

Does Anonymity Affect the Willingness To Accept and Willingness To Pay Gap?*

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Abstract

Conventional value-elicitation experiments often find subjects provide higher valuations for items they possess than for identical items they may acquire. Plott and Zeiler (2005) find no difference in elicited valuations after implementing procedures that provide for anonymity and experience with the second-price mechanism. This paper investigates whether anonymity is a necessary for their result. Employing a similar design to theirs, we find their general result holds in conditions both with and without anonymity. Contrary to predictions of one theory—which suggest social pressures may cause differences in subject valuations—anonymous and non-anonymous subjects have nearly identical valuations. As a robustness check, we note the subjects across conditions give significantly different amounts in a dictator game, suggesting they were aware of the conditions of anonymity and sensitive to the accompanying social pressures. Together, these findings strongly suggest subject familiarity with elicitation mechanisms, not anonymity, is responsible for the variability in results across value-elicitation experiments. As an application to experimental design methodology, there appears to be little need to impose anonymity in the laboratory when using second-price mechanisms as we see negligible differences in elicited values with and without anonymity.

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There is a great deal of controversy whether the simple act of owning an item causes an individual to value it more than he would otherwise. This “endowment effect” debate appears in the experimental literature as an argument about the existence of a gap between subjects’ willingness to pay (WTP) for an item versus their willingness to accept (WTA) dispossession of the same item. In their seminal work, Kahneman, Knetsch, and Thaler (1990) find the existence of this gap is robust to a variety of experimental conditions. Plott and Zeiler (2005) argue that to truly test the existence of such a gap, an experiment must provide an incentive compatible elicitation device, training and paid practice rounds with that device, and anonymity. Their study—the first to include all these conditions—finds no existence of such a gap. Assuming their differing results are due to their differing procedures, then there are two possible explanations. Either experience with an incentive compatible elicitation device or anonymity eliminates the willingness to pay-willingness to accept gap.

This paper reconciles which of these two types of procedural differences may be responsible for the disparity in results of Kahneman, Knetsch, and Thaler and Plott and Zeiler. Running similar procedures to the latter paper both with and without anonymity, this paper replicates their initial result and shows anonymity has no effect on subject valuations with an incentive-compatible elicitation device. Thus differing results in elicitation experiments results may be due to the level of training subjects have with the second-price mechanism, but not anonymity. This work can be seen as evidence against the predictions of Fremling and Posner (1999) who suggest the WTA-WTP gap is due to subject desires to be perceived as a “good bargainer” and shade their bids upward (or downward) as a seller (or buyer) for the purposes of signaling to others. Further it suggests that experimental designers need not worry about imposing anonymous conditions in the laboratory when using the second-price mechanism.

There is a rich history of experimental economics results involving the WTA-WTP gap. Kahneman, Knetsch, and Thaler (1990) find some of the most well-known and significant evidence in favor of the existence of the gap. They attribute this difference to the endowment effect. In a variety of experiments, subjects are randomly divided into two equal groups of “buyers” and “sellers.” Sellers are given an item (usually a mug) and told they may trade that item with buyers. Unlike standard economic theory—which predicts about half the sellers should trade their mugs and seller willingness to pay should not differ from buyer willingness to accept—a majority of sellers do not trade their mugs and seller WTA is about 1.5 to 2 times higher than buyer WTP. These general results are robust to a variety of experimental changes including clearly defining the market value of the item, removing money, only trading items, and using the second-price mechanism to obtain incentive compatible estimates of WTA and WTP. This WTA-WTP gap is not found, however, when tokens with clear, transferable, monetary value are used instead of a durable item.

Plott and Zeiler (2005) examine whether subject misunderstandings about the second-price mechanism might be responsible for the WTA-WTP gap, rather than the endowment effect. Before eliciting WTA and WTP values for mugs, they provide two unpaid and fourteen paid practice rounds for buyers and sellers with transferable tokens with a clear redemption value (the same type that produce no WTA-WTP gap in Kahneman, Knetsch and Thaler). Further, they provide instruction on the dominant bidding strategy with these tokens. They also provide anonymity for subjects throughout the procedures. They find no significant difference between WTA and WTP for mugs among buyers and sellers. They conclude that the exhibited gap in experiments cannot be viewed as evidence of the endowment effect or prospect theory preferences because the effect varies with minor changes in experimental design.

