***The Gamma Hat index*.**

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The gamma hat index has been shown to be resistant to sample size, model complexity, and model misspecification (Fan & Sivo, 2007). However, this index is not produced by most software applications. However, Fan and Sivo (2007) provide a formula by which gamma hat can be derived. The formula is:

Gamma hat = #vars / ((#vars) + (2*df*(RMSEA^2)))

#vars = the number of manifest or observed variables in a model

df = degrees of freedom for the model

RMSEA = root mean square error of approximation for the model

With this information (all of which is conventionally reported) it is possible to calculate gamma hat

An Excel spread sheet (calculate gamma blank template) has been set up which allows entry of these 3 values and automatically calculates the Gamma Hat value. Download the spreadsheet to your own computer to use. The spreadsheet columns are:

Column	Title	Comments	Field status
A	Year	Record year data information	Optional
B	Study	Enter name of study for data	Optional
C	Place	Where the data was collected	Optional
D	Group	Name of group or sub-group of participants	Optional
E	Model	Description of the model being analysed	Optional, but recommended
F	#vars	Number of manifest variables in model	Required
G	df	Degrees of Freedom in model	Required
H	RMSEA	RMSEA value for model	Required
I	Gamma	Value of Gamma Hat	Automatic

NB. Interpreting Gamma Hat should be done along the same lines as other goodness of fit indices, with the additional knowledge that this index is much more robust than the CFI or TLI. Based on Marsh, Hau, & Wen (2004), it can be argued that gamma hat ≥ .90 constitutes acceptable fit, while values ≥ .95 indicate good fit to the data.

References

Fan, Xitao, & Sivo, Stephen A. (2007). Sensitivity of fit indices to model misspecification and model types. *Multivariate Behavioral Research, 42*(3), 509–529.

Marsh, H W, Hau, Kit-Tai, & Wen, Zhonglin. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling, 11*(3), 320-341.