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Do People Anticipate Loss Aversion?

Alex Imas, Sally Sadoff and Anya Samek*

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Abstract

In this paper, we directly test a central prediction of loss aversion in contracting: in order to avoid losses, people will exert more effort under a contract in a loss frame than a gain frame. Anticipating this, they will prefer the gain-framed contract if given the choice. In a series of laboratory experiments, we find that individuals do indeed work harder when incentives are framed as a loss. However, we do not find evidence that they prefer the gain frame. In fact, our results suggest that individuals have a directional preference for contracts framed as a loss. These findings have implications for the theory of reference-dependent preferences and optimal incentive design.

1   Introduction

Since the publication of Kahneman and Tverskys (1979) seminal work on prospect theory, a large literature has provided support for two of its main features: 1) gains and losses are evaluated relative to a reference point and 2) losses loom larger than gains.[1] The second feature, known as *loss aversion*, is consistent with a large body of evidence demonstrating behavioral anomalies including the endowment effect (Kahneman, Knetsch and Thaler 1990), status quo bias (Samuelson and Zeckhauser 1988)

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[1]This is typically represented by a prospect theory value function kinked around the reference point, with the function steeper over losses than gains.

and observed divergence of willingness to pay and willingness to accept (Hanemann 1991).[2]

A central behavioral prediction of loss aversion is that because individuals are more sensitive to losses, they will work harder to avoid a loss than to experience an equivalent gain. Recent work has explored whether the design of incentive contracts can exploit this insight to increase effort and performance in the work place (Hossain and List 2012, Fryer et al 2012). These studies find that framing incentives as losses (i.e., bonuses workers could potentially lose) increases productivity relative to payoff-equivalent contracts where the same bonuses are framed as gains.[3]

However, a natural criticism of the economic significance of loss framed incentives is that if people are loss averse, they will prefer entering a gain-framed contract to a loss-framed contract. If individuals have rational expectations, given a choice between two payoff-equivalent contracts, people will (weakly) prefer contracts framed as gains rather than losses. As such, employees will demand a premium to select into the loss contracts, which may offset the productivity gains. In this paper, we set out to test whether individuals indeed avoid selecting into loss contract – do they anticipate loss aversion and require a premium to work under loss-framed incentives? If people do anticipate loss aversion, this would decrease the efficacy of such contracts. If, on the other hand, people do not correctly anticipate loss aversion, they may not exhibit an ex ante disdain for loss-framed incentives. Understanding individuals responses to how contracts are framed is critical for determining which types of contracts will be

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[2]A related literature examines effort and labor supply decisions relative to reference points (e.g., Camerer et. al 1997, Crawford and Meng 2011, Pope and Schweitzer 2011, Abeler 2011, Gill and Prowse 2012). See, Camerer et al. (2004), DellaVigna (2009), Barberis (2013) and Ericson and Fuster (2013) for recent reviews of applications of reference dependent preferences in laboratory and field studies.

[3]Models using the status-quo as the reference point (e.g. Thaler and Johnson 1990) predict that individuals will strictly work harder under loss-framed contracts conditional on the endowment being incorporated as the status-quo. If the expectation is taken as the reference point (e.g., Koszegi and Rabin 2006) then no difference between the frames should be observed.

optimal for a firm in equilibrium. However, to the best of our knowledge, little work has been done to directly investigate worker preferences for contract frames.

In this paper, we directly test a central prediction of loss aversion: in order to avoid losses, people will (weakly) exert more effort under a contract in a loss frame than a gain frame. Anticipating this, they will prefer the gain-framed contract if given the choice. As discussed above, several recent field studies have examined the prediction that individuals work harder under a loss frame than a gain frame and find that loss frames can increase productivity in the work place (Hossain and List 2012, Fryer et al 2012).[4] Less work has been done on whether anticipation of these framing effects impacts individuals preferences for different contract types. In the only study we are aware of exploring preferences between loss and gain-framed contracts, Luft (1994) finds that participants are more likely to enter gain-framed incentive contracts than those framed as losses. However, the study is limited in that it does not find differences in productivity on the task itself, so it is not clear whether loss aversion was a factor in the experiment.

We bring together the two strands of the literature to explore both the productivity and selection effects of contract framing for the same task. We first conduct an incentivized laboratory experiment to investigate whether performance is affected by framing in a real effort task. Particularly, we test whether participants exert greater effort when payoff-equivalent incentives are framed as losses rather than gains. We then conduct a second experiment to examine whether people *anticipate* the differential effect of the loss frame – that is, whether they prefer gain-framed incentives to loss-framed incentives. To do this, we compare participants' willingness to pay (WTP) to participate in the task when the incentives contract is framed as a gain to

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[4]Field studies in other contexts including incentives for student performance (Levitt et al 2012) and healthy food choice (List and Samek 2014) have not found significant differences in effort in loss and gain frames.

WTP when it is framed as a loss.

In line with prospect theory, we find that individuals assigned to the loss frame work harder than those assigned to the gain frame. However, we do not find support for the theoretical prediction that people prefer gain-framed to loss-framed contracts. In fact, willingness to pay for working under a loss-framed contract is directionally higher than for contracts framed as a gain.

