Replication of

"Last-Place Aversion": Evidence and Redistributive Implications

by Kuziemko, I./Buell, R.W./Reich, T./Norton, M.I. (2014)
in: The Quarterly Journal of Economics, 129(1), pp. 105–149.

Replication Authors:
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Kuziemko et al. find that subjects who are randomly placed in the second-to-last place in terms of endowments are the least likely to give money to the person one rank below them. The paper includes two experiments where other things are also tested. Experiment 2 was chosen as it was the last experiment. In Experiment 2, there are two group sizes: 6-person groups and 8-person groups, out of which we randomly chose to study the 6-person groups.

Hypothesis to bet on:

Subjects randomly placed in second-to-last place in terms of endowments are significantly less likely to allocate money to the person one rank below them in a choice of distributing \$2 to the person one rank below or the person one rank above (a comparison of allocation decisions between subjects randomly ranked second- to-last and subjects randomly ranked 2–4 in the 6 person redistribution experiment).

Power Analysis

The original *p*-value is reported as $p < 0.10$; the exact p-value $= 0.070$ based on a z-test of the marginal effect from a probit regression (probit regressions with round fixed effects and clustering on individuals and a dummy for subjects ranked 1st and last (as they don't have parallel choice sets); the coefficient of "Second from last" in regression (1) of Table II, p. 129): *"Column (1) shows that the second-to-last-place player is significantly less likely to give to the lower-ranked player relative to other players."* The original sample size is 42 participants. To achieve 90% power the required sample size is 134 participants.

Sample

The sample for replication consists of 138 students (in order to assign 6 person groups) from Boston-area colleges and universities. Apart from having participated in the original experiment, there are no exclusion criteria.

Materials

We use the material of the original experiment (programmed in PHP with a MySQL database) provided by the authors, along with instructions available at the journal's webpage.

Procedure

We follow the procedure of the original article, with only slight but unavoidable deviations as outlined below. The following summary of the experimental procedure is therefore based on the section "IV.A. Experimental Design" (pp. 124–125) in the original study.

As participants enter the lab, they are seated sequentially in different groups of 6, to minimize the likelihood that people who know one

another (and thus enter the lab together) are assigned to the same group. Each group will engage in the same game. Participants are seated in separate carrels surrounded by blinders. As all participants are seated, an experiment supervisor reads the instructions and subjects start by playing a test round before the actual experiment begins.

As a round begins the computer randomly ranks the 6 players in each group and allocates $1, $2, ..., $6 to them. Subsequently, players with rank 2–5 (i.e. that are allocated $5–$2) choose between giving the player directly above or directly below their rank, $2. The first player (with $6) makes a choice between the second ($5) and third ($4) player, and the last player considers players in fourth and fifth place. All participants are clearly instructed that the additional $2 that they are allocating come from a separate account. When the round is finished the computer randomly selects one participant. Two dollars are added to the allocated amount of the player chosen by that participant. The final allocation is not shown to participants, and neither is the decision of other players.

The game is repeated for 8 rounds. After all rounds are played, the computer randomly selects one round, and the final allocation from that round is paid out to all subjects. Subjects are further paid a show-up fee of $15. Payments are distributed while the players are still at their seats actively engaged in answering a questionnaire, and without other players being able to see the amounts handed out. Show-up fees are paid to subjects when they exit the lab.

Analysis

As in the original article, a probit regression is run on the data, with round and game fixed effects and with separate dummy variables for first- and last-place players. Standard errors are clustered by individual. The dependent variable is 1 if the participant has chosen to give money to a player with lower rank and 0 otherwise.

Differences from Original Study

The replication procedure is identical to that of the original study, with some unavoidable deviations. This replication will be performed at Harvard University in Cambridge MA, USA, in 2015, on students at Boston-area colleges and universities. The original data was gathered at Harvard University in Cambridge MA, USA, in September 2010, on subjects from the subject pool of the Harvard Business School Computer Lab for Experimental Research (CLER). The experiment will be in English as in the original study.

The paper contains two experiments and other treatments: for the replication the focus is only on Experiment 2 and 6-person groups. Experiment 2 is included as it is the last experiment in the paper; we randomly determined whether to replicate the 6-person or the 8-person redistribution game. In the original study, subjects stayed in the lab for approximately one hour, partaking in several other experiments after the main study. We will only conduct the main study.

Replication Results

Data for 144 subjects was collected, which is 6 more (one group of six) than the planned sample size of 138. In the original study the estimated marginal effect from being in second to last place was -0.116 ($p = 0.070$) in a probit regression (regression 1 in Table II). In the replication the estimated marginal effect using the same probit model is 0.045 ($p = 0.154$). The result does not replicate and the point estimate goes in the opposite direction of the original study. The estimated relative effect size of the replication is -38.79% ($0.045/-0.116$).

The authors also run a regression with second or third from last as independent variable (regression 2 in Table II in the original paper) with a marginal effect of -0.147. Using the replication data we get a marginal effect of 0.026 ($p = 0.326$).

