them make a more realistic valuation of the product when initially asked. Although, to the researcher's knowledge, no previous literature has found that difference priming specifically could eliminate the endowment effect, other research has hinted that manipulating perspective taking could moderate the endowment effect. Specifically, it was found that forcing sellers to pay attention to negative features and buyers to pay attention to positive features of a good moderated the endowment effect. This approach is essentially manipulating perspective taking because naturally sellers pay attention to positive features and buyers pay attention to negative features, so having them instead focus on what the other role usually considers enables them to more effectively take the other role's perspective (Nayakankuppam & Mishra, 2005).

Other manipulations have been found to eliminate the endowment effect as well. For instance, taking acetaminophen has been found to numb people to potential pain they would expect from selling a mug, which results in lower selling prices and a reduced endowment effect (DeWall, Chester, & White, 2015). However, this approach seems to be a somewhat invasive way to eliminate the endowment effect. Expectations of future ownership moderate the endowment effect (Novemsky & Kahneman, 2005), but one should not always assume that this situation is something that can be manipulated. It is important to be able to eliminate the endowment effect, even if one does not expect to trade the good in the future. Experience with trading has also been shown to eliminate the endowment effect (List, 2003), but this is something that is difficult to acquire, as most people do not have a lot of experience being a seller in their

every day lives, and they tend to avoid the types of transactions that would benefit from experience because they are adverse to them (Englemann & Hollard, 2010).

This research adds to previous findings that simple priming can eliminate the endowment effect. When participants are primed to have an independent self-construal (by asking participants to write about ways in which they are unique) they exhibited a larger endowment effect than when participants were primed to have an interdependent self-construal (by asking participants to write about their friendship and camaraderie) (Maddux et al., 2010). This finding, in combination with the results of the present study, seems to indicate that in general priming people to focus on others as opposed to themselves reduces the endowment effect. It is important to find easy and relevant ways to eliminate the endowment effect due to the fact that it causes inefficiencies and results in costly behavior.

Why Don't We, and How Can We, Anticipate the Endowment Effect: Hypotheses 2-5

The second hypothesis stated that our lack of anticipation of the endowment effect might be related to egocentric biases. It was hypothesized that the data would show a significant and positive correlation between how the participants value the endowed object (candy) and their estimation of how others would value the candy. In Study 1 this effect was not observed. In Study 2, the correlations revealed an interesting pattern. The group with the highest correlation (and the only one that approached significance) was the similar prime group. The group with the next highest correlation was the control group, followed by the difference prime group. This outcome suggests that similarity priming could perhaps make people more egocentric, compared to difference priming, which could perhaps make people less egocentric.

The third hypothesis stated that people would mispredict the valuation of the person in the other role. It was predicted that sellers would predict a significantly higher buyer's valuation

than buyers' actual valuation and buyers would predict a significantly lower seller's valuation than sellers' actual valuation due to their egocentrism. In both studies, it seemed that the buyers underestimated sellers' actual average selling price, but sellers did not underestimate buyers' actual average purchase price. In Study 1 and in the control group for Study 2, the buyers' estimates of the sellers' average selling price approached being significantly lower than the actual sellers' average selling price, but the sellers' estimates of the buyers' average purchase price did not significantly differ from the buyers' actual average purchase price. In the similar prime group for Study 2, the same pattern emerges as in the control group for Study 1 and Study 2, except that buyers actually overestimated (as opposed to underestimated) sellers' average purchase price. This outcome could be seen as egocentrism, and therefore consistent with the control group. In the similar prime group the buyers overestimated the sellers' actual selling price (approaching significance), but they also valued the candy more than did the sellers (although not significantly), so their prediction was biased in the direction of their own valuation. The only group in which both buyers' and sellers' estimates did not significantly differ from the actual buyers' and sellers' average prices was the difference prime group (in Study 2).

These results taken together seem to indicate an 'interaction effect' such that the prime's effect on the accuracy of participants' estimations depends on the role. In none of the conditions did the sellers' estimates of the buyers' average purchase price significantly differ from the buyers' actual purchase price, indicating that sellers actually can anticipate the endowment effect and are perspective taking accurately while buyers are not. Buyers in the control, similar prime, and difference prime groups, had prediction errors of 18 cents, 17 cents, and five cents respectively, while sellers in the control, similar prime, and difference prime groups, only had

prediction errors of five cents, 11 cents, and six cents, respectively. Sellers in the control and similar prime groups respectively had 72% and 35% lower prediction errors than did the buyers.