As far as we know, this is the first study to examine preferences for contracts that increase productivity through loss framing. Our results suggest that participants do not anticipate the differential effects of the loss-framed contract. These findings have applications for practice – in particular, if employees are more motivated by loss contracts, but do not require a premium to select into them, these contracts may indeed be optimal for firms. Our results also inform theory: whether people anticipate loss aversion has important implications for modeling the decision-making of individuals with reference-dependent preferences.

The remainder of the paper is organized as follows. Section 2 describes the experimental design and results. Section 3 discusses our interpretation of the results. And Section 4 concludes.

2 Experimental design and results

Experiment 1: Loss aversion in a real effort task

Experimental design

In order to test whether people anticipate loss aversion, we first need to establish that individuals are indeed differentially affected by how an incentive contract is framed. That is, we need to show that a loss-framed contract increases effort relative to a

gain-framed contract. Moreover, the incentivized task must be sensitive enough such that the effort response translates into increased productivity on the task.

Experiment 1 was implemented among 62 participants at the University of California San Diego. Subjects were randomized at the session level to either a GAIN or LOSS treatment and then participated in a one-shot task (sessions included 6 people on average and lasted about 15 minutes).

Upon arriving in the lab, subjects were assigned to a computer station and given the instructions, which were also read aloud. In both treatments, we first explained the task students would perform and then offered a performance-based incentive. For the real-effort task, we used the slider task developed and validated by Gill and Prowse (2012) programmed in ZTree (Fischbacher 2007). In this task, subjects have 2 minutes to move up to 48 "sliders" on their computer screen exactly halfway along a bar, using their computer mouse (see Appendix A.1 for instructions and a sample screen shot of the task).

All subjects were offered an incentive for correctly completing more sliders than a previously determined threshold. The threshold was set within each treatment such that half of the participants in each group were expected to receive the incentive.[5] In the GAIN treatment, subjects received the incentive if their performance on the slider task was above the threshold. In the LOSS treatment, participants were endowed with the incentive before performing the slider task and were told they would keep the incentive if their performance was above the threshold. If their performance was below the threshold, participants in the LOSS treatment had to return the incentive. This design created two payoff-equivalent contracts: one framed as a gain and the other

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[5]The threshold was determined by the average performance from a randomly chosen previous session of the same treatment. Participants were informed of what constituted the threshold, but not its value, prior to performing the effort task. In the first session of each treatment, we used an average from a pilot study.

framed as a loss. Importantly, the intra-treatment threshold ensures that earnings do not differ across treatments even if average effort does.

In both treatments, the incentive was a custom made t-shirt with an unknown outside value and a subjective personal value (its actual cost was about $8). In the GAIN treatment, the experimenter held up the t-shirt at the front of the room and told subjects they would receive it if their performance on the slider task was above the threshold; otherwise they would receive nothing. In the LOSS treatment, participants were given a t-shirt, which remained at their station throughout the session. The experimenter told subjects that they would keep the t-shirt if their performance was above the threshold; otherwise they would have to return it. Subjects then performed the slider task for 2 minutes. After completing the task, subjects filled out a short survey and received payment, including a show-up fee of $5.

Results

Models of reference-dependent preferences predict that individuals will (weakly) exert greater effort under a loss-framed contract than a gain-framed one. This leads to our first prediction:

Prediction 1: *If people are loss averse, performance will be higher under a loss-framed contract than a gain-framed contract.*

The results in Experiment 1 support this prediction. As illustrated in Figure 1, subjects in the GAIN treatment complete an average of 11.88 sliders (N=32, SD = 5.55) compared to an average in the LOSS treatment of 15.27 sliders (N=30, SD=4.44). The 0.6 standard deviation difference in performance is statistically significant at the $p < 0.01$ level.

Experiment 2: Anticipation of loss aversion

Experimental design

In Experiment 2, we examine whether people anticipate loss aversion – that is, whether they are more likely to select into a gain-framed rather than a loss-framed contract. To do this, we elicited participants' willingness to pay to participate in each of the two incentive schemes used in the first experiment.

Experiment 2 was implemented among 60 participants at the University of Wisconsin-Madison BRITE (Behavioral Research Insights through Experiments) Laboratory. Using a between-subject design, we elicited willingness to pay to participate in one of the two treatments described in Experiment 1: GAIN or LOSS. As in Experiment 1, we randomized at the session level (sessions included 10 people on average and lasted about 40 minutes).

Upon arriving in the lab, subjects were assigned to a computer station and given the instructions, which were also read aloud (see Appendix A.2 for instructions). The experiment proceeded in two parts. In the first part, subjects were given 2 minutes to participate in the slider task for no pay. As the slider task may be unfamiliar to subjects, we wanted to reduce uncertainty surrounding the task.

In the second part, we elicited willingness to pay (WTP) to participate in an incentivized version of the task. In the GAIN treatment, the experimenter held up the t-shirt at the front of the room and read the instructions describing the gain-framed contract from Experiment 1. The LOSS treatment was identical except that the experimenter read the instructions describing the loss-framed contract from Experiment 1.

