

Lab 5 Activity

PSYC 7804 - Spring 2026

We will be using the same data from Lab 6. Click [here](#) and copy the code from the chunk on the right and run it to load the data.

```
dat <- rio::import("https://fabio-setti.netlify.app/data/Hierarc_data.csv")
```

Our variables of interest are once again:

- `y = happiness`
- `x = age`
- `z = friends`.

1. In Lab 5 we observed that the partial correlation between two variables accounting for a third variable is the correlation of the residuals from $x \sim z$ and $y \sim z$:

- What is the resulting regression coefficient if we run a regression predicting the residuals of y with the residuals of x ? How is this type of regression coefficient called? (This was discussed in Lab 4)
- Calculate the partial correlation between y and x .
- can you transform the residuals of y and the residuals of x such that running a regression between the two will give a slope that equals the partial correlation?

2. Run a regression model with `friends` predicting `happiness`. Then, run an additional model that also includes `age` as a predictor. Is the improvement in R^2 significant when adding `age` to the model?

- Calculate ΔR^2 .

3. Compare the two models from the previous question with both AIC and BIC. What model should you select according to each? Do they “agree” with each other?

- Do either the BIC or the AIC “agree” with the ΔR^2 significance test from the previous question?