Previous literature has found that it tends to be the sellers who overestimate others' willingness to pay (Frederick, 2012), which is why it was surprising that in this study the sellers tended to be accurate while the buyers tended to be inaccurate. A possible explanation as to why the buyers did not tend to be accurate could be that because the sellers' value was so high, the buyers' would never anticipate such a high valuation. In other words, the difference between the buyers' average estimation and the sellers' actual average selling price could be driven by how high the sellers' actual average selling price was. Previous literature has found that the endowment effect is driven by the sellers' high valuation of goods rather than the buyers' higher valuation of money (Kahneman et al., 1990; Morewedge & Giblin, 2015; Novemsky & Kahneman, 2005) and by the fact that ownership alone can increase the perceived value of a good (Morewedge et al., 2009). If sellers are driving the endowment effect, it would make sense that buyers cannot accurately predict their valuations. In other words, if the endowment effect occurs mainly because sellers overvalue commodities due to their ownership, it would make sense that buyers cannot appreciate this ownership and therefore do not anticipate the sellers' valuation.

Participants' inaccurate perspective taking seems specifically to occur with the buyers' estimates of the sellers' average selling price in the control and similar prime groups. Given that there was no significant difference for the manipulation check between the control and similar prime group, it makes sense that their responses indicate the same thing; when no manipulation is implemented (or a potentially ineffective one is implemented) buyers do not anticipate the endowment effect and do not accurately perspective take. However, it seems that difference

priming did help participants' perspective taking and ability to anticipate the endowment effect because the buyers' estimates of the sellers' average selling price in the difference priming group did not significantly differ from the sellers' actual average selling price in the difference priming group. The predictions of the buyers in the control group and similarity priming group were incorrect, on average, by 18 cents and 17 cents (respectively) compared to the predictions of buyers in the difference priming group, which were only incorrect, on average, by five cents. This comparison corresponds to a 72% and a 71% reduction in prediction error, respectively. The fact that the correlation between participants' own valuations and their prediction of the other roles' valuation was the weakest and least significant among the difference prime group (as stated previously) is further evidence that difference priming was the most effective in reducing egocentric biases. It seems that difference priming allowed participants to move away from their own egocentric biases by allowing them to realize that others were different from them and therefore would likely have different perspectives from them. They were then able to anticipate the endowment effect and have more accurate predictions of the other role's valuation. The data seem to point to sellers being more accurate in their perspective taking of buyers than buyers are accurate in their perspective taking of sellers, and difference priming being an effective method to improve perspective taking.

This study's finding that difference priming reduced prediction errors has not been found in the previous literature, but is not surprising given the previous finding that creating a difference mind-set can improve perspective taking (Todd et al., 2011). It is also not surprising that while Kurt and Inman (2013) found that similarity priming improves the anticipation of the endowment effect, this study found that difference priming can likely also help improve the anticipation of the endowment effect. The fact that people do not anticipate the endowment

effect is attributed to lack of perspective taking (Dunning et al., 2001; Kurt & Inman, 2013; Van Boven et al., 2000), and the perspective taking literature has indicated that both similarity and differences are related to better perspective taking (Gehlbach et al., 2012; Kurt & Inman, 2013; Todd et al., 2011; Williams et al., 2007) than when neither is invoked. Participants in this study most likely felt it was not appropriate to use an egocentric anchor, due to the perceived difference between themselves and their target. When people perceive themselves as similar to their target, they may feel it's reasonable to assume that their target's perspective is very close to their own, and therefore reasonable for them to use an egocentric anchor as a starting point. However, when people perceive themselves as dissimilar, this assumption no longer seems reasonable, so using an egocentric anchor as a starting point no longer makes sense, and they will disregard it (Epley & Caruso, 2009). Another possibility is that because people believed their target's perspective would be quite different from their own, because they perceived their target as different from them, that they adjusted sufficiently far enough away from their egocentric anchor. Difference priming likely enabled them to eliminate their egocentric anchor or adjust sufficiently, be superior perspective takers, and accurately anticipate how the other role would value the candy. The prime used in this study was especially effective at enabling better perspective taking because it placed the focus on others, as opposed to themselves. When trying to create less egocentrism, it only seems appropriate to place the focus on others instead of the self. It seems possible that the prime used in Menon, Kyung, and Agrawal (2009) did not create a significant difference between those who were primed for differences and the control group, because their prime placed the focus on ways in which the participant is unique instead of placing the focus on how a group of individuals may vary. It seems possible that having an individual think about how many other students differ from them (and all of the possible ways

those students could differ from them) would create a stronger perceived difference than just focusing on ways in which an individual believes they are unique, because they are thinking of the entire student body's diversity, which would presumably create more differences coming to mind, compared to just three ways they may be unique.