Subjects were then asked to indicate their maximum WTP out of their $10 show-up fee to work under the offered contract. We elicited WTP using a multiple price

list, which has been used as an incentive-compatible method to elicit attitudes for risk (Holt and Laury, 2002), time preferences (Andersen et al. 2007) and loss aversion (Sprenger, 2013). In our paradigm, participants made a series of decisions between paying a price and participating, or paying nothing and not participating. The decision to not participate was constant (i.e., $0) while the price to participate increased from $0 to $10 from the first decision to the last. We then used a die roll to randomly choose a single decision from the list to be implemented. If a subject indicated she was willing to pay the chosen cost, she participated and the cost was deducted from her show up fee. If she indicated she was not willing to pay the chosen cost, she did not participate and nothing was deducted from her show up fee.

In the GAIN treatment, those who paid to participate completed the slider task and received the t-shirt if their performance was above average. Participating subjects in the LOSS treatment were first given the t-shirt, then performed the slider task, and either got to keep the t-shirt or had to return it, again depending on their performance. At the end of the session, all participants filled out a short survey and received payment.

Results

The results from Experiment 1 supported the prediction of prospect theory that people should work harder under loss frames than gain frames. However, under standard specifications, the loss frame imposes a net utility cost for participants relative to their ex-ante preference. If people anticipate this cost, this should lower their willingness to pay to participate in the task. That is, people should prefer the gain-framed contract to the loss-framed contract. Our second prediction follows:

Prediction 2: *If people anticipate the differential effect of the loss frame, willingness*

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to pay will be higher for gain-framed contracts than loss-framed contracts.

The results from Experiment 2 do not support this prediction. As shown in Figure 2, average willingness to pay was actually higher for the LOSS incentives ($2.58, N=30, SD=$1.97) than the GAIN incentives ($2.17, N=30, SD=$2.14).[6] Overall, we find no evidence that people prefer GAIN to LOSS (the one-tailed hypothesis test is not significant, p = 0.78).

3   Interpretation

The results demonstrate that in our experimental context, participants do not require a premium to enter loss-framed contracts as predicted by standard formulations of the reference-dependent model.[7] Our interpretation of these findings is that people do not anticipate the differential effect of the loss-framed incentives. An alternative interpretation of our results is that people could anticipate loss aversion, but still prefer the loss-framed incentives. We address potential reasons why this could happen below.

Anticipation of higher earnings

It is possible for participants to anticipate loss aversion and still prefer the loss-framed incentives because they anticipate they will exert more effort and thereby increase their expected earnings. We address this through our intra-treatment threshold, which assures that earnings are equivalent in both the loss and gain frames – i.e.,

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[6]One participant in the gain treatment reported inconsistent WTP across the multiple price list. The results reported above use the subjects first switching point. Dropping the participant from the analysis decreases average WTP in the gain treatment to $2.14.

[7]As noted above, models of reference dependence that assume expectations as the reference point would not predict a difference in willingness to pay between frames. However, those models would also not predict a difference in effort observed in Experiment 1. As such, in our context, "standard formulation" refers to models assuming the status quo as the reference point.

approximately 50% of participants in each treatment receive the incentive. Because average performance is higher in the loss incentives, subjects exert greater effort without increasing their expected earnings. Still, there may be concern that a participant incorrectly believes her expected earnings will be higher for example, because she anticipates her own increased effort but does not anticipate that other participants will also increase their effort (and thus shift up the average performance threshold in the group).

However, even if a participant believes her earnings will be higher under loss incentives, she should still not prefer to enter the loss-framed contract. This is because prior to entering the contract the participant is not endowed with the incentive in *both* the loss and gain treatments. Her ex ante preferences are therefore most aligned with those under the gain frame where she is also not endowed with the incentive. When evaluating contracts, her optimal choice of effort for the incentive is the level exerted under the gain contract. Barring dynamically inconsistent preferences, she should therefore prefer the gain-framed contract and the effort chosen under it.

Dynamically inconsistent preferences

If preferences exhibit a dynamic inconsistency, and individuals are sophisticated about it, they may choose the loss-framed contract as a commitment device that increases their chances of gaining the incentive. Particularly, one form of dynamic inconsistency may be that the weight on the cost of effort is lower when the individual chooses between contracts than when actually working under the contract. A sophisticated individual would then choose the loss-framed contract in order to increase the prospective pain of not gaining the incentive for her future self when it actually comes time to work for it.

As such, loss-framed contracts could potentially be viewed as commitment devices

for individuals with dynamically-inconsistent preferences. This would imply that offering such contracts could be mutually beneficial, both for the firm, which gains increased productivity, and the employee herself.[8] While this model of preferences deserves further investigation, we believe it does not apply well to our context. For the loss frame to act as a commitment device in our set up, subjects would first need to have some form of a self-control problem on our two-minute task that makes their choice of effort under gain incentives suboptimal relative to their ex ante long-run preferences. They would also need to be sophisticated about this dynamic inconsistency while at the same time being nave about the fact that they are entering a contract in which loss frames induce greater effort without increasing expected earnings.

4 Conclusion

Ours is the first study to rigorously explore peoples preferences for gain-framed versus loss-framed contracts. We find that while individuals work harder under a loss frame than a gain frame, they also appear to prefer the former to the latter. In our context of workplace incentives, the extent to which the structure of contracts is optimal given employee preferences should be further explored.

