

# TIPI-top or TIPI-flop

## Evaluation of Validity and Reliability of the Ten Item Personality Inventory

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### Background

The use of test inventories describing personality via the Five-Factor Trait Model (FFM) (Goldberg, 1993) in music psychology research has increased over the past decade. Since brevity is often essential, shorter inventories such as the Ten Item Personality Inventory (TIPI) (Gosling et al., 2003) have gained more attention. The aim of this study is to check whether the TIPI is an adequate proxy for longer test inventories by evaluating its reliability and validity.

### Methods

Participants (N=67) were asked to describe their personality regarding *Openness*, *Neuroticism*, *Agreeableness*, *Conscientiousness* and *Extraversion* using the Neo-PI-R (Ostendorf & Angleitner, 2004), its short version Neo-FFI (Costa & McCrae, 1992) as well as the TIPI. The data were first analysed regarding the construct validity of each factor using a Multi Trait Multi Method Matrix. Internal consistency was calculated of the two longer questionnaires since the TIPI is statistically too short for that. Exploratory and confirmatory factor analyses were performed to check whether the five dimensions still hold up. Correlations between the inventories and mean scores of each dimension were compared to examine whether the scores in each personality trait differ significantly.

### Results

The results reaffirm the two longer inventories as they show significant and strong correlations between the according factors.

### Validity

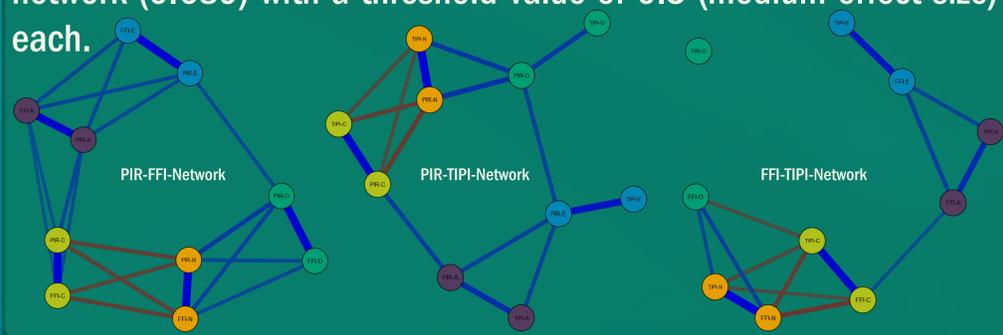
Correlations between the TIPI and the other two questionnaires regarding the factor *Openness* were weak to non-significant (TIPI~Neo-FFI:  $r=.232$ ,  $p=.059$ ; TIPI~Neo-PI-R:  $r=.441$ ,  $p>.001$ ). Based on the correlation between the TIPI and the other two questionnaires the TIPI showed too small effects to account for sufficient construct validity, except for the factor *Neuroticism*.

	PIR-O	PIR-C	PIR-E	PIR-A	PIR-N	FFI-O	FFI-C	FFI-E	FFI-A	FFI-N	TIPI-O	TIPI-C	TIPI-E	TIPI-A	TIPI-N
TIPI-O	0.441***	-0.038	0.19	0.109	0.242*	0.232	0.009	0.228	0.134	0.183	-0.086	0.204	-0.022	0.209	
TIPI-C	-0.273*	0.758***	0.119	0.296*	-0.402***	-0.315**	0.752***	0.182	0.232	-0.409***	-0.086	0.1	0.072	-0.335**	
TIPI-E	0.229	0.044	0.681***	0.055	0.048	0.107	0.155	0.651***	0.104	-0.085	0.204	0.1	0.093	0.081	
TIPI-A	0.058	-0.014	0.376**	0.522***	0.074	-0.086	-0.066	0.361**	0.542***	0.048	-0.022	0.072	0.093	0.02	
TIPI-N	0.441***	-0.326**	0.032	-0.019	0.808***	0.335**	-0.313**	-0.14	-0.103	0.806***	0.209	-0.335**	0.081	0.02	

Multi Trait Multi Method Matrix for TIPI, Neo-FFI and Neo-PI-R (\*\* $p<.001$ , \*\* $p<.01$ , \* $p<.05$ )

### Network Analysis

The Network analysis showed the sparsity to be lower for a PIR-FFI-network (0.511) than a PIR-TIPI-network (0.647) as well as FFI-TIPI-network (0.689) with a threshold value of 0.3 (medium effect size) each.