The fifth hypothesis predicted that difference priming and similarity priming would both be effective methods to improving the anticipation of the endowment effect because difference priming and similarity priming have both been shown to improve perspective taking by reducing egocentric biases. The hypothesis seems to have some support for difference priming as described above, however the effect of similarity priming remains unclear due to the fact that it was not significantly different from the control in the manipulation check. However, there is research that indicates that similarity may actually be related to less perspective taking (Kilpatrick, Bissonnette, & Rusbult, 2002; Todd et al., 2011). In a study involving married couples, couples were more likely to perspective take in the first year, and perspective taking decreased over time. The authors explain that over time couples may become overly familiar and therefore lack the motivation to accurately perspective take (Kilpatrick et al., 2002). These findings could explain why the similarity prime group was the only group where participants' own estimation, and their estimations of the other role approached being significantly correlated. It seems possible that participants who were primed for similarity may have actually been worse at perspective taking, perhaps because they did not feel the need to adjust far from their own perspective.

The fourth hypothesis predicted that a financial incentive would be effective at improving the anticipation of the endowment effect because it would motivate people to put more effort into moving away from their egocentric biases. This hypothesis was not confirmed, as there was no

difference in egocentrism scores between those who were offered a financial incentive and those who were not. A potential explanation for this is that people's egocentrism cannot be overcome by more effort, because it is an inherent flaw. One would presume that a financial motivation would cause people to expend more effort, and this would cause them to be more accurate. However, if people's egocentrism cannot be overcome with extra effort, we would expect a financial motivation to be ineffective. It would be surprising however if egocentrism could not be overcome with extra effort in this instance as it has been overcome with extra effort in other instances (Epley & Gilovich 2005; Epley & Gilovich 2006; Epley et al., 2004). Another possible explanation is that people have trouble overcoming costly behavior regardless of how costly it may be to them. It has been shown previously that people will fail to anticipate the endowment effect even if it is costly to them (Van Boven et al., 2000; Kurt & Inman, 2013), but this was only when small amounts were the incentive (\$2.00). Van Boven et al. (2000) also showed costly behavior in the buyers' agent experiment discussed previously. Buyers overall had the potential to earn \$2.75 on average, but instead earned a significantly lower amount of \$0.75 because the buyers' agents failed to take the perspective of the seller and make a realistic offer. Again, the money at stake did not exceed \$2.00. This research indicates that participants who were egocentric were not motivated by the potential gain of \$40.00 to be less egocentric. One can reasonably assume that \$40.00 is much more motivating than \$2.00 to a college student. The fact that participants were not motivated by a substantial amount of money indicates that people may continue to be egocentric regardless of a large cost. It is also possible however, that participants did not believe they had a realistic chance at winning the \$40.00 and were therefore not motivated by the financial incentive.

Limitations

One major limitation of this study was that the similarity prime was ineffective. The participants who were primed for similarity actually ranked other undergraduate students as less similar to themselves than did the control group (although these numbers did not significantly differ). One likely explanation for this outcome is that Connecticut College is already a very homogeneous population, and therefore most students might already feel they are very similar to other undergraduate students. College students alone are already a somewhat homogeneous population (in that they are likely between the ages of 18-22 and can attend college), and Connecticut College may be homogeneous in other respects, in that a large portion of the students are from New England (52%) (Nugent, personal communication, March 31, 2016), are White (72%) and can afford the college's full tuition of \$62,965 (48%) (Nugent, 2016). Another possible explanation for this effect could be the wording of the prime. Instead of using the wording used in previous studies (write down ways in which you are similar <different> compared to the average undergraduate student), this study used wording that placed the focus away from the participants themselves and instead on other students (write down three ways in which other undergraduate students at Connecticut College are similar <different> to <from> you). Perhaps this change caused a stronger prime for differences than for similarities. It's possible that when the focus is on other students, differences are more salient, and when the focus is on oneself, similarities are more salient. In Menon et al. (2009), they used wording where the focus was on the self, and did not have a significant difference between the difference and control group, but had a significant difference between the similarity and control group. This study, which placed the focus on others, found the opposite, so it is possible that the similarity prime was not as successful as the difference prime due to the wording being more effective at creating perceived difference.