This is also among the first studies to explore the more general question of whether people anticipate loss aversion. Our results suggest that on average our participants do not anticipate the loss aversion they will experience under the loss-framed contract. These findings are consistent with the only other study we know of in this area. In the context of eliciting willingness to pay and willingness to accept values for a mug, Loewenstein and Adler (1995) find evidence that prior to being endowed, subjects

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[8]It should be noted that the benefits to the individual are from a long-run self perspective, since the short-run individual in a loss-frame contract will be worse off. See O'Donoghue and Rabin (1999) and Laibson (1997) for a similar discussion.

underestimate their willingness to accept.

The lack of literature on whether people anticipate loss aversion is particularly surprising given its importance for modeling decision-making and understanding equilibrium effects. For example, several studies find that people are reluctant to realize losses on assets (Barberis 2013). If this is the case, whether people anticipate such behavior is critical for understanding their asset purchasing decisions. The anticipation of future preferences has been explored in other areas, such as models of rational addiction (Becker and Murphy 1988), projection bias (Loewenstein et al 2003), and time preferences with varying degrees of sophistication (O'Donoghue and Rabin 1999). These models allow us to evaluate the extent to which we can view individuals decision-making as rational and the extent to which they may be making optimization mistakes. Further studies in both the lab and the field can help shed light on this important and underexplored question in the context of reference dependent preferences.

References

Abeler, Johannes, Armin Falk, Lorenz Goette, and David Huffman. 2011. "Reference Points and Effort Provision," *American Economic Review*, 101(2): 470-92.

Andersen, Steffen, Glenn W. Harrison, Morten I. Lau, and E. Elisabet Rutstrm. "Eliciting Risk and Time Preferences," *Econometrica*, 76(3): 583-618.

Barberis, Nicholas C. 2013. "Thirty Years of Prospect Theory in Economics: A Review and Assessment," *Journal of Economic Perspectives*, 27(1): 173-96.

Becker, Gary S. and Kevin M. Murphy. 1988. "A Theory of Rational Addiction," *Journal of Political Economy*, 96(4): 675-700.

Camerer, Colin F., George Loewenstein and Matthew Rabin, ed. 2004. *Advances in Behavioral Economics*, Princeton, NJ: Princeton University Press.

Camerer, Colin F., Linda Babcock, George Loewenstein, and Richard H. Thaler. 1997. "Labor Supply of New York City Cab Drivers: One Day at a Time," *Quarterly Journal of Economics*, 112(2): 407-41.

Crawford, Vincent and Juanjuan Meng. 2011. "New York City Cab Drivers Labor Supply Revisited: Reference-Dependent Preferences with Rational-Expectations Targets for Hours and Income," *American Economic Review*, 101(5): 1912-32.

DellaVigna, Stefano. 2009. "Psychology and Economics: Evidence from the Field," *Journal of Economic Literature*, 47(2): 315-372.

Ericson, Keith M. and Andreas Fuster. 2013. "The Endowment Effect," NBER Working Paper 19384.

Fischbacher, Urs. 2007. "z-Tree: Zurich Toolbox for Ready-made Economic Experiments," *Experimental Economics*, 10(2): 171-178.

Fryer, Roland G., Steven D. Levitt, John A. List, and Sally Sadoff. 2012. "Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment," NBER Working Paper 18237.

Gill, David and Victoria Prowse. 2012. "A Structural Analysis of Disappointment Aversion in a Real Effort Competition," *American Economic Review*, 102(1): 469-503.

Holt, Charles A., and Susan K. Laury. 2002. "Risk Aversion and Incentive Effects," *American Economic Review*, 92(5): 1644-1655.

Hanemann, W. Michael. 1991. "Willingness to Pay and Willingness to Accept: How Much Can They Differ?" *American Economic Review*, 81(3): 635-647.

Hossain, Tanjim and John A. List. 2012. "The Behavioralist Visits the Factory: Increasing Productivity Using Simple Framing Manipulations," *Management Science*, 58(12): 2151-2167.

Kahneman, Daniel, Jack L. Knetsch and Richard Thaler. 1990. "Experimental Tests of the Endowment Effect and the Coase Theorem," *Journal of Political Economy*, 98(6): 1325-1348.

Kahneman, Daniel and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision Under Risk," *Econometrica*, 47(2): 263-291.

Koszegi, Botond, and Matthew Rabin. 2006. "A Model of Reference-Dependent Preferences," *Quarterly Journal of Economics*, 121(4): 1133-65.

Laibson, David. 1997. "Golden Eggs and Hyperbolic Discounting," *Quarterly Journal of Economics*, 112(2): 443-478.

Levitt, Steven D., John A. List, Susanne Neckermann and Sally Sadoff. 2012. "The Behavioralist Goes to School: Leveraging Behavioral Economics to Improve Educational Performance," NBER Working Paper 18165.

List, John A. and Anya C. Samek. 2014. "The Behavioralist as Dietician: Leveraging Behavioral Economics to Improve Child Food Choice and Consumption," Working Paper.

Loewenstein, George and Daniel Adler. 1995. "A Bias in the Prediction of Tastes," *The Economic Journal*, 105: 929-937.

Loewenstein, George, Ted O'Donoghue and Matthew Rabin. 2003. "Projection Bias in Predicting Future Utility," *Quarterly Journal of Economics*, 118(4): 1209-1248.

Luft, Joan. 1994. "Bonus and Penalty Incentives Contract Choice by Employees," *Journal of Accounting and Economics*, 18: 181-206.

