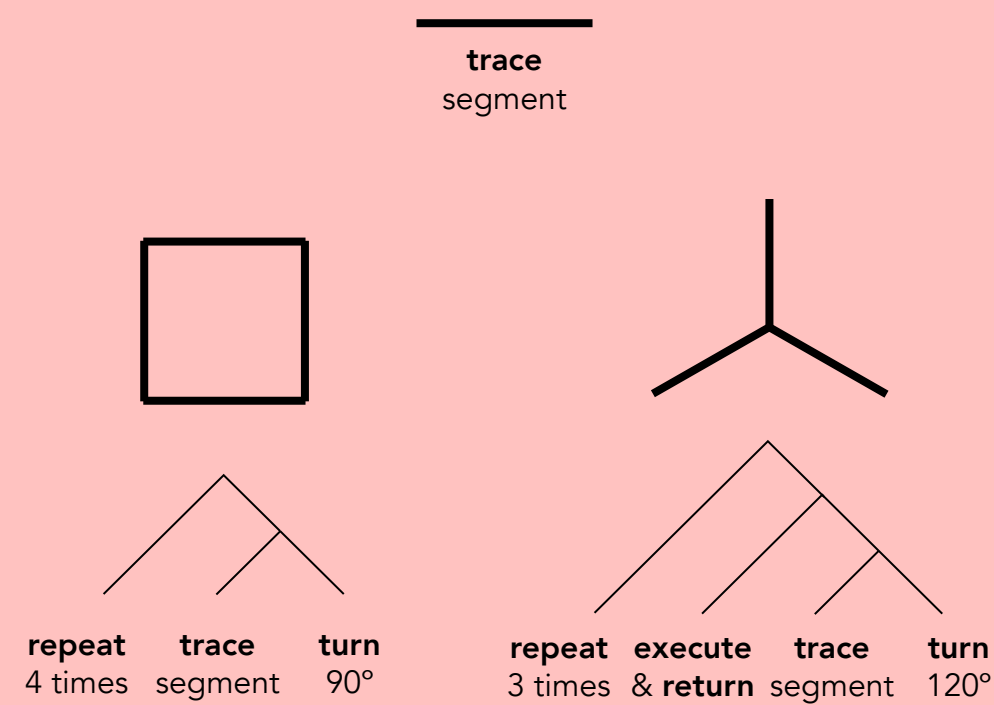






## Background

We build on the recent proposal that **geometric shapes are represented in a language of thought (LOT)** consisting of a handful of primitives that combine to recreate the encoded shape (Sablé-Meyer et al. 2022)



Sablé-Meyer et al. (2022) found that adults' reaction times and error rates in match-to-sample tasks were **predicted by the minimum description length (MDL) of the shape's LOT program**

This fuses **two features of geometric shape representations** that are partly independent, format (LOT) and selection (MDL), and uses MDL data to argue for LOT—Highly indirect evidence

We report more **direct evidence for tree structure in geometric shape representations** from three online experiments with adults



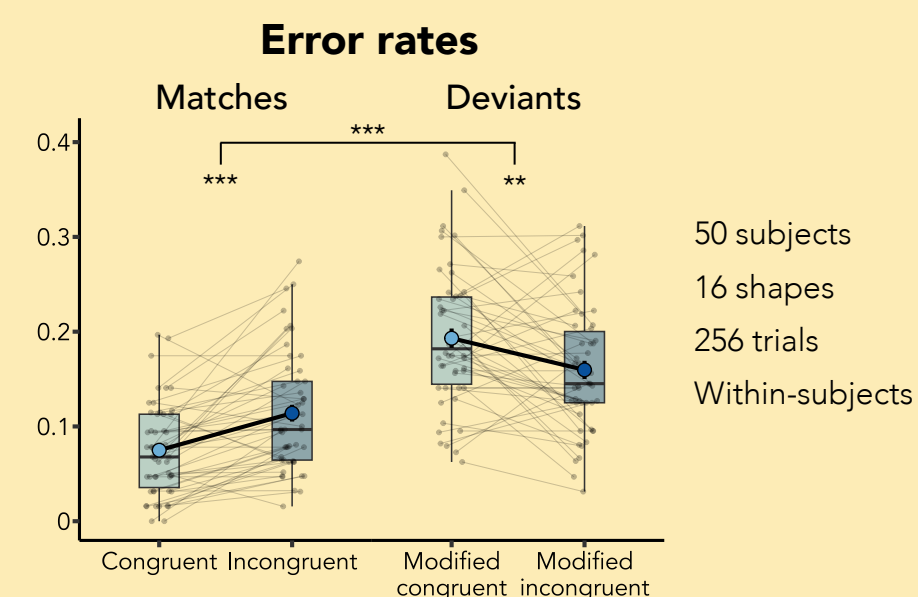
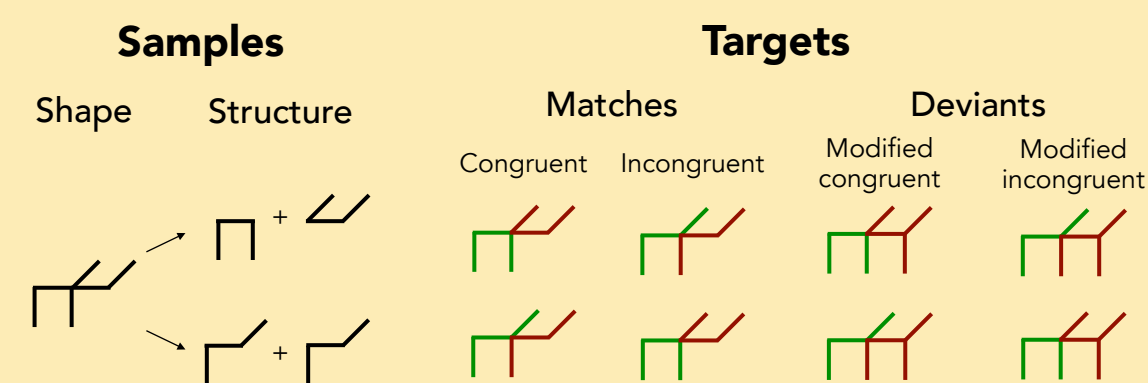
# Geometric shape representations in human adults have syntactic structure