Another issue with the similarity prime is that with regard to some results it caused the same effect as appeared in the control group (which would be expected), however with regard to other results, it had a different effect than appeared in the control group. For instance, the pattern of results for the anticipation of the endowment effect was the same among the similar prime and control group, however, the endowment effect itself was eliminated by the similar prime, whereas in the control group the standard endowment effect was found. Furthermore, the similar prime group was the only group where the difference between one's own valuation and the estimated valuation for the other role, approached significance. A possible explanation for this is that having the control group not perform an equivalent neutral activity could have caused an unexpected effect. Previous research (Kurt & Inman, 2013; Menon et al., 2009) has not found this to be problematic; however, it is possible that the act of doing an activity itself had an effect on subsequent decisions (and that in this case it had an effect on some decisions but not others). Another possible explanation is that the manipulation check did not fully capture what the manipulation could have accomplished. It seems possible that while students in the similar prime group may not have rated other students as more similar to themselves than was true in the control group, the students in the similar prime group were still most likely thinking about ways in which they were similar to other students that was true in the control, which could have had an effect.

Another limitation of this research was that it was not entirely clear how to approach the analyses. Prior to finding out that the endowment effect itself was affected by the prime, egocentrism scores could have been easily calculated. However, once the results revealed that the initial valuation was affected by the prime, it became unclear how to analyze the results. Correspondence with Kurt revealed he believed that a comparison of the estimations made by

each primed group and the overall actual price (meaning a combined actual price for all three groups) would be appropriate because “In the case of owners, for instance, the overall mean would be your best approximation for the price demanded by all sellers in the marketplace. Thus, it is an appropriate proxy for the market selling price of the item” (Kurt, personal communication, March 10, 2016). However, the researcher would disagree with this sentiment. If the market-selling price of the item is viewed as significantly different between those who have been primed and those who have not been primed, then it does not seem appropriate to combine those two values. Furthermore, when participants were asked to estimate how someone in the other role would value the candy, if they did in fact base their estimate on their own valuation of the candy as predicted, then using the mean relevant to their group (control, similar, different prime), and therefore their experience, would only be appropriate. Moreover, Kurt and Inman (2013) simply calculated prediction error (estimated-actual) compared to Van Boven et al. (2000) who calculated egocentrism scores (estimated-actual for sellers who should overestimate, and actual-estimated for buyers who should underestimate). This difference raises a fundamental issue of which method is more appropriate, and further, with the prediction error approach, if a negative value is fundamentally different than a positive value. For instance, imagine that the average actual price for sellers was \$0.50, and buyers significantly overestimated the score at \$0.75 (resulting in a negative prediction error). What is the interpretation of that finding? Assuming that the usual endowment effect is found (buyers valued the product significantly less), do we interpret this finding as buyers being very good perspective takers (as they were overly empathetic), or do we interpret this finding as buyers being poor perspective takers because they were not accurate?

Another limitation of this research was that participants seemed to have trouble understanding that they would actually receive the money at the end of the experiment. A pilot study for Study 2 revealed this issue, which is why for Study 2 more explicit directions were added, and participants were asked to indicate if they understood “this experiment involves you receiving actual money” and if they understood “the decisions you make in this experiment will affect what you receive at the end of the experiment (in terms of money and/or candy)”. Two participants failed to indicate they understood while the experiment was being conducted, and six participants expressed verbally after the experiment that they did not understand they were going to receive money (even though they had indicated during the experiment that they did understand). Although those participants were excluded, the participants who did not indicate confusion, but still might not have understood that the experiment involved real money, may limit these results. Research indicates that when the experiment is hypothetical, the results significantly differ because people tend not to be able to predict how they might act (Knutson, 2008; Loewenstein & Adler, 1995; Van Boven et al., 2000). Many participants also expressed that even though they understood they were going to get the money, it felt strange to them. All but two of the participants received course credit for the experiment. It seems possible that participants did not feel right accepting money for something for which they were already receiving credit, and this also might have changed the way they viewed the money and behaved in the experiment. This juxtaposition could have made them consider the money as unimportant, or even as “winnings,” because their initial (and likely primary) motivation for signing up for the study was the course credit. Even though the instructions stated, “For coming to this experiment you have earned \$1.00”, it is possible participants might still have viewed the money as “winnings.” Participants may not have viewed participating in the experiment as truly earning

the \$1.00 because they came to the study in order to get credit and did not truly do anything to earn the money. One participant even said, “It’s not like I had the money before,” in reference to how much that person indicated he/she would spend on the candy. Research indicates that earned money is treated differently than endowed money in some economic experiments (Harrison & Moudén, 2011). If this effect interacts with the endowment effect or the anticipation of the endowment effect, it could have affected the results.

