Data Guide

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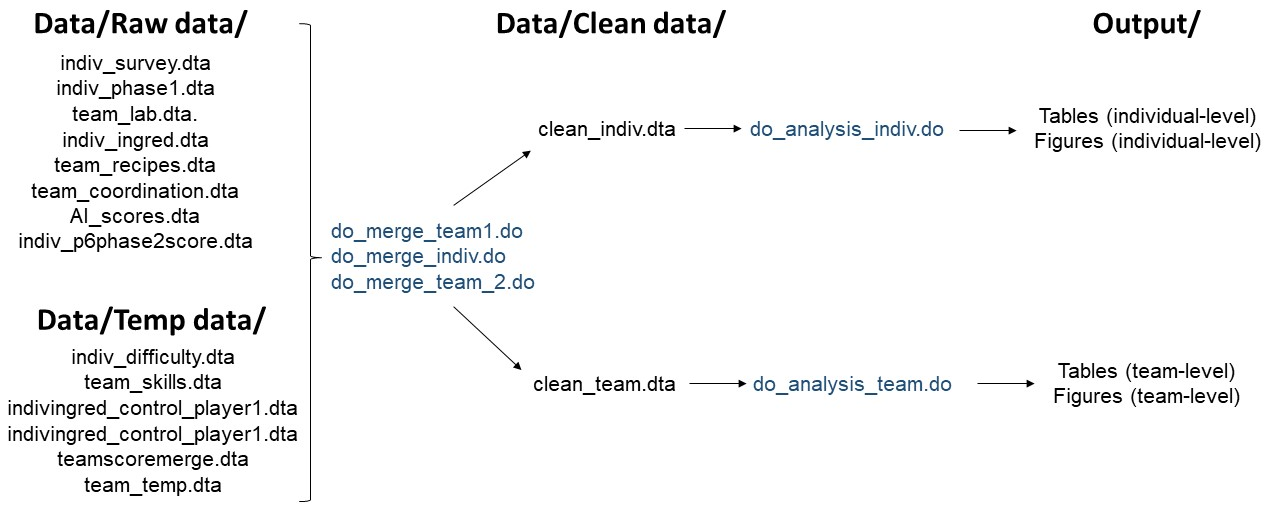
This document contains a data guide for replicating the results in "Super Mario Meets AI: Experimental Effects of Automation and Skills on Team Performance and Coordination." Figure 1 contains an overview of the folder structure, while the remainder of the document walks through the data, do files, and how to replicate the tables and figures of the article.

Figure 1: Overview of the folder structure



Data

Raw data

The raw data exists at both the individual and the team level. At the individual level, we have data on survey responses, skills in phase 1 training, performance in phases 2 and 3, and AI performance in pre-testing. At the team level, we have data on performance in phases 2 and 3, coordination failures in phases 2 and 3, and the recipes each team saw for each round.

- **Raw data/indiv_survey.dta**: This file contains survey response data for all participants of the experiment.
- **Raw data/indiv_phase1.dta**: This file contains phase 1 skills scores for all participants of the experiment
- **Raw data/team_lab.dta**: This file contains treatment identifiers and team performance scores for all teams in the experiment.

- **Raw data/indiv_ingred.dta**: This file contains treatment identifiers and individual performance scores for all participants in the experiment.
- **Raw data/team_recipes.dta**: This file contains the recipes that each team saw for each round.
- **Raw data/team_coordination.dta**: This file contains the number of coordination failures for each team in the experiment.
- **Raw data/AI_scores.dta**: This file contains the number of ingredients returned by the AI player in pre-testing.
- **Raw data/indiv_p6_phase2score.dta**: This file contains the number of ingredients returned by the new hires in phase 2.

Temp data

In the process of cleaning the raw data, some variables are required to go from the team-level to the individual-level, and vice versa. These are stored in the temp data folder, and are subsequently called by DO_MERGE_INDIV.DO and DO_MERGE_TEAM_2.DO.

- **Temp data/indiv_difficulty.dta**: This file contains round difficulty measures for each team.
- **Temp data/team_skills.dta**: This file contains skill measures for each team.
- **Temp data/indivingred_control_player1.dta**: This file (and *_player2.dta) contains performance scores for each participant.
- **Temp data/teamscoremerge.dta**: This file contains performance scores for each team.
- **Temp data/team_temp.dta**: This file contains treatment identifiers for each team.

Clean data

The cleaned data exists at both the individual and team levels, and is used to reproduce all of the tables and figures in the paper.

