

Online Appendix to *Evolutionary Origins of the Endowment Effect: Evidence from Hunter-Gatherers*

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Description of the Experimental Procedure.

Experiments were conducted privately, in Swahili, by one of the authors (Apicella) during her last day of residence in each camp. On this final day, gifts, such as knives and pots, are normally given to participants as an expression of gratitude. Added to the gift list were lighters and biscuits. Participants were called individually to receive their gift and upon approaching the experimenter the following occurred:

Condition 1: [Both goods are on the ground in front of researcher.] [Researcher hands over the endowed good.] This is a gift for you. Would you like to keep your biscuit/lighter, or exchange it for this one? [Researcher points to other item.]

Condition 2: [Both goods are on the ground in front of researcher.] I will flip a coin to determine your gift. Heads (kichwa) you will get the item on the left and tails (kifarua = rhinoceros) you will get the item on the right. [Researcher flips a 50 shilling coin and points to the item participant won.] This is a gift for you. [Researcher points to endowed item.] Would you like to keep your biscuit/lighter, or exchange it for this one? [Researcher points to other item.]

We have provided four pictures of the field site. Figures A.2 and A.3 depict Hadza men in the HE region crafting or standing by a large quantity of arrows, intended for sale. Hadza often reuse the same arrow several time when hunting, so that it is not useful to amass a large quantity of arrows for hunting. Figures A.4 and A.5 depict condition 1 of our experiment.

Description of the items.

Biscuits were purchased in Arusha, Tanzania for 350 TZ shillings, which is approximately USD 0.25. The biscuits are manufactured by Deemah Ltd. and come in individually wrapped 55g packages. The biscuits vary by fruit flavor, represented by different packaging color. Four flavors were used: coconut (blue) strawberry (pink), banana (green) and orange (orange). It

is unlikely that the Hadza in either group had knowledge of the different fruits or could read the packaging. These biscuits cannot be purchased in the Mangola village and in fact, most Tanzanians probably have not eaten them. Generic plastic lighters, of six different colors, were purchased from individual vendors in Arusha, Tanzania. Lighters are also difficult, if not impossible, to purchase in the Mangola village, though matches are widely available.

Disaggregated Analysis of the Data.

Here we report the results of the experiment disaggregated by condition and item type. We begin by testing whether there are significant differences in responses across conditions and items. Table A.1 reports the p-values of unpaired unequal-variance t-tests of whether the means in the four condition-item-type combinations were different. The values are not corrected for multiple hypothesis testing.

The only difference that was marginally significant was between condition 1 and 2 with lighters in the LE group ($p = 0.049$). The difference is due to agents in condition 1 trading 62% of the time and in condition 2 trading 31% of the time. This is unexpected, given that Plott and Zeiler (2005, 2007) have found that randomizing the endowed item and reducing transaction costs decreases the magnitude of the endowment effect. Moreover, this difference would not be significant if we correct for multiple hypothesis testing, for example with a Bonferoni correction. Therefore the data suggests that there are no differences across different condition-item pairs. The null finding is consistent with the Ericson and Fuster (2011) results, that the magnitude of the endowment effect is driven by subjects' expected endowment, which were kept constant in conditions 1 and 2.

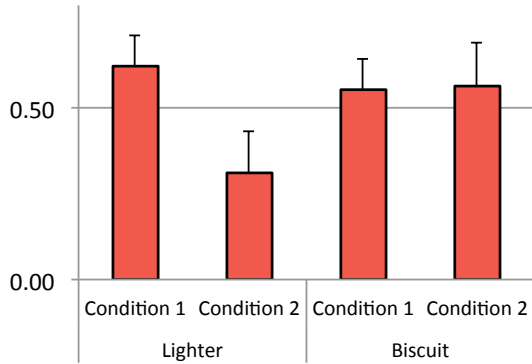
Figure A.1 plots the mean probability of trading disaggregated by condition-item pairs, in both HE and LE groups. The Figure suggests that the basic pattern in the analysis of the aggregate data, where subjects in the HE region were much less likely to trade their endowed items, broadly holds in the disaggregated data. Moreover, so does the pattern that subjects in the LE region display rational behavior, trading 50% of the time.

