Replication files for:
A Road to Efficiency through Communication and Commitment

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openicpsr-185662

Overview

The code in this replication package constructs all tables, figures, and in-text numbers of the referred article from the original datasources (Avoyan and Ramos (2023)) using software R. Two main files run all the code: one file cleans the data and the main file runs all of the code to generate the data for the tables, figures, in-text numbers in the paper and the online appendix that depend on the data. The replicator should expect both files to run for less than 15 minutes.

Data Availability Statement

All the data were collected by the authors in an original lab experiment. All the data, code, and files used to gather and generate the findings of this study have been deposited in the AEA Data and Code Repository as openicpsr-185662. Section III of the paper details the data collection. Online Appendix and AEA Data and Code Repository openicpsr-185662 contains the complete experimental instructions.

Computational requirements

Software R — the code was last tested on R version 4.2.1 (2022-06-23).

Additional R libraries used: devtools, ggplot2, reshape2, plyr, dplyr, tidyr, plm, grid, stargazer, Hmisc, rms, lmtest, multiwayvcov, sandwich, effects, clusterSEs, gtools, and Rmisc.

The code (cleaning.R) was last run on a 7-core Intel-based laptop with MacOS version 13.4 (22F66) in under 5 minutes. No controlled randomness is used.

The code (main.R) was last run on a 7-core Intel-based laptop with MacOS version 13.4 (22F66) in under 15 minutes. No controlled randomness is used.

Gathering data (z−Tree files and instructions)

The folder **experimental-code** contains z−Tree files (.ztt) corresponding to each of the treatments in the paper, and the labels match the treatment names in the paper. The same folder contains the exit survey file (.ztq). The folder **experimental-instructions** contains pdf files of instructions for each of the treatments in the paper, and the labels match the treatment names in the paper.

Note, the only difference in instructions between sessions at New York University (NYU) in 2015-2016 and 2018, and Indiana University (IU) is that for initially run NYU sessions (years 2015-2016) subjects were paid using Cash Vouchers, which they could cash at the Bursar's office immediately after they received them. In the sessions run at NYU in 2018 and at IU in 2020-2021, the subjects were paid in cash immediately after the experiment was over.

IRB

The data collection was approved by the IRB of New York University (IRB-10-8117) and by IRB of Indiana University (IRB-#2003653598).

Instructions to replicators

To reproduce in-text numbers, graphs and tables and install the required R libraries, proceed as follows. Open cleaning.R and on line 35 replace the pathway to the directory from
"/Users/alaavoyan/Desktop/ReplicationPackage/"
to the directory in which this ReadMe-file is located. Then run the file. The code will generate

data for the next steps in a folder data/working-data-reproduced.

Open main.R and on line 48 replace the pathway to the directory from
"/Users/alaavoyan/Desktop/ReplicationPackage/"
to the directory in which this ReadMe-file is located. Then run the code.

Raw data and corresponding files

There are total of 59 main raw data files (from 59 sessions) produced by z−Tree program, which is used as an interface to gather the data in the paper. Each session also has a survey file, containing the information from the exit survey. Folder /data/raw contains all the raw files.

CSV file names (labels are generated by z−Tree using the last two digits of the year the session was conducted, then month, day, and after "_" time the program was opened) and corresponding treatment names are below in Table 6. Each file is accompanied with another file, with extension "_survey" indicating the file containing the exit survey information.

R codes for data cleaning and generating workable files

cleaning.R contains the code to get relevant variables from z-Tree file format into clean workable .csv files to analyze the data. Note, due to the quasi-continuous nature of the experiment, there are 600 columns for each subject corresponding to 60 seconds of play in one round for 10 rounds in the revision treatments.

cleaning.R generates and saves the following files that are used in the main.R (and one additional file not used in the paper that might be of interest). Additionally, these files are also in a folder /data/working-data.

1. Decisions_revised.csv – all 600-second data that was posted on the graphs
2. Choices_instant.csv – all 600-second button hover data (instant updates)
3. PayoffRelevantData.csv – includes all treatments and only payoff relevant instances (subset of Decisions_revised.csv)
4. MessageAction.csv – includes the messages and action for relevant treatments

5. CheapTalkMessages.csv – only cheap talk message data

6. ResponseTimeData.csv - Response Time data — not used in the paper

The cleaning.R will generate and save the files in data/working-data-reproduced. For ease of access, these files are also in folder /data/working-data folder.

File name	Code line
Decisions_revised.csv	3181
Choices_instant.csv	3180
PayoffRelevantData.csv	3165
MessageAction.csv	3197
CheapTalkMessages.csv	3189
ResponseTimeData.csv	3204

Table 1: File names and code lines from cleaning.R

R codes for all analyses, Tables, and Figures

All the figures generated for the paper using the lab experiment data are in /results/paper folder and /results/appendix.

main.R generates all the numerical calculations, tables and figures included in the paper using the workable data files listed in Table 1 and generated by cleaning.R.

For the results explicitly used in the paper, code contains a comment phrase "# In the paper"; hence, a quick search of the phrase could help find relevant print points of the results. Similarly, for each figure, the code contains a section labeled appropriately (Figure 2, Figure 3a, etc).

For ease of access, **all the numbers/tables/figures** used in the main text can be printed (output) on lines 2010-2203 in main.R, section labeled "Part 4."

