

Factor Loading Diagnostics

Standalone verified Python analysis

Test: Factor Loading Diagnostics

Design: Item-level magnitude, primary-factor assignment, and cross-loading checks after oblimin EFA.

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

Null hypothesis: No item has an absolute loading of at least .40.

Formula: Primary loading= $\max_j |\lambda_{ij}|$; cross-loading count= $\sum_j I(|\lambda_{ij}| \geq .40)$.

Source rows: 649

Calculated metrics:

salient_loadings: 5

cross_loading_items: 0

minimum_primary_loading: 0.2010037775737925

maximum_primary_loading: 0.9849922123249903

items: 6

Independent reference values:

salient_loadings: 5

cross_loading_items: 0

minimum_primary_loading: 0.2010037775737925

maximum_primary_loading: 0.9849922123249903

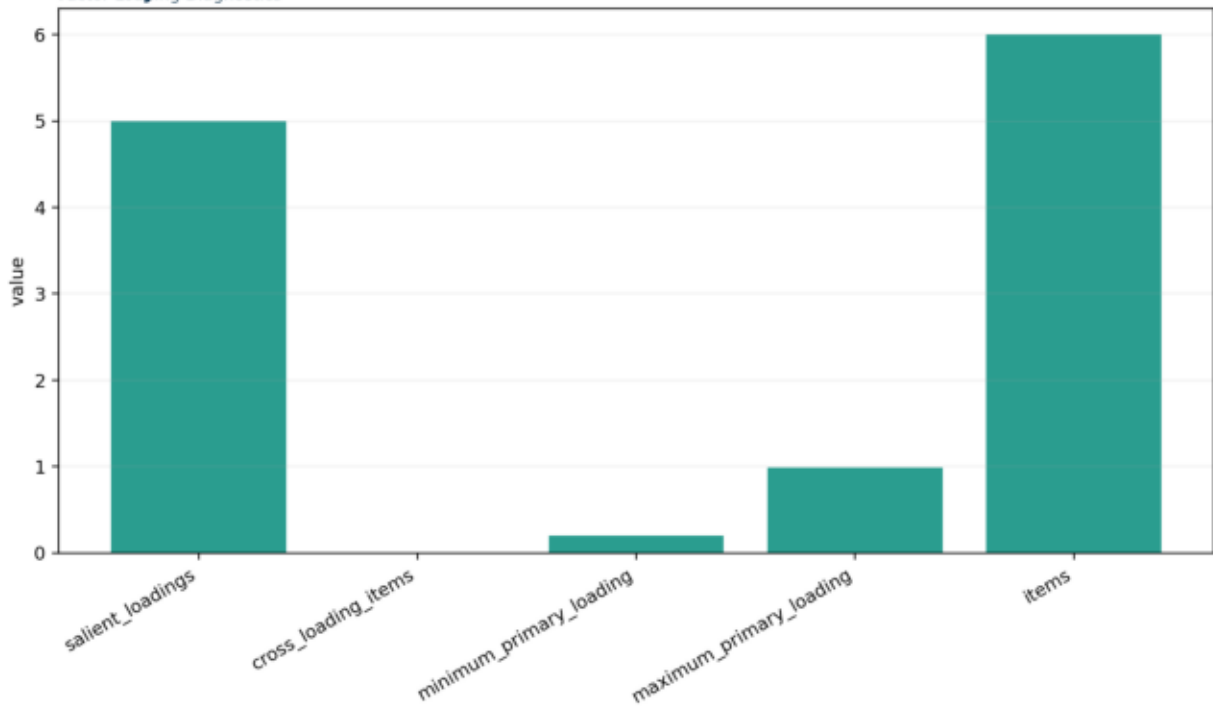
items: 6

Interpretation:

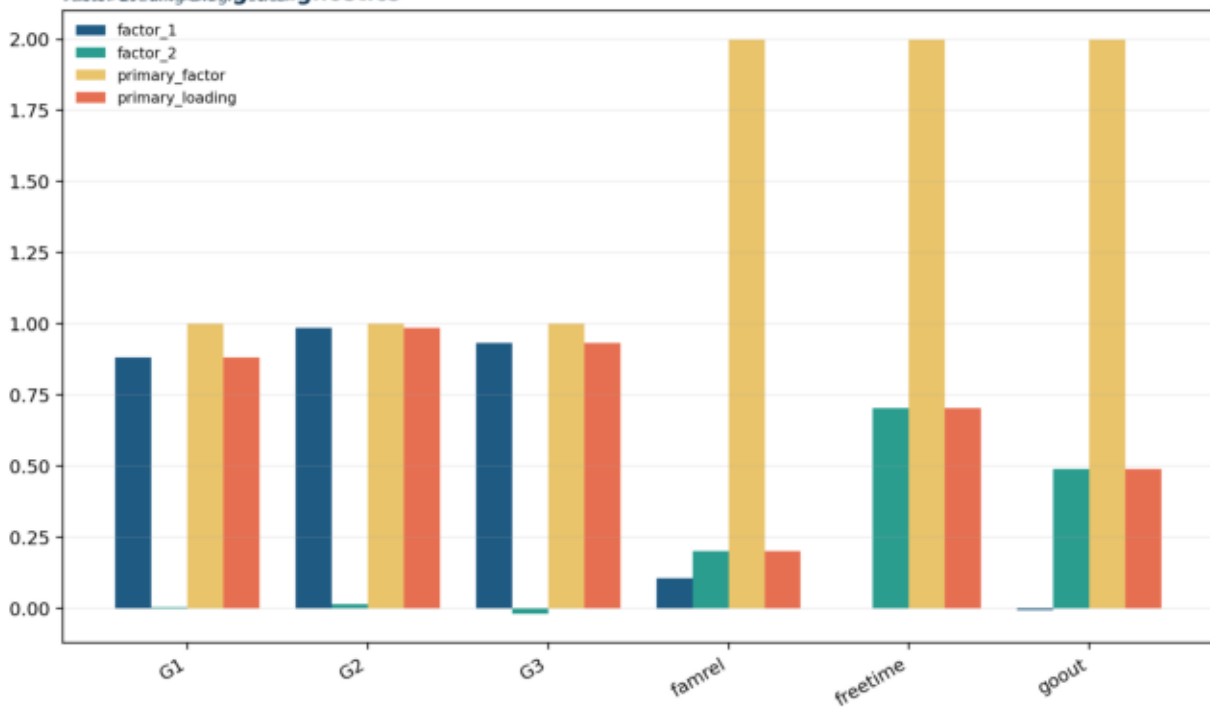
Primary and cross-loadings are checked item by item at the declared .40 threshold.

Salient loading count=5.