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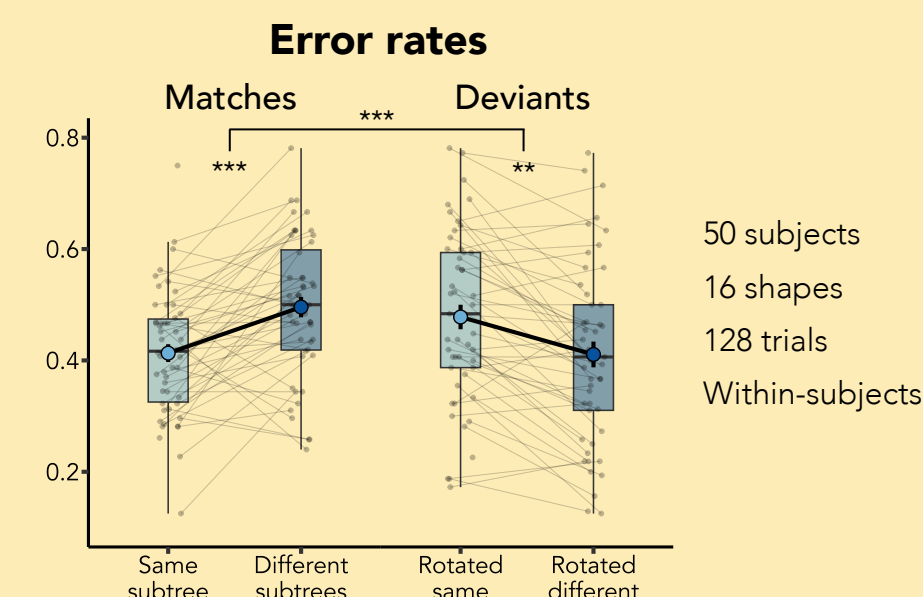
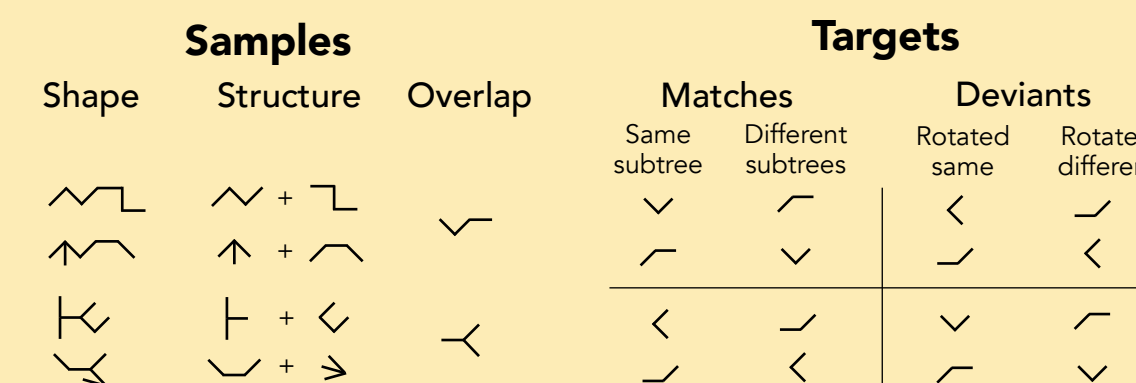
## Experiment 1: Structural Ambiguity

Different structured representations can be induced for the same shape



## Experiment 2: Subtree Facilitation

Subparts are easier to recognize when they belong to the same subtree



## Experiment 3: Movement Depth

Shapes are easier to reconfigure when they are split higher up in the tree

