

CFA Chi-Square Fit Test

Standalone verified Python analysis

Test: CFA Chi-Square Fit Test

Design: Maximum-likelihood exact-fit test for the two-factor covariance model.

Variables: G1, G2, G3, famrel, freetime, goout

Null hypothesis: The model-implied covariance matrix equals the population covariance matrix.

Formula: $\chi^2 = (n-1)F_{ML}$; $df = p(p+1)/2 - q$.

Source rows: 649

Calculated metrics:

chi_square: 13.76397207713822

df: 8

p_value: 0.08812864506217727

ml_discrepancy: 0.02124069764990466

n_cases: 649

Independent reference values:

chi_square: 13.76397207713822

df: 8

p_value: 0.08812864506217727

ml_discrepancy: 0.02124069764990466

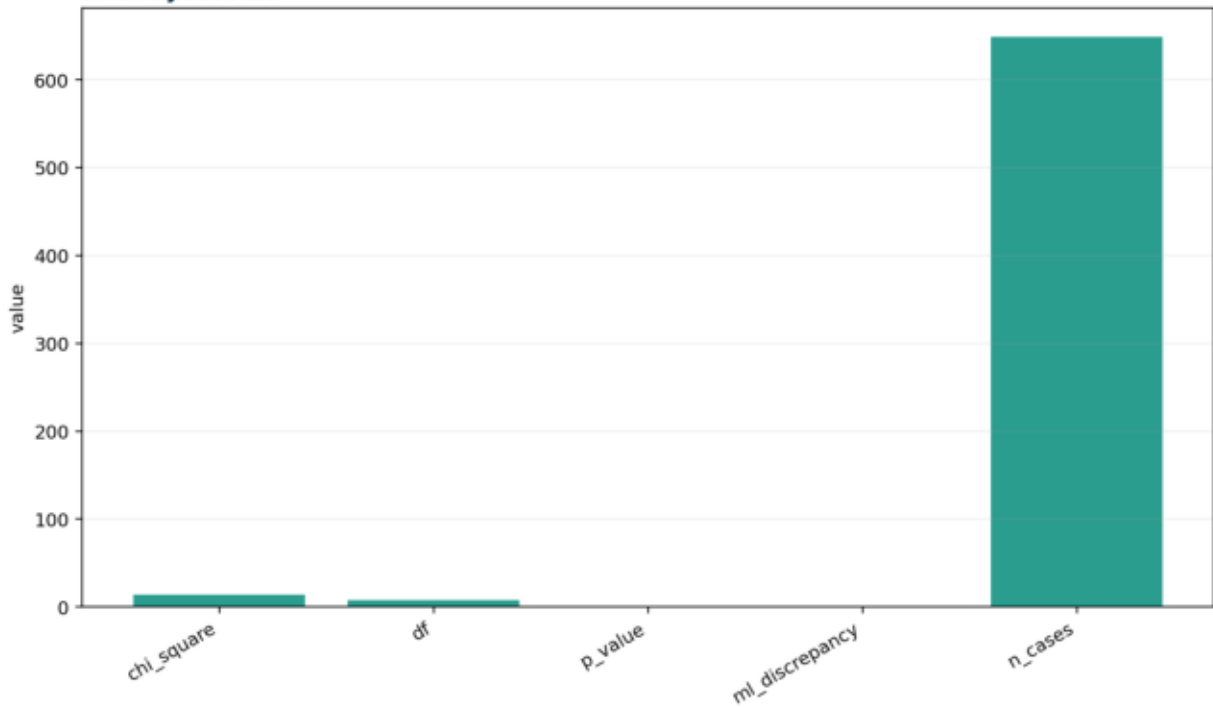
n_cases: 649

Interpretation:

