

Direct Oblimin Rotation

Standalone verified Python analysis

Test: Direct Oblimin Rotation

Design: Oblique rotation of principal-axis loadings with gamma zero and correlated factors.

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

Null hypothesis: Oblique rotation does not yield a simpler interpretable factor pattern.

Formula: Minimize oblimin criterion $\Phi(L)$ with $\gamma=0$ and unrestricted factor correlation.

Source rows: 649

Calculated metrics:

factor_correlation: 0.16682706017507173

maximum_pattern_loading: 0.9849922123249903

cross_loading_items: 0

factors: 2

Independent reference values:

factor_correlation: 0.16682706017507173

maximum_pattern_loading: 0.9849922123249903

cross_loading_items: 0

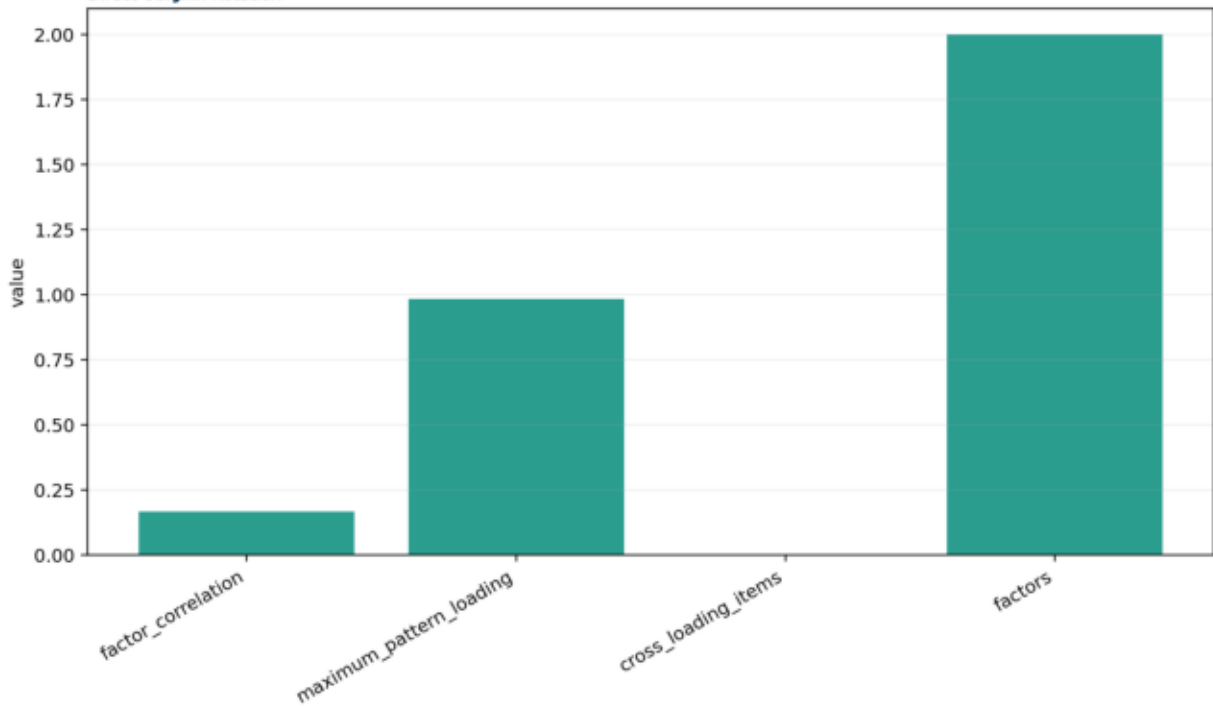
factors: 2

Interpretation:

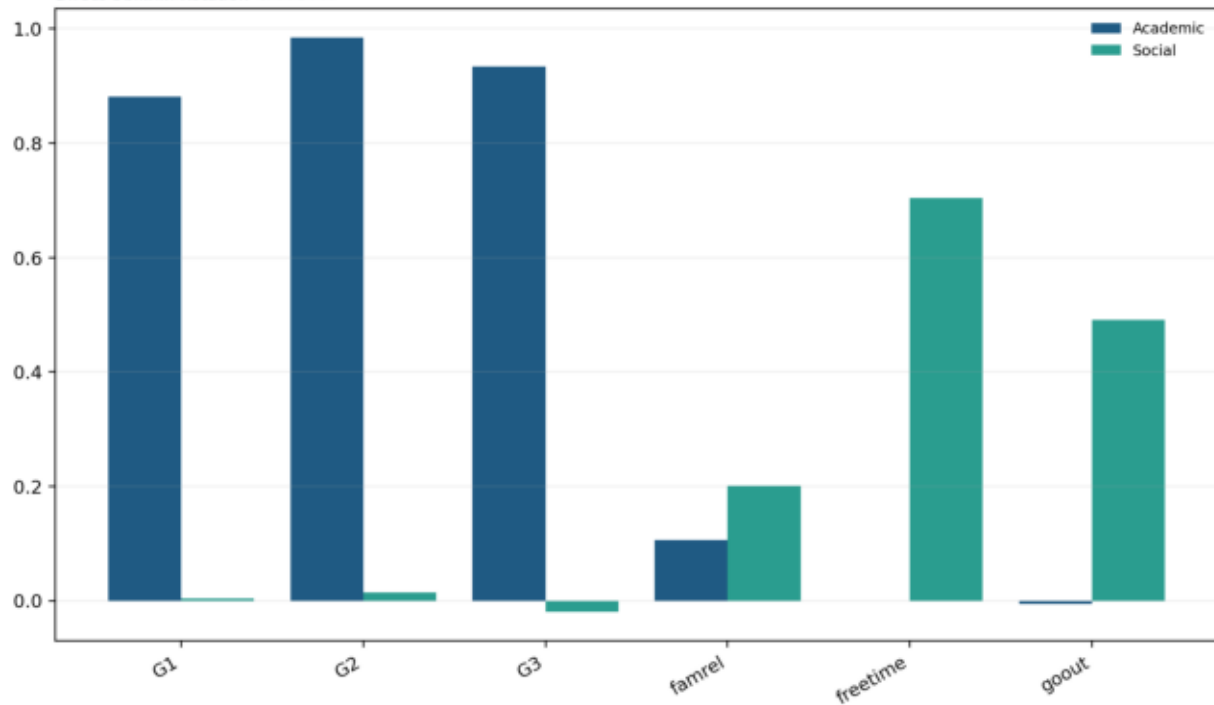
Direct oblimin allows correlated factors and reports a pattern matrix plus Φ .

Rotated factor correlation=0.166827.