### Factor Analysis

A confirmatory factor analysis over FFI and TIPI showed only 7 of 10 TIPI items to load into the correct factor.

Component Loadings	Neuroticism	Agreeableness	Conscientiousness	Extraversion	Openness	Uniqueness
TIPI-E1				0.839		0.285
TIPI-A1 (-)		-0.204	0.438		0.418	0.607
TIPI-C1			0.735			0.378
TIPI-N1	0.738					0.463
TIPI-O1	0.332			0.391	0.203	0.605
TIPI-E2 (-)				-0.468		0.719
TIPI-A2	0.219	0.716		0.200		0.372
TIPI-C2 (-)			-0.570		0.285	0.458
TIPI-N2 (-)	-0.749					0.315
TIPI-O2 (-)					-0.196	0.932

Item 2 and item 5 of the TIPI loaded into two wrong factors each, and item 10 did not load into any factor with sufficient  $r$ .

The exploratory factor analysis for Neo-FFI showed 5 factors (RMSEA=0.131; *Neuroticism* being the only factor without error). The exploratory factor analysis for the TIPI showed 2 factors (RMSEA=0.16), one containing *Conscientiousness* and one all other items.

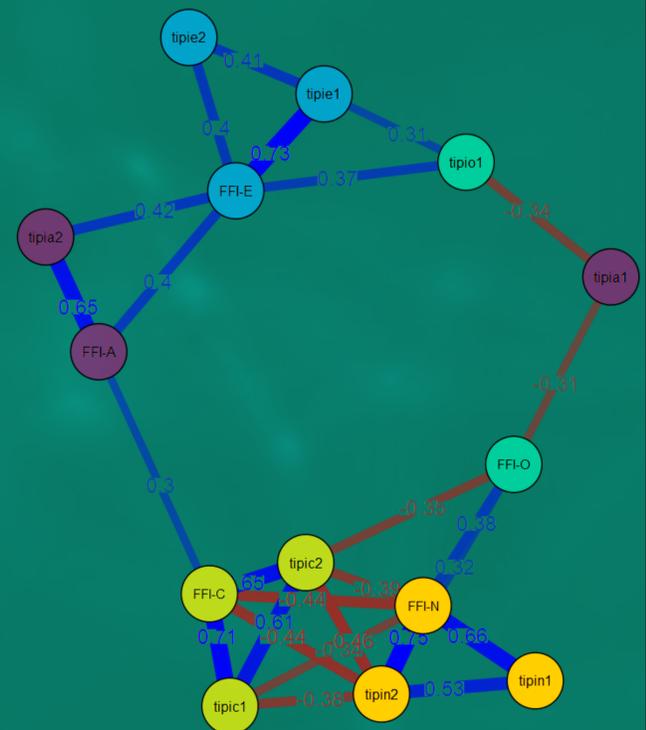
Factor Loadings	Factor 1	Factor 2	Uniqueness
Tipi E1		0.435	0.790
Tipi A1		-0.275	0.921
Tipi C1	0.675	0.302	0.452
Tipi N1	-0.306	0.364	0.774
Tipi O1		0.608	0.588
Tipi E2		0.406	0.833
Tipi A2		0.370	0.853
Tipi C2	0.745		0.444
Tipi N2	-0.724		0.426
Tipi O2		0.355	0.868

### Reliability

When added to the Neo-FFI item pool TIPI items lowered Cronbach's Alpha for *Openness*, *Extraversion* and *Agreeableness*, item 10 being the second worst item in its factor (O), item 6 being the third worst (E) and item 2 being the worst item in its factor (A;  $\alpha_{FFI}=.874$ ;  $\alpha=.885$  if item dropped).

Overall, the internal consistency of the long versions ranged from .779 to .893.

The network plot (right) shows the correlations of each TIPI item with the FFI factors.



### Discussion

Since the TIPI showed unreliable results concerning the correlation of its dimensions with those of longer inventories as well as weak construct validity, it seems to be an inadequate substitute for longer questionnaires such as the Neo-PI-R and the Neo-FFI. Therefore, it is not recommended to be used (without evaluation or care) for scientific purposes and empirical research such as online studies.

### References

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 Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A Very Brief Measure of the Big Five Personality Domains. *Journal of Research in Personality*, 37(6), 504-528. doi:10.1016/S0092-6566(03)00046-1  
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