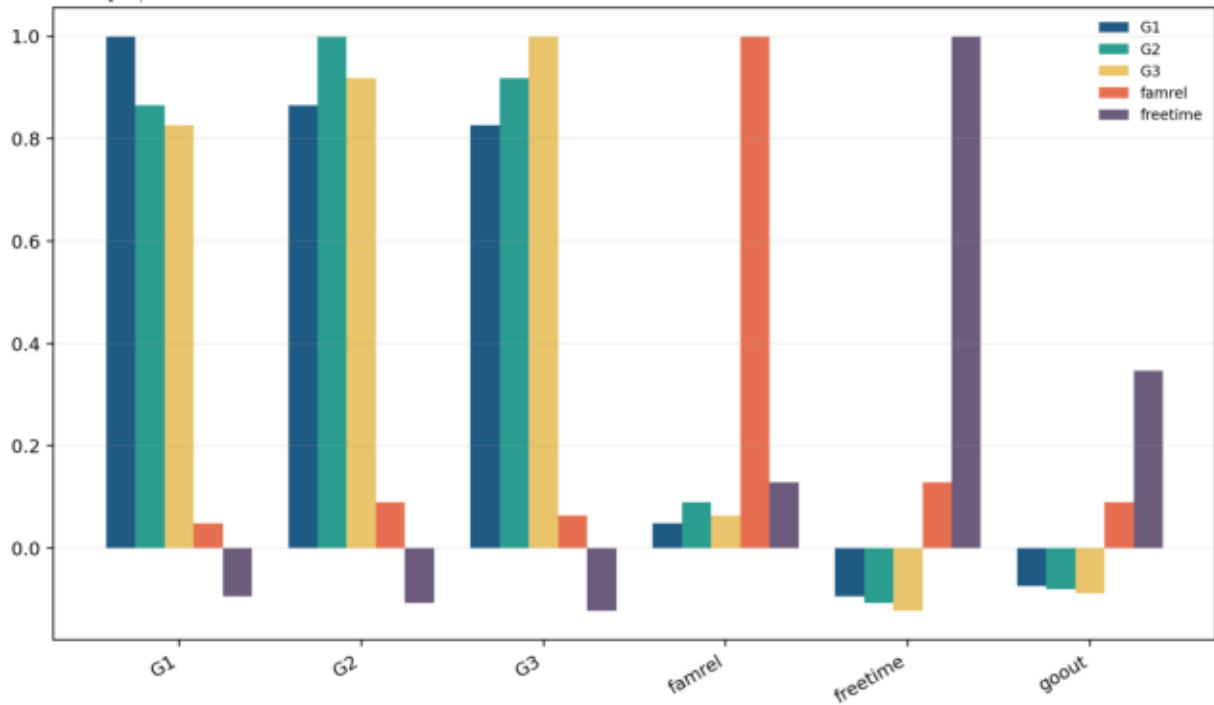
This is the ML exact-fit test for a covariance model, not a contingency test.

Chi-square(8)=13.763972, p=0.0881286.

