

Goodness-of-Fit Index

Standalone verified Python analysis

Test: Goodness-of-Fit Index

Design: Absolute covariance reproduction fit for the two-factor CFA.

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

Null hypothesis: The fitted model does not improve the weighted residual trace over the saturated reference.

Formula: $GFI = 1 - \frac{\text{tr}[(S^{-1}(S - \Sigma))(S^{-1}(S - \Sigma))]}{\text{tr}[(S^{-1} S)(S^{-1} S)]}$.

Source rows: 649

Calculated metrics:

gfi: 0.9926350185704358

residual_trace: 0.044189888577385095

p_variables: 6

df: 8

Independent reference values:

gfi: 0.9926350185704358

residual_trace: 0.044189888577385095

p_variables: 6

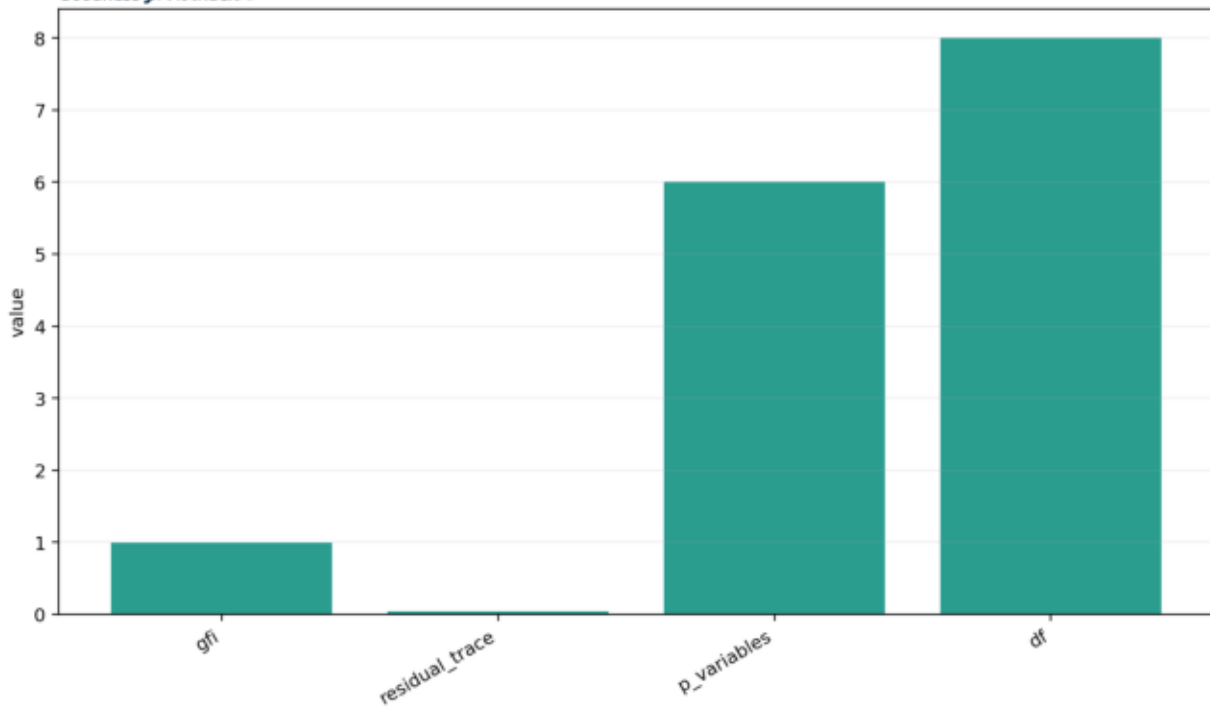
df: 8

Interpretation:

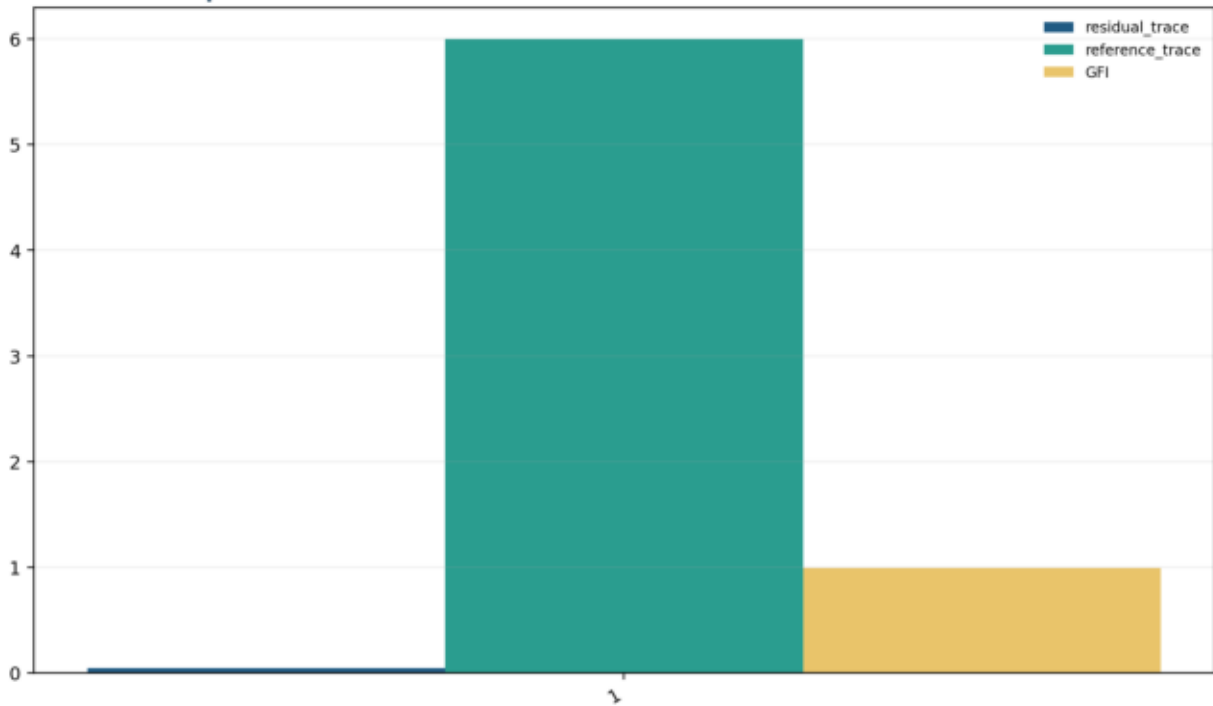
GFI is an absolute covariance-residual trace ratio.

GFI=0.992635.