O'Donoghue, Ted and Matthew Rabin. 1999. "Doing it Now or Later," *American Economic Review*, 89(1): 103-124.

Pope, Devin G., and Maurice E. Schweitzer. 2011. "Is Tiger Woods Loss Averse? Persistent Bias in the Face of Experience, Competition, and High Stakes," *American Economic Review*, 101(1): 129-57.

Samuelson, William and Richard Zeckhauser. 1988. "Status Quo Bias in Decision Making," *Journal of Risk and Uncertainty*, 1(1): 7-59.

Sprenger, Charles. 2013. "An Endowment Effect for Risk: Experimental Tests of Stochastic Reference Points," Mimeo.

Thaler, Richard H., and Eric J. Johnson. 1990. "Gambling with the House Money and Trying to Break Even: The Effects of Prior Outcomes on Risky Choice." *Management Science*, 36(6): 643-660.

Figure 1: Loss Aversion in a Real Effort Task

Effort in Gain vs Loss Incentives
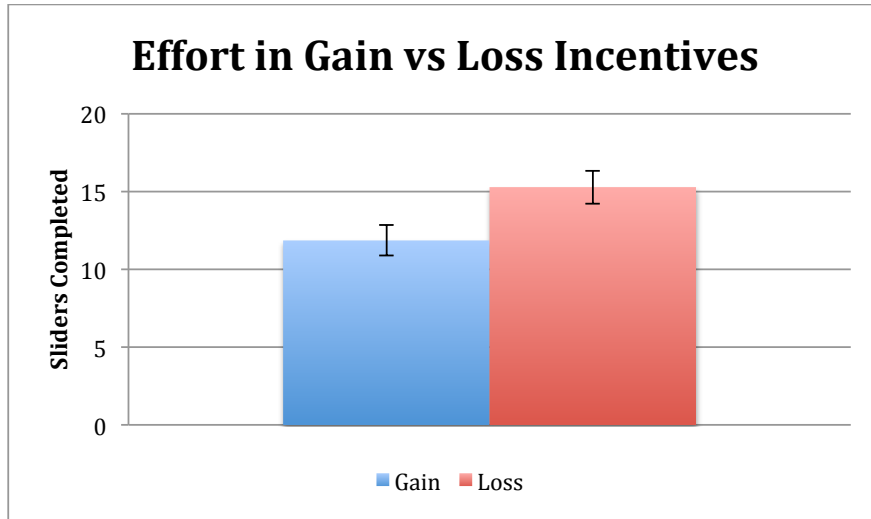
Average performance and standard error bars are shown for each treatment. The difference in average performance between Gain and Loss is significant at the $p < 0.01$ level.

Figure 2: Anticipation of Loss Aversion

WTP for Gain vs. Loss Incentives
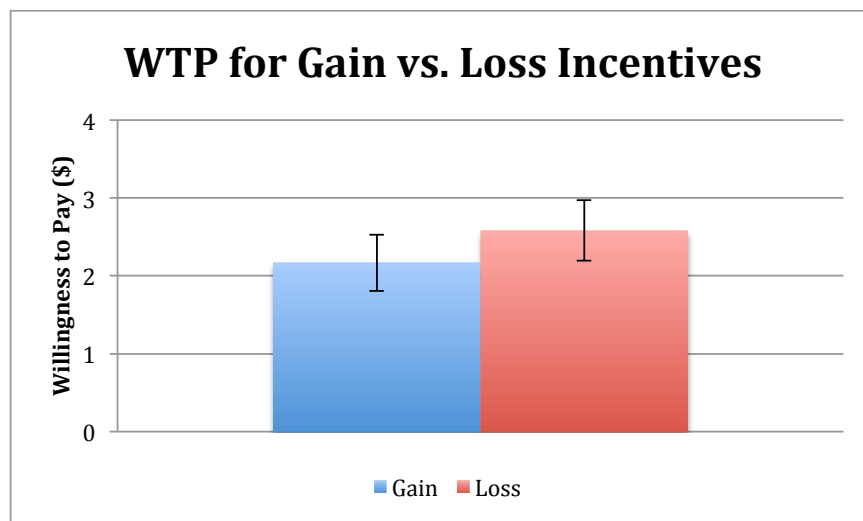
Average willingness to pay (WTP) and standard error bars are shown for each treatment. The difference in average WTP between Gain and Loss is not statistically significant.

