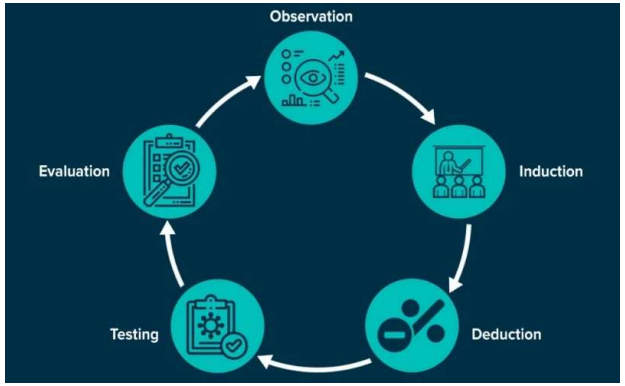
Empirical research in management and economics

Exercise

Thorsten Pachur, Linus Hof, Rebecca West, Sebastian Hellmann, Nuno Busch

Technical University of Munich
School of Management
Chair of Behavioral Research Methods



Exercise I: Internal consistency

Short version of the Unified Scale to Assess Individual Differences in Intuition and Deliberation (USID)

Deliberative decision style (6 items)

- "Developing a clear plan is very important to me.
- "I like detailed action plans."
- "When I make decisions, I proceed step-by-step."
- "Before making decisions I usually think about the goals I want to achieve."
- "I prefer making detailed plans rather than leaving things to chance."
- "I usually have clear, explainable reasons for my decisions."

Intuitive decision style (15 items)

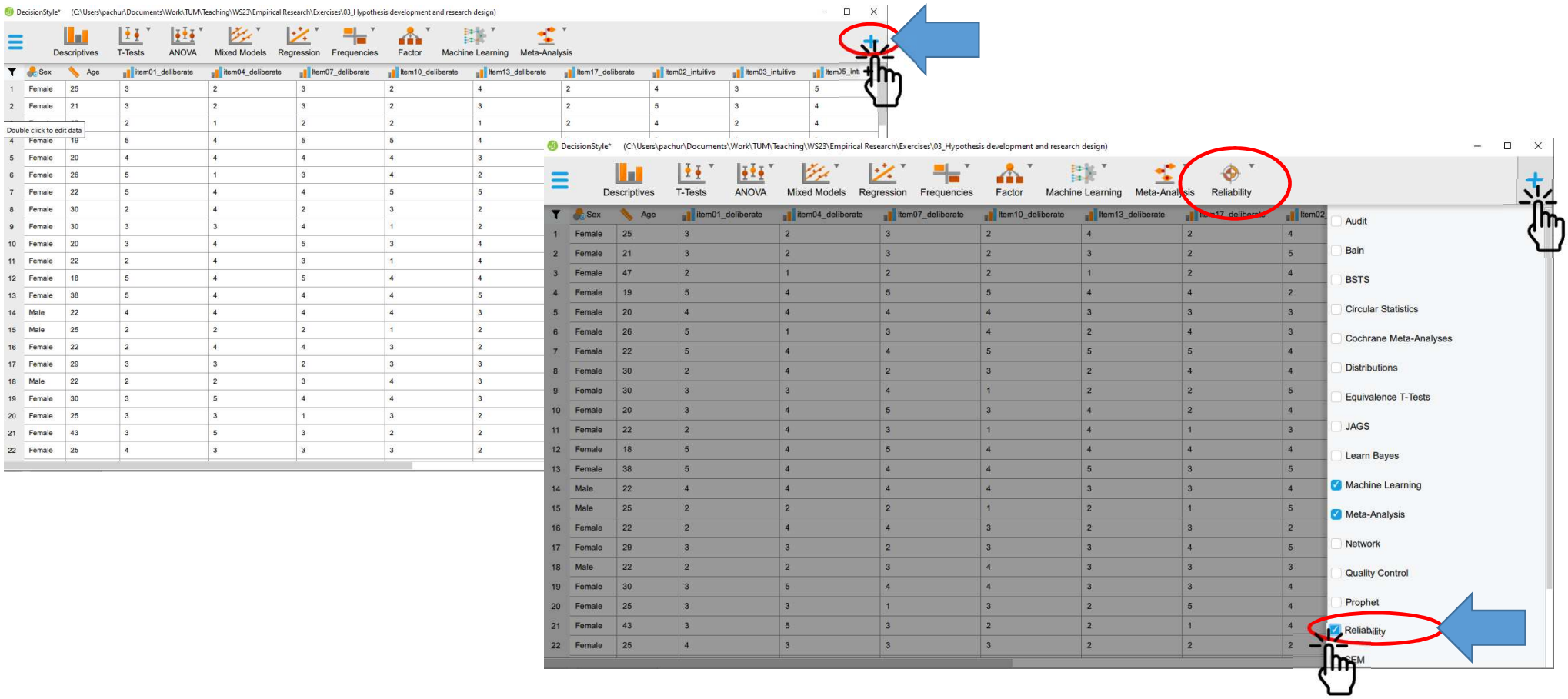
- "With most decisions it makes sense to completely rely on your feelings."
- "Using my gut feelings usually works well for me in figuring out problems in my life."
- "Thinking is not my idea of an enjoyable activity."
- "I am not a very analytical thinker."
- "I am often aware of how to cope with a stressful situation even before I review all its aspects."
- …