Lastly, due to the short duration of the experiment as well as the resources available, neither sample size in either of the experiment was likely as large as it needed to be. Only 40 participants were included in the analysis for Study 1 and only 71 participants were included in the analysis for Study 2. The literature suggests a larger sample size is necessary to test for the effect of priming, however, this could not be achieved given the constraints. Kurt and Inman (2013) had an average of 20 participants in each condition when testing for the effect of priming, while this study had between 11-13 participants in each condition when testing for the effect of priming.

Future Directions

As there were many inconclusive results in this research, many future studies should be conducted to further investigate the topics explored here. First, this study found that the endowment effect did not occur when participants were primed for differences. In the literature, there has yet to be any indication that something as simple as asking participants to write down three ways in which other students differ could eliminate the endowment effect. Recall that in the control condition sellers valued the candy 24 cents more than did the buyers, but in the difference prime condition sellers valued the candy only 10 cents more than did the buyers. Because this has yet to be difference has yet to be seen in the literature, there is not a clear

explanation why this occurred. A potential hypothesis to test in the future is whether the endowment effect itself (not just the anticipation of the endowment effect) is a result of egocentrism. Previously, research has tested whether the lack of anticipation of the endowment effect can be explained by egocentrism (Kurt & Inman, 2013; Van Boven et al., 2000), but could the endowment effect also be explained by egocentrism? Do sellers have an unrealistically high price for the product, while buyers have an unrealistically low price for the product, because they are not thinking about how someone in a different position would value the candy? When sellers and buyers are motivated to think about others, and move away from their own mind-set (as difference priming presumably does), do they give more realistic values of the product, therefore eliminating the endowment effect? Previous results have indicated that the *estimated* price discrepancy between buyers and sellers is a result of their own initial valuation (Van Boven et al., 2000), but this research indicates that the reverse could occur as well. It is possible that if participants realize that there might be a discrepancy between their valuation and the other role's valuation (i.e., anticipate the endowment effect), they may make their initial valuation more realistic. Presumably, this is what happened with participants in the difference prime group. Their results indicated that they did not perform the endowment effect, and that they anticipated the endowment effect. A future study should test whether participants anticipating the endowment effect can eliminate the endowment effect. One participant in the study did in fact tell the researcher that after filling out his/her estimation of the other group, he/she wanted to change his/her response to his/her initial valuation. It is possible that simply asking participants to re-evaluate could eliminate the endowment effect, and if it does, it could provide an explanation why participants in the difference prime group did not perform the endowment effect. We could presume that they were inclined to be better perspective takers and therefore

gave a more realistic valuation of the candy. Given that the endowment effect is an important phenomenon, it is important to know how to eliminate it, in order to help people be more efficient.

A troubling finding from this study is that a financial incentive does not motivate people to be better perspective takers in this context. In other words, people will still not anticipate the endowment effect, even if it is costly to them (Van Boven et al., 2000). It would be interesting to investigate why, if the endowment effect can be explained by perspective taking and perspective taking tends to improve with a financial incentive, the endowment effect does not improve with a financial incentive. Is there something particular to the endowment effect that makes a financial incentive ineffective for improvement? Future research should also look for easy and relevant ways to improve the anticipation of the endowment effect and improve perspective taking abilities, as both are extremely costly behaviors, in every sense of the word.

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Appendix A
Informed Consent

I hereby consent to participate in Amanda Traub's research about buyer's and seller's cognitive processes. This study is being conducted as part of Amanda Traub's honors thesis in psychology.

I understand that this research will involve participating in a buyer-seller situation and indicating how much I feel a product is worth to me.

I understand that the results of this research may help me learn more about the way people understand the thought processes involved in buyer-seller situations.

I understand that this research will take about 30 minutes.

I have been told that there are no known risks or discomforts related to participating in this research.

I have been told that Amanda Traub can be contacted at atraub@conncoll.edu.

I understand that I may decline to answer any questions as I see fit, and that I may withdraw from the study without penalty at any time.

I have been advised that I may contact the researcher who will answer any questions that I may have about the purposes and procedures of this study.

I understand that this study is not meant to gather information about specific individuals and that my responses will be combined with other participants' data for the purpose of statistical analyses.

