

Reliability Analysis for Likert Scales

Standalone verified Python analysis

Method: Reliability Analysis for Likert Scales

Method type: reliability_analysis

Design: Internal-consistency analysis of the six-item directionally aligned scale.

Variables: famrel, freetime, goout, Dalc, Walc, health

Inference scope: No significance test is required; alpha, standardized alpha, omega, item-total correlations, and alpha-if-deleted diagnose consistency.

Formula: $\alpha = k / (k - 1) * (1 - \sum(s_i^2) / s_{total}^2)$; $\alpha_{std} = k * r_{bar} / [1 + (k - 1)r_{bar}]$.

Source rows: 649

Calculated metrics:

cronbach_alpha: 0.1117626312468654

standardized_alpha: 0.16890957016106378

omega_total: 0.020155382121447452

minimum_item_total_r: -0.10476993802912485

maximum_alpha_if_deleted: 0.23408718414663743

items: 6

respondents: 649

Independent reference values:

cronbach_alpha: 0.1117626312468654

standardized_alpha: 0.16890957016106378

omega_total: 0.020155382121447452

minimum_item_total_r: -0.10476993802912485

maximum_alpha_if_deleted: 0.23408718414663743

items: 6

respondents: 649

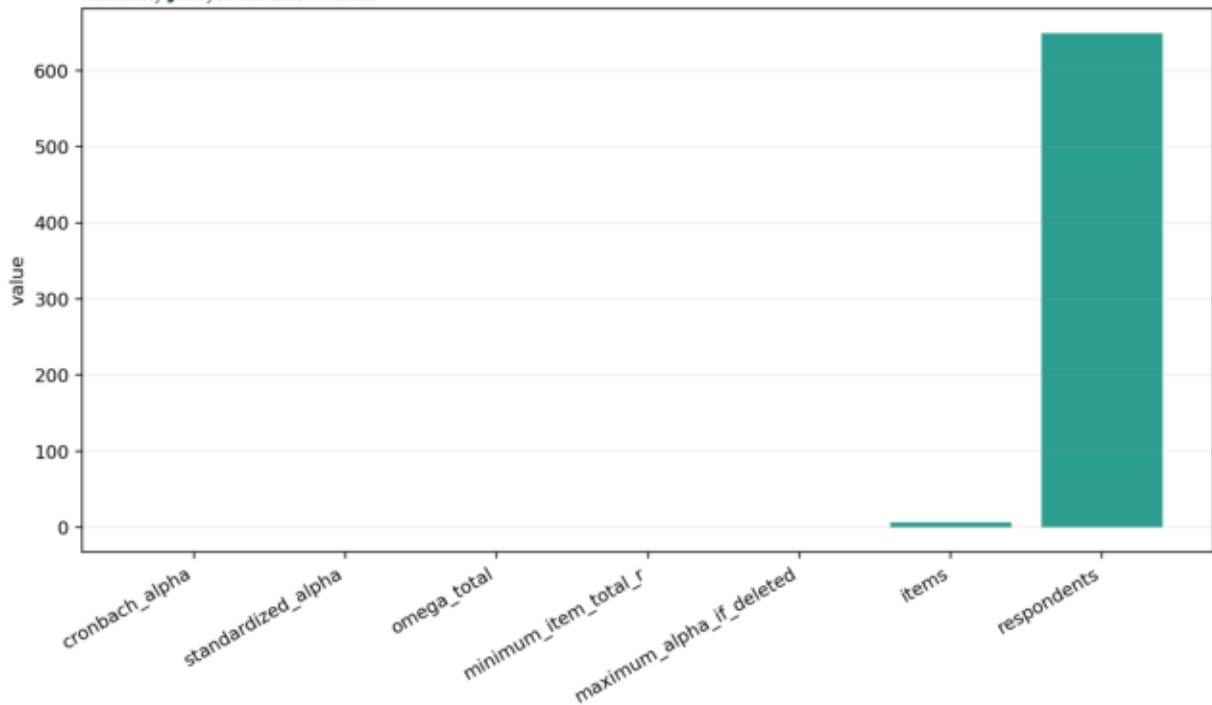
Interpretation:

Alpha, standardized alpha, and omega are reported without assuming they are interchangeable.