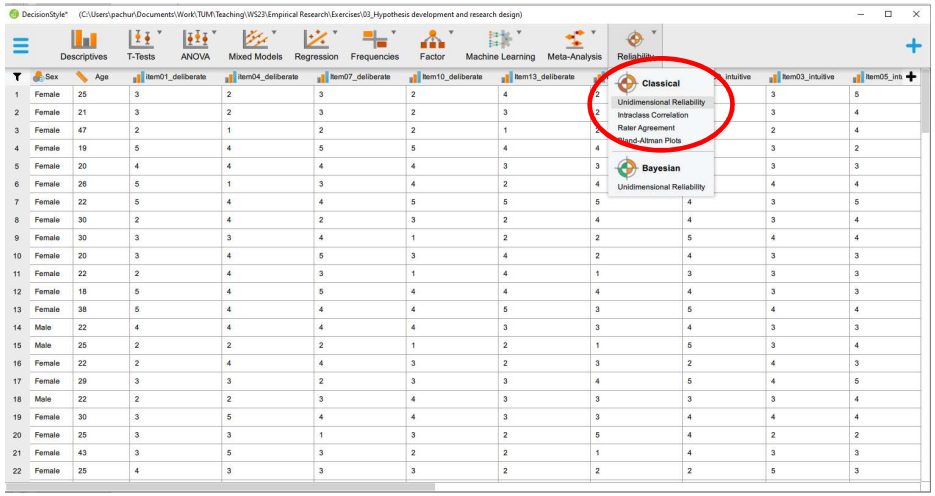
→ Ratings on 5-point scale ranging from 1 = "I don't agree" to 5 = "I agree completely".

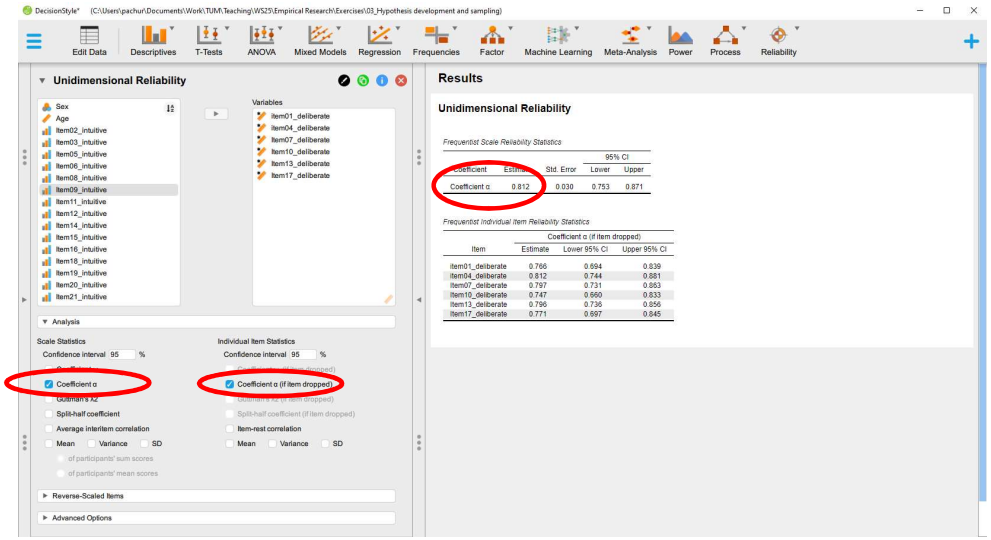
Pachur & Spaar (2015)

