

The Multiverse Approach in Multi-Lab Projects: Robustness Might Matter More Than Statistical Significance in Infancy Research

Tuesday, September 24, 2024 9:25 AM (15 minutes)

In this multi-lab study, we explored goal attribution in infants using various data analysis pipelines for pupilometry data from seven laboratories in Europe, the USA, and Canada. The main focus was on the multiverse approach, where data preprocessing is conceptualised as a garden of forking paths, each of which can dramatically affect subsequent statistical outcomes. This method shifts the focus from merely testing for statistical significance to exploring the robustness of findings, which can be influenced by how data are preprocessed. The present blind yet collaborative analysis aimed to examine the robustness of specific interactions (Target \times Path in goal attribution). That is, the hypothesis that infants may deploy more cognitive resources when a hand reaches a familiar goal via a new path, as opposed to reaching for either a new or the familiar goal via a previously known path. However, instead of advocating for a one-best-method for data processing, the multiverse analysis embraces uncertainty by presenting the outcomes of various plausible preprocessing pipelines and exploring how they might impact the results. This approach supports the ongoing shift toward more open scientific practices that prioritise transparency over making groundbreaking but potentially fragile claims. In particular, the combination of the multiverse approach applied to a multi-lab effort acknowledges how different traditions in handling data can lead to opposite conclusions. This contribution stresses the importance of a collaborative strategy that empowers the findings from individual labs with broader, community-based insights.

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No

If you're submitting a symposium talk, what's the symposium title?

The Multiverse of Multi-labs. Methodological and Statistical Aspects of Multi-Lab and Multiverse Studies.

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No

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Session Classification: Symposia