Warum die Psychologie R braucht /
Why Psychology needs R

Klaus D. Kubinger
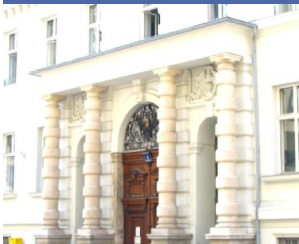
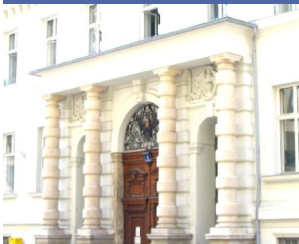*Workshop "R in Teaching and Empirical Research"*

Psychology research work applies

- Nonstandard statistical methods, which are not implemented in SPSS, and there are even no common special software routines

- Specific statistical methods, for which only special software (FORTRAN) is available

- "Modern" statistical methods, for which only special commercial software is available

- Methods of IRT (*Item Response Theory* for calibrating psychological tests), for which numerous software is available, this nearly unmanageable but only commercial sold

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… methodically well-qualified researchers can handle this situation –
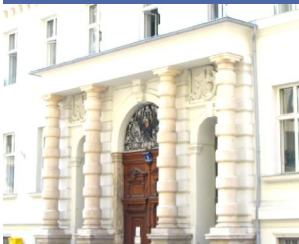
the problem is

that 1000s of (applied) researchers in psychology do rather use methods which are within a common-used programm package than use the most proper method!

And of course:

A scientist has to have his/her methods on his/her disposal but not to worry that they work!

- Nonstandard statistical methods, which are not implemented in SPSS, and there are even no common special software routines.

i) H0: $0 < \rho \leq \lambda$ [cf. SPSS-Syntax at:

   Kubinger, K.D., Rasch, D. & Šimečkova, M. (2007).

   Testing a correlation coefficient's significance:
   Using H0: $0 < \rho \leq \lambda$ is preferable to H0: $\rho = 0$.
   Psychology Science, 49, 74-87.]

ii) tetra-choric correlation for factor analysis for dichotomous data [cf. SPSS-Syntax at:

   Kubinger, K.D. (2003). On artificial results due to using factor analysis for dichotomous variables. *Psychology Science, 45,* 106-110.]

iii) Φ_{max} for $\Phi_{corr} = \Phi/\Phi_{max}$ [nowhere (?) available]

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[http://psychologie.univie.ac.at/diagnostik/software-downloads/statistik/]

Analysis of variance for ranks in a two-way layout:
Kubinger, K.D. (1986). A note of non-parametric tests for the interaction in two-way layouts. *Biometrical Journal, 28*, 67-72.

Distributions-free discriminant analysis:
Kubinger, K.D (1983). Some elaborations towards a standard procedure of distribution-free discriminant analyses. *Biometrical Journal, 25*, 765-774.

Configuration-Frequency-Analysis (CFA):
Krauth, J. & Lienert G.A. (1973). Die Konfigurationsfrequenzanalyse (KFA) und ihre Anwendung in Psychologie und Medizin.

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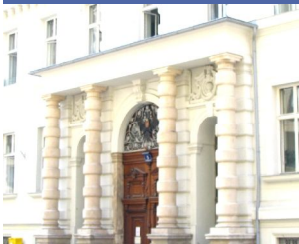www.testzentrum.at
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Designing experiments (calculating the sample size for given precision parameters) → **CADEMO**

Sequential testing (e.g. *triangle test* by Schneider) → **CADEMO**
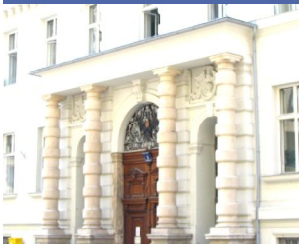
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Rasch model (however BE AWARE of: eRm, Hatzinger & Mair)

2 PL-; 3 PL-, and "Difficulty plus Guessing PL-" model

Latent Class Analysis

Result:

In order to guarantee that within psychological research work proper methods are applied it is necessary …

… to get psychologists (and students of psychology) fit to construct additions in **R.**

Thank you for your attention!