

Covariance-Based Structural Equation Model

Test: Covariance-Based Structural Equation Model

Design: ML measurement model followed by latent-score structural regression for academic achievement.

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

Null hypothesis: Social, study-time, and failure paths jointly explain no academic-score variance.

Formula: Measurement: $\Sigma = \Lambda \Phi \Lambda' + \Theta$; structural: $\eta = B \eta + \Gamma x + \zeta$.

Source rows: 649

Calculated metrics:

chi_square: 13.7639720984401

cfi: 0.997398206239512

rmsea: 0.0333448246929569

social_path: -0.0470898201207388

studytime_path: 0.203047070350936

failures_path: -0.372573999374448

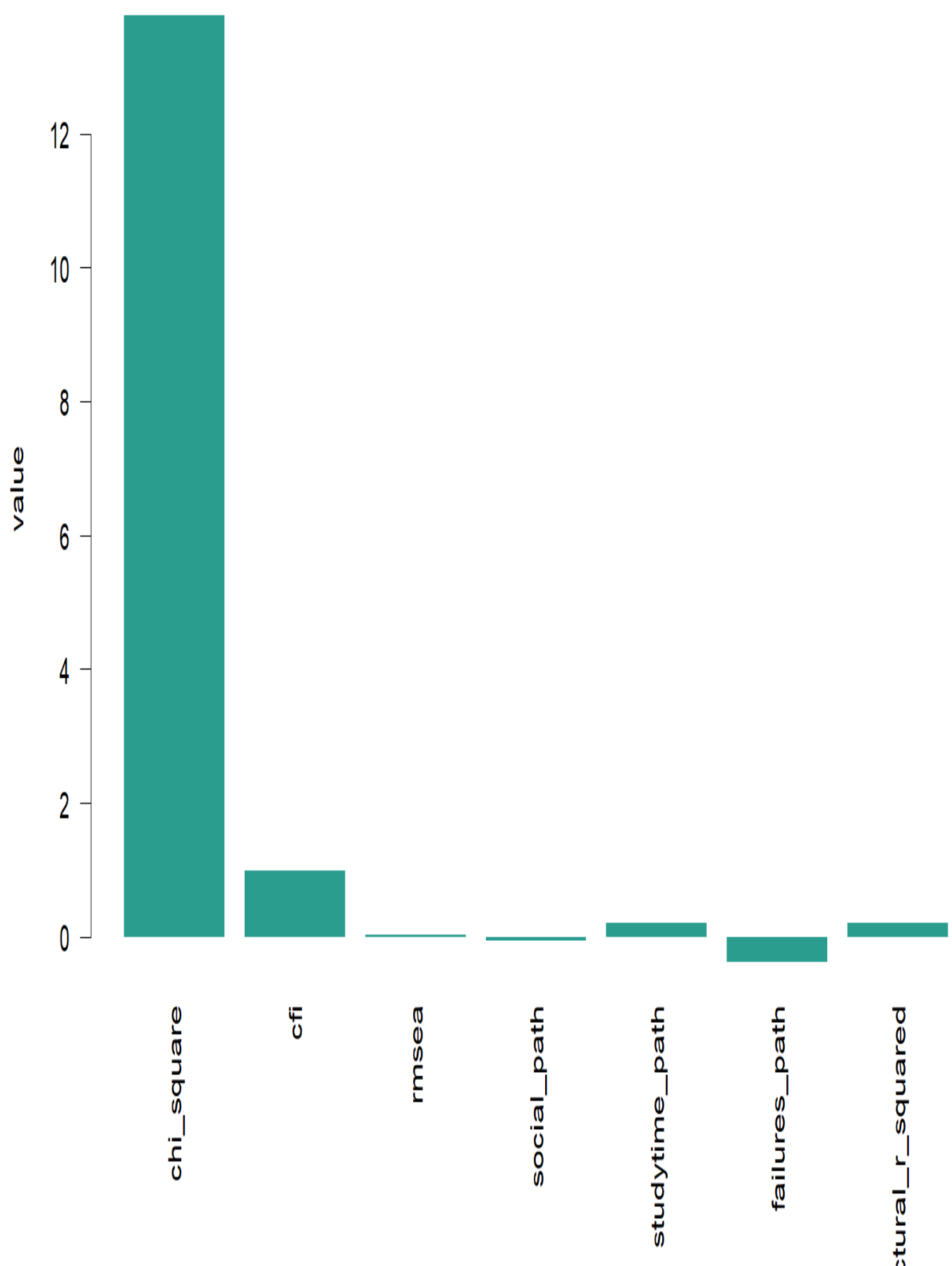
structural_r_squared: 0.208490582064094

Interpretation:

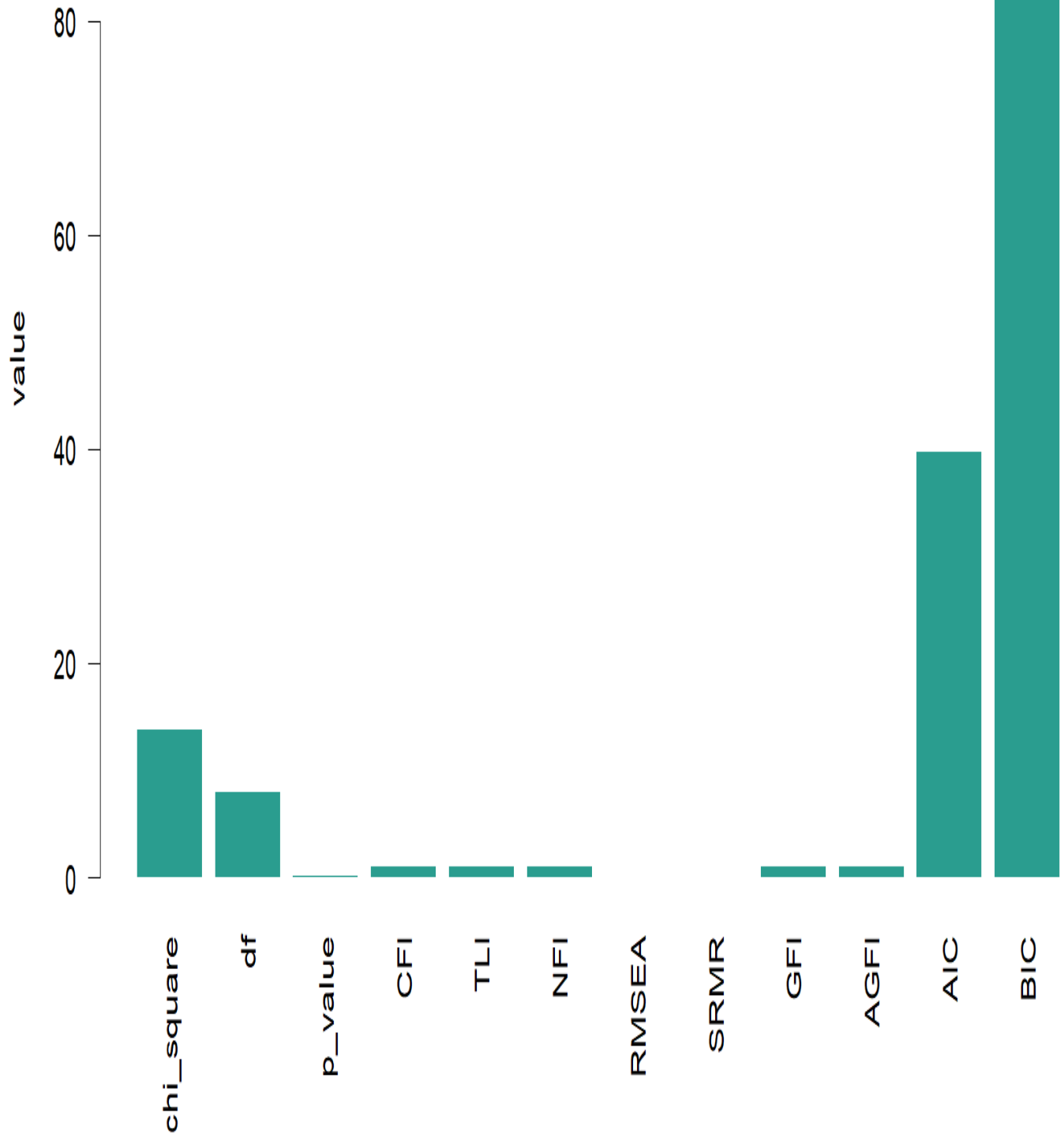
CB-SEM evaluates covariance fit before structural paths.

