

R-Style SEM with Bootstrap Path Interval

Standalone verified Python analysis

Test: R-Style SEM with Bootstrap Path Interval

Design: ML measurement fit plus deterministic case-bootstrap interval for the social-to-academic path.

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

Null hypothesis: The bootstrapped social-to-academic path includes zero.

Formula: Fit measurement model by ML; resample cases and refit score regression 1,000 times.

Source rows: 649

Calculated metrics:

social_path: -0.047089820120738896

bootstrap_ci_low: -0.12364973618880826

bootstrap_ci_high: 0.030553548259164266

bootstrap_replications: 1000

cfi: 0.9973982062491278

rmsea: 0.03334482463134081

Independent reference values:

social_path: -0.047089820120738896

bootstrap_ci_low: -0.12364973618880826

bootstrap_ci_high: 0.030553548259164266

bootstrap_replications: 1000

cfi: 0.9973982062491278

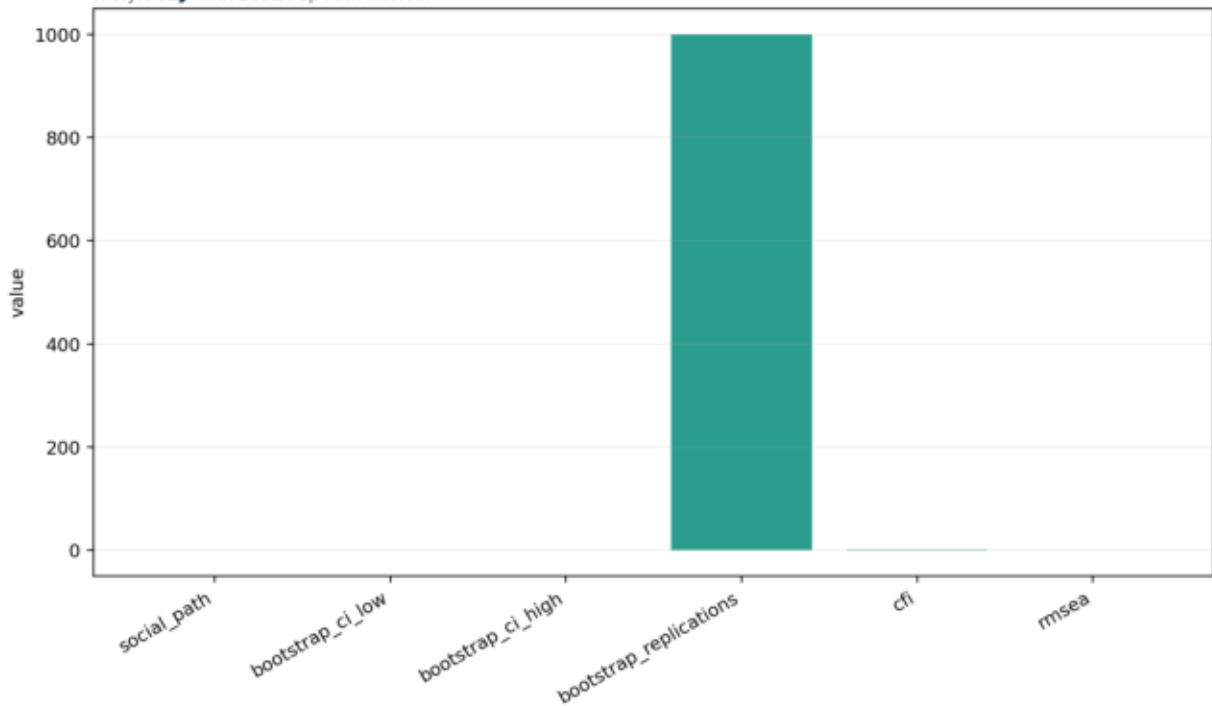
rmsea: 0.03334482463134081

Interpretation:

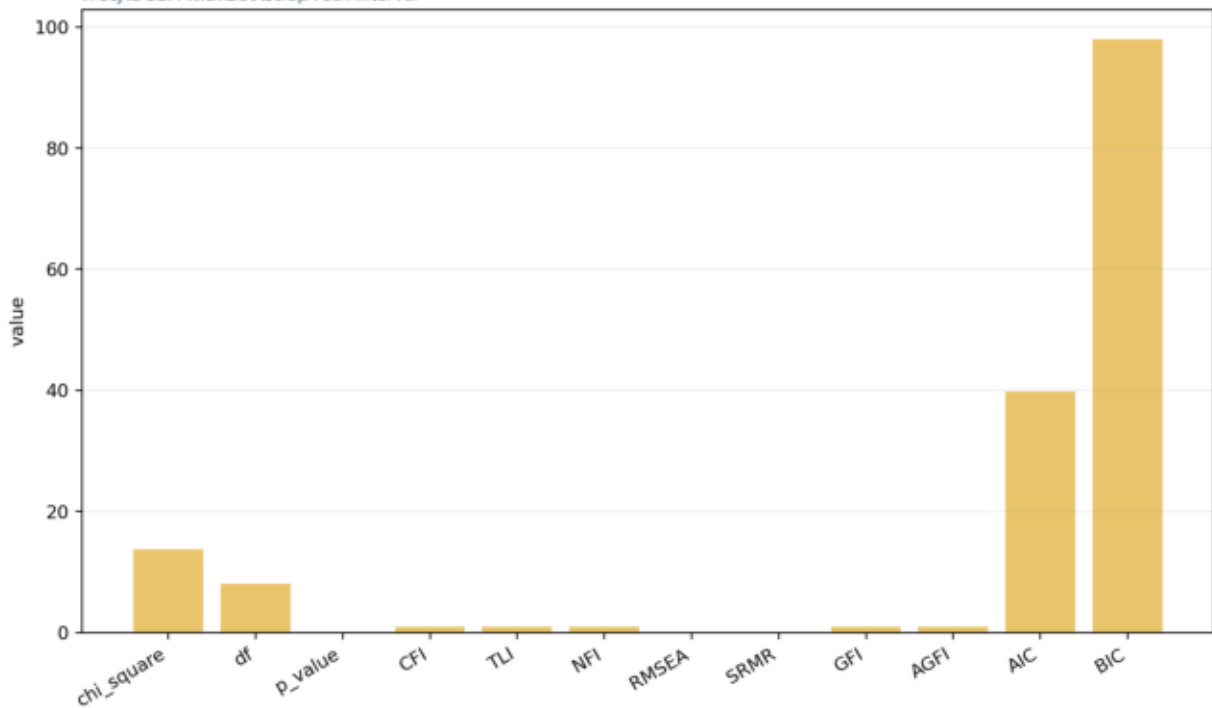
The R-style SEM keeps ML measurement fit and fixed-score case-bootstrap uncertainty distinct.

Bootstrap interval=[-0.123650, 0.030554].