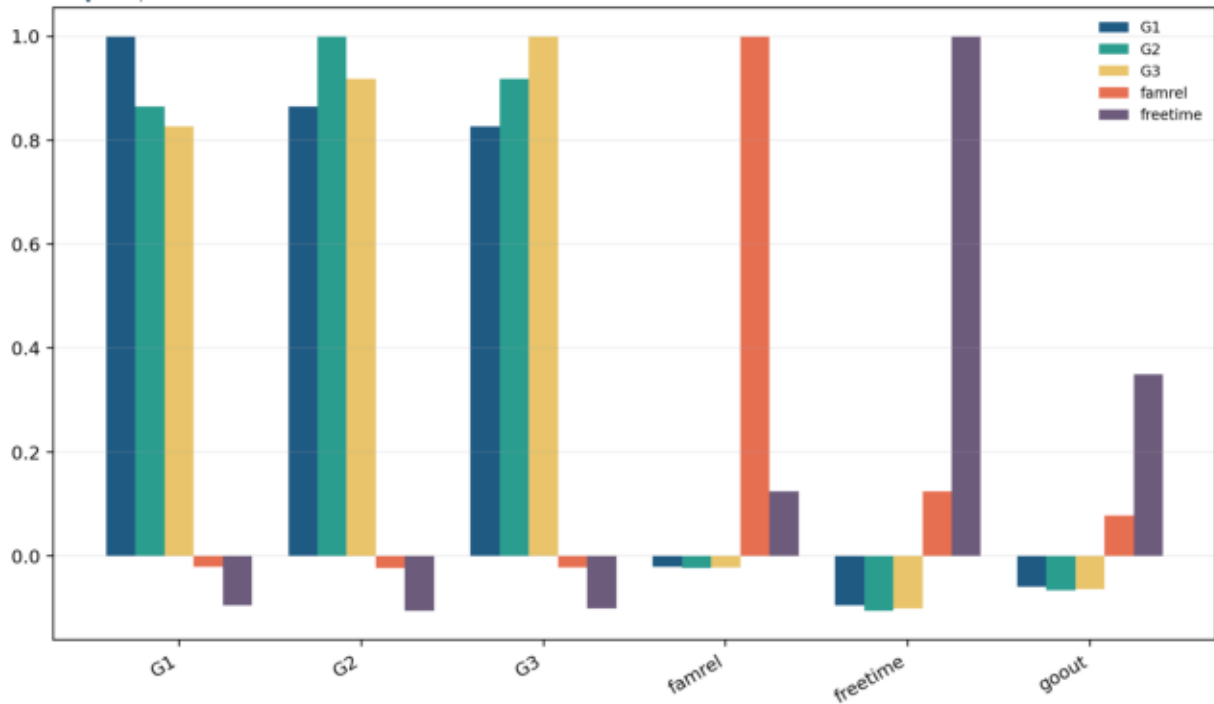
Primary Metrics



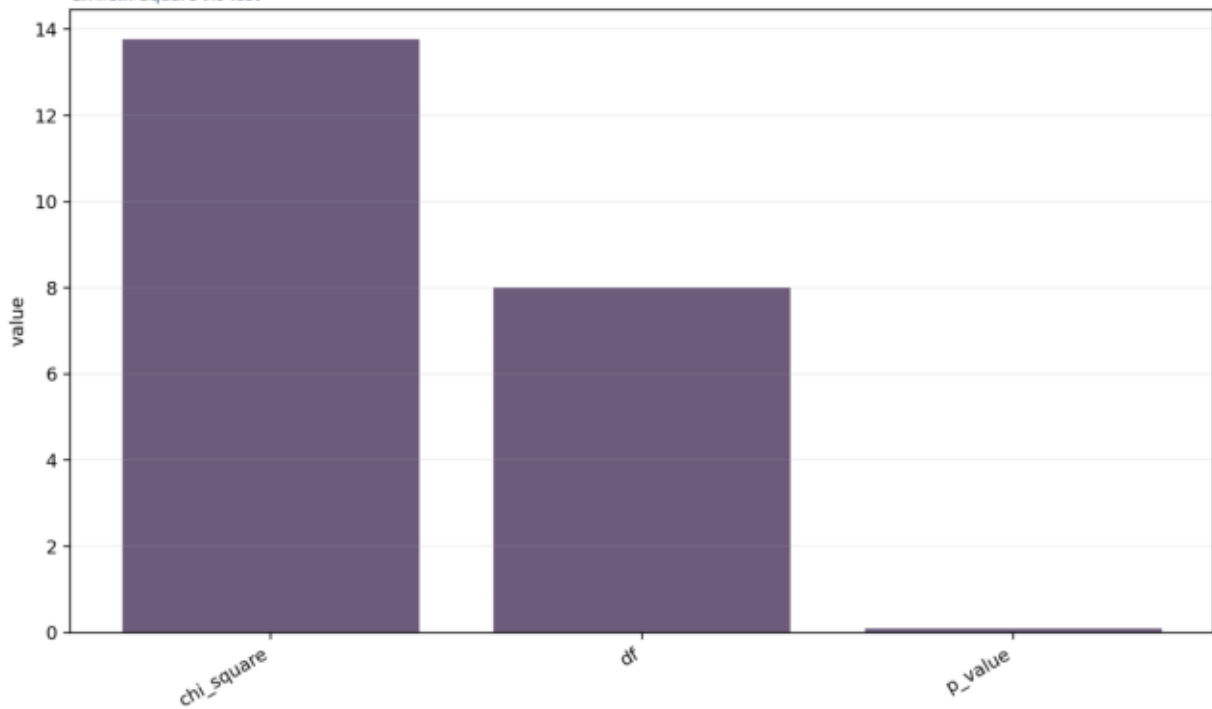
Sample Covariance



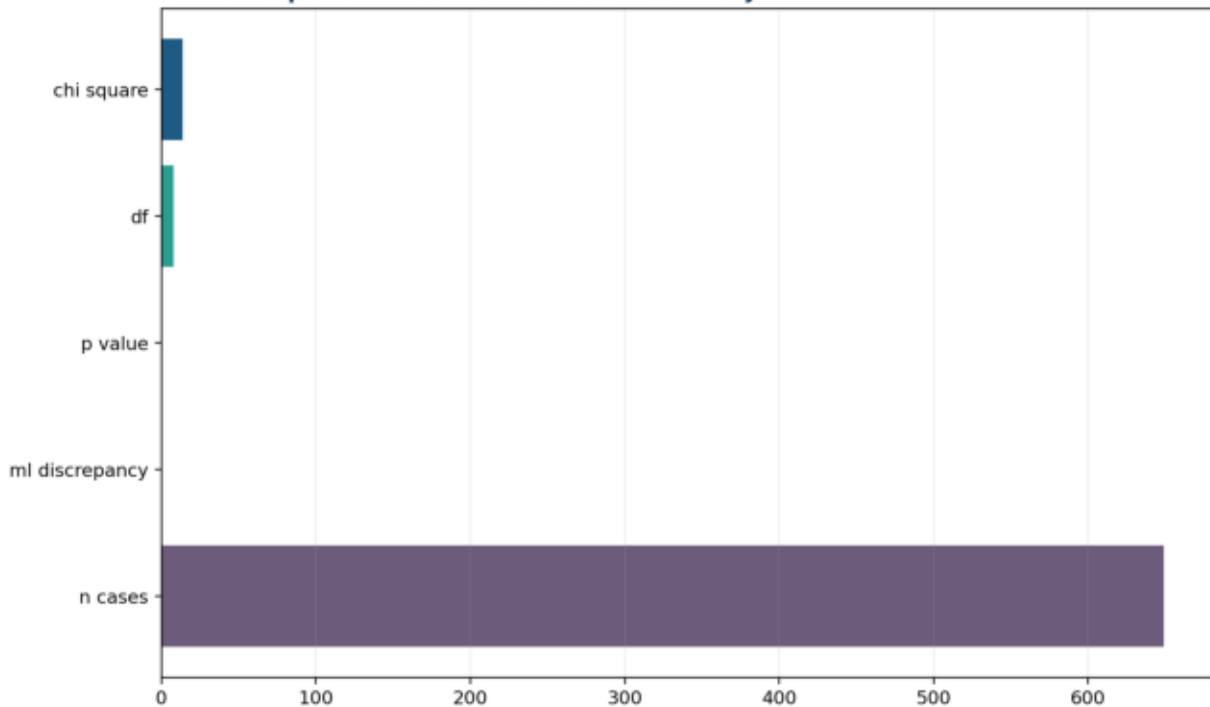
Implied Covariance



Exact Fit Test



CFA Chi-Square Fit Test verified result summary



Primary Metrics

metric	value
chi_square	13.764
df	8
p_value	0.0881286
ml_discrepancy	0.0212407
n_cases	649

Sample Covariance

item	G1	G2	G3	famrel	freetime	goout
G1	1	0.864982	0.826387	0.0487946	-0.0944966	-0.0740526
G2	0.864982	1	0.918548	0.0895878	-0.106678	-0.0794692
G3	0.826387	0.918548	1	0.0633611	-0.122705	-0.0876407
famrel	0.0487946	0.0895878	0.0633611	1	0.129216	0.0897066
freetime	-0.0944966	-0.106678	-0.122705	0.129216	1	0.346352
goout	-0.0740526	-0.0794692	-0.0876407	0.0897066	0.346352	1

Implied Covariance

item	G1	G2	G3	famrel	freetime	goout
G1	1	0.864823	0.826865	-0.0212451	-0.0954199	-0.059606
G2	0.864823	1	0.918554	-0.023601	-0.106001	-0.0662155
G3	0.826865	0.918554	1	-0.0225651	-0.101348	-0.0633093
famrel	-0.0212451	-0.023601	-0.0225651	1	0.124376	0.0776941
freetime	-0.0954199	-0.106001	-0.101348	0.124376	1	0.348953
goout	-0.059606	-0.0662155	-0.0633093	0.0776941	0.348953	1

Exact Fit Test

index	value
chi_square	13.764
df	8
p_value	0.0881286