Structural R² 0.208490582064094

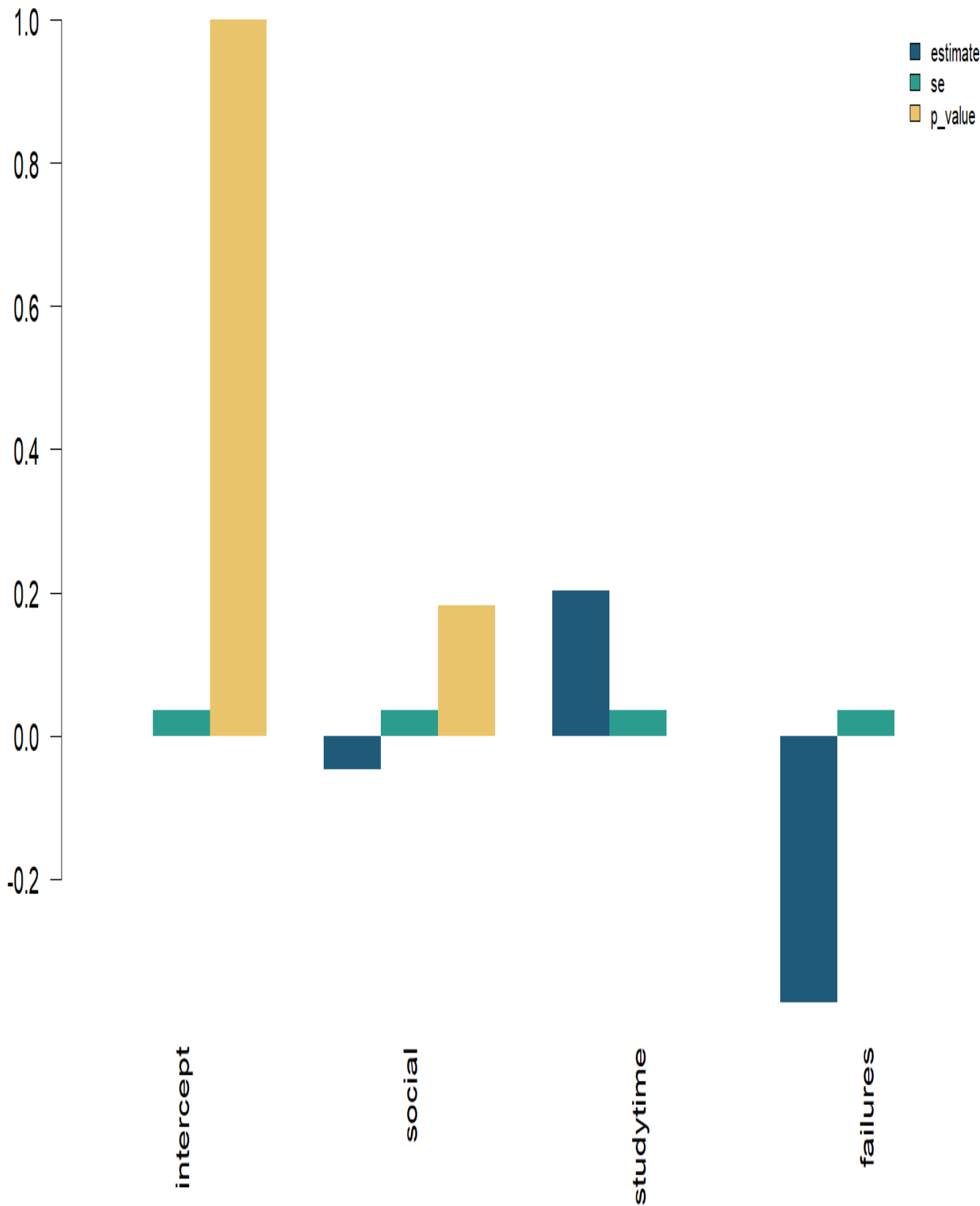
Covariance-Based Structural Equation Model - primary metrics