There are two types of procedural changes implemented in Plott and Zeiler (2005) that differ from Kahneman, Knetsch, and Thaler (1990): procedures designed to increase familiarity with the second-price mechanism and anonymity. These two changes imply two very different explanations about their results. In one case, unfamiliarity or misconceptions about an experimental design is altering subjects' responses, but buyers and sellers ultimately have the same preferences. In the other, subjects could be perfectly responding to the design, but social preferences concerning their self-perception might dictate different responses in buyers and sellers. Fremling and Posner (1999) propose this latter explanation. Since "talented negotiators" are known for obtaining items for low prices and selling them for high prices, subjects may wish to signal to others or the experimenter that they are talented. These social preferences cause their actions to diverge from their true individual valuation of items, causing the WTA-WTP gap. While there is no experimental evidence suggesting subjects will sacrifice their own earnings to be perceived as talented, several studies on anonymity in dictator games (e.g., Burnham, 2003; Charness and Gneezy, 2008; Eckel and Grossman, 1996; Hoffman et al., 1996) suggest subjects will sacrifice earnings to be perceived as unselfish by others.

In the aim of providing further clarity in WTA-WTP elicitation experiments this paper examines whether anonymity has any effect on subject responses in preference elicitation procedures in mug experiments of Plott and Zeiler (2005). While it is generally believed that experience with the second-price mechanism and not anonymity is responsible for the differences between Plott and Zeiler (2005) and Kahneman, Knetsch, and Thaler (1990),¹

¹ In a later work, Plott and Zeiler (2011) state, "Our results demonstrate that the gap for commodities can be turned on and off by implementing procedures designed to control for subject misconceptions about the value elicitation procedures. (p. 1012)" Several field studies also suggest that experienced professionals do not exhibit the endowment effect (List 2003; Engelmann and Hollard, 2010), but these studies do not use the second-price mechanism so it is debatable whether experience with the second price mechanism and professional experience in the field are the same attribute.

whether anonymity is responsible for any of the difference has not been tested. To this end, we replicate the general design of Plott and Zeiler with and without anonymity. If we find differences across treatments, then this is consistent with the explanation of anonymity being responsible for the endowment effect. Experimenters will then need to decide when using the second-price mechanism whether or not it is appropriate to use anonymity, depending on the purposes of their design. If both treatments have similar results, then varying degrees of experience with the second-price mechanism—not the lack of anonymity—is the likely cause of differing elicitation among subjects. It will be up to future experimenters to decide what level of familiarity with the second-price mechanism is appropriate for their studies, but they likely need not worry about instituting anonymous procedures.

These results could also have relevance to empiricists studying the endowment effect and prospect theory-like preferences. If anonymity is responsible, this result likely could generalize to field settings and suggest the endowment effect is the result of social preferences and not prospect theory. If instead we find no effect of anonymity, we show that anonymity and social preferences concerning visibility may not be relevant to the WTA-WTP debate, but experience and familiarity with market mechanisms may contribute to the appearance of the gap.

Our results show no effect of anonymity on subjects' willingness to accept and willingness to pay for mugs. Subject WTA and WTP for mugs are not significantly different with or without anonymity. Further, our results are similar to Plott and Zeiler's as we do not find a significant WTA-WTP gap in either condition. As an added check, we run single-shot dictator games in each anonymity condition and find significant differences in giving (consistent with Hoffman, et al., 1996). Thus, the absence of a difference between the two conditions is not due to subjects being unaware of or unresponsive to the differences in levels of anonymity.

experiment with a mug. The first two rounds featured imaginary tokens of a given value. In the first round, the token would have a value between \$0 and \$1; in the second round, the value was between \$0 and \$2. Subjects were given paper sheets where they could indicate their decision to buy or sell for ten different price levels: for the first round this was done in \$0.10 increments, for the second round it was \$0.20 increments. Buyers indicated whether they wanted to buy the token at each of the ten prices. Sellers indicated whether they wanted to sell the token at each of the ten prices. After the decision was made in each round, subject sheets were collected and a ten-sided die was rolled to determine the price. Subjects were compensated based on their decisions at that price level. After each of the first two rounds, the experimenter answered questions and briefly summarized how the second-price mechanism should be used. All buyers and sellers were in the same room and heard instructions for both buyers and sellers.

Before the third round, buyers were allowed to examine the mugs of sellers. All subjects were assured that their decisions would determine if they would receive a mug, and not the decisions of any other subject. Sellers (Buyers) were asked to complete a second-price sheet with their decision to sell (buy) their (a) mug at ten different prices (listed from \$0.50 to \$5.00).² After all worksheets were collected, a ten-sided die was rolled to determine the price of mugs.

The final round then began and subjects played a dictator game similar to Hoffman et al. (1996). Half the subjects were randomly selected³ as dictators and chose how much of \$5 to keep for themselves. To keep the identity of dictators confidential, all subjects were given worksheets, but only dictators were given a choice. Dictators were told they had the opportunity to take up to \$5 and the remainder would be left for a randomly paired partner. Once all worksheets were

² The mugs were regular coffee mugs with a Texas A&M logo on them. They could be purchased off campus for \$3.00.