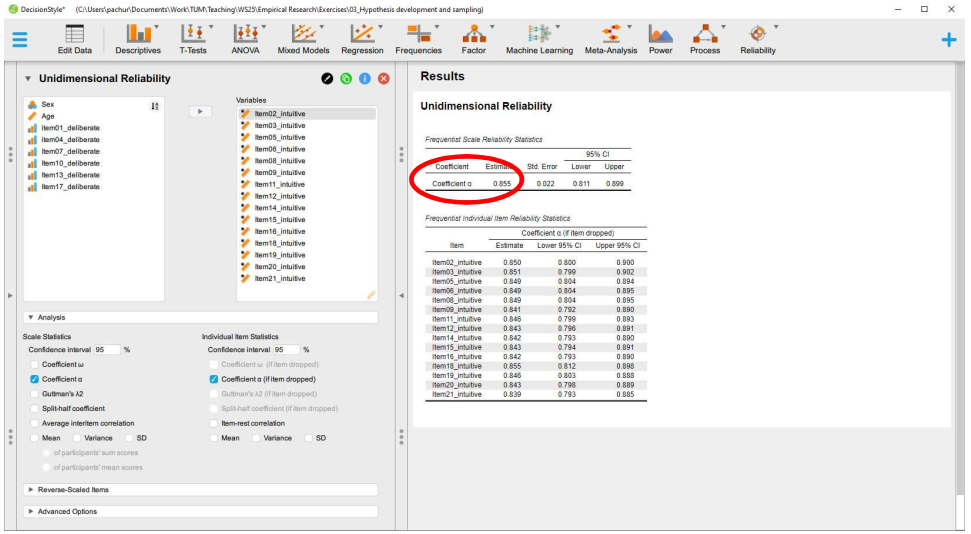
Exercise I: Internal consistency

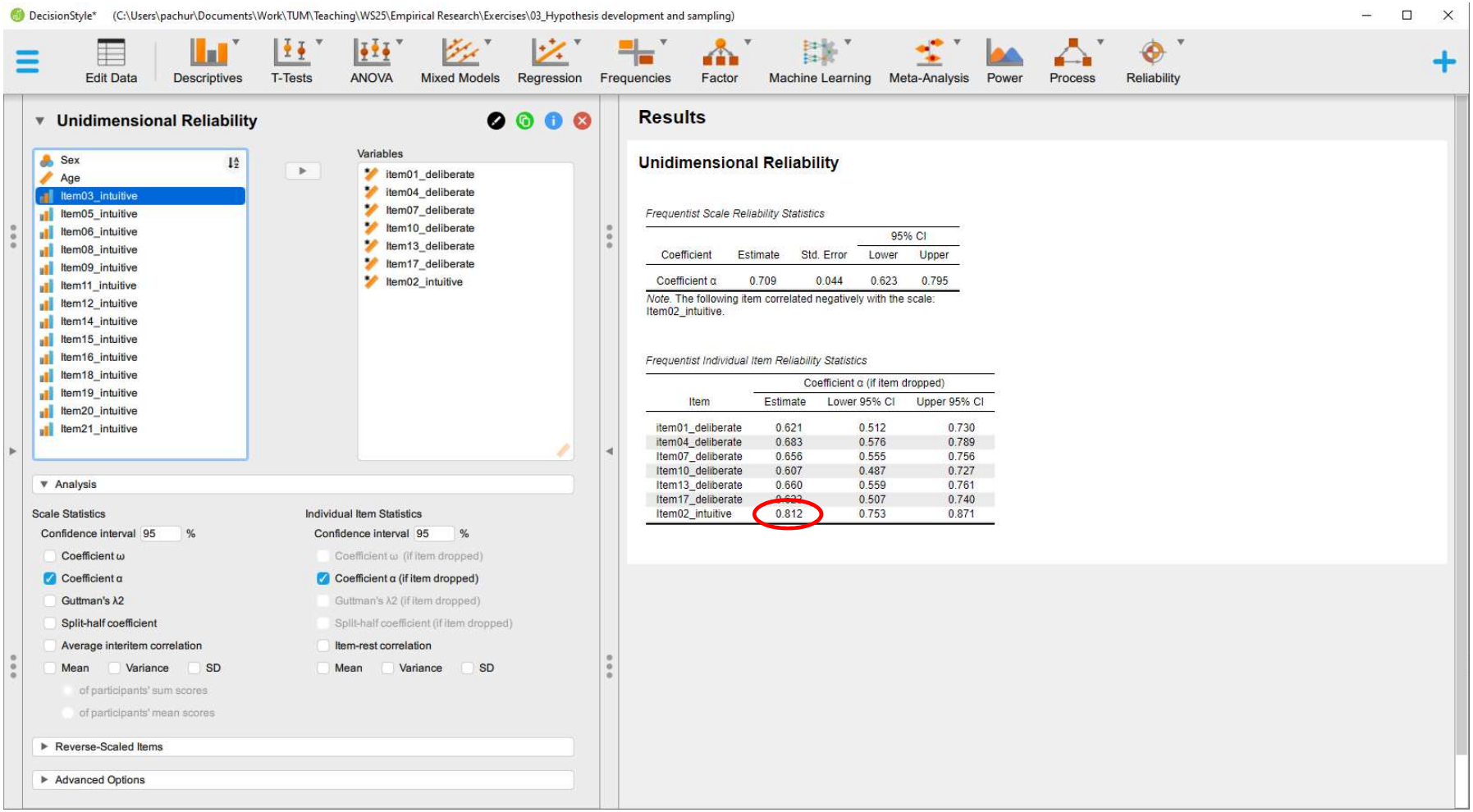
- Start JASP and open the file “DecisionStyle.csv“ (can be found in the Materials folder)
- Compute Cronbach‘s α for the deliberative decision style scale and for the intuitive decision style scale
- Do the scales show satisfactory internal consistency? < 0.8 :(
- What happens if you submit a mix of items of the two scales to an analysis of internal consistency?


DecisionStyle* (C:\Users\pachur\Documents\Work\TUM\Teaching\WS23\Empirical Research\Exercises\03_Hypothesis development and research design)
Descriptives
T-Tests
ANOVA
Mixed Models
Regression
Frequencies
Factor
Machine Learning
Meta-Analysis
Reliability
Double click to edit data
Audit
Bain
BSTS
Circular Statistics
Cochrane Meta-Analyses
Distributions
Equivalence T-Tests
JAGS
Learn Bayes
Machine Learning
Meta-Analysis
Network
Quality Control
Prophet
Reliability
SEM


Descriptives
T-Tests
ANOVA
Mixed Models
Regression
Frequencies
Factor
Machine Learning
Meta-Analysis
Reliability
Classical
Unidimensional Reliability
Intraclass Correlation
Rater Agreement
Bland-Altman Plots
Bayesian
Unidimensional Reliability


Edit Data
Descriptives
T-Tests
ANOVA
Mixed Models
Regression
Frequencies
Factor
Machine Learning
Meta-Analysis
Power
Process
Reliability
Unidimensional Reliability
Results
Unidimensional Reliability
Coefficient α
0.812
0.030
0.753
0.871


