

Supplementary information

Results after twin exclusion and using cerebellar white matter as reference region

Table 3 *Pearson's r and default BF for 5-HT_{1A} receptor binding and self-transcendence (ST) and spiritual acceptance (SA) assessed by TCI for frontal cortex, hippocampus and dorsal raphe nuclei for present replication and Karlsson's replication.*

		Pearson's r		BF ₀₋		
		Twin exclusion	White matter	Twin exclusion	White matter	
Self-transcendence						
- frontal cortex	-0.06	0.16	-0.07	5.3	8.3	3.7
- hippocampus	-0.19	-0.02	-0.23	2.5	4.3	5.9
- dorsal raphe nuclei	-0.11	-0.10		4.3	2.9	
Spiritual acceptance vs material rationalism						
- frontal cortex	-0.03	0.19	-0.01	5.6	9.1	5.3
- hippocampus	-0.12	0.07	-0.13	4.2	6.3	2.4
- dorsal raphe nuclei	-0.16	-0.09		3.1	2.9	

Abbreviations: TCI, Temperament and Character Inventory; r, Pearson's correlation efficient; BF₀₋, the default BF representing the likelihood for the null hypothesis (H₀: no correlation) versus the alternative hypothesis (H₁: negative correlation).

Calculation of PPV

PPV is the positive predictive value (i.e. the chance of the finding being true) and has the following formula:

$$PPV = \frac{(1-\beta) \times R}{(1-\beta) \times R + \alpha}$$

where $1 - \beta$ is the power and β the type II error; R is the pre-study odds (in our case the probability of any one personality scale being correlated with 5-HT_{1A} receptor binding); α is the type I error (the statistical significance level).

We made the following assumptions:

- We calculate for an effect size of Pearson's $R = 0.5$. This represents a large effect (Cohen, 1988). We calculated the power using this effect size using the "pwr" package in R (Stephane Champely (2015).
- We assume a pre-study odds of 10%. We believe that this is a liberal estimate for comparisons of receptor binding and personality traits.
- The sample size of the original study was 15.
- We set $\alpha = 0.05$ for 10 analyses without correction for multiple comparisons. The original analysis was performed first with three ROIs for seven dimensions, after which self-transcendence was found to be significantly associated with ST ($p < 0.05$). Due to the high correlations between regional binding estimates, it is an exaggeration to consider this as 21 independent comparisons. Instead, we approximate it as 10 comparisons, comprised of 7 approximately independent original personality dimensions, and three more to account for the multiple ROIs. This means that we assume a final type I error rate of 0.5 (50%).