³ This randomization was independent of the randomization that determined buyers and sellers in rounds 1-3.

collected, subject earnings were tabulated and subjects were compensated based on their decisions in the experiment plus a \$10 show-up payment.

a. Non-anonymous condition

Once the earnings were calculated, subjects were distributed payment forms and entered their personal information (e.g., name, student ID, etc.) on those forms. They were called up by number (all sellers were told to bring their mugs) and paid in a corner of the experimental lab. This corner featured some degree of privacy (as subjects were paid one at a time), but lacked full confidentiality (as other subjects could still hear—or possibly see—transactions). During the payment process, sellers either gave up their mug or kept it depending on their choices in round 3, and the price corresponding to the die-roll in that round. Buyers either received a mug or did not receive a mug depending on their choices as well. The experimenter, who calculated payments, saw the faces of subjects, knew their number, knew their name (from the payment sheet), and also knew the randomly-determined market price of mugs in round 3.

b. Anonymous condition

The anonymous condition was designed to be double blind. No one experimenter could connect the performance of a subject with his/her face and/or name. Before the experiment began, experimenter 1 checked subjects in, learning their faces and names. At the beginning of the experiment, all subjects filled out their payment sheets leaving the payment information blank. Experimenter 1 collected the payment sheets and then placed them in a sealed envelope and left the experimental laboratory.

Before each of the four rounds, subjects were instructed that no one would be able to connect their performance in the experiment to their name or likeness. During each round, experimenters 2 and 3 would distribute mugs and worksheets to subjects by number. Since they

We conclude that subject training on the second-price mechanism and not anonymity is likely responsible for differences in the WTA-WTP gap between Kahneman, Knetsch, and Thaler (1990), Plott and Zeiler (2005), and other elicitation experiments that use the second-price mechanism. We do not claim we have educated subjects to correctly reveal their preferences in the second-price mechanism. Future research will need to determine the appropriate way to use such mechanism. Nonetheless, the result should aid experimenters who wish to use the second-price procedure as they can focus on the proper amount of subject training and not enforcing anonymous procedures in the lab.

This paper proceeds as follows: section I describes our general design; section II provides results and section III concludes.

I. Our Design

These experiments took place in the Economic Research Lab (ERL) in the Texas A&M University Department of Economics during January and February 2012. Subjects were randomly recruited using ORSEE (Greiner, 2004). A total of 52 and 50 subjects participated in the non-anonymous and anonymous conditions respectively. As this was a between-subjects design, no subject participated in both conditions. Average subject earnings were \$15 for a 30-minute session. This was a pencil and paper experiment consisting of 4 worksheets corresponding to four rounds. Subjects were paid for their decisions in each of the four rounds. Each round lasted 4 minutes. Afterwards, subjects folded their worksheets to preserve confidentiality and turned gave them to an experimenter.

At the beginning of the experiment, each subject randomly drew a number and sat at a private booth corresponding to that number. Half the subjects were randomly assigned to be “sellers” and were given mugs. The other half was classified as “buyers” and did not begin the

couldn't see the worksheets, they could only know a subject's face and number, but neither name nor performance. They would bring worksheets to experimenter 4 who sat with his back to all subjects. He would total earnings and know subject performance, but would not be able to identify any subject by their appearance or name. Payments were distributed in two sealed envelopes by experimenters 2 and 3. With payment, subjects also received a second sealed envelope that contained information on whether they would receive a mug at the end of the experiment. Each subject left the laboratory one at a time, with all sellers bringing their mugs. After exiting the laboratory, subjects would show experimenter 1 (who was unaware of the die roll in round 3) their envelope determining if they would leave the experiment with a mug or not. Experimenter 1 would distribute or collect mugs to match the conditions on the envelope. After the experiment was over, a separate party unaware of the type of experiment copied subject payment information onto each payment sheet for institutional records.

II. Results

Table 1 shows subjects' elicited values for willingness to pay and willingness to accept in round 3. This is a direct test of the WTA-WTP disparity; differences across the first two columns indicate a WTA-WTP gap. The average value that a subject is willing to accept to sell their mug is \$3.04 and \$3.02 (\$3.03 average over both conditions) in the anonymous and non-anonymous conditions, respectively. The average value that a subject would pay to acquire a mug is slightly lower, \$2.88 and \$2.87 (\$2.87 average over both conditions) in the anonymous and non-anonymous conditions, respectively. The magnitude of the WTA-WTP difference is much smaller than similar experiments which have reported willingness to accept estimates twice the value of willingness to pay (Kahneman, Knetsch, and Thaler, 1990)—and is statistically insignificant in both studies even when the results are pooled (all p-values for parametric t-tests

and nonparametric Mann-Whitney-Wilcoxon rank sum tests are greater than 0.85, see table 1). Our results replicate the finding of Plott and Zeiler (2005) who also find no significant difference between willingness to pay and willingness to accept values under condition of anonymity. Further we find the same result in our non-anonymous condition.