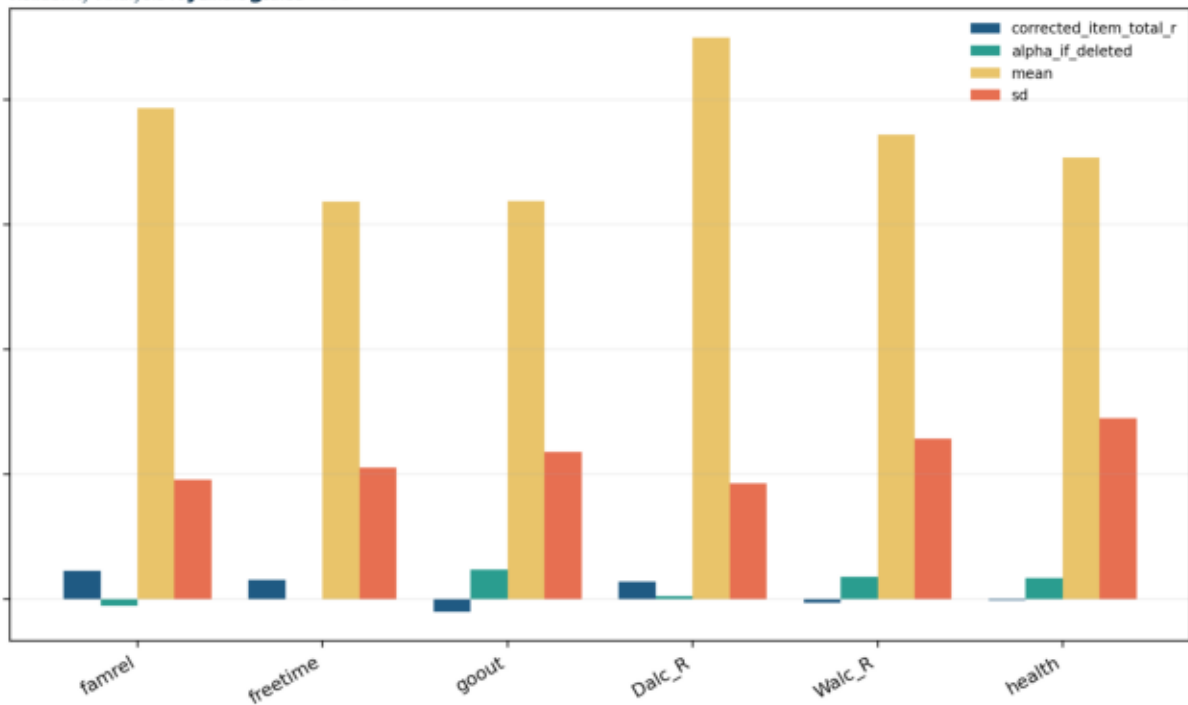
Alpha=0.111763; omega=0.020155; minimum corrected item-total r=-0.104770.

