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Project Part 2

10-30-25

Dataset 1: ***Sex differences in longitudinal personality stability in chimpanzees***

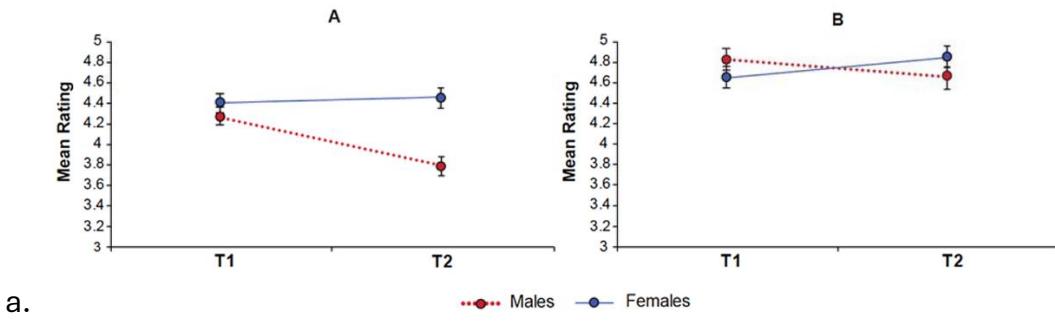
1. Data and Research Questions

- a. The researchers studied a group of chimpanzees and assessed their personality traits at two different time points, from adolescence to adulthood (T1 and T2; 10 years apart). Caretakers who were familiar with each chimpanzee rated them across several personality domains, including openness, agreeableness, dominance, reactivity, methodicalness, and extraversion. Each individual received numerical scores for these traits based on standardized rating scales called a seven-point Likert scale. The same tools used to measure personality in T1 were also used in T2. The study aimed to measure how stable personality traits are across time and whether there are sex differences in personality stability. In short, the 14 features of the 50 individual chimpanzee observations at two different timepoints are:
 - i. ID (unique chimpanzee identifier)
 - ii. Sex (coded: 1 = male, 2 = female)
 - iii. T1 traits:
 - A. T1 openness, T1 agreeableness, T1 reactivity, T1 methodical, T1 dominance, T1 extraversion
 - iv. T2 traits:
 - A. T2 openness, T2 agreeableness, T2 reactivity, T2 methodical, T2 dominance, T2 extraversion
- b. The data gives information about each individual chimpanzee's behavior across time and for the different sexes. They want to measure whether there's a change in personality after some time, in this case they measure the chimps 10 years apart. One other research question that can be answered is whether or not there is a correlation between personality factors for the chimps that did have a change in personality. Such as how strong is the correlation between dominance and extraversion versus agreeableness and methodicalness. If there were chimps in which dominance only increase but not extraversion, could have to do with their other personality factors?

2. Description of the data

- a. There are 50 rows and 14 columns. The file gives the personality score of each chimpanzee at both timepoints. All the data that is used for the figures is in this file.
- b. The data is formatted as separate columns. Each observation gives the ID, sex, and personality traits for both timepoints of each chimp.