In the below table we show the probit regres-

sion results for regression 1 and 2 in Table II in the original paper for the original study and the replication. Below we also reproduce Figure IV from the original study based on the replication data. As can be seen in the figure there is no indication that the second to last (or third from last) subjects are less likely to give the $2 to the lower ranked player. But the results for those ranked first, second, third or last is similar to the original study.

Unplanned Protocol Deviations

Due to difficulties in recruiting, the show-up fee was raised to from $15 to $30. Further, there were some issues with the experimental software used that led to some games not finishing. Data from these groups (8 groups) was not included in the analysis (the decision to discard this data was taken by Magnus Johannesson directly after being informed about the software problems occurring in the first session; he decided that only groups with complete data for the 8 rounds will be included and that additional sessions will be added until the required sample size is reached). Due to the problems with the software we also over-recruited a bit so that the total sample was 144 instead of the planned 138 (this was to make sure that we reached at least the required 138 observations at the last session). Apart from that the replication experiment has been conducted exactly the way as described above, without any deviations from the protocol.

Discussion

Given the criteria and procedure outlined above, the hypothesis of interest has not been replicated at a significance level of $\alpha < 5\%$. The relative effect size equals -38.79% and the p-value of the hypothesis test is $p = 0.154$.

The point estimate is in the opposite direction of the original study. Overall the fraction of subjects giving the $2 to the lower ranked player is similar to the original study, but there is no tendency in the replication for the second to last or the third to last ranked player to be less likely than other players to give the $2 to the lower ranked player.

The show up fee was higher in the replication than in the original study, and it cannot be ruled out that this has affected the results of the replication.

Figure 1: Probability of choosing to give \$2 to the lower-ranked player in their choice set in the original study and the replication study (the dashed gray line in the figure is the approximate original data and the black solid line is the replication data).
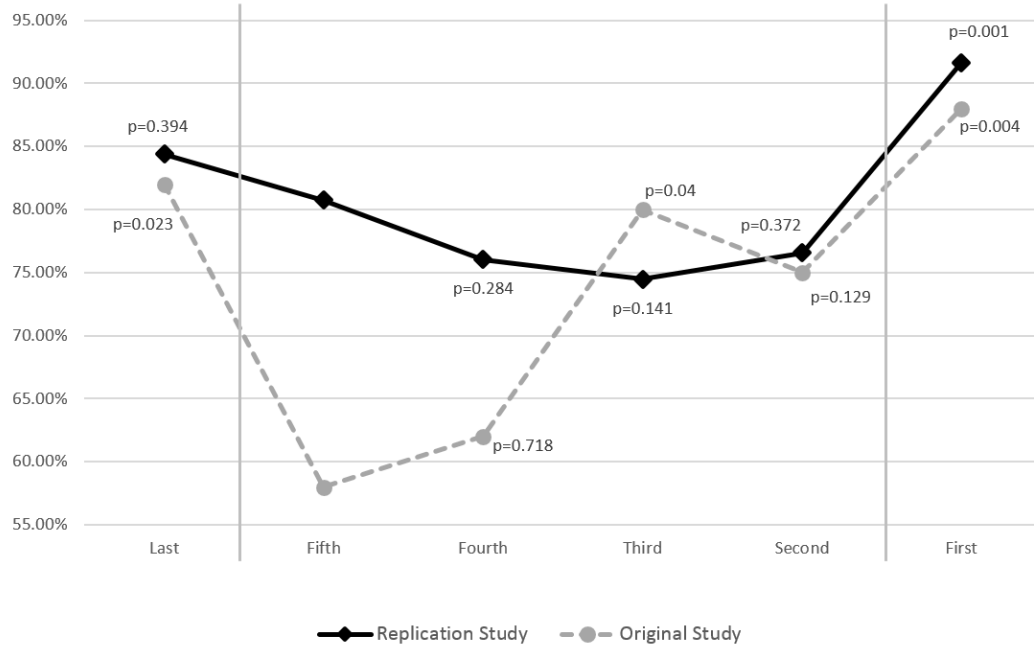
Table 1: Original results and replication results for regression (1) and (2) in Table II in the original study.

	Original Study		*Replication Study*	
	(1)	(2)	(1)	(2)
Second from last	**−0.116***		**0.045**	
	(0.064)		(0.032)	
Second or third from last		−0.147**		0.026
		(0.061)		(0.027)
Mean, dept. var.	0.747	0.747	0.806	0.806
Log-Likelihood	-167.6	-165.5	-510.5	-511.1
Observations	336	336	1152	1152

Note: All regressions are estimated via probit, coefficients are reported as marginal changes in probability. Standard errors clustered by individual in parentheses. All regressions include round and game fixed effects, as well as separate dummy variables for being in the first and last place. The dependent variable is 1 if the subject decided to give to the lower ranked player in their choice set.

*** Significant at the 1 percent level
 ** Significant at the 5 percent level
  * Significant at the 10 percent level