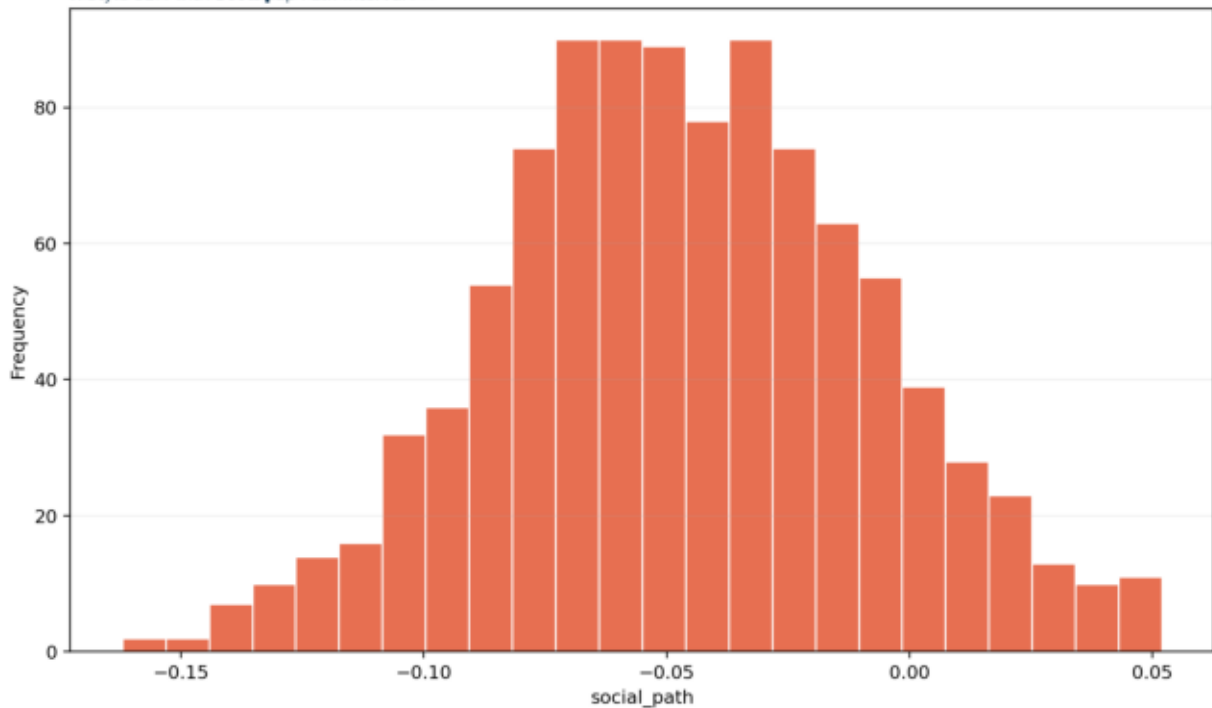
Primary Metrics



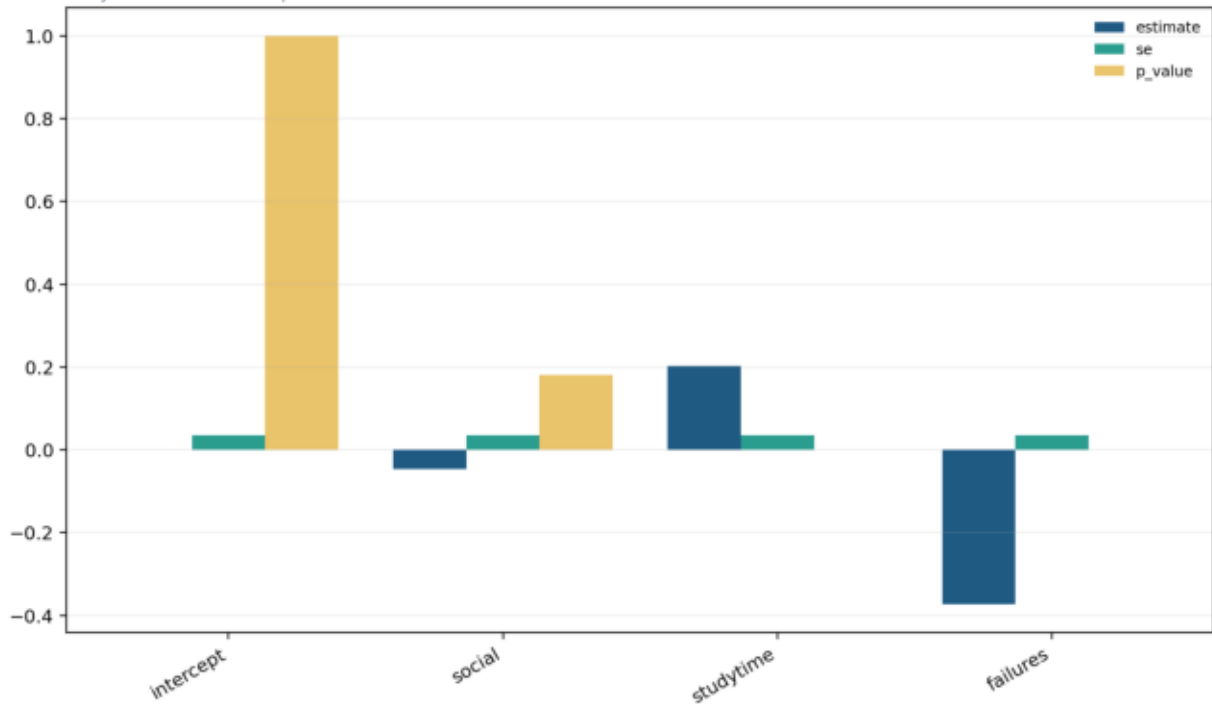
R_Sem_Measurement_Fit



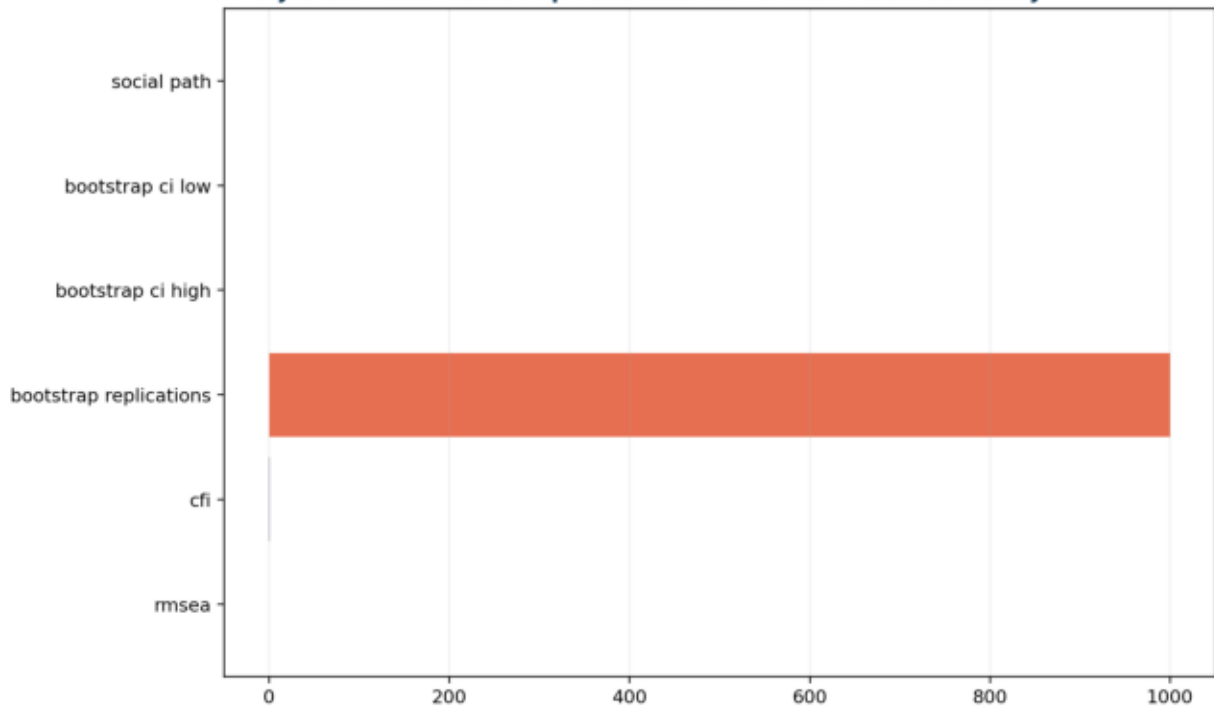
R-Sem Bootstrap Distribution



R-Sem: Structural Coefficients



R-Style SEM with Bootstrap Path Interval verified result summary



Primary Metrics

metric	value
social_path	-0.0470898
bootstrap_ci_low	-0.12365
bootstrap_ci_high	0.0305535
bootstrap_replications	1000
cfi	0.997398
rmsea	0.0333448

R Sem Measurement Fit

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

R Sem Bootstrap Distribution

social_path
-0.0599709
0.0205599
-0.0288212
-0.0765191
-0.018066
0.00101816
-0.0100785
-0.0742826
-0.060611
-0.0284975
-0.030265
-0.100395
-0.0828712
-0.0646313
-0.0585045
-0.0397328
-0.106054
-0.0542742
0.000855334
-0.0467872
-0.0561283
-0.0657747
-0.0901927
-0.0694018
-0.0998116
-0.062438

R Sem Structural Coefficients

term	estimate	se	p_value
intercept	0	0.0350037	1
social	-0.0470898	0.0352034	0.181482
studytime	0.203047	0.0355113	1.65087e-08
failures	-0.372574	0.0354738	6.29231e-24