Table 2 shows the differences in elicited willingness to pay and willingness to accept values across anonymity conditions. Large differences across columns 1 and 2 would demonstrate that anonymity has an effect on subject valuations of mugs elicited with the second-price mechanism. There is no such difference across anonymous and non-anonymous conditions. In fact, both values are within 2 cents (less than 1%) of each other. Significance tests confirm this result; both the average elicited willingness to accept and willingness to pay values are not significantly different across conditions in both parametric t-tests and non-parametric Mann-Whitney-Wilcoxon rank sum tests.

Nonetheless, table 2 has not compared the estimated WTA-WTP gap across conditions. An added statistical test can be done to see if that gap is significantly different in the anonymous and non-anonymous conditions. Table 1 shows the differences between averages in each treatment is \$0.16 and \$0.15 for the anonymous and non-anonymous conditions, respectively. Using the calculated standard error values from our first t-test, we see that the estimated standard errors on these differences are \$0.37 and \$0.35, respectively. A two-tailed test finds no difference between these two values at any reasonable level of significance (t-value=0.0194, p-value=0.9846). Thus, there is no evidence that anonymity has any effect on the WTA-WTP gap in this experiment.

It is important after reporting no difference between anonymous and non-anonymous conditions in our mug experiments that we check to make sure that our anonymous condition

provided subjects with a sufficiently anonymous environment. That is, subjects found the procedures credible and different from the non-anonymous condition. A standard result in experimental economics literature is that subjects in anonymous dictator games take more for themselves than subjects in dictator games where experimenters will know their identity (e.g., Burnham, 2003; Charness and Gneezy, 2008; Eckel and Grossman, 1996; Hoffman et al., 1996). We replicate the dictator game of Hoffman et al. (1996) on both our anonymous and non-anonymous subjects to see if there is any difference between the treatments. Table 2 shows the result. Subjects in the anonymous dictator game kept more on average (\$4.27 of \$5) than subjects in the non-anonymous game (\$3.64 of \$5). This difference is significant in both parametric and non-parametric treatments (two-tailed p-values: 0.046, t-test of means, 0.058 Mann-Whitney-Wilcoxon rank sum). Our results indicate anonymity does affect giving in dictator games, but not willingness to pay estimates, willingness to accept estimates, nor the size of the gap between them.

III. Conclusion

By providing subjects detailed explanations and two rounds of paid training before using the second-price mechanism, we find no significant gap between the dollar price subjects are willing to pay or willing to accept for mugs with and without anonymity. While there are a variety of procedures and results for WTA-WTP mug experiments, our results are most consistent with the experimental design that is closest to ours, Plott and Zeiler (2005). In fact, our anonymous condition appears to be a successful replication of their results. Further, we find nearly identical values for average willingness to accept, willingness to pay and the gap between them with and without anonymity suggesting that anonymity has no effect on elicitation experiments.

This last result is important for two reasons. First, it shows the initial Plott and Zeiler (2005) result is not due to anonymity. While Plott and Zeiler (2005) rightly conclude that their experiments demonstrate that WTA-WTP gaps in elicitation experiments should not be interpreted as evidence of the endowment effect and prospect-theory like preferences, if their result was entirely due to anonymity, then those results could be interpreted as clear evidence of another explanation of the endowment effect, that buyers and sellers provide different valuations of items because of how they wished to be perceived by others (Fremling and Posner, 1999). Instead, we now can isolate subject instruction and training about the second-price mechanism as the causes of variability in the reported WTA-WTP gaps in mug experiments.

Second, we find no evidence of anonymity altering any subject behavior in elicitation experiments. Our design shows that anonymity is not a necessary condition for the reduction in the WTA-WTP gap. While we cannot rule out that it could be a sufficient condition, our consistent results across conditions suggest that this possibility is highly unlikely. It appears that subjects do not consider anonymity when making decisions in these experiments, as elicited measures for buyers and sellers are virtually identical with and without anonymity.

In the most pragmatic sense, these two results can be seen as general guidelines for future experiments involving value-elicitation with second price mechanisms. The experimenter should carefully decide what level of training with the second-price mechanisms is appropriate for subjects, because that appears to cause differing estimates with the device. However, the experimenter need not worry about enforcing double-blind protocols in these experiments, because there is no evidence that subjects alter their elicited valuations in such conditions.

Finally, our final dictator round in the experiment shows a difference between subject behavior with and without anonymity. This result confirms that subjects were conscious of the

difference between the two treatments; it is a well-known result that anonymity increases exhibition of pro-social preferences in these types of games (e.g., Burnham, 2003; Charness and Gneezy, 2008; Eckel and Grossman, 1996; Hoffman et al., 1996). Thus the nearly identical results between anonymous and non-anonymous conditions cannot be caused by subjects being unaware of the level of anonymity in their condition.

