Let's Practice: Evaluating Model Fit in Confirmatory Factor Analysis!!

Work together as a group to evaluate the following models for fit in terms of *excellent/close*, *acceptable/satisfactory*, or *unacceptable/poor*. Refer to the thresholds in Table 1 in Kalkbrenner (2021; <mark>see the next page</mark>) for evaluating model fit.

Model 1:

$CMIN = \chi2$ (77) = 200.01, $p < .001$, $\chi2$ to df = 2.60

Comparative Fit Index (*CFI*) = .97

Root mean square error of approximation (*RMSEA*) = .04, 90% *CI* (.02, .06)

Standardized root mean square residual (*SRMR*) = .03

Specify fit in terms of excellent, acceptable, or unacceptable for model 1

(Begin typing your response here and delete this message)

Model 2:

$CMIN = \chi2$ (74) = 357.93, $p < .001$, $\chi2$ to df = 4.84

Comparative Fit Index (*CFI*) = .90

Root mean square error of approximation (*RMSEA*) = .09, 90% *CI* (.08, .10)

Standardized root mean square residual (*SRMR*) = .14

In the space below, specify fit in terms of excellent, acceptable, or unacceptable for model 2

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Model 3:

$CMIN = \chi2$ (140) = 400.33, $p < .001$, $\chi2$ to df = 2.86

Comparative Fit Index (*CFI*) = .91

Root mean square error of approximation (*RMSEA*) = .09, 90% *CI* (.07, .12)

Standardized root mean square residual (*SRMR*) = .08

In the space below, specify fit in terms of excellent, acceptable, or unacceptable for model 3

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Table 1

Fit Indices and Tentative Thresholds for Evaluating Model Fit

Absolute Fit Indices				
Index	Abbreviation	Strong Fit	Acceptable Fit	Poor Fit
Chi-square	χ^2 or CMIN	p-value > .05 or χ^2 to $df \leq 1$	χ^2 to $df \leq 2$ or 3	χ^2 to $df > 3$
Standardized root mean square residual	SRMR	< .05	.06 to .08	> .08
Root mean square error of approximation	RMSEA	< .05, report confidence interval	.06 to .08 (.081 to .10 can denote a somewhat acceptable fit)	> .10
Goodness-of-fit index & Adjusted goodness-of-fit index	GFI/AGFI	$\geq .97$	$\geq .95$ ($\geq .90$ to .94 can denote a somewhat acceptable fit)	< .90
Incremental Fit Indices				
Index	Abbreviation	Strong Fit	Acceptable Fit	Poor Fit
Comparative fit index	CFI	$\geq .97$	.95 to .90	< .90
Normed fit index	NFI	$\geq .97$	.95 to .90	< .90
Incremental fit index	IFI	$\geq .97$	.95 to .90*	< .90
Tucker–Lewis index	TLI	$\geq .97$	.95 to .90	< .90
Parsimonious Fit Indices				
Index	Abbreviation	Strong Fit	Acceptable Fit	Poor Fit
Parsimony-adjusted goodness-of-fit index	PGFI	Parsimony-adjusted indices range from 0 to 1 and have utility for making comparisons between different models. Values closer to 1 indicate a stronger fit.		
Parsimony-adjusted normed fit index	PNFI			

(Kalkbrenner, 2021)