Theories Studies (ConTraSt) database: analyzing and comparing empirical studies of consciousness theories

RPT²

Recurrent Processing

Local synchronization

Posterior areas

Early Latency

rent Processing Theory Integrated Information Theory

Information

Integration

PHI (Φ)

Posterior Hot Zone

Early Latency



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HOT²

Higher-Order Theories

Higher Order

Representation

Metacognition

PFC

Long Latency

GNW²

Global Neuronal Workspace

Sharing of Information

Ignition

Fronto-Parietal and

anterior Temporal

areas

Long Latency

Introduction

Key mechanism

tial predict

Temporal

predictions

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Methods







Limited cross-talk between the theories

Is the field fractionated?

 Lack of cross-talk between the theories - Increase in support of one theory has no clear implications for other theories.



Diverse means to study consciousness

The outcome of studies can be predicted by methodological parameters
A random forest classifier⁵ learned the associations between the parameters and outcomes of N-1 experiments and predicted the outcome of an untrained experiment (leave one out strategy) with above chance accuracy.





Conclusions

- Most experiments in the field yield supportive results, and relatively few studies try to test opposing predictions in a theory-driven manner.
- A highly-variable pattern of temporal and spatial findings, that cannot be easily explained by any of the suggested frameworks for consciousness.
- The interpretation of a study can be predicted based on the methodological choices made by the researchers, hinting at possible methodological biases.

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