A   Appendix

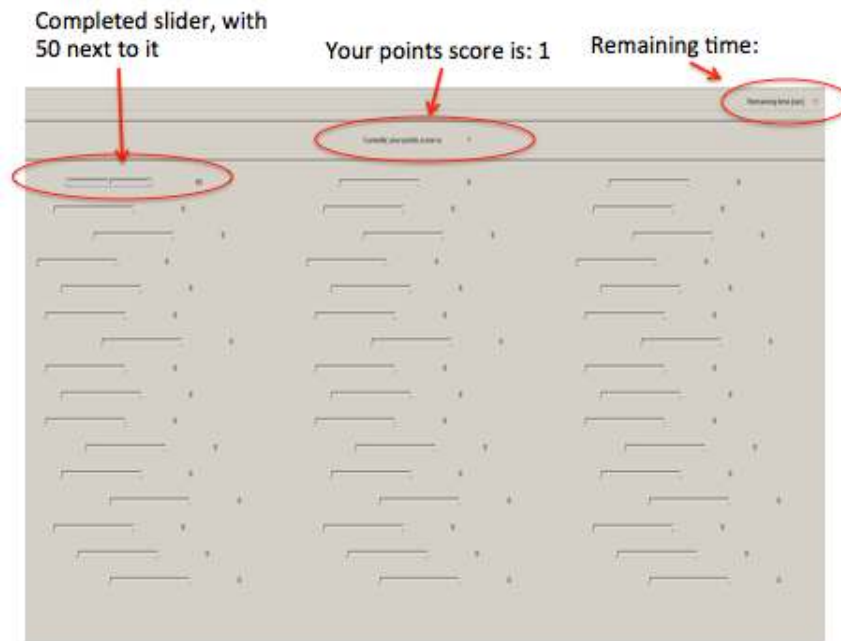## A.1   Experiment 1 Instructions

Instructions

Welcome to our short experiment.

Please pay attention to the instructions carefully. You will be asked several questions throughout the study to make sure that you are reading and understanding the instructions. You will NOT get paid if you do not follow all instructions carefully.

Today you will perform a slider task.

In this task, you will see a screen with 48 sliders on it. You will have 120 seconds to move as many sliders as you can to the 50% position. You should only use your mouse to move sliders by clicking and dragging on the slider. Each slider you move to the 50% position is considered completed and earns you 1 point. You should only use your mouse to move sliders by clicking and dragging on the slider – using the keyboard is not allowed. **You should try to complete as many sliders as you can.**

The picture below shows you the slider task. At the top right, you can see the remaining time. At the top middle of the screen, you see the number of points you have. You can complete sliders in any order you like. Completed sliders will have a 50 next to them.

[GAIN Treatment Only]

In the past year, different groups of students completed the slider task. We recorded the average number of sliders that were completed in each session. At the end of the study, we will select at random one of the past sessions to be your 'comparison session', and **your individual performance on the slider task will be compared to the average in that session.**

You will be paid directly for your performance. **In particular, if your performance on the slider task is equal to or above average, you will receive this T-shirt as a bonus.**

Your payment in the task will depend on both your individual performance and the performance of the comparison session, but it does not depend on the performance of anyone else in this room.

Slider Task Instructions

You will now perform the slider task. **If you complete as many or more sliders than average, you will receive this T-shirt as a bonus. If you complete fewer sliders than average, you will not receive the T-shirt.**

The more sliders you complete, the higher your chance of receiving the T-shirt.

[LOSS Treatment Only]

In the past year, different groups of students completed the slider task. We recorded the average number of sliders that were completed in each session. At the end of the study, we will select at random one of the past sessions to be your 'comparison session', and **your individual performance on the slider task will be compared to the average in that session.**

You will be paid directly for your performance. **In particular, you will be given this T-shirt to perform the slider task. However, if your performance on the slider task is below average, you will have to give up your T-shirt.**

Your payment in the task will depend on both your individual performance and the performance of the comparison session, but it does not depend on the performance of anyone else in this room.

Slider Task Instructions

PLEASE WAIT TO RECEIVE YOUR PAYMENT FOR THE TASK

You will now perform the slider task. **You were given a T-shirt to carry out this task. If you complete as many or more sliders than average, you will keep your T-shirt. If you complete fewer sliders than average, you will have to give up your T-shirt.**

The more sliders you complete, the higher your chance of keeping your T-shirt.

A.2 Experiment 2 Instructions
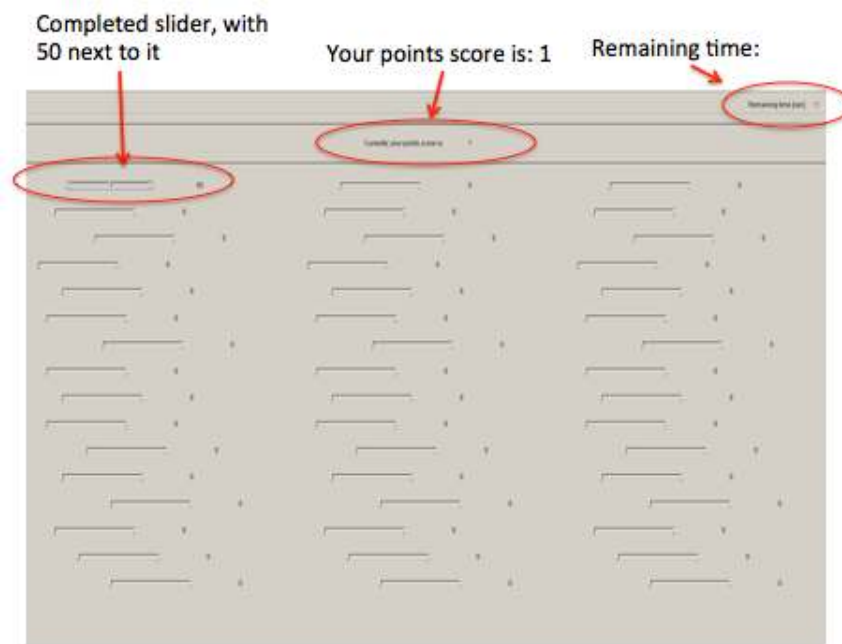
Instructions

Welcome to our short experiment. You will get a $10 show up fee just for participating today.

