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Exploratory Factor Analysis With Small Sample Sizes

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well below 50, even in the presence of small distortions. Such conditions may be uncommon but should certainly not be ruled out in behavioral research data.

* These authors contributed equally to this work

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Notes

* These authors contributed equally to this work

¹ This article defines simple structure as a special case of Thurstonian simple structure, also called independent cluster structure or ideal simple structure.

² [Lorenz](#) (1998) and [Lorenz et al.](#) (2001) proposed a method for determining the basis of simple structure that others have used (e.g., [Lorenz et al., 2001](#)).

³ The ES is a reduced matrix (RCM, the number of common factors have repeated the subsamples based on squared multiple correlations based on the UCM. The average



^a A different population pattern was produced for each repetition for all conditions of groups 3, 4, and 11.

^b The numbers refer to the variables per factor with a .8 loading.

⁴ A loading of .6 was considered low for the sample size ($N = 17$) under investigation. This was based on the findings of the first part of the simulations ([Table 2](#)): for $\lambda = .6$, $f = 3$, $p = 24$, the required minimum N for good agreement ($K = .95$) was 55.

⁵ Cronbach's α was calculated for two conditions of the first simulation series (low loadings: $\lambda = .2$, $f = 2$, $p = 24$, $N = 1,438$ and high loadings: $\lambda = .9$, $f = 2$, $p = 24$, $N = 6$). Although factor recovery was identical in those two conditions (see [Table 2](#)), average Cronbach's α among variables loading on the factor was .332 for the low loadings and .968 for the high loadings. This demonstrates that high internal consistency is not necessary for good factor recovery. A more detailed discussion of this issue can be found in [Boyle \(1991\)](#).

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