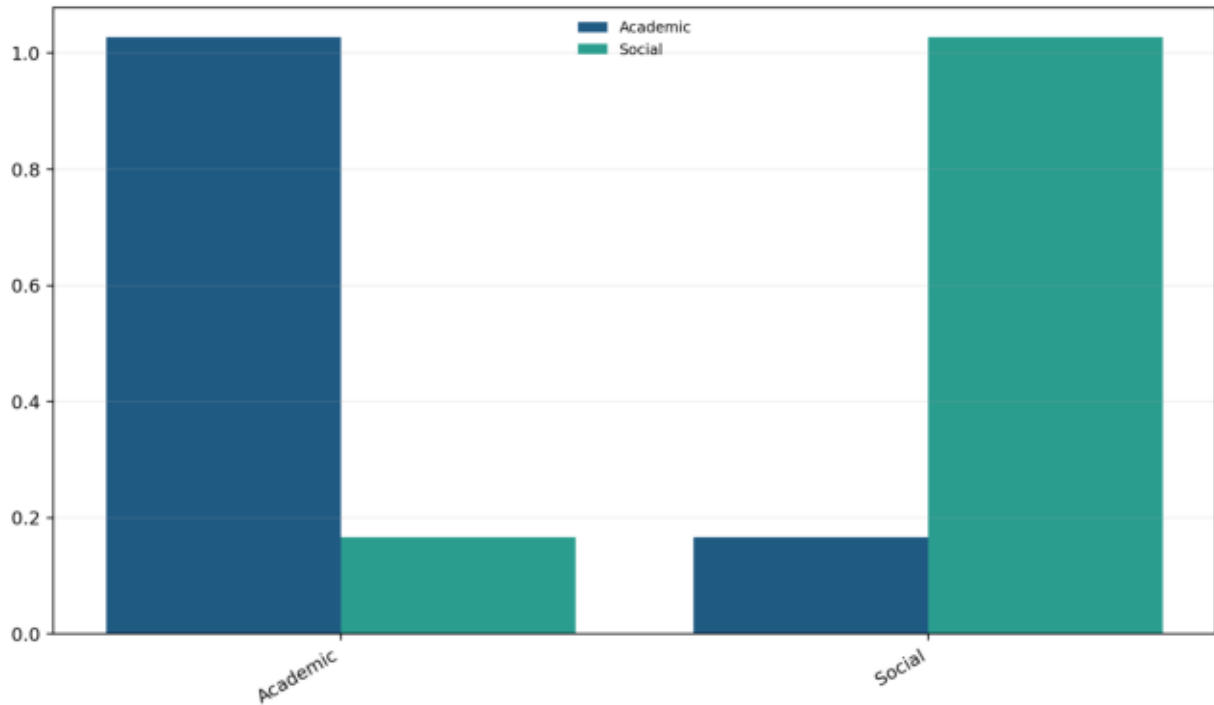
Primary Metrics



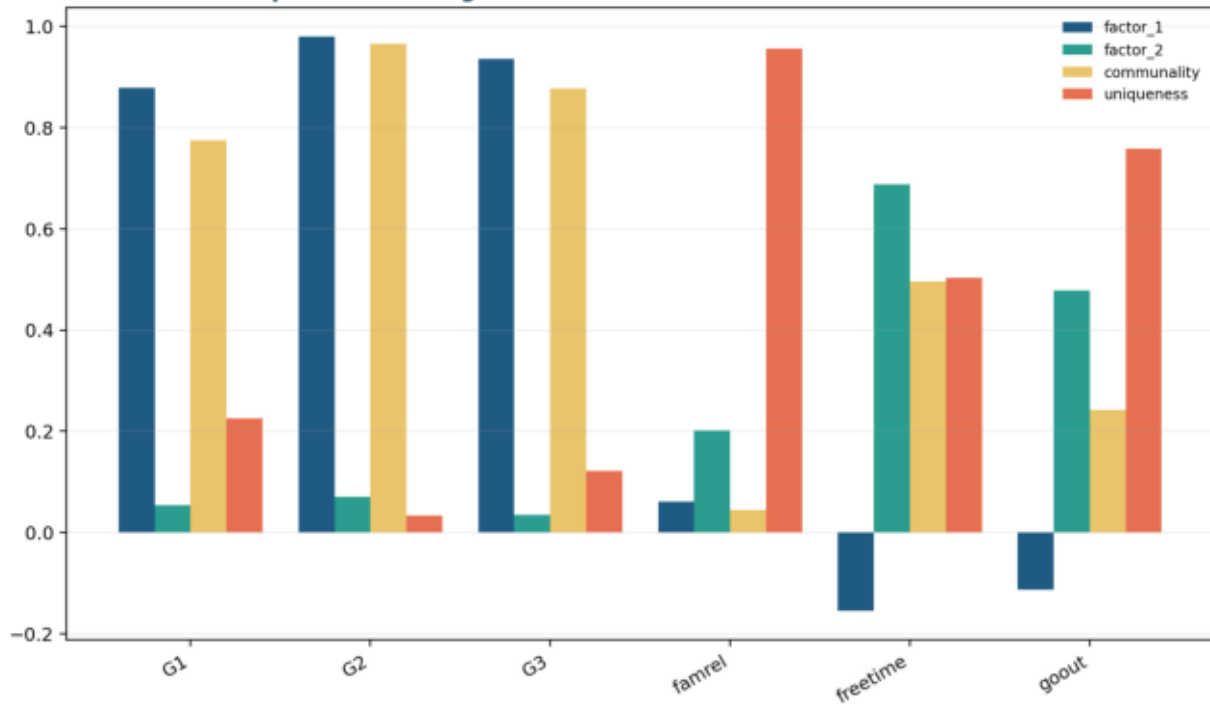
Direct Oblimin Pattern



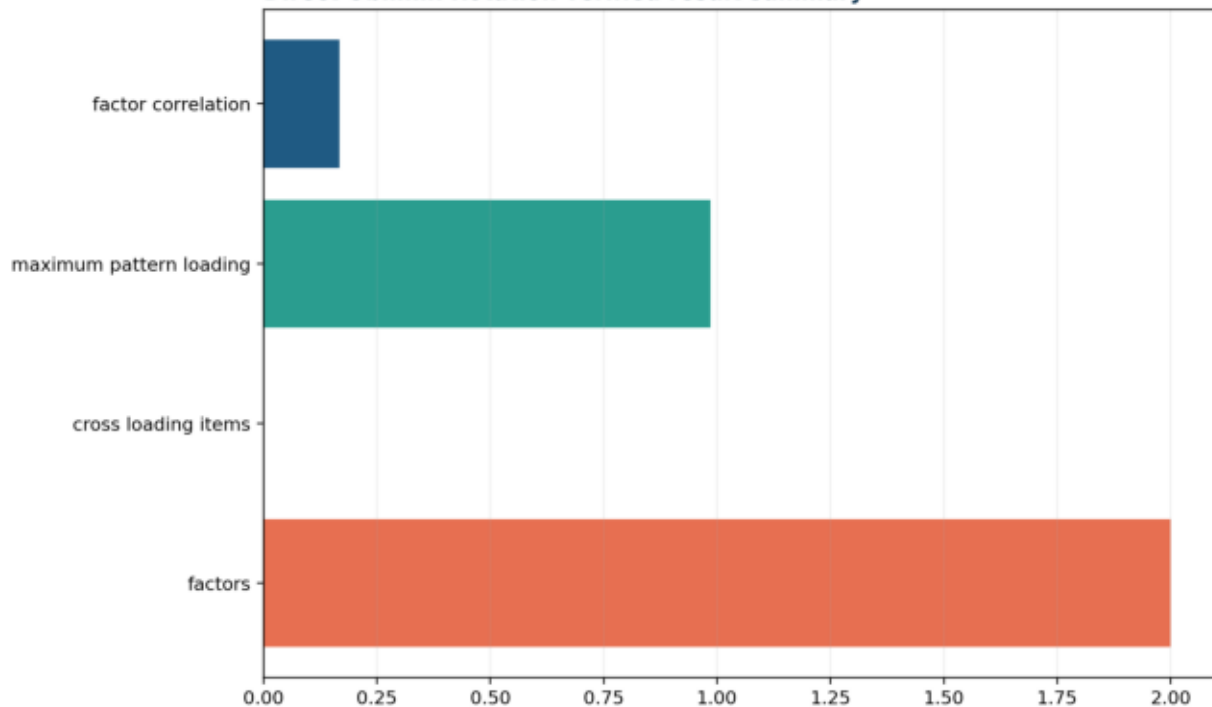
Oblimin Factor Correlation



Unrotated Principal Axis Loadings



Direct Oblimin Rotation verified result summary



Primary Metrics

metric	value
factor_correlation	0.166827
maximum_pattern_loading	0.984992
cross_loading_items	0
factors	2

Direct Oblimin Pattern

item	Academic	Social
G1	0.880821	0.00328991
G2	0.984992	0.0140718
G3	0.933421	-0.0197898
famrel	0.105501	0.201004
freetime	-0.000844467	0.704398
goout	-0.00610066	0.490454

Oblimin Factor Correlation

factor	Academic	Social
Academic	1.0271	0.166827
Social	0.166827	1.0271

Unrotated Principal Axis Loadings

item	factor_1	factor_2	communality	uniqueness
G1	0.878645	0.053824	0.774915	0.225085
G2	0.980285	0.0703304	0.965905	0.034095
G3	0.936209	0.0343263	0.877666	0.122334
famrel	0.061336	0.202193	0.0446442	0.955356
freetime	-0.155005	0.687273	0.496371	0.503629
goout	-0.11343	0.478213	0.241554	0.758446