

Fornell-Larcker Criterion

Standalone verified Python analysis

Test: Fornell-Larcker Criterion

Design: Square roots of construct AVE compared with the absolute latent correlation.

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

Null hypothesis: At least one construct's square-root AVE does not exceed its interconstruct correlation.

Formula: Discriminant validity requires $\sqrt{\text{AVE}_j} > |\phi_{jk}|$ for every k not equal to j .

Source rows: 649

Calculated metrics:

`sqrt_ave_academic`: 0.934069241707824

`sqrt_ave_social`: 0.5177814247212298

`factor_correlation`: -0.14469453186032052

`minimum_margin`: 0.37308689286090924

`criterion_pass`: True

Independent reference values:

`sqrt_ave_academic`: 0.934069241707824

`sqrt_ave_social`: 0.5177814247212298

`factor_correlation`: -0.14469453186032052

`minimum_margin`: 0.37308689286090924

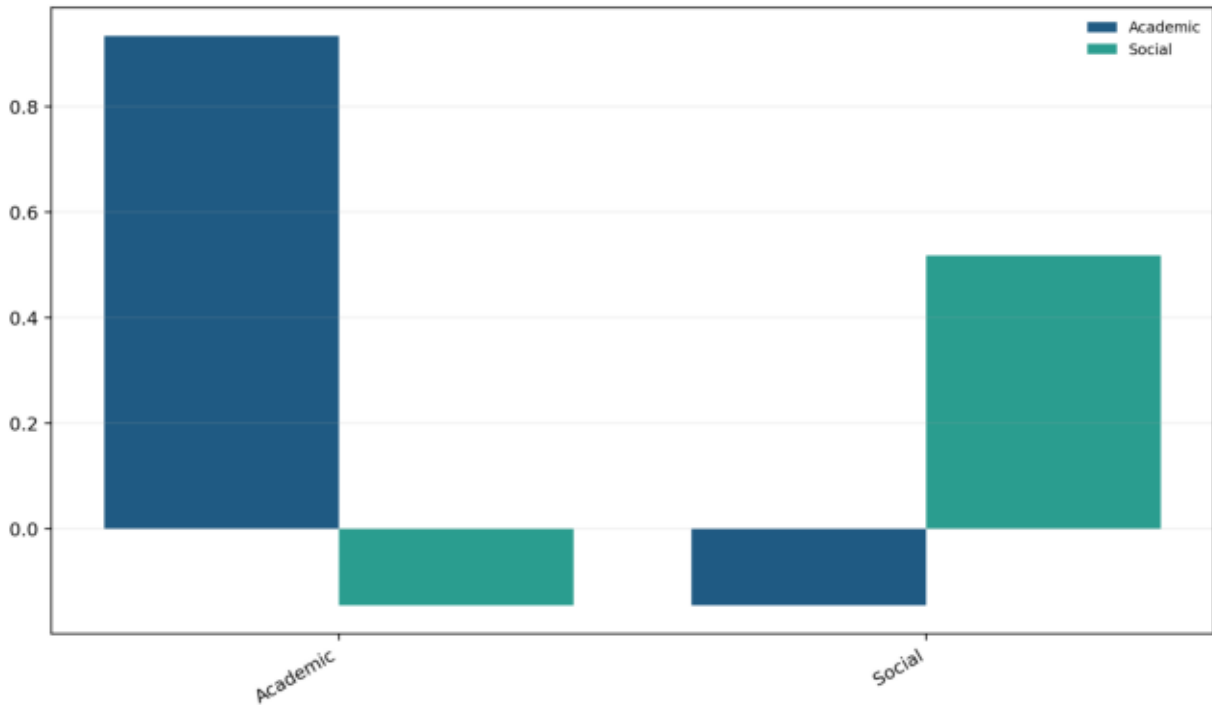
`criterion_pass`: True

Interpretation:

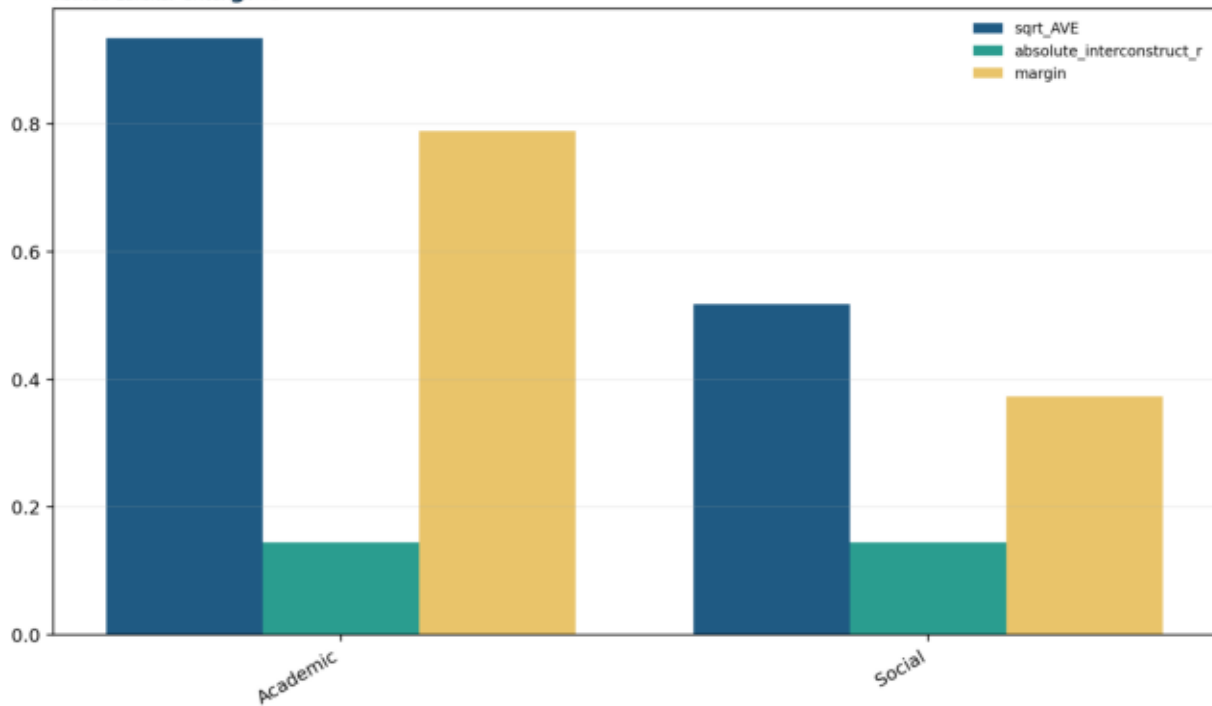
Each square root of AVE is compared with the absolute latent correlation.

Minimum Fornell-Larcker margin=0.373087.