Primary Metrics

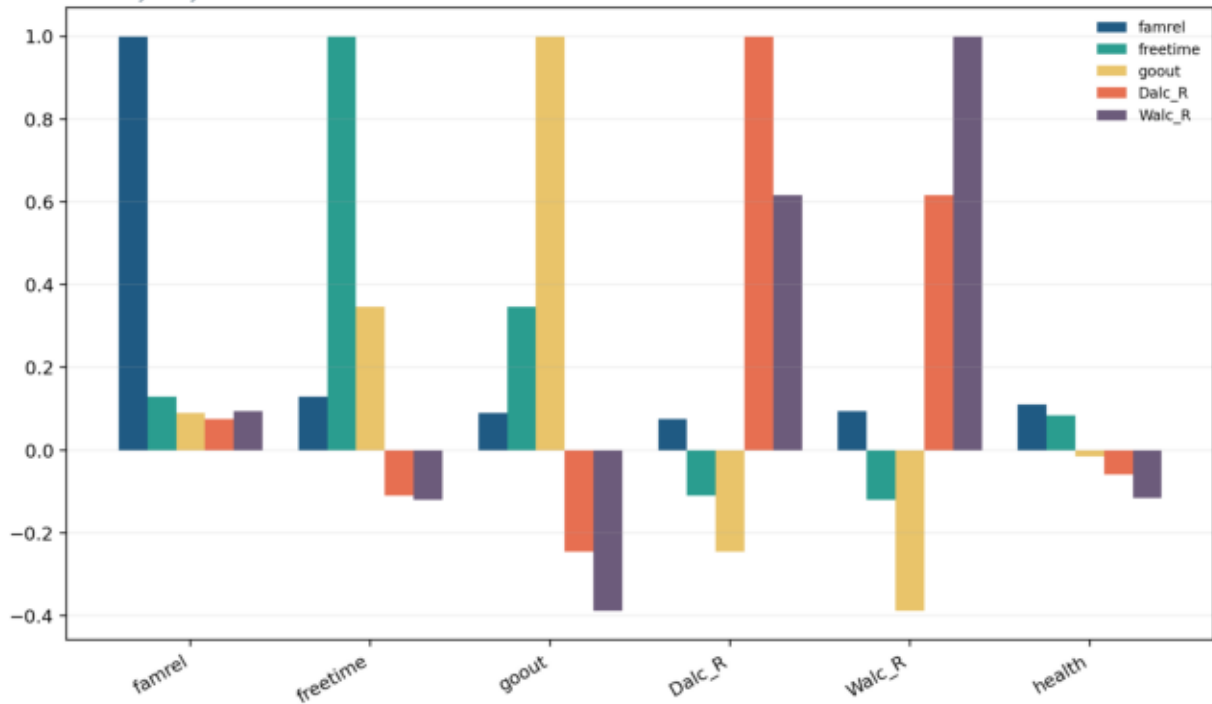
Reliability and Likert Scales



Item Reliability Diagnostics

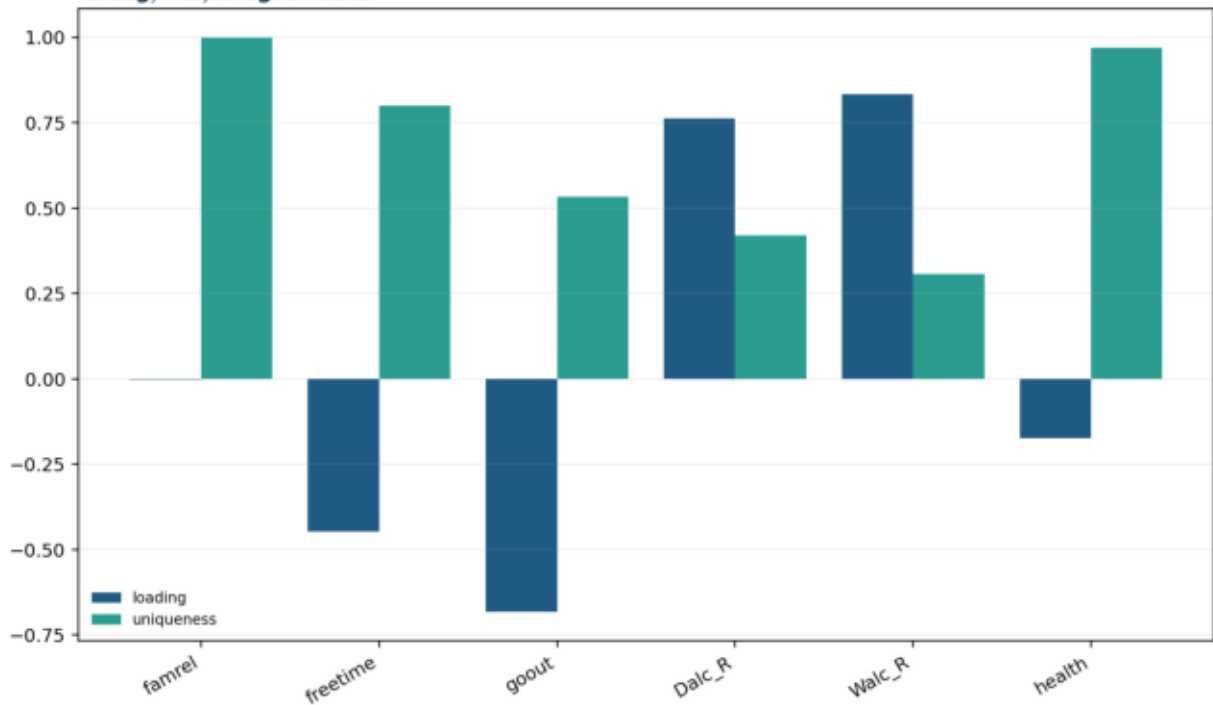


Inter Item Correlation Matrix

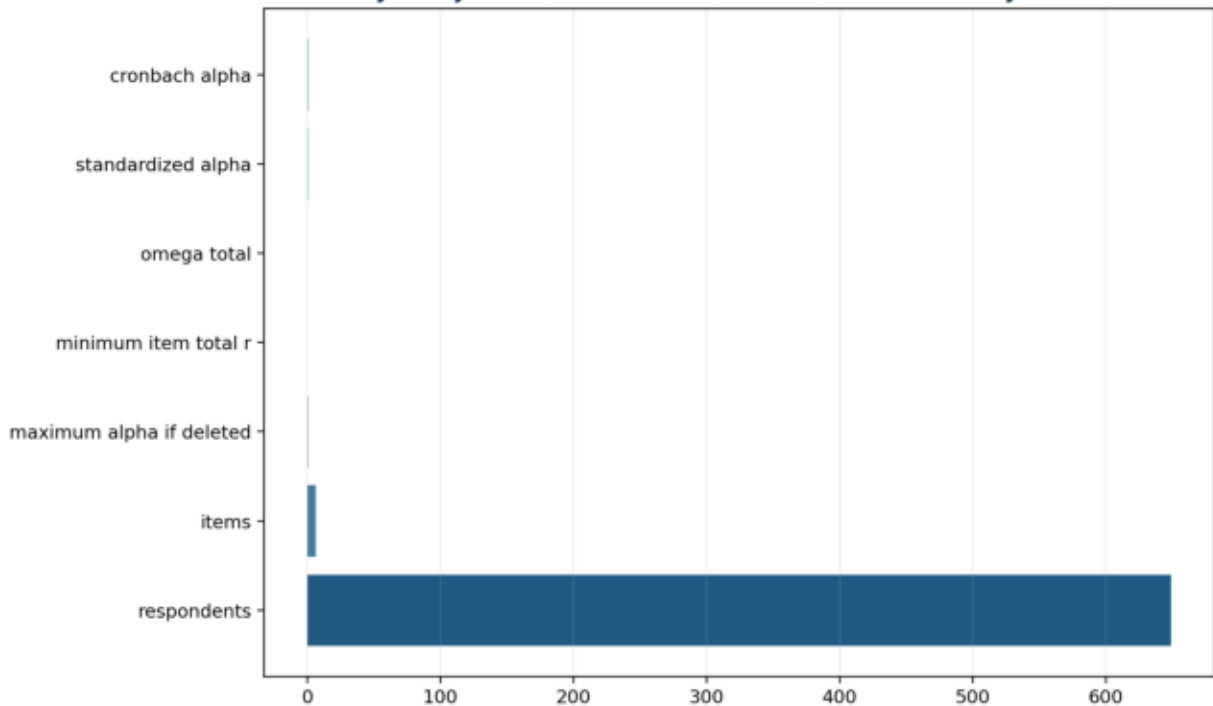


Omega Loadings

Factor Scales



Reliability Analysis for Likert Scales verified result summary



Primary Metrics

metric	value
cronbach_alpha	0.111763
standardized_alpha	0.16891
omega_total	0.0201554
minimum_item_total_r	-0.10477
maximum_alpha_if_deleted	0.234087
items	6
respondents	649

Item Reliability Diagnostics

item	corrected_item_total_r	alpha_if_deleted	mean	sd
famrel	0.226597	-0.0564858	3.93066	0.955717
freetime	0.151318	-0.0023642	3.18028	1.05109
goout	-0.10477	0.234087	3.1849	1.17577
Dalc_R	0.139144	0.0219086	4.49769	0.924834
Walc_R	-0.0331203	0.177823	3.71957	1.28438
health	-0.0104535	0.165338	3.53621	1.44626

Inter Item Correlation Matrix

item	famrel	freetime	goout	Dalc_R	Walc_R	health
famrel	1	0.129216	0.0897066	0.0757672	0.0935108	0.109559
freetime	0.129216	1	0.346352	-0.109904	-0.120244	0.0845264
goout	0.0897066	0.346352	1	-0.245126	-0.38868	-0.0157411
Dalc_R	0.0757672	-0.109904	-0.245126	1	0.616561	-0.0590675
Walc_R	0.0935108	-0.120244	-0.38868	0.616561	1	-0.114988
health	0.109559	0.0845264	-0.0157411	-0.0590675	-0.114988	1

Omega Loadings

item	loading	uniqueness
famrel	-0.0026175	0.999993
freetime	-0.448238	0.799083
goout	-0.682835	0.533737
Dalc_R	0.762003	0.419351
Walc_R	0.832727	0.306566
health	-0.173167	0.970013