

# Solution in Stata: Exercises Day 5

PSY8003

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## Exercise 1: Factor analysis

- Scree-plot suggests bw 4 and 5 factors
- Parallel analysis suggests somewhat more, up to 7 or 8
- we go with 5 because of theory (Big-Five)
- the loadings are as expected but there are quite some cross-loadings as well
- the CFA fit is not great and there are quite a few cross-loadings; not sure why that is the case, this is supposed to be a well-validated questionnaire

```
use "../data/psychbfi.dta"

factor A1-05, pf

screeplot, mean
quietly graph export pics/ex5_scree.png, replace

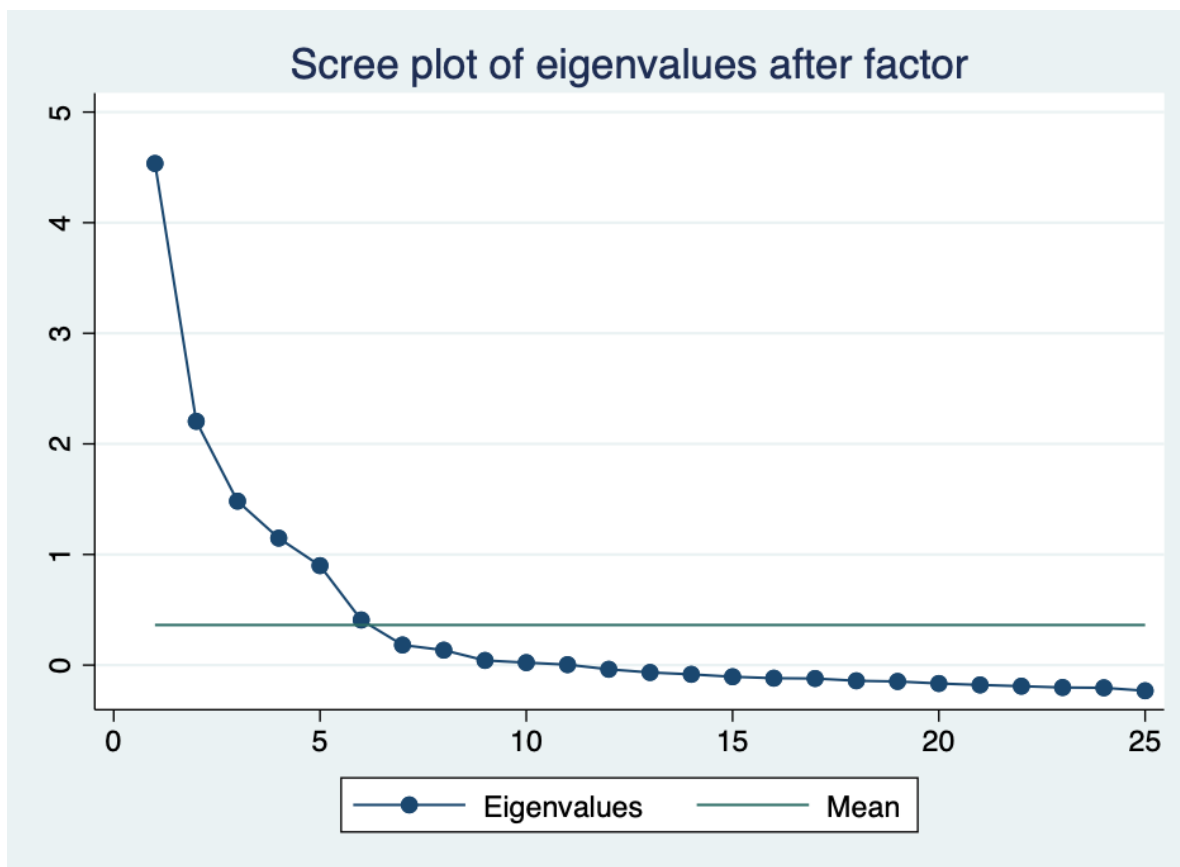
fapara, reps(25)
quietly graph export pics/ex5_fapara.png, replace

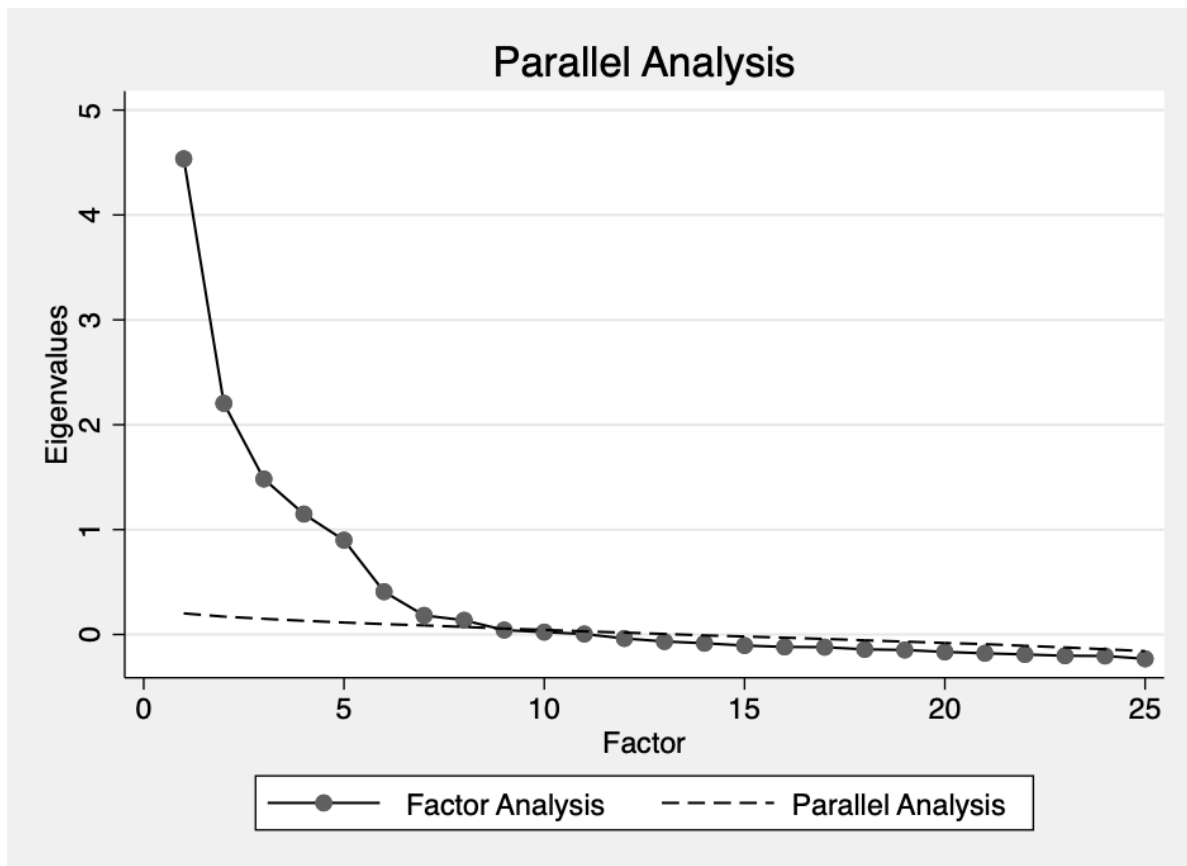
quietly factor A1-05, ipf factors(5) blanks(.3)
rotate, oblique promax(3) blanks(.4)

estat common
estat kmo

sem (Agreeableness -> A1 A2 A3 A4 A5) (Openness -> O1 O2 O3 O4 O5) ///
    (Conscientiousness -> C1 C2 C3 C4 C5) (Extraversion -> E1 E2 E3 E4 E5) ///
    (Neuroticism -> N1 N2 N3 N4 N5), nocapslatent latent(Agreeableness Conscientiousness Ope
```

```
estat gof, stats(all)
```





## Exercise 2: Multi-level regression

- there is a clear positive effect between homework score and math score across all students
- however, in the MLM, this effect is gone. Looking at the individual slopes, there is huge variability between schools. In some schools, students profit a lot from homework, in others they don't.
- at the individual level, socio-economic status (`ses`) is a good predictor for math achievement
- at the school level, mean-SES is predictive of a school's students math achievements

```
use "../data/imm10.dta"
reg math homework
```

```
mixed math homework || schid: homework
mixed math homework ses meanses || schid: homework
```