Please pay attention to the instructions carefully. You will be asked several questions throughout the study to make sure that you are reading and understanding the instructions. You will NOT get paid if you do not follow all instructions carefully.

Today you will perform a slider task.

In this task, you will see a screen with 48 sliders on it. You will have 120 seconds to move as many sliders as you can to the 50% position. You should only use your mouse to move sliders by clicking and dragging on the slider. Each slider you move to the 50% position is considered completed and earns you 1 point. You should only use your mouse to move sliders by clicking and dragging on the slider – using the keyboard is not allowed. **You should try to complete as many sliders as you can.**

The picture below shows you the slider task. At the top right, you can see the remaining time. At the top middle of the screen, you see the number of points you have. You can complete sliders in any order you like. Completed sliders will have a 50 next to them.

[GAIN Treatment Only]

Instructions - Part 2

In this part, just like before, you will have 120 seconds to move as many of the 48 sliders as you can to the 50% position, and you will see how many you have completed and how much time is left at the top of your screen. Again, you should only use your mouse.

In the past year, different groups of students completed the slider task. We recorded the average number of sliders that were completed in each session. At the end of the study, we will select at random one of the past sessions to be your 'comparison session', and **your individual performance on the slider task will be compared to the average in that session.**

Unlike in part 1, in part 2 you will be paid directly for your performance. **In particular, if your performance on the slider task is equal to or above average, you will receive this T-shirt as a bonus.**

Your payment in the task will depend on both your individual performance and the performance of the comparison session, but it does not depend on the performance of anyone else in this room.

Please read the 2nd Slider Task Instructions at your desk.

Paying to Play

On the next screen, you will indicate how much you are willing to pay to participate in the task. Each line represents a different cost for the task. After you are done with the next screen, you will pick a number from the bingo cage to be the 'line that counts'.

If you were willing to pay for the task on the 'line that counts', then:
- you will perform the slider task
- if you complete as many or more sliders than average, you will receive the T-shirt as a bonus
- the cost of the task will be deducted from your show up fee

If you were not willing to pay for the task at the cost determined by the number you pick, then:
- you will wait quietly for 120 seconds and will not participate in the task
- the cost of the task will not be deducted from your show up fee

You will not know which line is the 'line that counts' until after you have made your

decisions. Because you are making a random draw, any of the lines could be the 'line that counts.' Therefore, you should think carefully about the choice you make on each line.

Here is an example. Look at line 5. Suppose Line 5 is chosen as the 'line that counts.' If you said "YES" in Line 5, you will have to pay $3, and you will participate in the slider task. If you said "NO" in Line 5, you will not pay $3 and you will not participate in the slider task.

5. *If you have to pay $3 to participate in the study, do you want to participate?*
    a. *Yes, I want to pay $3 to participate*
    b. *No, I don't want to pay $3 to participate.*

Before completing the pay to play sheet, please read the 2ⁿᵈ Slider Task Instructions at your desk.

(1) If you have to pay **$0** to participate in the study, do you want to participate?
    a. Yes, I want to pay $0 to participate
    b. No, I don't want to pay $0 to participate.

(1) If you have to pay **$0.25** to participate in the study, do you want to participate?
    a. Yes, I want to pay $0.25 to participate
    b. No, I don't want to pay $0.25 to participate.

(2) If you have to pay **$0.75** to participate in the study, do you want to participate?
    a. Yes, I want to pay $0.75 to participate
    b. No, I don't want to pay $0.75 to participate.

(3) If you have to pay **$1** to participate in the study, do you want to participate?
    a. Yes, I want to pay $1 to participate
    b. No, I don't want to pay $1 to participate.

(4) If you have to pay **$2** to participate in the study, do you want to participate?
    a. Yes, I want to pay $2 to participate
    b. No, I don't want to pay $2 to participate.

(5) If you have to pay **$3** to participate in the study, do you want to participate?
    a. Yes, I want to pay $3 to participate
    b. No, I don't want to pay $3 to participate.

(6) If you have to pay **$4** to participate in the study, do you want to participate?
    a. Yes, I want to pay $4 to participate
    b. No, I don't want to pay $4 to participate.

(7) If you have to pay **$5** to participate in the study, do you want to participate?

a. Yes, I want to pay $5 to participate
b. No, I don't want to pay $5 to participate.

(8) If you have to pay **$6** to participate in the study, do you want to participate?
a. Yes, I want to pay $6 to participate
b. No, I don't want to pay $6 to participate.

(9) If you have to pay **$7** to participate in the study, do you want to participate?
a. Yes, I want to pay $7 to participate
b. No, I don't want to pay $7 to participate.

(10)   If you have to pay **$8** to participate in the study, do you want to participate?
a. Yes, I want to pay $8 to participate
b. No, I don't want to pay $8 to participate.

(11)   If you have to pay **$9** to participate in the study, do you want to participate?
a. Yes, I want to pay $9 to participate
b. No, I don't want to pay $9 to participate.

(12)   If you have to pay **$10** to participate in the study, do you want to participate?
a. Yes, I want to pay $10 to participate
b. No, I don't want to pay $10 to participate.