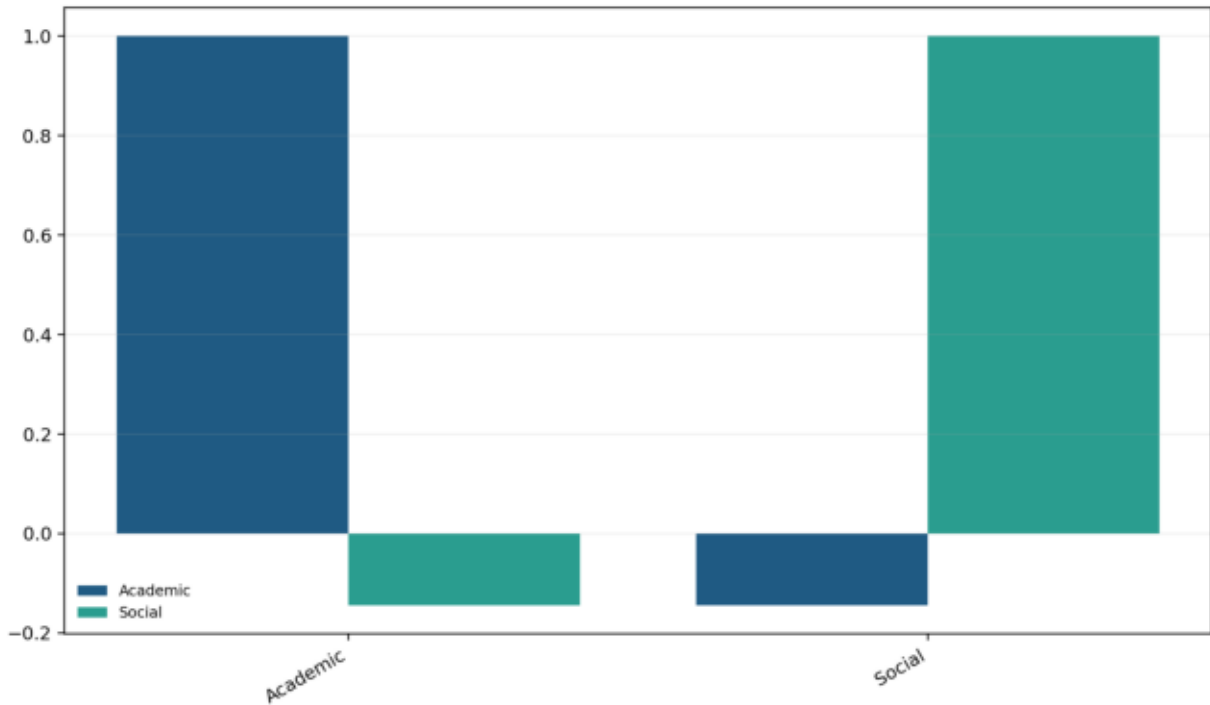
Fornell-Larcker Matrix



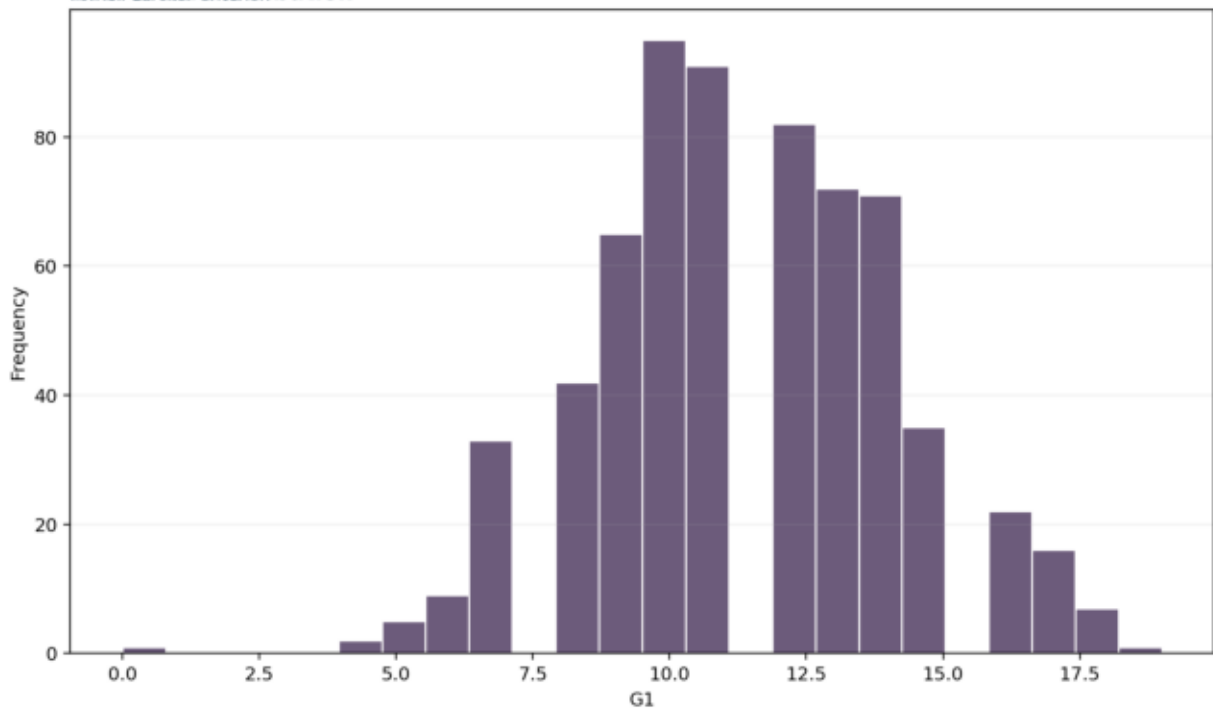
Construct Margins



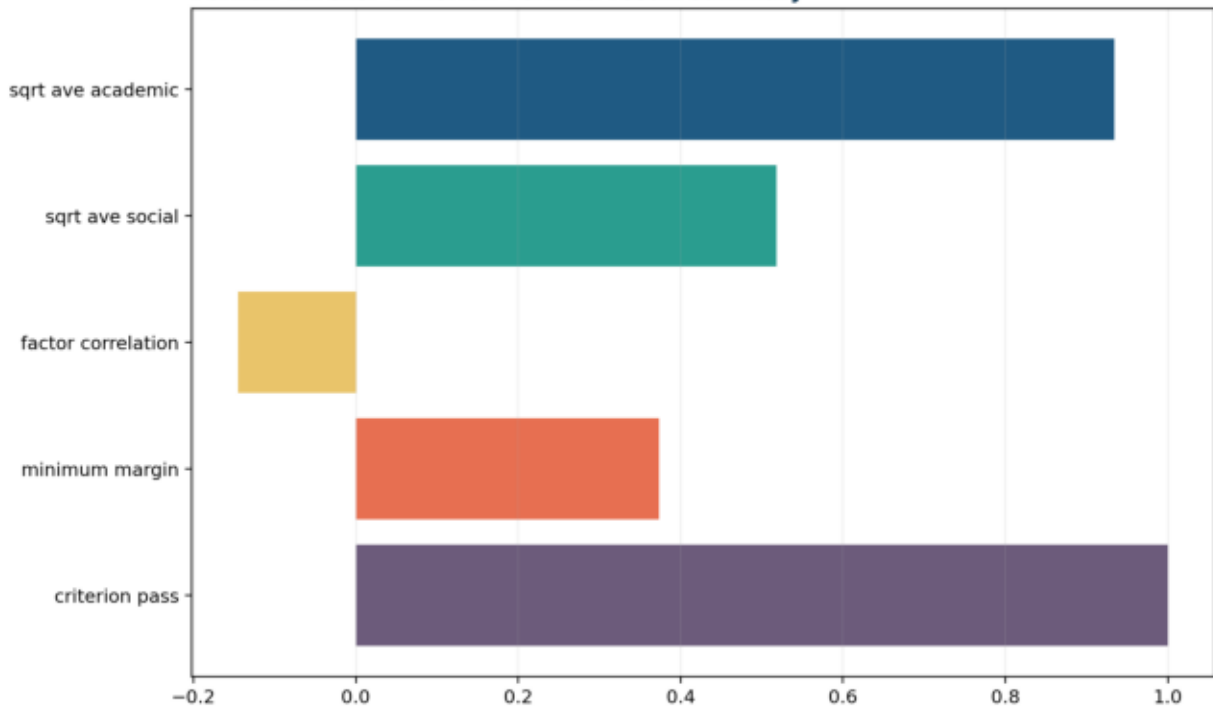
Latent Correlation Matrix



Source: G1 Distribution



Fornell-Larcker Criterion verified result summary



Primary Metrics

metric	value
sqrt_ave_academic	0.934069
sqrt_ave_social	0.517781
factor_correlation	-0.144695
minimum_margin	0.373087
criterion_pass	True

Fornell Larcker Matrix

construct	Academic	Social
Academic	0.934069	-0.144695
Social	-0.144695	0.517781

Construct Margins

construct	sqrt_AVE	absolute_interconstruct_r	margin
Academic	0.934069	0.144695	0.789375
Social	0.517781	0.144695	0.373087

Latent Correlation Matrix

construct	Academic	Social
Academic	1	-0.144695
Social	-0.144695	1