



The Neuropsychology of Hypnotizability: Executive Functioning and Information Salience

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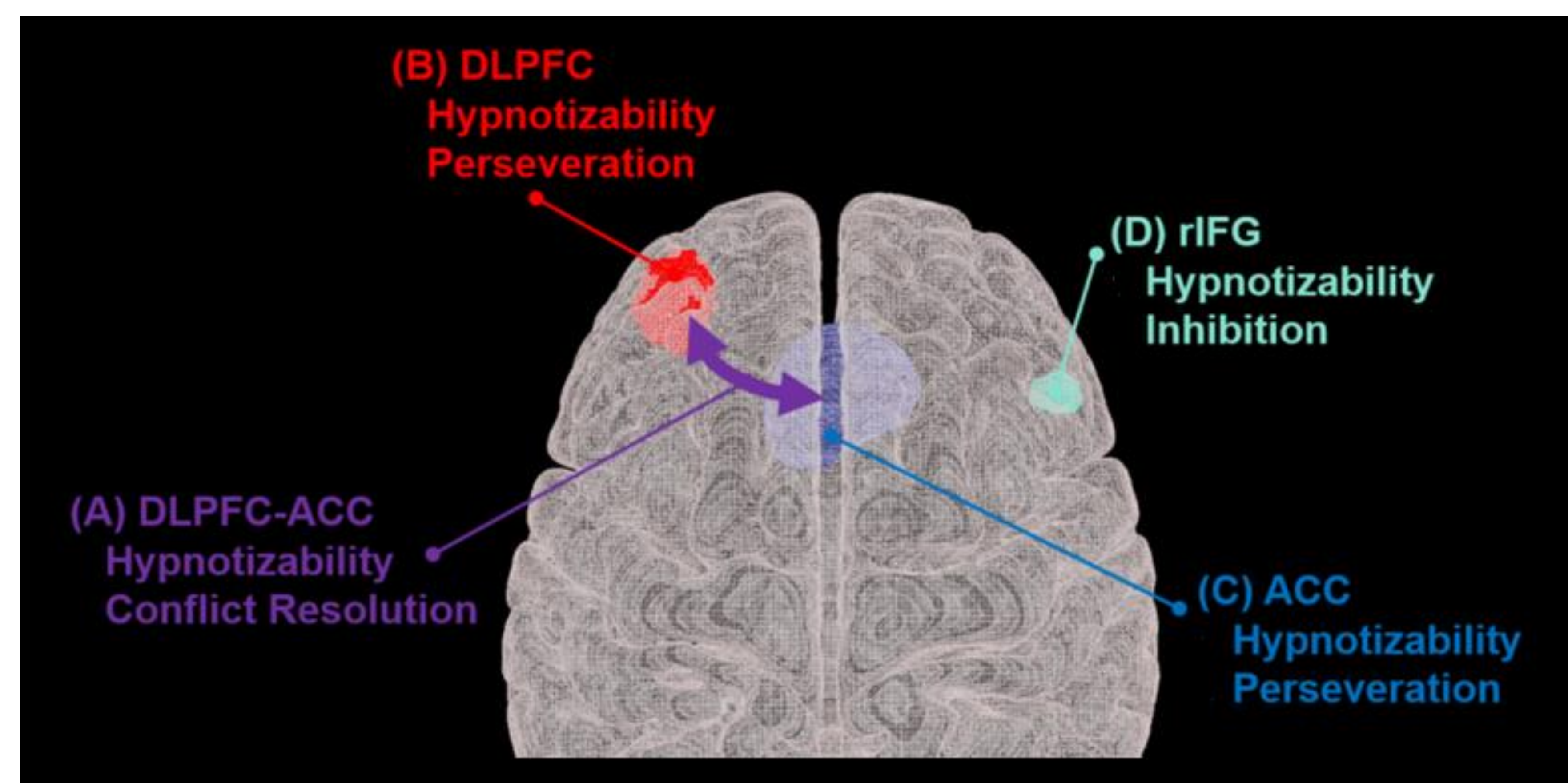


Introduction

- Hypnotizability is a highly stable trait representing one's ability to experience physiological, sensory, behavioral, and emotional phenomena in response to suggestions given during hypnosis (1).
- In recent years, evidence linked the dorsolateral prefrontal cortex (dlPFC; executive control), the anterior cingulate cortex (ACC; information salience) and inferior frontal gyrus (rIFG) to hypnotizability (2).
- The right inferior frontal cortex (includes the rIFG) is a central component in the inhibition of executive control (3), and both the PFC (4) and ACC (5) are related to conflict resolution and perseveration.
- Despite the growing pool of evidence, the cognitive phenotype of hypnotizability is not well understood. We hypothesized that higher hypnotizability will correspond to lower perseveration and set-shifting.

Methods

- Participants were 72 healthy adults who had either low (0-3) or high (9-12) scores on the Harvard Group Scale of Susceptibility and participated in a study exploring the functional activity and connectivity in hypnosis (7).
- Participants were administered the Hypnotic Induction Profile (HIP) to measure trait hypnotizability (8) and a neuropsychological battery including the Wisconsin Card Sorting Test (WCST; an executive function test of problem-solving) and the Trail-Making Test (TMT; an executive function task of set-shifting) from the Delis-Kaplan Executive Function System (D-KEFS).
- Perseverative responding was captured through age-corrected scores of perseverative responses (PR) and erroring (PE) on the WCST.
- Set shifting performance was operationalized via age-corrected completion times of TMT Condition 4 (Letter/Number Sequencing; TMT4).