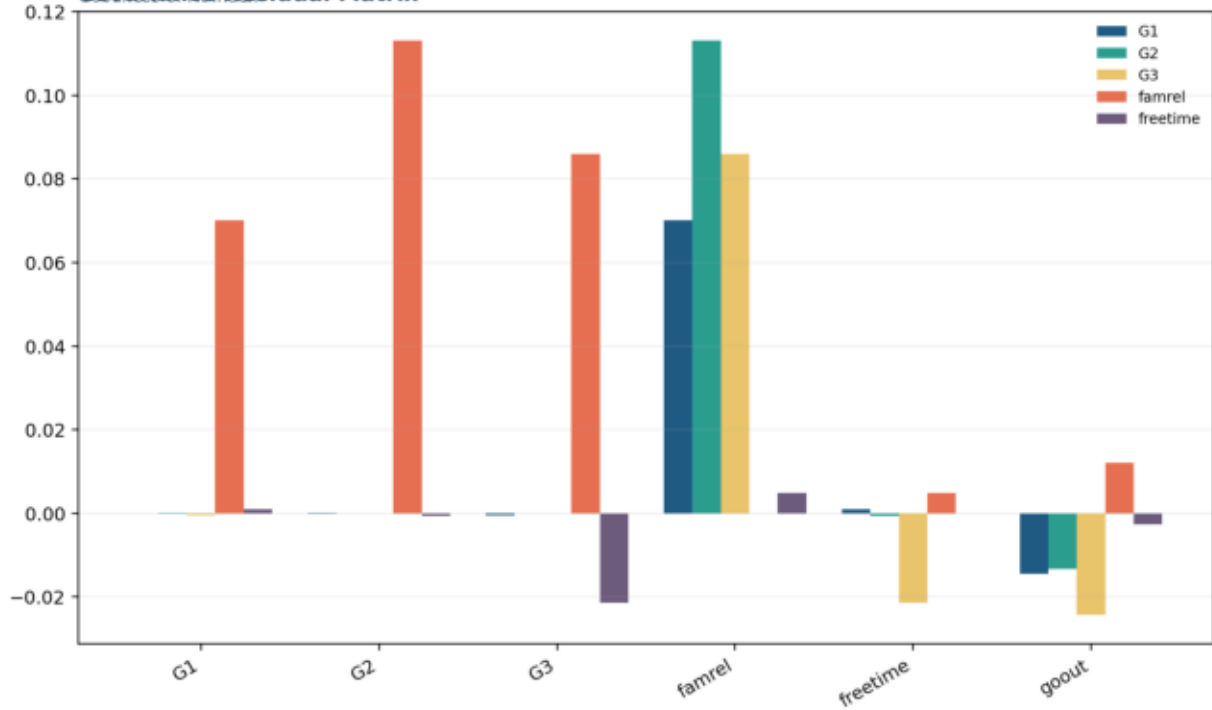
Primary Metrics



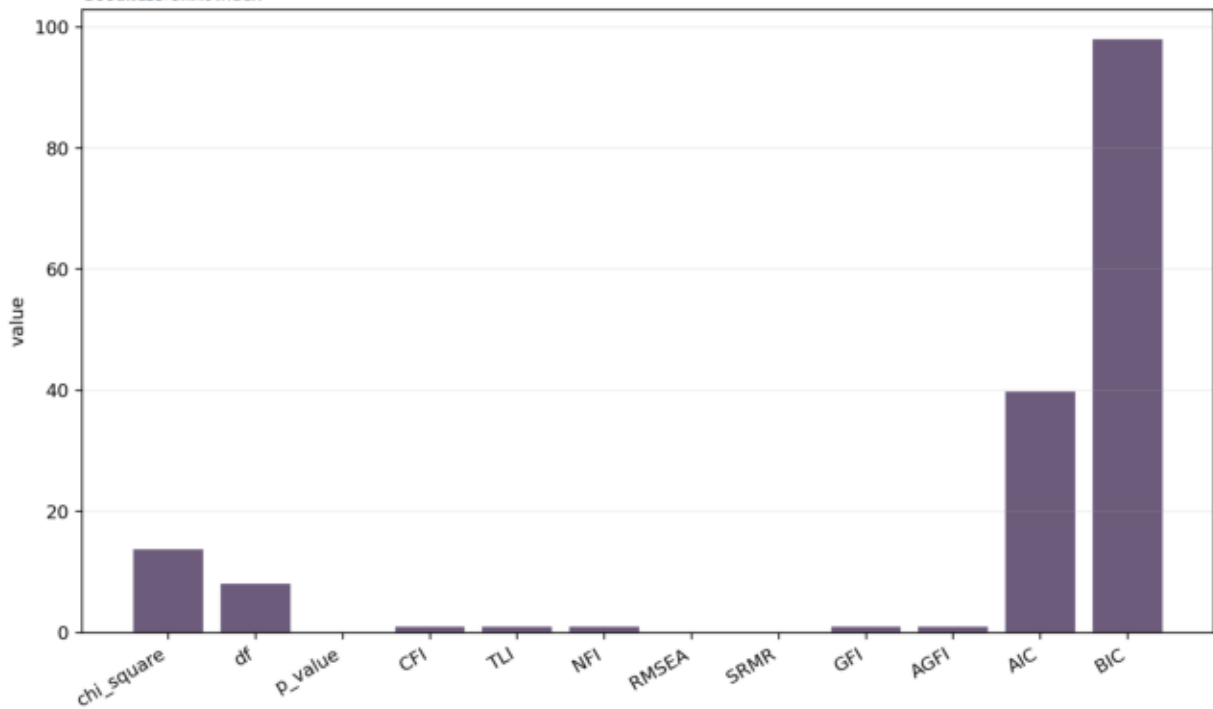
Gfi Trace Components



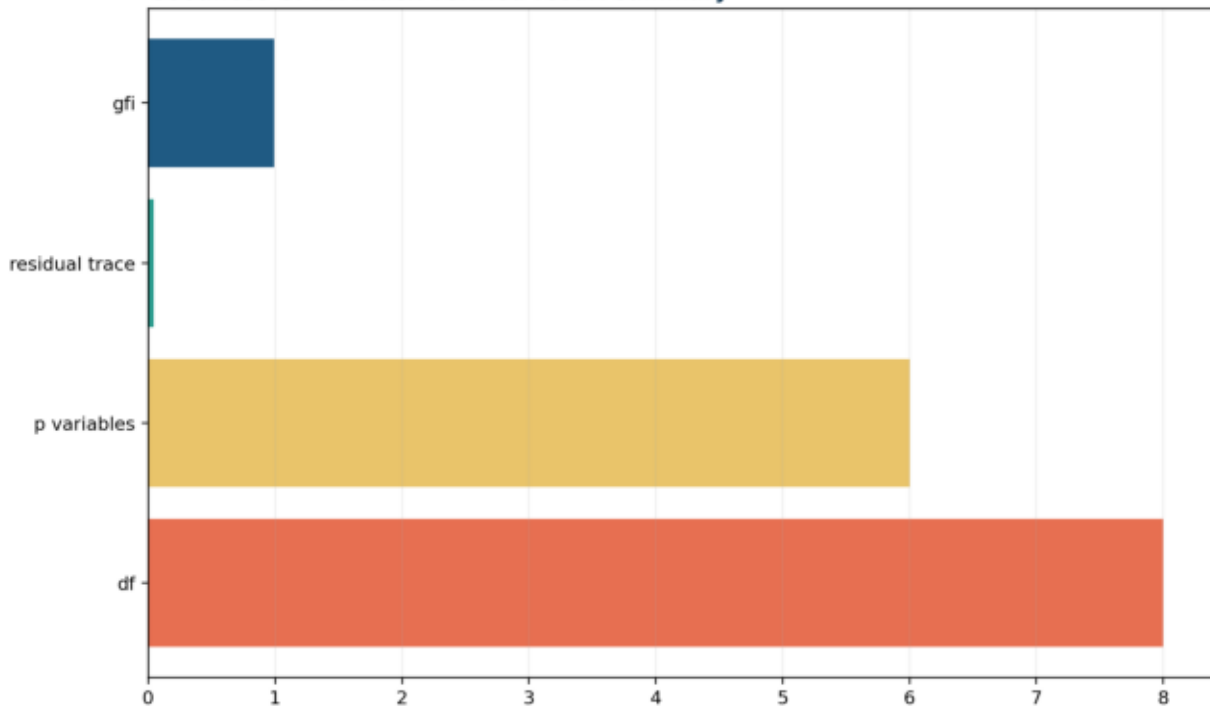
Covariance Residual Matrix



Fit Context



Goodness-of-Fit Index verified result summary



Primary Metrics

metric	value
gfi	0.992635
residual_trace	0.0441899
p_variables	6
df	8

Gfi Trace Components

residual_trace	reference_trace	GFI
0.0441899	6	0.992635

Covariance Residual Matrix

item	G1	G2	G3	famrel	freetime	goout
G1	9.82827e-09	0.000158759	-0.000478078	0.0700397	0.000923277	-0.0144466
G2	0.000158759	6.59088e-08	-5.69385e-06	0.113189	-0.000677231	-0.0132537
G3	-0.000478078	-5.69385e-06	1.85794e-07	0.0859262	-0.0213567	-0.0243314
famrel	0.0700397	0.113189	0.0859262	9.66359e-09	0.00483956	0.0120124
freetime	0.000923277	-0.000677231	-0.0213567	0.00483956	6.20226e-08	-0.00260153
goout	-0.0144466	-0.0132537	-0.0243314	0.0120124	-0.00260153	8.58988e-08

Fit Context

index	value
chi_square	13.764
df	8
p_value	0.0881286
CFI	0.997398
TLI	0.995122
NFI	0.993829
RMSEA	0.0333448
SRMR	0.0356632
GFI	0.992635
AGFI	0.980667
AIC	39.764
BIC	97.9446