I consent to publication of the study results as long as the identity of all participants is protected.

I understand that this research has been approved by the Connecticut College Human Subjects Institutional Review Board (IRB).

Concerns about any aspect of this study may be addressed to Professor Audrey Zakriski, Chairperson of the Connecticut College IRB at alzak@conncoll.edu.

I am at least 18 years of age, and I have read these explanations and assurances and voluntarily consent to participate in this research about economic transactions.

Name (printed) _____

Signature _____

Date _____

Email _____

Appendix B

Name: _____

For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher (below). During this experiment you may gain more money. If you do, the amount you gain will be added to the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in cash.



\$1.00

Additions:

Appendix C

Name: _____

You have been randomly assigned to the **seller** condition. Please read the below scenario and follow the instructions given.

You now own the candy in front of you. It is yours to keep and take home. In a few minutes, however, you will have an opportunity to sell the candy to the experimenter in exchange for cash (in addition to the \$1.00 you have already earned). For each of the prices below, please indicate whether you choose to: 1) receive that amount of money and return the candy to the experimenter, or 2) not sell the candy at that price. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the randomly selected price is a price you indicated you would sell the candy at, that amount will be added to your voucher and you will return the candy to the experimenter. If the randomly selected price is a price you indicated you would keep the candy at, you will keep the candy.

Put an "X" next to the prices below at which you would be willing to sell the candy. Leave the line blank if you would not be willing to sell the candy at that price.

___ 0.00	___ 0.55
___ 0.05	___ 0.60
___ 0.10	___ 0.65
___ 0.15	___ 0.70
___ 0.20	___ 0.75
___ 0.25	___ 0.80
___ 0.30	___ 0.85
___ 0.35	___ 0.90
___ 0.40	___ 0.95
___ 0.45	___ 1.00
___ 0.50	

Appendix D

Name: _____

*For coming to this experiment, you have earned \$1.00. For now, the \$1.00 will be given to you in the form of a voucher. During this experiment you may spend money. If you do, the amount you spend will be deducted from the \$1.00 voucher. At the end of this experiment, the experimenter will give you the amount you have on your voucher in **cash**.*



\$1.00

Deductions:

Appendix E

Name: _____

You have been randomly assigned to the **buyer** condition. Please read the below scenario and follow the instructions given.

At this time you do not own the candy in front of you. It is not yours to keep and take home. In a few minutes, however, you will have an opportunity to purchase the candy from the experimenter using the \$1.00 you have already earned. For each of the prices below, please indicate whether you choose to: 1) pay the experimenter that amount of money in exchange for the candy, or 2) not pay the experimenter that amount of money and receive no candy. The experimenter will randomly select one of the prices listed below and your choice for that price will be honored. In other words, if the randomly selected price is a price you indicated you would buy the candy at, that amount will be deducted from your voucher and you will receive the candy and the amount left on your voucher. If the randomly selected price is a price you indicated you would not buy the candy at, nothing will be deducted from your voucher and you will receive no candy.

Put an "X" next to the prices below at which you would be willing to buy the candy.

Leave the line blank if you would not be willing to buy the candy at that price.

___ 0.00	___ 0.55
___ 0.05	___ 0.60
___ 0.10	___ 0.65
___ 0.15	___ 0.70
___ 0.20	___ 0.75
___ 0.25	___ 0.80
___ 0.30	___ 0.85
___ 0.35	___ 0.90
___ 0.40	___ 0.95
___ 0.45	___ 1.00
___ 0.50	

Appendix F

Name: _____

I would now like you to imagine you were randomly assigned to the buyer condition instead of the seller condition. Those assigned to the buyer condition had the opportunity to buy the candy instead of the opportunity to sell the candy. I will now hand you the same sheet that the buyers receive and I would like you to fill it out how you think an average participant in the buyer session would fill it out.

[INSERT MESSAGE ABOUT GIFT CARD FOR HALF OF THE PARTICIPANTS IN STUDY 1]

The sheet the buyers saw is below the dotted line. Please fill it out how you believe an average buyer would fill it out.

Put an "X" next to the prices below at which you would be willing to buy the candy.

Leave the line blank if you would not be willing to buy the candy at that price.

