WHEN SHAPES SPEAK

How do abstract visual features shape perceptual processes?

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Guiding Research Questions

(1) What visual features most predict how humans describe an unfamiliar and unseen stimuli?
and
(2) What role does visual complexity play in the absence of any available mental schema to anchor perception to?

Introduction

- This project is part of a larger, ongoing project.
- This experiment specifically explores whether features of a visual stimulus predict how people describe it.
- Visual complexity arises from combinations of elemental properties or features — such as curvature, shape, color, angularity, and spatial organization.
- Importantly, some evidence suggests that these features are not necessarily fixed as previously thought.
- Research (Schyns, 1998) shows that categorization and object recognition often require the creation of new features.
- Research on visual perception indicates that humans tend to prioritize the global shape of an object when identifying and describing it, whereas many artificial intelligence systems rely much more on local texture cues (Baker, 2018).

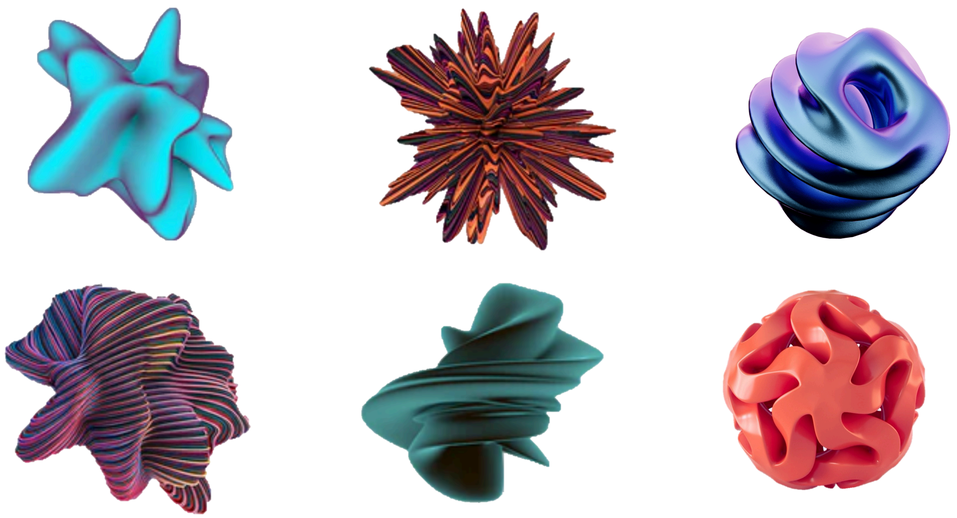
Methods

01 This study uses Qualtrics surveys to collect word associations as part of our novel object paradigm, as well as a memory block using a classic old/new memory task to explore how the visual feature space of different simuli affects the strength of recall.

02 Data will be collected from undergraduate students at Florida State University of varying majors and ages.

03 In the word association task, participants will be visually presented with ambiguous 3D objects and asked to list their immediate mental associations upon viewing the stimuli.

04 In the memory block, administered upon completion of the free association task, participants will be presented with items and asked to classify them as previously viewed (old) or not (new).



Expected Results

- We expect that the sharp edges and curvalinearity of the shapes will play the biggest role in the associations participants provide, as well as in their perception of the shape's complexity.
- Our previous findings (Figure 1) showed greater lexical variability within sharp-related word associations (in response to phonetically sharp words), so we expect to a similar pattern of results in response to visually sharp stimuli. This is consistent with previous literature and research suggesting that humans attend to sharp visual features such as line junctions, corners, and spikes more

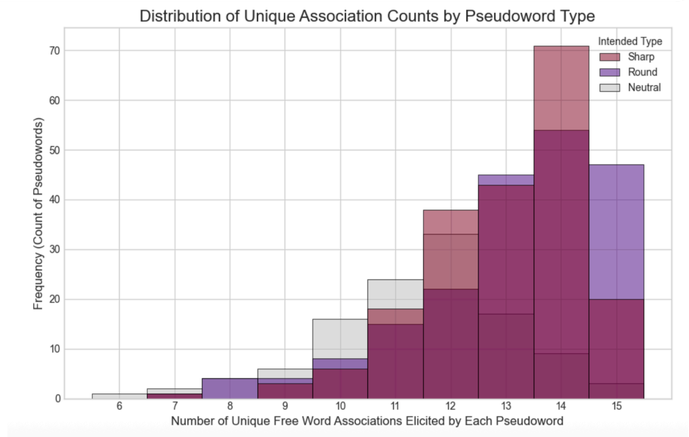


Figure 1

Conclusion

- Findings from this experiment will inform ongoing work in exploring sound-symbolic cross-modal correspondances.
- Next steps will test these same associative processes with tactile stimuli (via digital fabrication of all the visual stimuli used in this experiment.)
- The data collected also serves as our human baseline while we collect responses to the same prompts shown to the human participants but from large language models.

Key Sources & Acknowledgements

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