The results of these dictator rounds may also provide a partial defense of a criticism from psychology about training subjects about how to use mechanisms. Psychologists argue that results obtained after familiarizing subjects with the second-price mechanism are invalid because they communicate to subjects the appropriate way to respond in their experiments, and subjects comply (Kahneman, 2011). That criticism would apply to the results of the mug round of this experiment, but not for the dictator round. Extending this type of theory to the dictator round, the anonymity in the round suggests it is appropriate for dictators to keep their endowments; the lack of anonymity suggests dictators allocate funds consistent with what is perceived as socially appropriate. As our results indicate, dictators in the anonymous condition keep more of their endowment than in the non-anonymous condition, but their average holding (\$4.27) is significantly different from their initial endowment of \$5 ($p\text{-value} < 0.01$). Similarly, the average holding without anonymity (\$3.67) is significantly different from equality ($p\text{-value} < 0.01$). Thus, the decisions of subjects in this experiment are not simply a reflection of the response the experimenter deems appropriate; it appears they demonstrate information about aggregate preferences. To the extent that we may apply this logic to the mug round of this experiment, the lack of a WTA-WTP in those rounds cannot *only* be due to subjects complying with what the experimenter suggests is appropriate. The results likely reflect aggregate preferences as well.

The design and results of this paper are relevant in a large class of papers about subtle changes affecting WTA-WTP estimates. Previous literature examines whether experimenter language is responsible for the effect (Franciosi et al. 1996), whether results can be explained by a different loss aversion factor (Brown 2005), whether repeated markets cause the WTA-WTP gap to disappear (Loomes, Starmer, and Sugden 2003), whether varying the method in which the mug was given alters the effect (Loewenstein and Issacharoff 1994), and whether imprecise preferences cause the disparity (Dubourg, Jones-Lee, and Loomes 1994). Additionally, papers test the hypotheses set forth by Plott and Zeiler (2005), such as Isoni, Loomes, and Sugden (2011) and Plott and Zeiler (2007). Our main result suggests that anonymity has no effect on subject behavior in mug experiments. If this result generalizes to other similar experimental settings, it suggests that if the results of the preceding papers hold in anonymous (or non-anonymous) settings, they likely will still hold in non-anonymous (or anonymous) settings.

Eliminating anonymity as a factor in these elicitation experiments, we are still left with many questions. Plott and Zeiler (2005) freely concede that their procedures may not elicit “true preferences” for mugs for their subjects. They only can conclude that their procedural manipulations cast doubt on the interpretations of elicitation experiments regarding the endowment effect. Similarly, our experiment does not provide any more insight as to whether the preferences in our experiment, Plott and Zeiler (2005), or Kahneman, Knetsch and Thaler (1990) are any more “true.” Until that is determined, we cannot conclude whether endowment effect theory is relevant for individual’s valuations of small, newly obtained items like mugs. Our results do show, through our use of anonymity, that the perception of others appears to have no effect on such items.

REFERENCES

- Brown, Thomas C. 2005. "Loss aversion without the endowment effect, and other explanations for the WTA–WTP disparity." *Journal of Economic Behavior & Organization* no. 57 (3): 367-379.
- Burnham, Terence C. 2003. "Engineering altruism: a theoretical and experimental investigation of anonymity and gift giving." *Journal of Economic Behavior & Organization* no. 50 (1): 133-144.
- Charness, Gary, and Uri Gneezy. 2008. "What's in a name? Anonymity and social distance in dictator and ultimatum games." *Journal of Economic Behavior & Organization* no. 68 (1): 29-35.
- Dubourg, W. R., M. W. Jones-Lee, and Graham Loomes. 1994. "Imprecise Preferences and the WTP-WTA Disparity." *Journal of Risk & Uncertainty* no. 9 (2): 115-133.
- Eckel, Catherine C., and Philip J. Grossman. 1996. "Altruism in Anonymous Dictator Games." *Games and Economic Behavior* no. 16 (2): 181-191.
- Engelmann, Dirk and Guillaume Hollard. 2010. "Reconsidering the Effect of Market Experience on the "Endowment Effect. "" *Econometrica* no. 78 (6): 2005-2019.
- Franciosi, Robert, Praveen Kujal, Roland Michelitsch, Vernon Smith, and Gang Deng. 1996. "Experimental tests of the endowment effect." *Journal of Economic Behavior & Organization* no. 30 (2): 213-226.
- Fremling, Gertrud M., and Richard A. Posner. 1999. "Market Signaling of Personal Characteristics." SSRN eLibrary.
- Greiner, Ben. (2004) The online recruitment system ORSEE 2.0 — A guide for the organization of experiments in economics, University of Cologne Discussion Paper (www.orsee.org).
- Hoffman, Elizabeth, Kevin McCabe, and Vernon L. Smith. 1996. "Social Distance and Other-Regarding Behavior in Dictator Games." *American Economic Review* no. 86 (3): 653-660.
- Isoni, Andrea, Graham Loomes, and Robert Sugden. 2011. "The Willingness to Pay--Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations: Comment." *American Economic Review* no. 101 (2): 991-1011.
- Kahneman, Daniel. 2011. *Thinking, Fast and Slow*. (Farrar, Straus and Giroux: New York).
- Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1990. "Experimental Tests of the Endowment Effect and the Coase Theorem." *Journal of Political Economy* no. 98 (6): 1325-1348.
- List, John A. 2003. "Does Market Experience Eliminate Market Anomalies? " *Quarterly Journal of Economics* no. 118, 41-71.
- Loewenstein, George, and Samuel Issacharoff. 1994. "Source Dependence in the Valuation of Objects." *Journal of Behavioral Decision Making* no. 7 (3): 157-168.