<input type="checkbox"/> 0.00	<input type="checkbox"/> 0.55
<input type="checkbox"/> 0.05	<input type="checkbox"/> 0.60
<input type="checkbox"/> 0.10	<input type="checkbox"/> 0.65
<input type="checkbox"/> 0.15	<input type="checkbox"/> 0.70
<input type="checkbox"/> 0.20	<input type="checkbox"/> 0.70
<input type="checkbox"/> 0.25	<input type="checkbox"/> 0.80
<input type="checkbox"/> 0.30	<input type="checkbox"/> 0.85
<input type="checkbox"/> 0.35	<input type="checkbox"/> 0.90
<input type="checkbox"/> 0.40	<input type="checkbox"/> 0.95
<input type="checkbox"/> 0.45	<input type="checkbox"/> 1.00
<input type="checkbox"/> 0.50	

Appendix G

Name: _____

I would now like you to imagine you were randomly assigned to the seller condition instead of the buyer condition. Those assigned to the seller condition had the opportunity to sell the candy instead of the opportunity to buy the candy. I will now hand you the same sheet that the sellers receive and I would like you to fill it out how you think an average participant in the seller session would fill it out.

[INSERT MESSAGE ABOUT GIFT CARD FOR HALF OF THE PARTICIPANTS IN STUDY 1]

The sheet the sellers saw is below the dotted line. Please fill it out how you believe an average seller would fill it out.

Put an "X" next to the prices below at which you would be willing to sell the candy.

Leave the line blank if you would not be willing to sell the candy at that price.

<input type="checkbox"/> 0.00	<input type="checkbox"/> 0.55
<input type="checkbox"/> 0.05	<input type="checkbox"/> 0.60
<input type="checkbox"/> 0.10	<input type="checkbox"/> 0.65
<input type="checkbox"/> 0.15	<input type="checkbox"/> 0.70
<input type="checkbox"/> 0.20	<input type="checkbox"/> 0.70
<input type="checkbox"/> 0.25	<input type="checkbox"/> 0.80
<input type="checkbox"/> 0.30	<input type="checkbox"/> 0.85
<input type="checkbox"/> 0.35	<input type="checkbox"/> 0.90
<input type="checkbox"/> 0.40	<input type="checkbox"/> 0.95
<input type="checkbox"/> 0.45	<input type="checkbox"/> 1.00
<input type="checkbox"/> 0.50	

Appendix H

Name: _____

What is your gender?

What is your age?

What is your race/ethnicity?

Appendix I

Debriefing Form

First of all, thank you for participating in this research dealing with economic transaction. This research is ongoing and the purpose can be revealed to participants once all of the sessions have been completed. For this reason, please do not discuss the study with anyone until you receive an email stating the research has been completed. The participants of this study include students of Connecticut College. Once the study is completed I will send you a full explanation of the hypotheses and procedures in this research.

If you have any questions or concerns about this research, please contact Amanda Traub at (atraub@conncoll.edu).

Additionally, you can contact the chair of the IRB, Audrey Zakriski at alzak@conncoll.edu if you have any questions about the manner in which this study was conducted.

Appendix J

Debriefing Email (Study 1)

Hello,

Thank you for participating in Amanda Traub's research between 10/29/2015-11/9/2015. At the time the purpose of the study could not be revealed due to the fact that the research was ongoing. Now that the research has been completed the purpose can be revealed. Below is the full debriefing as promised at the time of study.

This research is about the endowment effect. The endowment effect is the tendency to value something more when you own it (the sellers of the candy value it higher than the buyers). In this research, we want to see if a) the endowment effect exists and b) if financial incentives can help people anticipate the endowment effect such that the buyer and seller will estimate each other's valuations more accurately, when incentivized. People's tendency not to predict the endowment effect is an example of failed of perspective taking (the buyers do not see the sellers point of view and vice versa), so this research can translate to perspective taking in general. The participants of this study include students of psychology courses at Connecticut College.

Participants were randomly assigned to buyer or seller and financial incentive or no financial incentive. Those people randomly assigned to the financial incentive condition were told they could win a \$40 Amazon gift card if their estimate was the closest to the price the person in the other role indicated, on average, for the candy. Of the people who tied for closest estimate a winner was selected at random and they received the Amazon gift card. Similar research has been conducted on the effects of a financial incentive on the endowment effect, and furthermore on perspective taking in general. Van Boven, Dunning and Loewenstein (2000)'s study did try to use a financial incentive to improve the anticipation of the endowment effect and it was unsuccessful. My explanation was that their financial incentive was not large enough.

If you are interested in this topic and want to read the literature in this area, please contact Amanda Traub (atraub@conncoll.edu).

Additionally, you can contact the chair of the IRB, Audrey Zakriski (alzak@conncoll.edu), if you have any questions about the manner in which this study was conducted.