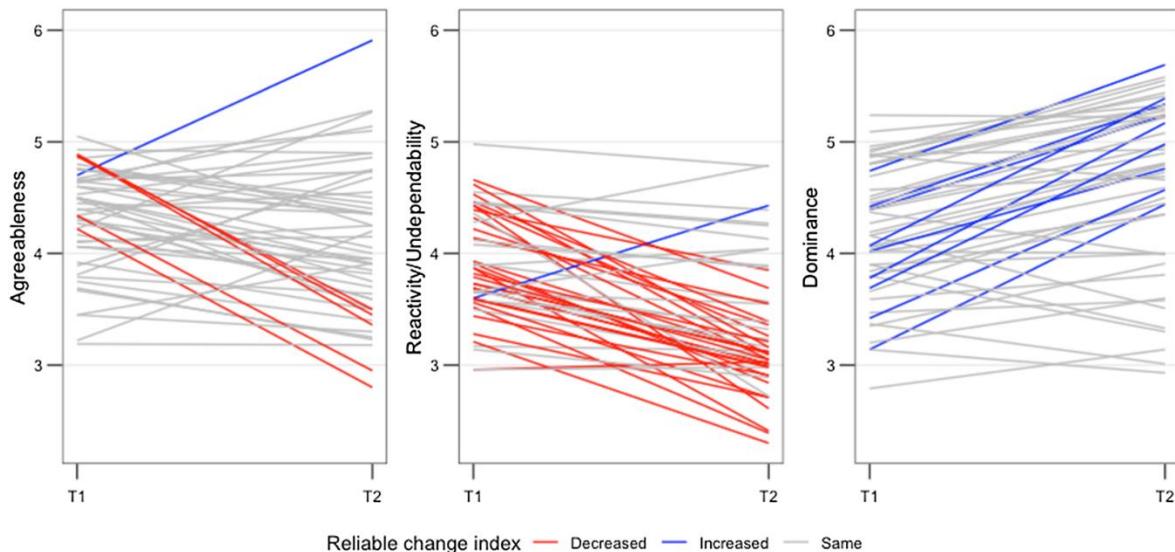
3. Figures and Tables



a.

Figure 1. Results revealed significant sex by time interactions for agreeableness (A) and openness (B)

- Figure 1 from Rawlings et al., 2020. The figure here represents the mean agreeableness (figure A) and the mean openness (figure B) across time (x-axis) for both sexes (males in red; females in blue). The mean and its standard deviation are given as points with error bars, respectively.
- Here the authors wanted to show the interaction of agreeableness and openness with sex of the chimpanzee. In figure A in particular, they show that male agreeableness significantly reduces across time, while females remain the same. This supports the author's original hypothesis that females would be rated higher in agreeableness than males, however they expected female agreeableness to increase, not males to decrease.
- From this figure, we can conclude there is an interaction between sex and personality across time, specifically agreeableness and openness. However, since these are the only one that were plotted, it's assumed that only these two factors interacted with sex.

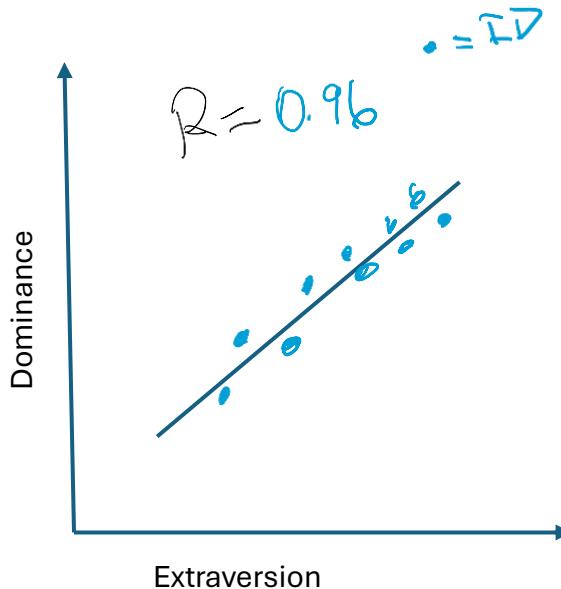


b.

Figure 2. Individual reliable change index (RCI) values for agreeableness, dominance and reactivity/undependability, which all showed significant mean level change over time. Red lines show individuals whose RCI value significantly decreased, blue lines indicate individuals whose RCI value significantly increased and grey lines indicate individual's

whose RCI value did not change significantly over the time points

- i. Figure 2 from Rawlings et al., 2020. The figure shows the factors agreeableness, dominance, and reactivity for each individual ape, regardless of sex, across both time points. The colors represent the types of changes (increase, decrease, or stayed the same).
- ii. The authors wanted to visualize the change for each individual and determine that the results were not due to measurement error. (*The RCI is used to distinguish individual change that is statistically significant from change that may have occurred owing to measurement error*).
- iii. From this figure we can conclude that average change doesn't necessarily apply to the whole sample. Take agreeableness, there's only a few chimps that decreased in that factor, while most observations remained the same. Further, we can conclude that changes don't only apply to just one sex, reactivity appears to drop for almost all individuals in the study.
- c. It would be interesting to show the correlation between two personality factors for both sexes. In the paper they describe that males had an increase in dominance and extraversion, while females increased in agreeableness and openness. A correlation plot of these factors might show how strong the relationship is between them and whether or not you need one to influence the other. If the relationship is weak, then there are outside factors that influence this agreeableness/extraversion. If it's strong, then it would question why for some animals (even humans) why dominance doesn't automatically increase extraversion.



4. There was no feedback given to this dataset.