- Loomes, Graham, Chris Starmer, and Robert Sugden. 2003. "Do Anomalies Disappear in Repeated Markets?" *The Economic Journal* no. 113 (486): C153-C166.
- Plott, Charles R., and Kathryn Zeiler. 2005. "The Willingness to Pay-Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations." *American Economic Review* no. 95 (3): 530-545.
- Plott, Charles R., and Kathryn Zeiler. 2007. "Exchange Asymmetries incorrectly interpreted as evidence of endowment effect theory and prospect theory?" *American Economic Review* no. 97 (4): 1449-1466.
- Plott, Charles R., and Kathryn Zeiler. 2011. "The Willingness to Pay—Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations: Reply" *American Economic Review* no. 101 (2): 1012-1028.
- Thaler, R. 1980. "Toward a positive theory of consumer choice." *Journal of Economic Behavior & Organization* no. 1 (1): 39-60.

Table 1: Willingness to Pay and Willingness to Accept Gap in Anonymous and Non-Anonymous Conditions

| | Willingness to Accept | Willingness to Pay | Difference | Parametric Test | Non-Parametric Test |
|----------------------|-----------------------|--------------------|----------------|--------------------|---------------------|
| Anonymous (N=50) | 3.04 (0.26) | 2.88 (0.27) | 0.16 (0.37) | t=0.427 p=0.671 | z=0.343 p=0.732 |
| Non-Anonymous (N=52) | 3.02 (0.25) | 2.87 (0.25) | 0.15 (0.35) | t=0.434 p=0.666 | z=0.503 p=0.615 |
| Combined (N=102) | 3.03 (0.18) | 2.87 (0.18) | 0.16 (0.25) | t=0.616 p=0.540 | z=0.623 p=0.534 |

Table 2: Comparison of Willingness to Pay, Willingness to Accept and Dictator Offer Values across Anonymous and Non-Anonymous Conditions

| | Anonymous (N=25) | Non-Anonymous (N=26) | Parametric Test | Non-Parametric Test |
|------------------------------------|------------------|----------------------|--------------------|---------------------|
| Willingness to Pay | 2.88 (0.27) | 2.87 (0.25) | t=0.040 p=0.969 | z=0.048 p=0.962 |
| Willingness to Accept | 3.04 (0.26) | 3.02 (0.25) | t=0.058 p=0.954 | z=0.181 p=0.856 |
| Amount Dictator Keeps (out of \$5) | 4.27 (0.19) | 3.64 (0.24) | t=2.019 p=0.049 | z=1.895 p=0.058 |

INSTRUCTIONS

This is an experiment in individual decision making. Our purpose is to study technical issues involved in decision making. Various research foundations have provided funds for this research. We will conduct two hypothetical rounds and one paid round.

When prompted, please write your identification number on the top of your page.

ID Number: _____

Please write your ID Number in the box.

In this market the objects being traded are tokens. You are a **buyer**, so you have an opportunity to buy a token which has a value to you of \$_____. It has this value to you because the experimenter will give you this much money for it.

Using the form marked **Round 1**, please indicate whether you prefer to: (1) Buy a token at each price and cash it in for the sum of money indicated above, or (2) Not buy a token at this price. After you have finished, your form will be picked up by the experimenter. Afterwards, one of the prices listed below will be selected at random and any exchanges will take place at that price. If you have indicated you will buy at this price you will receive a token and it can be redeemed for its value; if you have indicated that you will not buy a token at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
- (2) It is in your interest to indicate your true preferences at each of the possible prices listed below.

Below is an example of **Rounds 1-3**:

For each price indicate your decision by marking an X in the appropriate column.

| | | | |
|-------------------------------------|---|---------------------------------------|--|
| Your token is worth <u>\$0.10</u> . | ← | This subject's token is worth \$0.10. | |
| | | I Will Buy The Token | I Will Not Buy The Token |
| If the price is \$0.10 | | _____X_____ | _____ ← |
| | | | This subject is willing to buy a token for \$0.10, but not \$0.20. |

Instructions: Buyer, Non-Anonymous

If the price is \$0.20

_____ X

ROUND 2

(Identical to Round 1 using different token value)

Please use the form labeled **Round 2** for this part of the experiment.