Listed below are two sources you may want to consult to learn more about this topic:

Van Boven, L., Dunning, D., & Loewenstein, G. (2000). Egocentric empathy gaps between owners and buyers: Misperceptions of the endowment effect. *Journal of Personality and Social Psychology*, 79, 66-76. doi:10.1037/0022-3514.79.1.66

Kurt, D., & Inman, J. J. (2013). Mispredicting others' valuations: Self-other difference in the context of endowment. *Journal of Consumer Research*, 40, 78-89. doi:10.1086/668888

Thank you,
Amanda Traub
Class of '16

Appendix K

Please write down three ways in which other undergraduate students at Connecticut College are similar <different> to <from> you.

1. _____

2. _____

3. _____

Appendix L

Please rate the extent to which you believe other undergraduate students at Connecticut College are similar <different> to <from> you

Not at all
Similar

Very
Similar

1

2

3

4

5

6

7

[FOR PARTICIPANTS THAT WERE PRIMED]

Please rate how easy or difficult it was to list three ways in which other undergraduate students at Connecticut College are similar <different> to <from> you from 1 (Easy) to 7 (Difficult).

Easy

Difficult

1

2

3

4

5

6

7

Appendix M

Hi everyone, thank you for coming to my study. Throughout this experiment you will receive written instructions that will guide you through the experiment. Please read all of the instructions you receive carefully.

[Give prime sheet in being primed]

At this point, your instructions will start to differ as some of you were randomly assigned to be buyers in the experiment and some of you were randomly assigned to be sellers in the experiment.

[Give voucher]

Did everyone finish reading?...I am now going to summarize the instructions on the voucher you just received. "For coming to this experiment you have earned \$1.00. At the end of this experiment, I will give you the amount you have on your voucher in cash."

Please put a check next to your name if you understand that this experiment involves you receiving actual money. In other words, please put a check next to your name if you understand this experiment is NOT hypothetical.

Please read the instructions on the next sheet I give you and look up when you are done. Please wait to fill out the sheet until instructed to do so.

[Give eval sheet and candy]

Please put a check next to your name on this sheet if you understand that the decisions you make in this experiment will affect what you receive at the end of the experiment (in terms of money and/or candy). Then, please continue to fill out the sheet.

Appendix N

Debriefing Email (Study 2)

Hello,

Thank you for participating in Amanda Traub's research between 2/9/2016-3/10/2016. At the time the purpose of the study could not be revealed due to the fact that the research was ongoing. Now that the research has been completed the purpose can be revealed. Below is the full debriefing as promised at the time of study.

This research is about the endowment effect. The endowment effect is the tendency to value something more when you own it (the sellers of the candy value it higher than the buyers). In this research, we want to see if a) the endowment effect exists and b) if similarity or difference priming can help people anticipate the endowment effect such that the buyer and seller will estimate each other's valuations more accurately, when primed. People's tendency not to predict the endowment effect is an example of failed of perspective taking (the buyers do not see the sellers point of view and vice versa), so this research can translate to perspective taking in general. The participants of this study include students of psychology courses at Connecticut College.

Participants were randomly assigned to either be primed for similarities, differences, or were in the control group. Those people randomly assigned to similarity/difference priming were asked to list three ways other undergraduate students at Connecticut College were similar/different to/from you. Similar research has been conducted on the effects of similarity priming on the endowment effect (Kurt & Inman, 2013), and furthermore on perspective taking in general, but there are no published studies regarding the effect of difference priming. The purpose of this study was to replicate the finding that similarity priming can improve the anticipation of the endowment effect, as well as to find out if difference priming could improve the anticipation of the endowment effect.

If you are interested in this topic and want to read the literature in this area, please contact Amanda Traub (atraub@conncoll.edu).

Additionally, you can contact the chair of the IRB, Audrey Zakriski (alzak@conncoll.edu), if you have any questions about the manner in which this study was conducted.

Listed below are two sources you may want to consult to learn more about this topic:

Van Boven, L., Dunning, D., & Loewenstein, G. (2000). Egocentric empathy gaps between owners and buyers: Misperceptions of the endowment effect. *Journal of Personality and Social Psychology*, 79, 66-76. doi:10.1037/0022-3514.79.1.66

Kurt, D., & Inman, J. J. (2013). Mispredicting others' valuations: Self-other difference in the context of endowment. *Journal of Consumer Research*, 40, 78-89. doi:10.1086/668888

Thank you,
Amanda Traub
Class of '16