Decomposing objects into parts from vision and language

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Abstract

How people decompose objects into parts provides insight into how object concepts are organized (Tversky & Hemenway, 1984). How strongly is such knowledge grounded in how parts appear in visual images? Some parts may loom larger in the mind than they do in the world, while others may be more perceptually salient than they are accessible from memory. In our study, participants were either cued with a photograph (N=50) or a category label (N=96) before decomposing each of 32 objects into parts. We found that parts were generally listed at similar frequencies in both conditions, but identified several parts that diverged from this pattern (Jensen-Shannon divergence=0.157, $p<0.001$), suggesting that the salience of certain parts can depend on task context. In ongoing work, we are exploring how these part decompositions relate to the parts that people include in drawings of those objects (Yang & Fan, 2021).

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