ROUND 3

You do not own a mug. You have the option of buying one.

Using the form labeled **Round 3**, please indicate whether you wish to: (1) Give that amount of money and buy a mug, or (2) Not buy a mug at this price.

After you have finished, your form will be taken up by the experimenter. Afterwards, one of the prices will be selected at random and any exchanges will take place at that price. If you have indicated you will buy at this price you will give the amount of money equal to the price of the mug for the mug; if you have indicated that you will not buy a mug at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
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INSTRUCTIONS

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When prompted, please write your identification number on the top of your page. Note that the experimenter will not be able to link any specific subject to a subject identification number. Therefore the experimenter will not know subject payoffs by individual. After the experiment, a third party will come in and distribute your earnings. The experimenter will not be able to link you to your identification number, and the third party will be unable to link you and your payment.

ID Number: _____

Please write your ID Number in the box.

ROUND 1

In this market the objects being traded are tokens. You are a **buyer**, so you have an opportunity to buy a token which has a value to you of \$_____. It has this value to you because the experimenter will give you this much money for it.

Using the form marked **Round 1**, please indicate whether you prefer to: (1) Buy a token at each price and cash it in for the sum of money indicated above, or (2) Not buy a token at this price. After you have finished, please place your form in the envelope and pass it to the front of the room. Afterwards, one of the prices listed below will be selected at random and any exchanges will take place at that price. If you have indicated you will buy at this price you will be given a token and will receive this amount of money; if you have indicated that you will not buy a token at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
- (2) It is in your interest to indicate your true preferences at each of the possible prices listed below.

Instructions: Buyer, Anonymous

Below is an example of **Rounds 1-3**:

For each price indicate your decision by marking an X in the appropriate column.

| | | | | |
|-------------------------------------|---|---------------------------------------|-----------------------------|--|
| Your token is worth <u>\$0.10</u> . | ← | This subject's token is worth \$0.10. | | |
| | | I Will Buy The Token | I Will Not Buy The Token | |
| If the price is \$0.10 | | <u> X </u> | <u> </u> | |
| If the price is \$0.20 | | <u> </u> | <u> X </u> | ← |
| | | | | This subject is willing to buy a token for \$0.10, but not \$0.20. |

ROUND 2

(Identical to Round 1 using different token value)

Please use the form labeled **Round 2** for this part of the experiment.

ROUND 3

You do not own a mug. You have the option of buying one.

Using the form labeled **Round 3**, please indicate whether you wish to: (1) Pay that amount of money and buy a mug, or (2) Not buy a mug at this price.

After you have finished, please place your form in the envelope and pass it to the front of the room. Afterwards, one of the prices will be selected at random and any exchanges will take place at that price. If you have indicated you will buy at this price you will be given the amount for the mug and your mug will be given to a buyer; if you have indicated that you will not buy a mug at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
- (2) It is in your interest to indicate your true preferences at each of the possible prices listed below.

Instructions: Seller, Non-Anonymous

INSTRUCTIONS

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When prompted, please write your identification number on the top of your page.

ID Number: _____

Please write your ID Number in the box.

In this market the objects being traded are tokens. You are a **seller**, so you have an opportunity to sell a token which has a value to you of \$_____. It has this value to you because the experimenter will give you this much money for it.

Using the form marked **Round 1**, please indicate whether you prefer to: (1) Sell a token at each price and cash it in for the sum of money indicated above, or (2) Not sell a token at this price. After you have finished, your form will be picked up by the experimenter. Afterwards, one of the prices listed below will be selected at random and any exchanges will take place at that price. If you have indicated you will sell at this price you will give a token and will receive this amount of money; if you have indicated that you will not sell a token at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
- (2) It is in your interest to indicate your true preferences at each of the possible prices listed below.

Instructions: Seller, Non-Anonymous

Below is an example of **Rounds 1-3**:

For each price indicate your decision by marking an X in the appropriate column.

| | | | | |
|-------------------------------------|---|---------------------------------------|------------------------------|---|
| Your token is worth <u>\$0.20</u> . | ← | This subject's token is worth \$0.20. | | |
| | | I Will Sell The Token | I Will Not Sell The Token | |
| If the price is \$0.10 | | _____ | _____ X _____ | This subject is willing to sell his token for \$0.20, but not \$0.10. |
| If the price is \$0.20 | | _____ X _____ | _____ | |

ROUND 2

(Identical to Round 1 using different token value)

Please use the form labeled **Round 2** for this part of the experiment.

ROUND 3

You now own a mug. You have the option of selling one to a buyer.