Tables and Figures

Tables	File	Lines (calculations)	Print line (output)	Notes
Table 1				No data required
Table 2	main.R	1378-1473	2100-2115	

Table 2: Tables—calculation/save/output code lines

Tables	File	Lines (calculations)	Print line	Notes
Figure 1				No data required
Figure 2	main.R	328-353	2072	saved as .eps on lines 348-353
Figure 3	main.R	354-602	2134	saved as .eps on lines 597-602
Figure 4a	main.R	659-861	2180	saved as .eps on lines 856-861
Figure 4b	main.R	863-1141	2181	saved as .eps on lines 1136-1141

Table 3: Figures—calculation/save/output code lines

Online Appendix Tables and Figures

Tables	File	Lines (calculations)	Print line	Notes
Table C.1	main.R	2310-2423	2385 ED(PR)	Table needs
			2423 NRF	to be manually
		889-899	895 ED(I)	created by
			899 FC(I)	combining outputs
		1016-1085	1086 FC(PR)	from Print lines.
Table D.1	main.R	1216-1373	2073-2094	
Table D.2	main.R	1216-1373	2073-2094	
Table D.3	main.R	1544-1623	1614-1623	
Table D.4	main.R	1624-1712	1702-1712	
Table D.5	main.R	1474-1509	1500-1509	
Table D.6	main.R	1510-1543	1534-1543	
Table D.7	main.R	1714-1743	1745-1746	

Table 4: Online Appendix Figures—calculation/save/output code lines

Figures	File	Lines	Save lines	Notes
Figure B1				No data required
Figure D1a	main.R	2238-2266	2297-2302	
Figure D1b	main.R	2270-2294	2304-2309	
Figure D2	main.R	3300-4594		ECDFs in Figures D2, D3, D4, D5
Figure D3	main.R	3300-4594		are all calculated and saved
Figure D4	main.R	3300-4594		on lines 3300-4594
Figure D5	main.R	3300-4594		
Figure D6a	main.R	659-789	784-789	
Figure D6b	main.R	863-1203	1198-1203	
Figure D7	main.R	2488-2704	2708-2766	
Figure D8	main.R	3108-3270	3272-3298	
Figure D9	main.R	2929-3074	3080-3104	
Figure D10	main.R	2769-2816	2819-2832	
Figure D11	main.R	2833-2912	2915-2928	

Table 5: Online Appendix Figures—calculation/save code lines

Table 6: Raw zTree files and corresponding treatments

151214_1046	–	Baseline, Session 1
160222_1450	–	Baseline, Session 2
151209_1044	–	Revision Mechanism, Session 1
151210_1332	–	Revision Mechanism, Session 2
160217_1543	–	Revision Mechanism, Session 3
160224_1313	–	Revision Cheap Talk, Session 1
160224_1426	–	Revision Cheap Talk, Session 2
160224_1617	–	Revision Cheap Talk, Session 3
180402_1606	–	Baseline, Session 3
180402_1410	–	Revision Mechanism, Session 4
180402_1242	–	Revision Cheap Talk, Session 4
180410_1715	–	Random RM, Session 1
180411_1812	–	Random RM, Session 2
180413_1257	–	Random RM, Session 3
180413_1711	–	Random RM, Session 4
180425_1116	–	Standard Cheap Talk, Session 1
180425_1309	–	Standard Cheap Talk, Session 2
180425_1709	–	Standard Cheap Talk, Session 3
180426_1510	–	Standard Cheap Talk, Session 4
180430_1715	–	Infrequent Revision Mechanism, Session 1
180502_1258	–	Infrequent Revision Mechanism, Session 2
180502_1708	–	Infrequent Revision Mechanism, Session 3
180507_1654	–	Infrequent Revision Mechanism, Session 4
180605_1112	–	Revision Cheap Talk Memory, Session 1
180718_1714	–	Revision Cheap Talk Memory, Session 2
180719_1411	–	Revision Cheap Talk Memory, Session 3
180720_1409	–	Revision Cheap Talk Memory, Session 4

201021_1149 – Synchronous RM, Session 1
201021_1344 – Synchronous RM, Session 2
201022_1147 – Synchronous RM, Session 3
201104_1053 – Synchronous RM, Session 4
201104_1346 – Synchronous RM, Session 5
201116_1339 – Synchronous RM, Session 6
201117_1439 – Synchronous RM, Session 7
210325_1641 – Synchronous RM, Session 8
201022_1548 – RM at IU, Session 1
201027_1347 – RM at IU, Session 2
201027_1445 – RM at IU, Session 3
201027_1542 – RM at IU, Session 4
201105_1434 – RM at IU, Session 5
201118_1104 – RM at IU, Session 6
201118_1340 – RM at IU, Session 7
201119_1443 – RM at IU, Session 8

210322_1440 – RM VHBB, Session 1
210322_1544 – RM VHBB, Session 2
210322_1637 – RM VHBB, Session 3
210323_1240 – RM VHBB, Session 4
210323_1339 – RM VHBB, Session 5
210323_1637 – RM VHBB, Session 6
210324_1706 – RM VHBB, Session 7
210325_1547 – RM VHBB, Session 8
210405_1640 – Richer RCT, Session 1
210406_1635 – Richer RCT, Session 2
210414_1534 – Richer RCT, Session 3
210414_1638 – Richer RCT, Session 4
210419_1534 – Richer RCT, Session 5
210421_1656 – Richer RCT, Session 6
210427_1036 – Richer RCT, Session 7
210427_1641 – Richer RCT, Session 8

For questions and inquires, contact aavoyan@iu.edu.

References

Avoyan, Ala, and João Ramos. 2023. "Replication data for: A Road to Efficiency through Communication and Commitment." American Economic Association [publisher], Inter-university Consortium for Political and Social Research [distributor]. https://doi.org/10.3886/E185662V1.