

Confirmatory Composite Analysis

Standalone verified Python analysis

Test: Confirmatory Composite Analysis

Design: Fixed weighted composites evaluated by their outer loadings and reproduced correlation matrix.

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

Null hypothesis: The prespecified two-composite model has inadequate reliability or residual fit.

Formula: Composite scores= Xw ; outer loading= $\text{cor}(x_i, \text{score})$; SRMR= $\sqrt{\text{mean residual correlation}^2}$.

Source rows: 649

Calculated metrics:

academic_composite_reliability: 0.9693952591759201

social_composite_reliability: 0.7128393255337119

composite_correlation: -0.08877463872252819

constructs: 2

Independent reference values:

academic_composite_reliability: 0.9693952591759201

social_composite_reliability: 0.7128393255337119

composite_correlation: -0.08877463872252819

constructs: 2

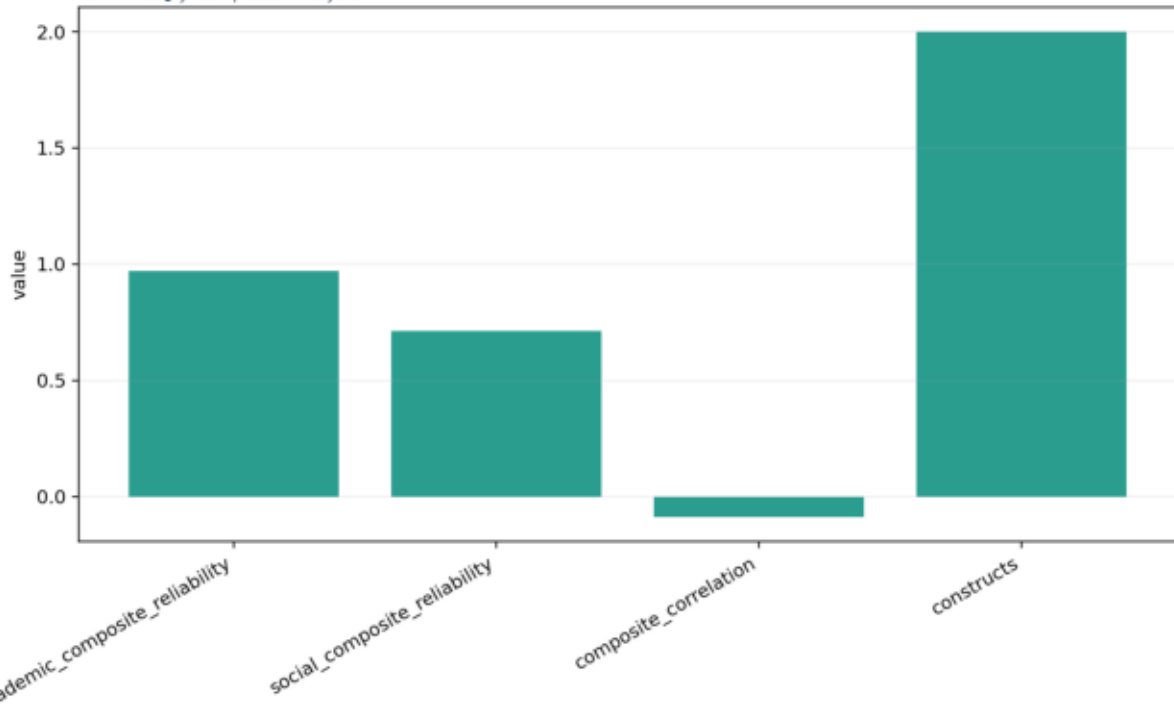
Interpretation:

CCA evaluates exact weighted composites rather than latent common factors.