Using the form labeled **Round 3**, please indicate whether you wish to: (1) Receive that amount of money and sell a mug, or (2) Not sell a mug at this price.

After you have finished, your form will be taken up by the experimenter. Afterwards, one of the prices will be selected at random and any exchanges will take place at that price. If you have indicated you will sell at this price you will be given the amount for the mug and your mug will be given to a buyer; if you have indicated that you will not sell a mug at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
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ID Number: _____

Please write your ID Number in the box.

ROUND 1

In this market the objects being traded are tokens. You are a **seller**, so you have an opportunity to sell a token which has a value to you of \$_____. It has this value to you because the experimenter will give you this much money for it.

Using the form marked **Round 1**, please indicate whether you prefer to: (1) Sell a token at each price, or (2) Not sell a token at this price and cash it in for the sum of money indicated above. After you have finished, please place your form in the envelope and pass it to the front of the room. Afterwards, one of the prices listed below will be selected at random and any exchanges will take place at that price. If you have indicated you will sell at this price you will give a token and will receive this amount of money; if you have indicated that you will not sell a token at this price then no exchange will be made and you do not receive anything.

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Instructions: Seller, Anonymous

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For each price indicate your decision by marking an X in the appropriate column.

| | | | |
|-------------------------------------|---|---------------------------------------|------------------------------|
| Your token is worth <u>\$0.20</u> . | ← | This subject's token is worth \$0.20. | |
| | | I Will Sell The Token | I Will Not Sell The Token |
| If the price is \$0.10 | | _____ | _____ <u>X</u> _____ |
| If the price is \$0.20 | | _____ <u>X</u> _____ | _____ |

←

This subject is willing to sell his token for \$0.20, but not \$0.10.

ROUND 2

(Identical to Round 1 using different token value)

Please use the form labeled **Round 2** for this part of the experiment.

ROUND 3

You now own a mug. You have the option of selling one to a buyer.

Using the form labeled **Round 3**, please indicate whether you wish to: (1) Receive that amount of money and sell a mug, or (2) Not sell a mug at this price.

After you have finished, please place your form in the envelope and pass it to the front of the room. Afterwards, one of the prices will be selected at random and any exchanges will take place at that price. If you have indicated you will sell at this price you will be given the amount for the mug and your mug will be given to a buyer; if you have indicated that you will not sell a mug at this price then no exchange will be made and you do not receive anything.

Notice the following two things:

- (1) Your decision can have no effect on the price actually used because the price will be selected at random.
- (2) It is in your interest to indicate your true preferences at each of the possible prices listed below.

INSTRUCTIONS

In this experiment each of you will be paired with a different person within your room. You will not be told who these people are either during or after the experiment. The other person will also not be told who you are either during or after the experiment.

The experiment is conducted as follows: When the experiment begins, you will be asked to reenter your identification number on the form labeled **Round 4**. Then, half of you will fill out the form labeled **Round 4**. You will then make a decision on how much money you will keep. You will then enter the amount in the box provided on the form. For example, if you will keep \$7, you will put a 7 on the line provided. This is an example only; the actual decision is up to each person. Once you have made your decision, please wait for the rest of the people to make their decisions.

The other half will be asked to sit silently until all of the decisions have been made. The forms will then be collected by the experimenter.

After all of the people have submitted their decisions, please wait silently as the experimenter prepares your payment. The experimenter will then have you individually come up with your identification number and trade it for an envelope containing a receipt and your payment. Once you have received your envelope, please fill out the pertinent information on the receipt **and leave the receipt face down with the experimenter**. Please keep the money within the envelope as you silently gather your things and leave the room.

INSTRUCTIONS

In this experiment each of you will be paired with a different person within your room. You will not be told who these people are either during or after the experiment. The other person will also not be told who you are either during or after the experiment.

When prompted, please write your identification number on the form labeled **Round 4**. Note that the experimenter will not be able to link any specific subject to a subject identification number. Therefore the experimenter will not know subject decisions. After the experiment, a third party will come in and distribute your earnings. The experimenter will not be able to link you to your identification number, and the third party will be unable to link you and your payment.

The experiment is conducted as follows: you will see an amount of money on the screen. You will then make a decision on how much money you will keep. You will then enter the amount on the line provided on the form labeled **Round 4**. For example, if you will keep \$7, you will put a 7 on the line provided. This is an example only; the actual decision is up to each person. Once you have made your decision, please wait for the rest of the people to make their decisions.

After everyone has finished filling out the forms, you will then place your form in an envelope and pass it to the front of the room.

After all of the people have submitted their decisions, please wait silently as the experimenter prepares your payment. Remember, the experimenter does not know the identity of each person. The experimenter will then have a third party come in to hand out the envelopes containing payments. Please keep the money within the envelope as you silently gather your things and leave the room.