PLEASE WAIT TO PICK A NUMBER FROM THE BINGO CAGE

[For Participating Subjects Only]

2nd Slider Task Instructions

You will now perform the slider task. **If you complete as many or more sliders than average, you will receive this T-shirt as a bonus. If you complete fewer sliders than average, you will not receive the T-shirt.**

The more sliders you complete, the higher your chance of receiving the T-shirt.

Instructions - Part 2

In this part, just like before, you will have 120 seconds to move as many of the 48 sliders as you can to the 50% position, and you will see how many you have completed and how much time is left at the top of your screen. Again, you should only use your mouse.

In the past year, different groups of students completed the slider task. We recorded the average number of sliders that were completed in each session. At the end of the study, we will select at random one of the past sessions to be your 'comparison session', and **your individual performance on the slider task will be compared to the average in that session.**

Unlike in part 1, in part 2 you will be paid directly for your performance. **In particular, you will be given this T-shirt to perform the slider task. However, if your performance on the slider task is below average, you will have to give up your T-shirt.**

Your payment in the task will depend on both your individual performance and the performance of the comparison session, but it does not depend on the performance of anyone else in this room.

Paying to Play

On the next screen, you will indicate how much you are willing to pay to participate in the task. Each line represents a different cost for the task. After you are done with the next screen, you will pick a number from the bingo cage to be the 'line that counts'.

If you were willing to pay for the task on the 'line that counts', then:
- you will be given the T-shirt to keep at your desk
- you will perform the slider task
- if you complete fewer sliders than average, you will have to return your T-shirt
- the cost of the task will be deducted from your show up fee

If you were not willing to pay for the task at the cost determined by the number you pick, then:
- you will wait quietly for 120 seconds and will not participate in the task
- the cost of the task will not be deducted from your show up fee

You will not know which line is the 'line that counts' until after you have made your decisions. Because you are making a random draw, any of the lines could be the 'line that counts.' Therefore, you should think carefully about the choice you make on each line.

Here is an example. Look at line 5. Suppose Line 5 is chosen as the 'line that counts.' If you said "YES" in Line 5, you will have to pay $3, and you will participate in the slider task. If you said "NO" in Line 5, you will not pay $3 and you will not participate in the slider task.

6. *If you have to pay **$3** to participate in the study, do you want to participate?*
   c. *Yes, I want to pay $3 to participate*
   d. *No, I don't want to pay $3 to participate.*

Before completing the pay to play sheet, please read the 2ⁿᵈ Slider Task Instructions at your desk.

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(13)   If you have to pay **$0** to participate in the study, do you want to participate?
a. Yes, I want to pay $0 to participate
b. No, I don't want to pay $0 to participate.

(2) If you have to pay **$0.25** to participate in the study, do you want to participate?
a. Yes, I want to pay $0.25 to participate
b. No, I don't want to pay $0.25 to participate.

(14)   If you have to pay **$0.75** to participate in the study, do you want to participate?
a. Yes, I want to pay $0.75 to participate
b. No, I don't want to pay $0.75 to participate.

(15)   If you have to pay **$1** to participate in the study, do you want to participate?
a. Yes, I want to pay $1 to participate
b. No, I don't want to pay $1 to participate.

(16)   If you have to pay **$2** to participate in the study, do you want to participate?
a. Yes, I want to pay $2 to participate
b. No, I don't want to pay $2 to participate.

(17)   If you have to pay **$3** to participate in the study, do you want to participate?
a. Yes, I want to pay $3 to participate
b. No, I don't want to pay $3 to participate.

(18)   If you have to pay **$4** to participate in the study, do you want to participate?
a. Yes, I want to pay $4 to participate

    b. No, I don't want to pay $4 to participate.

(19)   If you have to pay **$5** to participate in the study, do you want to participate?
    a. Yes, I want to pay $5 to participate
    b. No, I don't want to pay $5 to participate.

(20)   If you have to pay **$6** to participate in the study, do you want to participate?
    a. Yes, I want to pay $6 to participate
    b. No, I don't want to pay $6 to participate.

(21)   If you have to pay **$7** to participate in the study, do you want to participate?
    a. Yes, I want to pay $7 to participate
    b. No, I don't want to pay $7 to participate.

(22)   If you have to pay **$8** to participate in the study, do you want to participate?
    a. Yes, I want to pay $8 to participate
    b. No, I don't want to pay $8 to participate.

(23)   If you have to pay **$9** to participate in the study, do you want to participate?
    a. Yes, I want to pay $9 to participate
    b. No, I don't want to pay $9 to participate.

(24)   If you have to pay **$10** to participate in the study, do you want to participate?
    a. Yes, I want to pay $10 to participate
    b. No, I don't want to pay $10 to participate.

PLEASE WAIT TO PICK A NUMBER FROM THE BINGO CAGE

[For Participating Subjects Only]

2nd Slider Task Instructions

PLEASE WAIT TO RECEIVE YOUR PAYMENT FOR THE TASK

You will now perform the slider task. **You were given a T-shirt to carry out this task. If you complete as many or more sliders than average, you will keep your T-shirt. If you complete fewer sliders than average, you will have to give up your T-shirt.**

The more sliders you complete, the higher your chance of keeping your T-shirt.