

# Inferred Attractiveness

Guide to scripts, summarized data, and plots

## Names of files are color coded below:

- **Scripts appear in blue text**
- **Data appear in orange text**
- **Plots appear in purple text**

## Data and scripts are uploaded in two places:

- OSF: all raw data and scripts are archived here: <https://osf.io/r673j/>
- GitHub: all scripts and data can be run from code in the repository here: [https://github.com/EAHobson/inferred\\_attractiveness](https://github.com/EAHobson/inferred_attractiveness)

## The general steps in the data processing, analyzing, and plotting are summarized below:

- Data processing script: “**Step01\_import\_data.R**” -- Start at Step02 if you want to use the already-formatted data rather than the raw version, or start at Step03 if you just want to reproduce the plots with the already-analyzed data (Step02 is computationally-intensive)
  - This R script imports and formats all the raw data files outputted by the Mathematica script into a format easier to store and analyze. All raw model output are stored in the folder “Model output” on OSF (<https://osf.io/vfcph>).
  - The script also adds metadata (model parameters, run number, etc)
  - The model abbreviations used in the metadata are defined in the descriptions for each model in the supplemental information “**Exemplar model runs, Figure set S3**” which precedes the plots in S3
  - Output: Data folder (on GitHub) “**Rawdata\_compiled**” which contains all raw data compiled by each model variant
- Data analysis script: “**Step02\_summarize raw time series data.RMD**”
  - This script is the initial summary of raw time series data from model runs
  - Output: In the “**Cached\_data**” folder, two types of summaries are saved:
    - “**summary.fixation**”... type files, which save data on the generation at which trait variation ceased
    - “**summary.preferencesXthresholds**”... type files, which save data on the patterns of trait preferences in relation to a series of “thresholds” (We use the 25%/75% data in the main paper, but more are summarized here).
- Plotting script: We plotted two raw versions of the time series to initially visualize all the raw results.

- **NOTE: start here to regenerate all the plots in the paper with cached data (cached from summaries produced during Steps 1 and 2 above)**
- First, we plotted exemplar runs from each model parameter combination. For each combination, we plotted the Run 01 (out of 20 replicate runs) for each s and a setting for each model and each group size.
  - These plots are produced with the script “[Step03a\\_plot raw time series \(run01 examples\).RMD](#)”.
  - These plots are saved to the folder “[Plots\\_raw timeseries](#)”
  - These plots are shown in Supplement 3 of the paper (Fig S3.i to S3.xi).
- Second, we plotted all of the time series (all 20 replicate runs per s/a combination, group size, and model setting). Each series of 20 replicate runs is saved as a separate pdf file. (These plots were not reported in the paper)
  - These plots are produced with the script “[Step03b\\_plot ALL raw time series \(book of plots\)](#)”
  - These plots are saved to the folder “[Plots\\_book of plots \(all raw time series\)](#)”
- Data analysis script: “[Step04a\\_summarize tseries preferences & traits for heatmaps.Rmd](#)”
  - This script summarizes patterns in preferences and trait variation for each s/a combination, for each group size, and for each model type.
  - These summaries are used to plot the heat maps seen in the main text in the figures [Fig. 1 \(c/d\)](#), [Fig. 3 \(aii/aiii and bii/biii\)](#), and [Fig. 4 \(b/c\)](#).
  - These summaries are also used to plot the heat maps seen in the supplemental figures [Fig. S1 \(aii/aiii, bii/biii, and cii/ciii\)](#).
  - This script also pulls out four exemplar raw timeseries runs and plots them. These appear in the main text as panels in [Fig. 1\(b\)](#), [Fig. 3 \(ai/bi\)](#), and [Fig. 4\(a, but see below\)](#).
  - These time series exemplars also appear in the supplemental in [Figure S1\(ai/bi/ci\)](#)
    - A slight variation of this script plots the same time series, but for all Run 02 exemplars (See “[Step04\\_summarize tseries preferences & traits for heatmaps RUN02 exemplars.RMD](#)”). We plotted the Run 02 exemplars because in one case, the Run 01 exemplar happened to have an unusual pattern that differed from the general pattern seen in the rest of the 20 replicate runs. In this case, we subbed in a Run 02 exemplar to better illustrate the main pattern we highlighted ([Figure 4a, the panel for s = 0.1 and a = 0.7 is Run 02](#); all other time series exemplars are from Run 01s).
- Plotting script “[Step05a\\_rank order plots.RMD](#)”
  - This script was used to plot the data shown in [Figure 2](#) in the main text
  - We used a slight variation of the script (“[Step05b\\_rank order plots \(supp mat\).RMD](#)”) in the supplemental materials to plot [Figure S2](#).