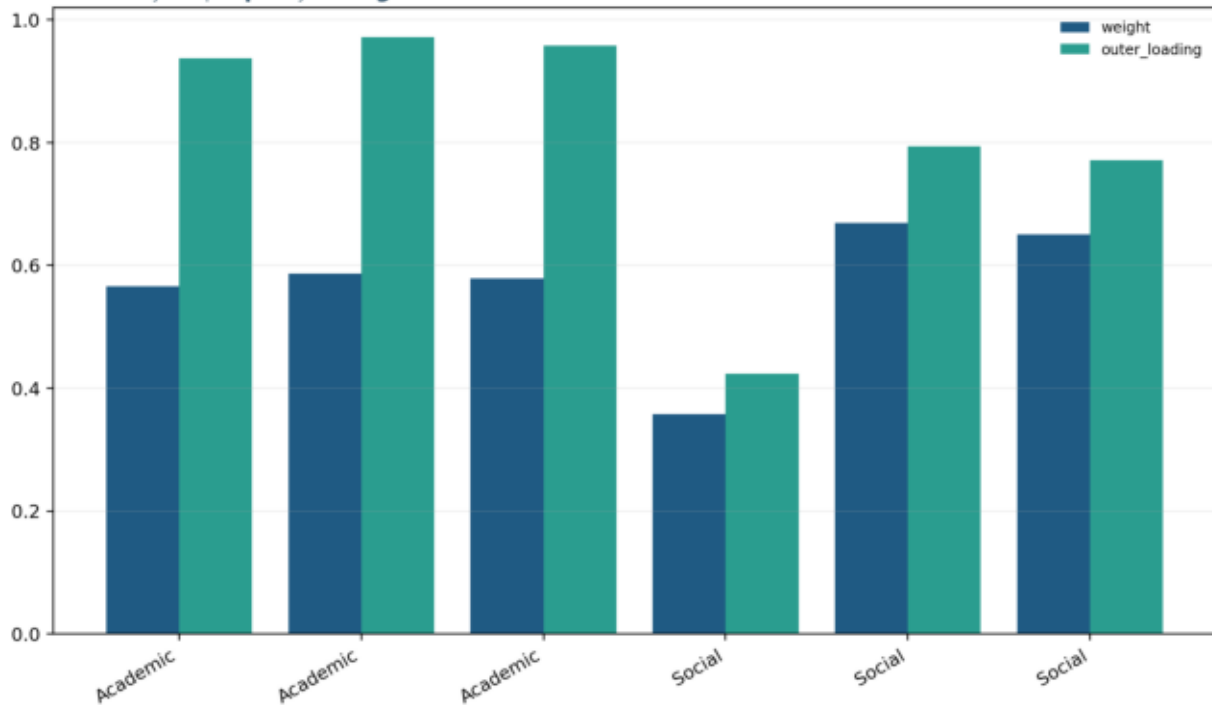
Composite correlation=-0.088775.