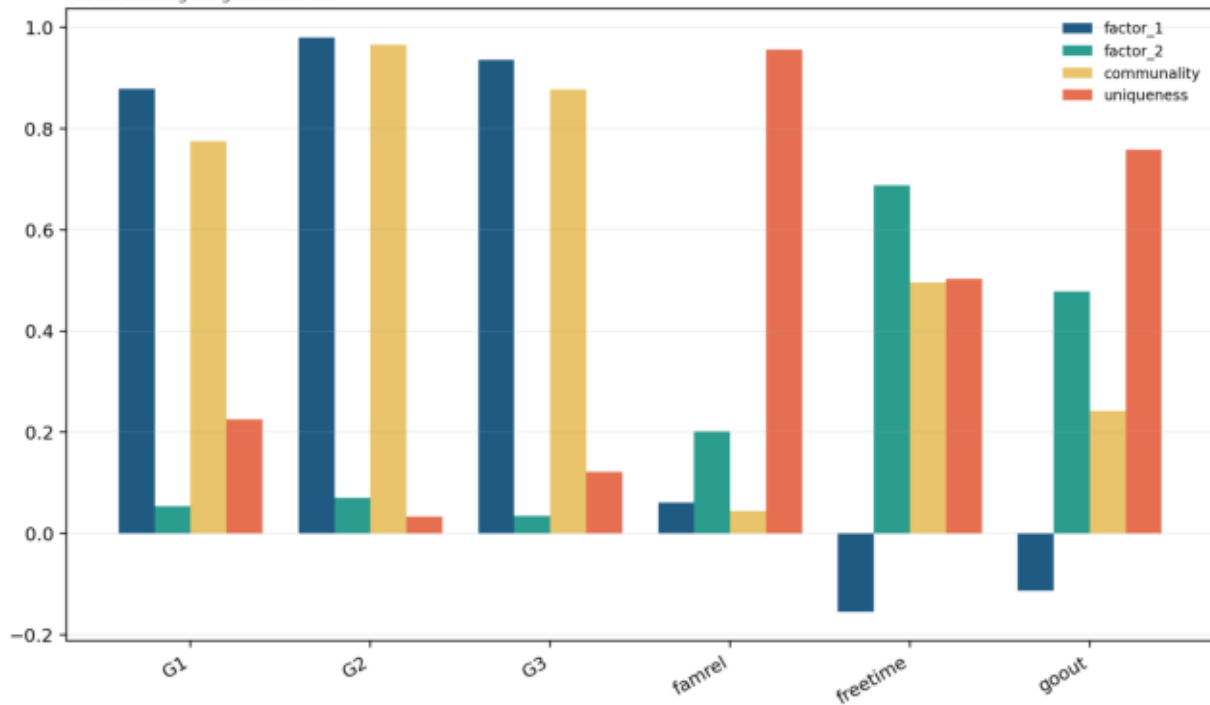
Primary Metrics



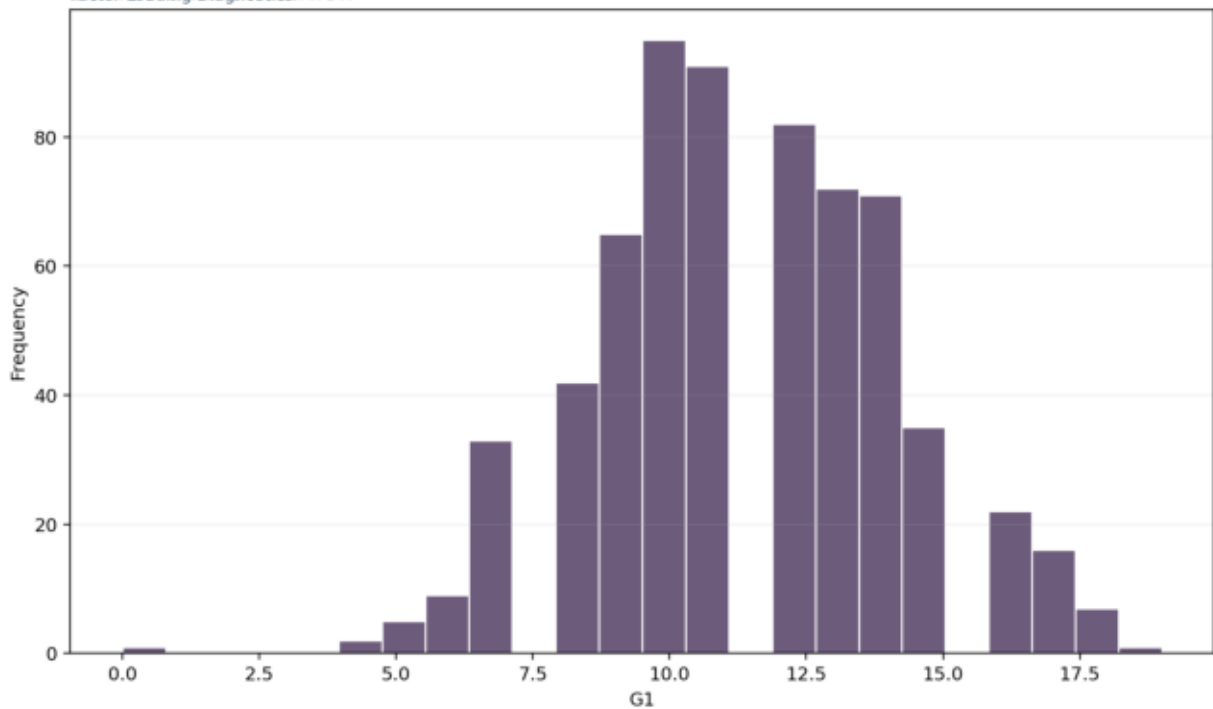
Factor Loading Diagnostics



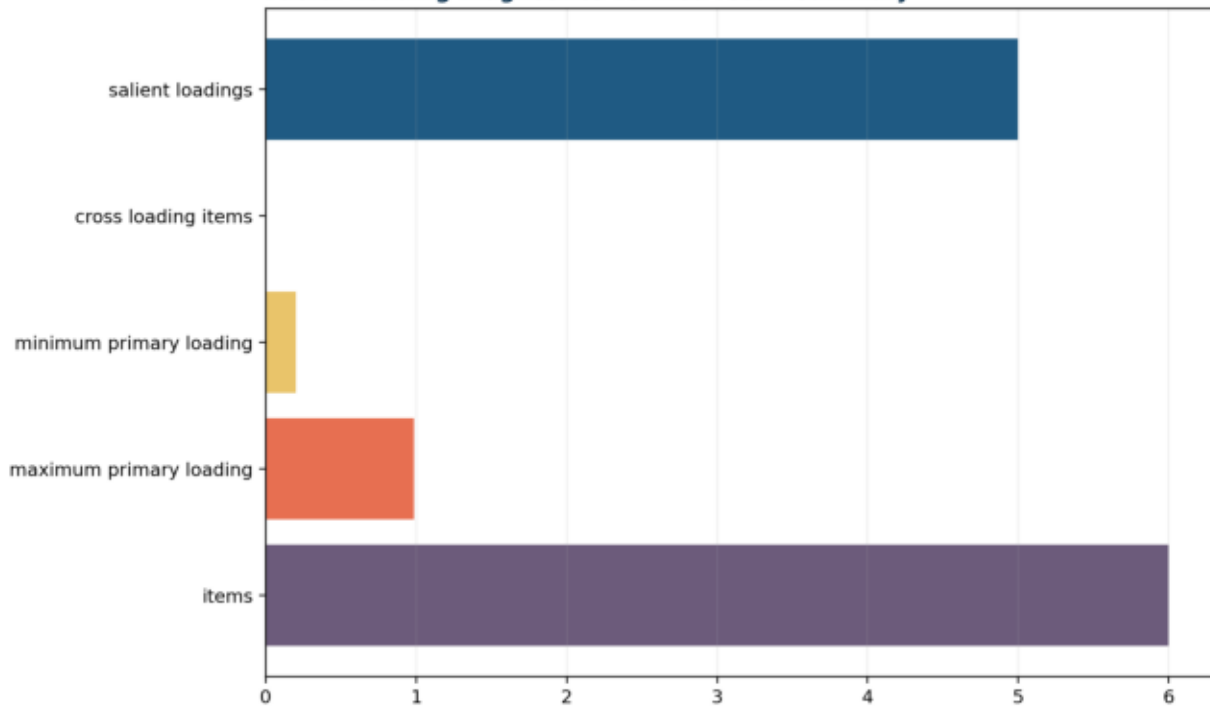
CommunalitiesContext



Source: G1 Distribution



Factor Loading Diagnostics verified result summary



Primary Metrics

metric	value
salient_loadings	5
cross_loading_items	0
minimum_primary_loading	0.201004
maximum_primary_loading	0.984992
items	6

Factor Loading Diagnostics

item	factor_1	factor_2	primary_factor	primary_loading	cross_loading
G1	0.880821	0.00328991	1	0.880821	False
G2	0.984992	0.0140718	1	0.984992	False
G3	0.933421	-0.0197898	1	0.933421	False
famrel	0.105501	0.201004	2	0.201004	False
freetime	-0.000844467	0.704398	2	0.704398	False
goout	-0.00610066	0.490454	2	0.490454	False

Salient Loading Mask

item	Academic	Social
G1	True	False
G2	True	False
G3	True	False
famrel	False	False
freetime	False	True
goout	False	True

Communalities Context

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