

Mediated Regression

Test name: Mediated Regression

Dataset: D:/DATA ANALYSIS/H Regression Tests and Models/Mediated Regression/dataset.csv

Rows in original dataset: 649

Columns in original dataset: 33

Rows used in mediated regression: 649

X independent variable: G1

Mediator variable: G2

Outcome variable: G3

Numeric covariates: studytime, failures, absences, age, Medu

Categorical covariates: school, sex, address

Mediator formula: $G2 \sim G1 + \text{studytime} + \text{failures} + \text{absences} + \text{age} + \text{Medu} + \text{school} + \text{sex} + \text{address}$

Total formula: $G3 \sim G1 + \text{studytime} + \text{failures} + \text{absences} + \text{age} + \text{Medu} + \text{school} + \text{sex} + \text{address}$

Outcome formula: $G3 \sim G1 + G2 + \text{studytime} + \text{failures} + \text{absences} + \text{age} + \text{Medu} + \text{school} + \text{sex} + \text{address}$

Path a: 0.879067

Path b: 0.881441

Total effect c: 0.908578

Direct effect c prime: 0.133732

Indirect effect a*b: 0.774846

Bootstrap 95% CI for indirect effect: 0.67656 to 0.864288

Decision: Indirect effect CI excludes zero

Interpretation: mediation is supported when the bootstrap indirect-effect confidence interval excludes zero.

Reporting guide: state X, mediator, Y, covariates, a, b, c, c prime, indirect effect, bootstrap CI, and decision.

Charts generated: 7

Mediation summary

x_variable	mediator_variable	outcome_variable	path_a	path_b	total_effect_c	direct_effect_c_prime
G1	G2	G3	0.8790672	0.8814409	0.9085782	0.1337324
indirect_effect_ab	bootstrap_mean_indirect	bootstrap_sd_indirect	bootstrap_ci95_lower	bootstrap_ci95_upper		
0.7748458	0.7727252	0.04804167	0.6765599	0.8642884		
proportion_mediated	bootstrap_samples_successful		decision			
0.8528114	1000	Indirect effect CI excludes zero				

Path coefficients

model	term	coefficient	standard_error	t_value	p_value	ci95_lower	ci95_upper
Path a mediator model	(Intercept)	-1.334721998	0.90363017	-1.4770667	1.401504e-01	-3.109165538	0.43972154
Path a mediator model	G1	0.879067192	0.02443616	35.9740282	9.613731e-156	0.831082306	0.92705208
Path a mediator model	studytime	0.013617728	0.07312522	0.1862248	8.523276e-01	-0.129977053	0.15721251
Path a mediator model	failures	-0.385199129	0.10861048	-3.5466109	4.187709e-04	-0.598475733	-0.17192253
Path a mediator model	absences	-0.003237451	0.01289346	-0.2510926	8.018232e-01	-0.028556116	0.02208121
Path a mediator model	age	0.162742255	0.04993159	3.2593043	1.176112e-03	0.064692415	0.26079210
Path a mediator model	Medu	0.098260597	0.05384885	1.8247484	6.850576e-02	-0.007481487	0.20400268
Path a mediator model	schoolMS	-0.077012763	0.13750346	-0.5600787	5.756220e-01	-0.347026025	0.19300050
Path a mediator model	sexM	-0.082632823	0.12065269	-0.6848817	4.936669e-01	-0.319556505	0.15429086
Path a mediator model	addressU	0.063039669	0.13292969	0.4742332	6.354957e-01	-0.197992160	0.32407150
Total effect model	(Intercept)	-1.341099153	1.11601075	-1.2016902	2.299288e-01	-3.532590909	0.85039260
Total effect model	G1	0.908578178	0.03017940	30.1059021	1.192541e-124	0.849315384	0.96784097

decision_alpha_0_05

Not statistically significant

Statistically significant

Not statistically significant

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Not statistically significant

Statistically significant

Not statistically significant

Not statistically significant

Not statistically significant

Not statistically significant

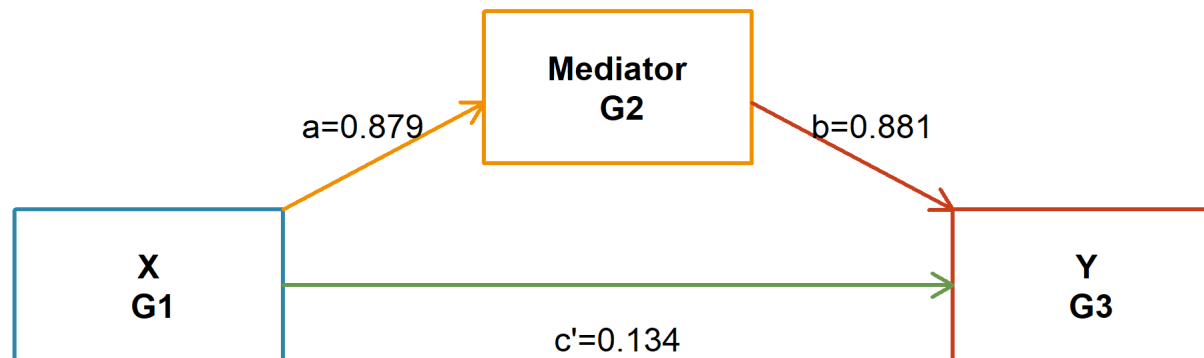
Not statistically significant

Statistically significant

Model fit statistics

	model	n	df_model	df_residual	r_squared	adj_r_squared	f_statistic	f_p_value
Path a mediator	model	649		9	639	0.7574733	0.7540574	221.7512 5.256105e-190
Total effect	model	649		9	639	0.6991120	0.6948742	164.9682 3.303360e-160
Direct and mediator outcome	model	649		10	638	0.8523746	0.8500607	368.3748 2.159712e-257
aic	bic							
2331.465	2380.694							
2605.467	2654.696							
2145.340	2199.045							

Mediated regression path diagram



X effect is decomposed into direct and indirect paths through the mediator