Primary Metrics

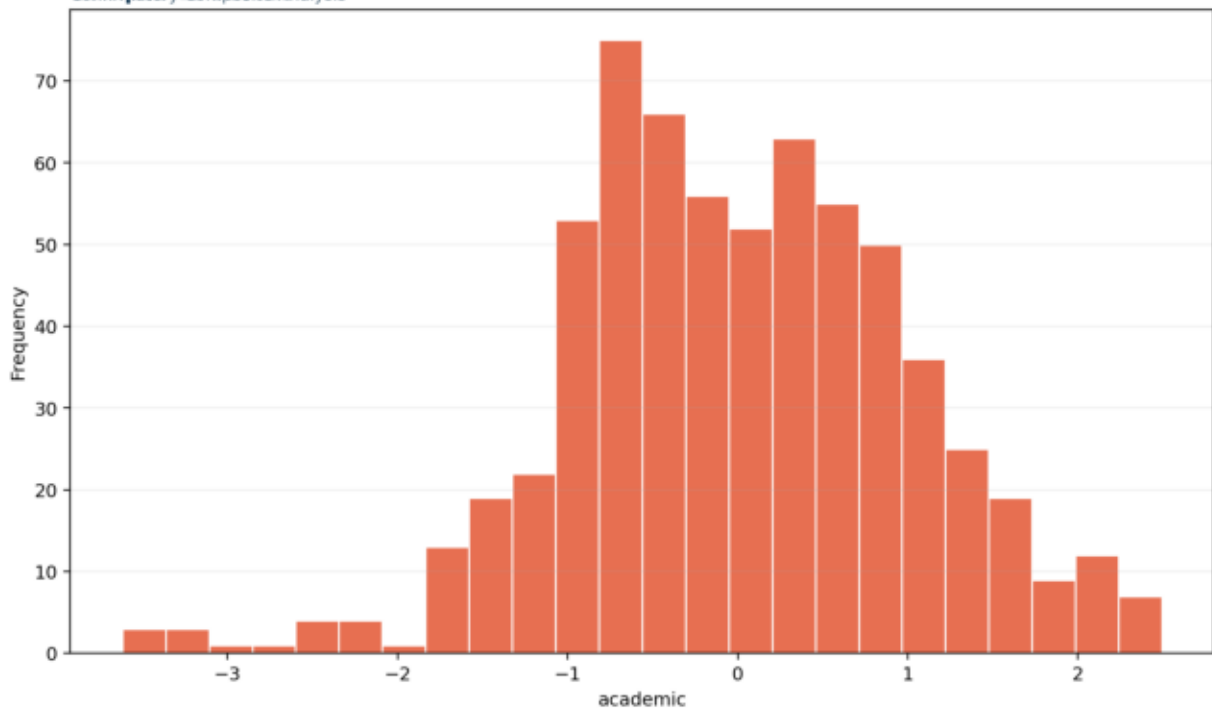
Unimixity Composite Analysis



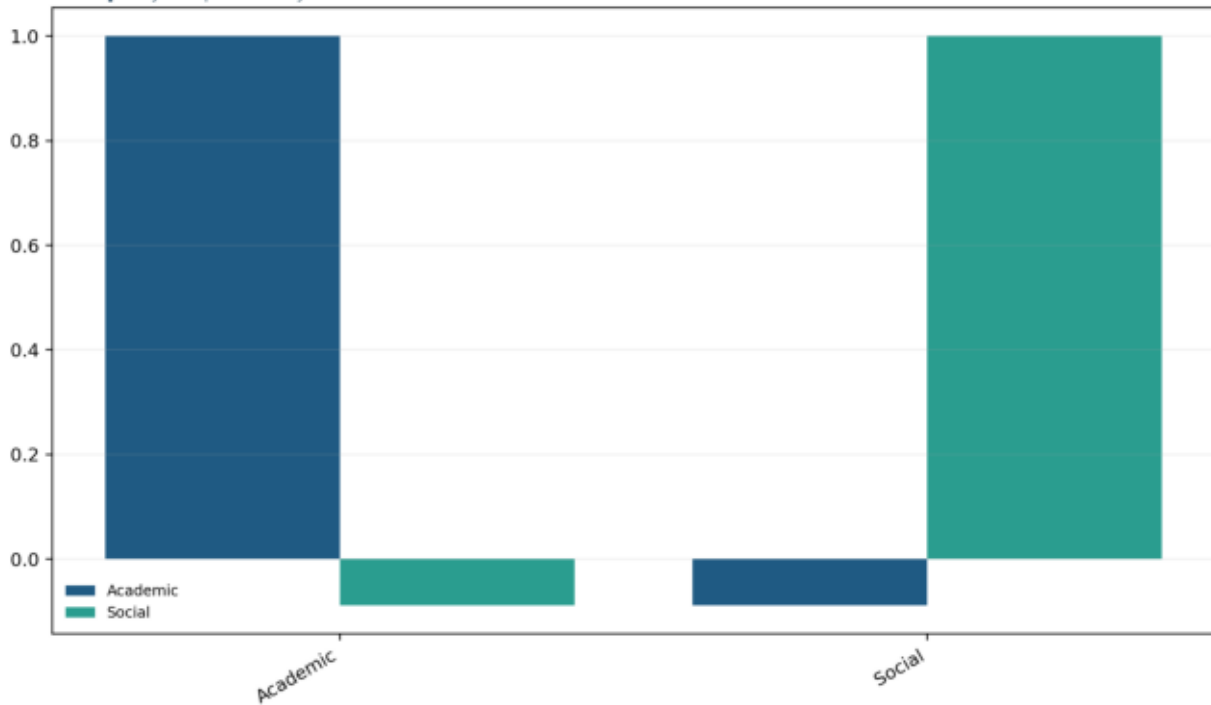
Confirmed Composite Weights



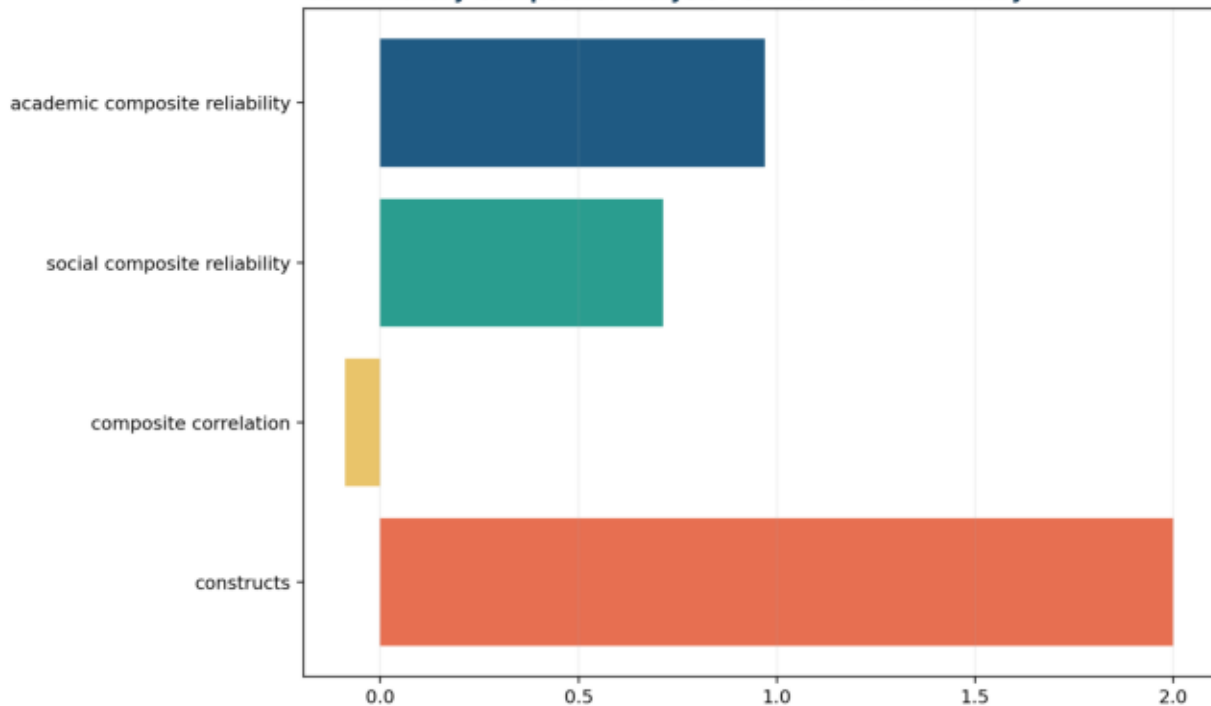
Composite Scores Analysis



Composite Correlation Matrix



Confirmatory Composite Analysis verified result summary



Primary Metrics

metric	value
academic_composite_reliability	0.969395
social_composite_reliability	0.712839
composite_correlation	-0.0887746
constructs	2

Confirmed Composite Weights

construct	item	weight	outer_loading
Academic	G1	0.566384	0.937618
Academic	G2	0.586852	0.9715
Academic	G3	0.578631	0.957891
Social	famrel	0.35735	0.423665
Social	freetime	0.669738	0.794025
Social	goout	0.650962	0.771764

Composite Scores

academic	social
-1.58802	0.30562
-0.466377	0.154013
0.259033	-0.628356
0.846341	-1.48118
0.242599	-0.628356
0.245557	0.224471
0.370184	0.843067
0.117972	-0.769273
1.53888	-1.1658
0.245557	0.29493
0.846341	-0.476749
-0.00369699	-0.850422
0.259033	-0.161368
0.245557	0.69146
0.954533	0.446537
1.9098	0.843067
0.600045	-1.0142
0.721714	-0.312975
-1.38878	2.16288
0.137365	-1.55164
0.475418	-0.557898
0.0127378	0.224471
0.475418	-0.020451
-0.571611	1.15845
-0.449942	-0.628356
-0.233558	-2.11194

Composite Correlation Matrix

construct	Academic	Social
Academic	1	-0.0887746
Social	-0.0887746	1