- **Clean data/clean_indiv.dta**: This file contains cleaned data at the participant level.
- **Clean data/clean_team.dta**: This file contains cleaned data at the team level.

Code

The code in the attached folder inputs the raw data, cleans it, and then creates the tables and figures in the manuscript. In order to do so, you must run the following do files in the specified order:

- To create the cleaned data:
  1. Run DO_MERGE_TEAM1.DO.
  2. Run DO_MERGE_INDIV.DO.
  3. Run DO_MERGE_TEAM1.DO.
- To create the tables and figures:
  1. Run DO_ANALYSIS_TEAM.DO.
  2. Run DO_ANALYSIS_INDIV.DO.

We have also included a master do file (DO_MASTER.DO) that will run all of the files in the proper order (you just need to change the directory paths atop each do file).

Replicating the results

Table 1 displays a breakdown of the main text tables, and where they can be found in the replication materials, and Table 2 does so for the main text figures. Meanwhile, Tables 3 and 4 provide the same information for the tables and figures in the appendix, respectively.

Table 1: Main text tables

Number	Title of Table	Do-File	Line
(1)	(2)	(3)	(4)
1A	Descriptive Statistics (Participant-level)	do_analysis_indiv.do	29
1B	Descriptive Statistics (Team-level)	do_analysis_team.do	30
2	Effect of AI and new hires on ingredients returned	do_analysis_team.do	40
3	Effect of AI and new hires on coordination failures	do_analysis_team.do	114
4	Impact on trust, effort, and AI attitudes	do_analysis_indiv.do	39
5A	Skill analysis (Heterogeneity by skill)	do_analysis_team.do	188
5B	Skill analysis (Impact of skills on team performance)	do_analysis_team.do	259

Table 2: Main text figures

Number	Title of Figure	Do-File	Line
(1)	(2)	(3)	(4)
1	Kernel density plot of performance: AI vs humans	do_analysis_indiv.do	65
2	Experimental manipulations	N/A	N/A
3A	Cumulative performance plots (Tacit vs explicit, in the control group)	do_analysis_team.do	286
3B	Cumulative performance plots (AI vs new hire vs control)	do_analysis_team.do	343

Table 3: Appendix tables

Number	Title of Table	Do-File	Line
(1)	(2)	(3)	(4)
B.1	Effect of tacit manipulation on team performance	do_analysis_team.do	418
B.2	Effect of tacit manipulation on explicit communication	do_analysis_indiv.do	101
B.3	Heterogeneity by team structure and task difficulty	do_analysis_team.do	459
B.4	Correlation between coordination failures and team ingredients returned	do_analysis_team.do	481
B.5	Impact on trust, effort, and AI attitudes, by tacit and explicit conditions	do_analysis_indiv.do	113
B.6	Effect on trust items	do_analysis_indiv.do	131
B.7	Effect on effort items	do_analysis_indiv.do	143
B.8	Effect on AI attitude items	do_analysis_indiv.do	155
B.9	Impact on trust, effort, and AI attitudes, by tacit and explicit conditions	do_analysis_indiv.do	167
B.10	Correlation between individual skill and individual ingredients returned	do_analysis_indiv.do	181
B.11	Correlation between team skills and team ingredients returned	do_analysis_team.do	510
B.12	Impact of team assignment on AI performance	do_analysis_indiv.do	209
B.13	Impact of partner assignment on high-skilled team performance	do_analysis_indiv.do	228
B.14	Impact of partner assignment on coordination failures in high-skilled teams	do_analysis_team.do	539
B.15	Heterogeneity in direct and spillover effects by team	do_analysis_team.do	553
B.16	Weights from prediction algorithm	do_merge_team_1.do	57
B.17	Correlation between round difficulty and team performance	do_analysis_team.do	596

Table 4: Appendix figures

Number	Title of Figure	Do-File	Line
(1)	(2)	(3)	(4)
A.1	Nintendo Switch Controller	N/A	N/A
A.2	Distribution of performance	do_analysis_indiv.do	256
A.3	Experimental task	N/A	N/A
A.4	Structure of experiment	N/A	N/A
B.5	Aggregate performance plot, directly-impacted teams	do_analysis_team.do	633
B.6	Aggregate performance plot, spillover teams	do_analysis_team.do	634
B.7	AI performance by team assignment	do_analysis_indiv.do	277
B.8	High-skilled teams performance by partner assignment	do_analysis_indiv.do	300
B.9	Skill heterogeneity by round	do_analysis_team.do	716
B.10	Co-worker preferences	do_analysis_indiv.do	321