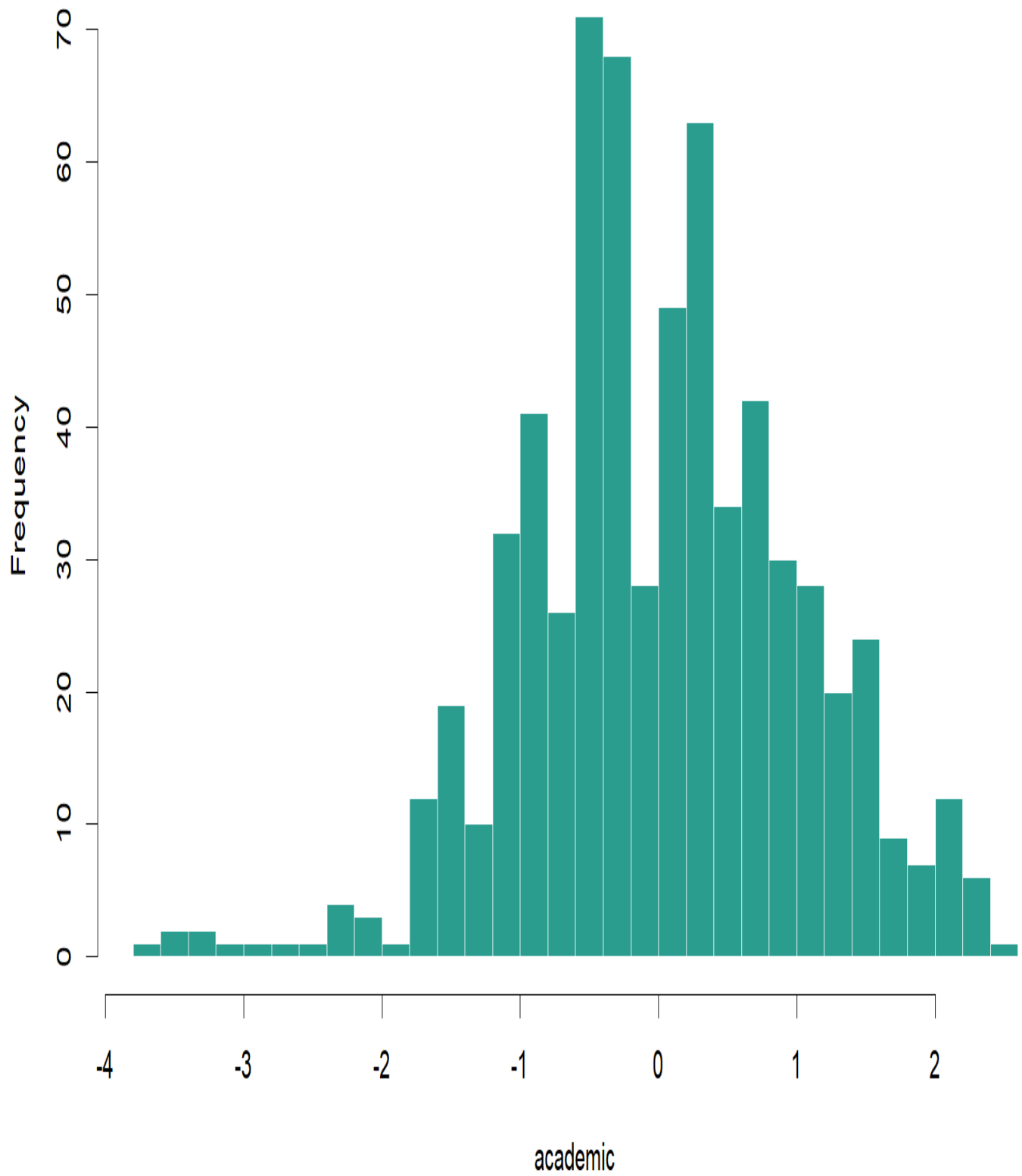
Covariance-Based Structural Equation Model - cbsem measurement fit



Covariance-Based Structural Equation Model - cbsem structural coefficients



Covariance-Based Structural Equation Model - latent score data



Covariance-Based Structural Equation Model verified results