Edit Data
Descriptives
T-Tests
ANOVA
Mixed Models
Regression
Frequencies
Factor
Machine Learning
Meta-Analysis
Power
Process
Reliability
Unidimensional Reliability
Results
Unidimensional Reliability
Coefficient α
0.855
0.022
0.811
0.899


DecisionStyle* (C:\Users\pachur\Documents\Work\TUM\Teaching\WS25\Empirical Research\Exercises\03_Hypothesis development and sampling)
Edit Data
Descriptives
T-Tests
ANOVA
Mixed Models
Regression
Frequencies
Factor
Machine Learning
Meta-Analysis
Power
Process
Reliability
Unidimensional Reliability
Sex
Age
Item03_intuitive
Item05_intuitive
Item06_intuitive
Item08_intuitive
Item09_intuitive
Item11_intuitive
Item12_intuitive
Item14_intuitive
Item15_intuitive
Item16_intuitive
Item18_intuitive
Item19_intuitive
Item20_intuitive
Item21_intuitive
Variables
item01_deliberate
Item04_deliberate
Item07_deliberate
Item10_deliberate
Item13_deliberate
Item17_deliberate
Item02_intuitive
Analysis
Scale Statistics
Confidence interval 95 %
Coefficient ω
Coefficient α
Guttman's λ2
Split-half coefficient
Average interitem correlation
Mean Variance SD
of participants' sum scores
of participants' mean scores
Individual Item Statistics
Confidence interval 95 %
Coefficient ω (if item dropped)
Coefficient α (if item dropped)
Guttman's λ2 (if item dropped)
Split-half coefficient (if item dropped)
Item-rest correlation
Mean Variance SD
Reverse-Scaled Items
Advanced Options
Results
Unidimensional Reliability
Frequentist Scale Reliability Statistics
95% CI
Coefficient Estimate Std. Error Lower Upper
Coefficient α 0.709 0.044 0.623 0.795
Note. The following item correlated negatively with the scale: Item02_intuitive.
Frequentist Individual Item Reliability Statistics
Coefficient α (if item dropped)
Item Estimate Lower 95% CI Upper 95% CI
item01_deliberate 0.621 0.512 0.730
item04_deliberate 0.683 0.576 0.789
Item07_deliberate 0.656 0.555 0.756
Item10_deliberate 0.607 0.487 0.727
Item13_deliberate 0.660 0.559 0.761
Item17_deliberate 0.740
Item02_intuitive 0.812 0.753 0.871

Exercise II: Concepts in research design

1) When a researcher develops an experiment, they will decide what they want to manipulate as part of the experimental procedure. The variable controlled by the experimenter is the _____ variable.

a. Hypothetical.
b. Extraneous.
c. Independent.
d. Construct.

2) If a measurement of depression on a standardized depression inventory is useful in understanding an individual's depression, that measurement is said to:

a. Show good reliability.
b. Eliminate nonsampling error.
c. Be representative.
d. Have validity.

Exercise II: Concepts in research design

3) Construct validity refers to how well:

a. Your measured variable relates to the underlying concepts you are trying to measure.

b. Your measurements agree with the measurements of others.

c. Your statistical tests help you answer your research questions.

d. Your measurements correlate with one another.

4) If you want to generalize the results of your research to a different population, your measurements should show:

a. Convergent validity.

b. Construct validity.

c. External validity.

d. Internal validity.

Exercise III: Research design

In groups of 3-5

A company aims to improve its work conditions and has the following hypothesis: “Improved training provision will create a more productive, reliable, and satisfied workforce.”

- Is the hypothesis falsifiable? How would it be (non)falsifiable? What is your assessment of the empirical content of the hypothesis (i.e., universality and precision)?
- Design a study that allows you to test the hypothesis
  - What are the dependent and independent variables in your design?
  - How do you operationalize the variables?
  - How could you ensure that the variables allow for a reliable and valid measurement?
  - What could be possible moderators and mediators for the relationship between the independent and the dependent variable?