We now formally test whether the results from the pooled data extend to the disaggregated data. We performed one-sided exact binomial test that the means are equal to 0.50, the rational benchmark. Results are reported in Table A.2. In the LE group, no means are distinguishable from 0.50. In the HE group, all subsamples except for lighter-condition 1 are significantly less than 0.50. Even correcting for multiple hypothesis test with a conservative Bonferoni bound, we find that in the HE group the lighter condition 2 and biscuit condition 1 groups are significantly different from 0.50. Given the conservative nature of multiple hypothesis testing, this supports the conclusion drawn from the pooled data, that the LE group displays no endowment effect, while the HE group does.

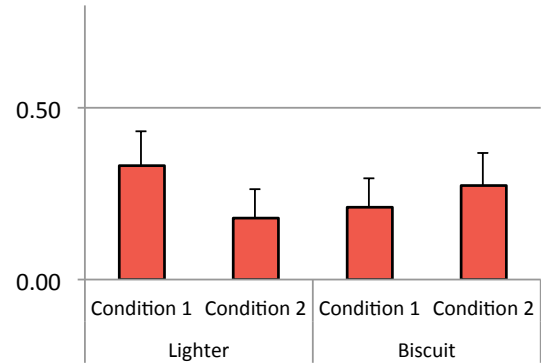
References

- Ericson, K.M.M. and A. Fuster, "Expectations as Endowments: Evidence on Reference-Dependent Preferences from Exchange and Valuation Experiments," *Quarterly Journal of Economics*, 2011.

- Plott, C.R. and K. Zeiler**, “The Willingness to Pay-Willingness to Accept Gap, the “Endowment Effect,” Subject Misconceptions, and Experimental Procedures for Eliciting Valuations,” *The American Economic Review*, 2005, *95* (3), 530–545.
- **and** —, “Exchange Asymmetries Incorrectly Interpreted as Evidence of Endowment Effect Theory and Prospect Theory?,” *The American Economic Review*, 2007, *97* (4), 1449–1466.



(a) Low Exposure.



(b) High Exposure.

Figure A.1: M+SE of subjects trading endowed item in the data disaggregated by condition, item pairs, and region.



Figure A.2: Hadza man in the HE group crafting a large number of arrows intended for sale.



Figure A.3: Hadza man in the HE group resting by arrows intended for sale.



Figure A.4: Subject being handed endowed item in condition 1 of the experiment.



Figure A.5: Subject trading her endowed item for the non-endowed item in condition 1 of the experiment.

Table A.1: p-values of t-tests for differences in means across different condition-item pair subsamples.

| | LE group | | |
|---------------------|---------------------|---------------------|---------------------|
| | Lighter Condition 1 | Lighter Condition 2 | Biscuit Condition 1 |
| Lighter Condition 2 | 4.93% | | |
| Biscuit Condition 1 | 60.2% | 12.6% | |
| Biscuit Condition 2 | 71.4% | 16.4% | 94.6% |

| | HE group | | |
|---------------------|---------------------|---------------------|---------------------|
| | Lighter Condition 1 | Lighter Condition 2 | Biscuit Condition 1 |
| Lighter Condition 2 | 24.8% | | |
| Biscuit Condition 1 | 34.1% | 82.5% | |
| Biscuit Condition 2 | 66.3% | 48.4% | 62.0% |

Table A.2: One-sided binomial tests of the difference between mean probability of trading and 50%, disaggregated by condition, item type, and group.

| Low Exposure Group | | | | |
|--|------------------------|------------------------|------------------------|------------------------|
| | Lighter Condition 1 | Lighter Condition 2 | Biscuit Condition 1 | Biscuit Condition 2 |
| Mean | 0.62 (0.09) | 0.31 (0.12) | 0.55 (0.09) | 0.56 (0.13) |
| N | 29 | 16 | 29 | 16 |
| p-value of one-sided binomial test, $H_0 M = 0.50$. | 93.20 | 10.51 | 77.09 | 77.28 |
| High Exposure Group | | | | |
| | Lighter Condition 1 | Lighter Condition 2 | Biscuit Condition 1 | Biscuit Condition 2 |
| Mean | 0.33 (0.10) | 0.18** (0.08) | 0.21** (0.08) | 0.27* (0.10) |
| N | 24 | 22 | 24 | 22 |
| p-value of one-sided binomial test, $H_0 M = 0.50$. | 7.58% | 0.22% | 0.33% | 2.62% |