OPTIMIZING METHODOLOGY FOR ANOMALIES RESEARCH IN THE CONTEXT OF A NON-INFERENTIAL PERCEPTION TASK

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Background: Anomalies research is subject to the same fundamental risks as conventional science: false positives that mimic effects and false negatives that obscure them. Investigations of purported anomalous cognition — such as non-inferential perception or "dowsing"— require exceptional methodological discipline to discriminate authentic phenomena from experimental noise or bias.

Aims: To test the hypothesis that some individuals can consistently perform above chance in a non-inferential 3D perception task, and to implement a methodological framework minimizing both false-positive and false-negative risks.

Methods: We employed a two-stage participant pre-selection design with preregistration, pre-defined analysis, and the Advanced Meta-Experimental Protocol (AMP; see Walleczek and von Stillfried, 2019; Walleczek et al, 2025) as embedded diagnostic control. More than 6,000 participants were recruited across a pilot and two preregistered confirmatory studies. High-performers and matched null-performers were retested under identical conditions. Simulations guided optimal participant selection thresholds and sample size calibration for a power >.95.

Results: Despite having found initial positive results in selected exploratory analyses, no significant deviations from chance expectancy were observed with confirmatory analyses in any conditions. Confirmatory Study 1 (mixed sample; threshold $d = 0.26$) yielded $z = –0.27$ ($p = .607$); Confirmatory Study 2 (males only; threshold $d = 0.08$) yielded $z = –1.24$ ($p = .803$). Control and sham conditions showed no above-chance deviations. According to the preregistered outcome scenario interpretation these results indicate absence of evidence for a true positive finding and at the same time methodological robustness and reduced risk for systematic false-positive results.

Conclusions: Across two large-scale preregistered studies, no replicable non-inferential perception effect was detected. This project demonstrates and validates a transparent, reproducible protocol for testing extraordinary hypotheses in anomalous cognition. The AMP framework and the used participant pre-selection strategy provide transferable methodological innovations for other frontier sciences where effects are rare or small, and where skepticism is high.

Keywords: Anomalies research, Non-inferential perception, Preregistration, AMP, Bottleneck design

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