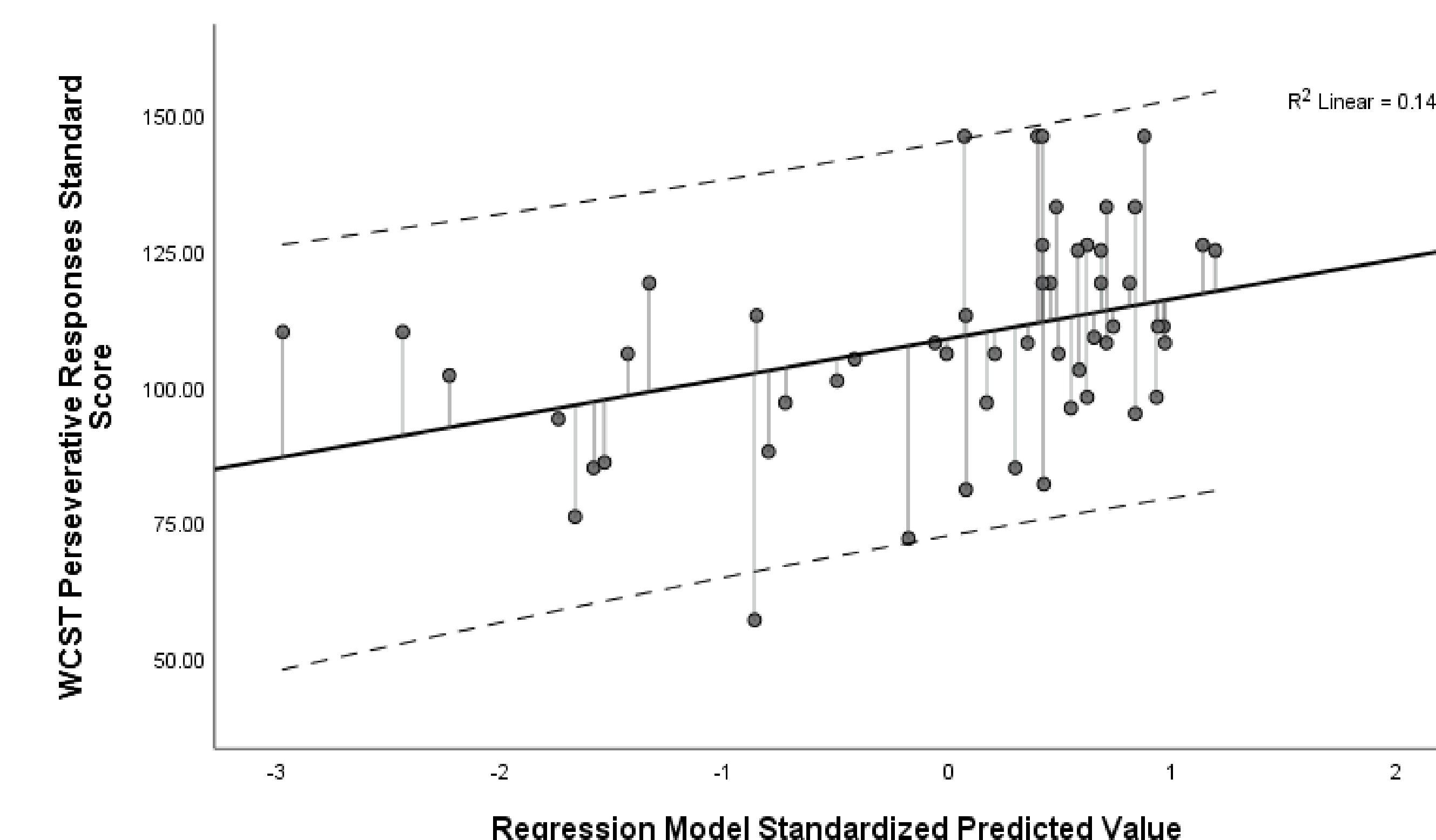


Data Analysis

- Valid test data were available for 54 participants for WCST scores and for 70 participants for D-KEFS TMT scores. Multiple regression analyses were performed using WCST and TMT standard scores as dependent variables and HIP total score as the independent variable, with age and years of education as covariates.

Results

- There were no significant demographic differences between the included and excluded participants in both subsamples (see Table 1). Additionally, no significant differences in neuropsychological performance or hypnotizability have been observed between males and females (all p values $\geq .168$).
- Linear regression model (including HIP, age, and education) significantly predicted WCST PR ($R^2 = .146$, $F(3,50) = 2.83$, $p = .047$), with HIP score as the sole significant predictor ($\beta = .271$, $CI = [.038, .538]$, $t(50) = 2.036$, $p = .047$; age and education p values were .125 and .673, respectively). Multicollinearity was not a concern for any of the predictors (all Tolerance values $\geq .913$, all VIF values ≤ 1.095), and the data met assumptions of independent errors (Durbin-Watson = 1.95) and of non-zero variances (Variance values: WCST = 342.7; HIP = 9.2; Education = 30.4; Age = 186.2).
- However, the hypnotizability regression model did not significantly predict TMT4, yet a trend was observed ($p = .082$).



Discussion

- Our results indicate an inverse relationship between trait hypnotizability and perseveration, an executive function that utilizes regions of both the executive control and the salience systems.
- Hypnotizability includes out-of-hypnosis cognitive processing correlates.

Limitations

- Heavy-tailed and negatively skewed distribution of HIP scores.
- We had more high- than medium- and low-hypnotizable participants

References

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