Generalizability: Reliability or Validity? More precision in definition of concepts

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Generalizability theory

Generalizability Theory focuses on investigating and designing reliable observations.

In an ANOVA framework the estimator of *intraclass correlation* (Fisher, 1936)

$$r_{icc} = \frac{\sigma_b^2 - \sigma_w^2}{\sigma_b^2 + (g-1)\sigma_w^2}$$

is regarded as a estimator for reliability.

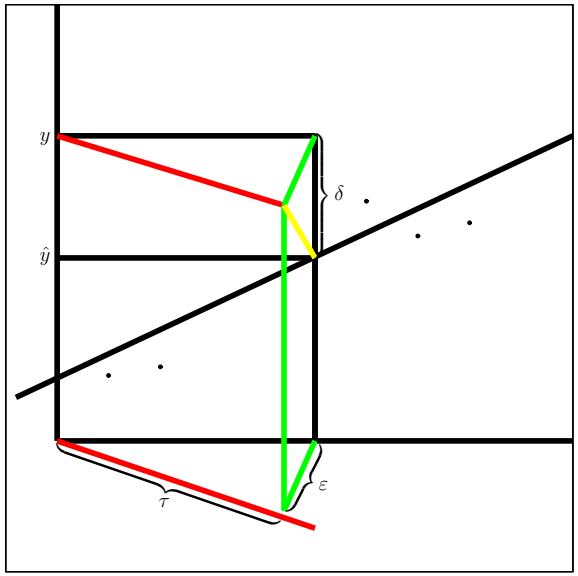
Generalizability is frequently associated with reliability but it should be associated with validity.

Errors in linear model

In linear models the error is usually expressed by one term in equation i.e.

$$y = \alpha x + \delta$$

This is however too restricted. In linear models the errors need to be taken care of both parts of the model: response(s) and dependent variable.



The generalizability theory framework does not pay any attention to measurement errors.

In **measurement model** framework the errors can be included in the model by defining the dependent variable

$$x = \tau + \epsilon$$

with true scores and measurement errors.

References

Brennen, R. L. (2001). *Generalizability Theory*, Springer.

Tarkkonen, L. and Vehkalahti, K. Measurement errors in multivariate measurement scales, *Journal of Multivariate Analysis*, 96(1), 172-189.

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