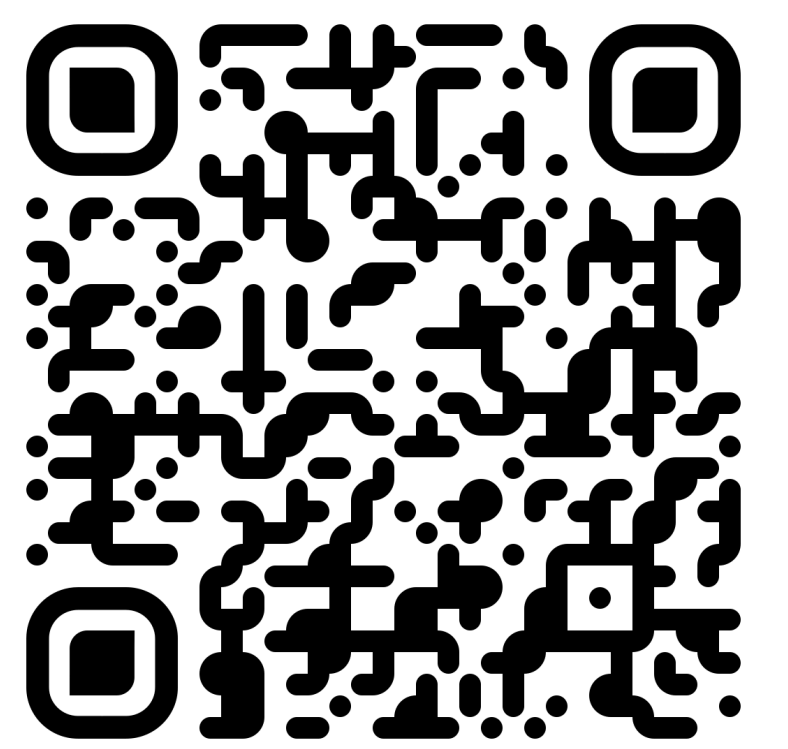




# Measuring Representational Relevance: A Cognitive Approach to Shared Conceptual Importance

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Poster

## 01. Introduction

- Objects and concepts vary in cognitive importance—some are more central to thought and behavior.
- **Representational relevance** measures how much a concept influences cognition across contexts.

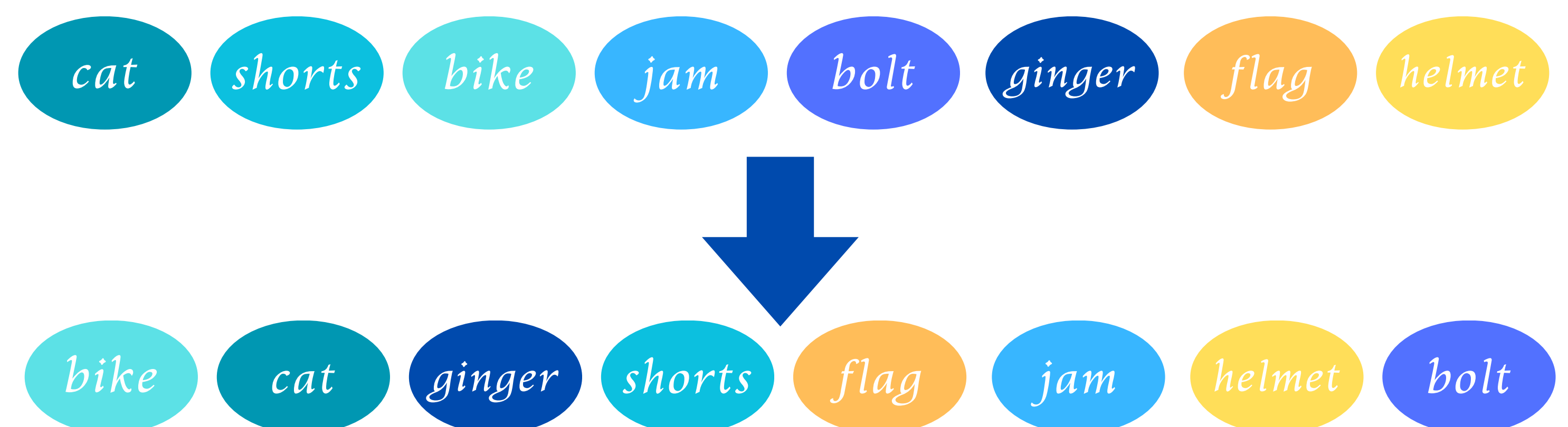
**Goal: Develop a robust measure of representational relevance and compare it to traditional linguistic and cognitive factors.**

## 02. The Family Feud Task



- Captures shared cognitive importance.
- Reliability Analysis:
  - Mean Spearman Correlation (1000 splits): **0.689**
  - Spearman-Brown adjusted reliability: **0.816**

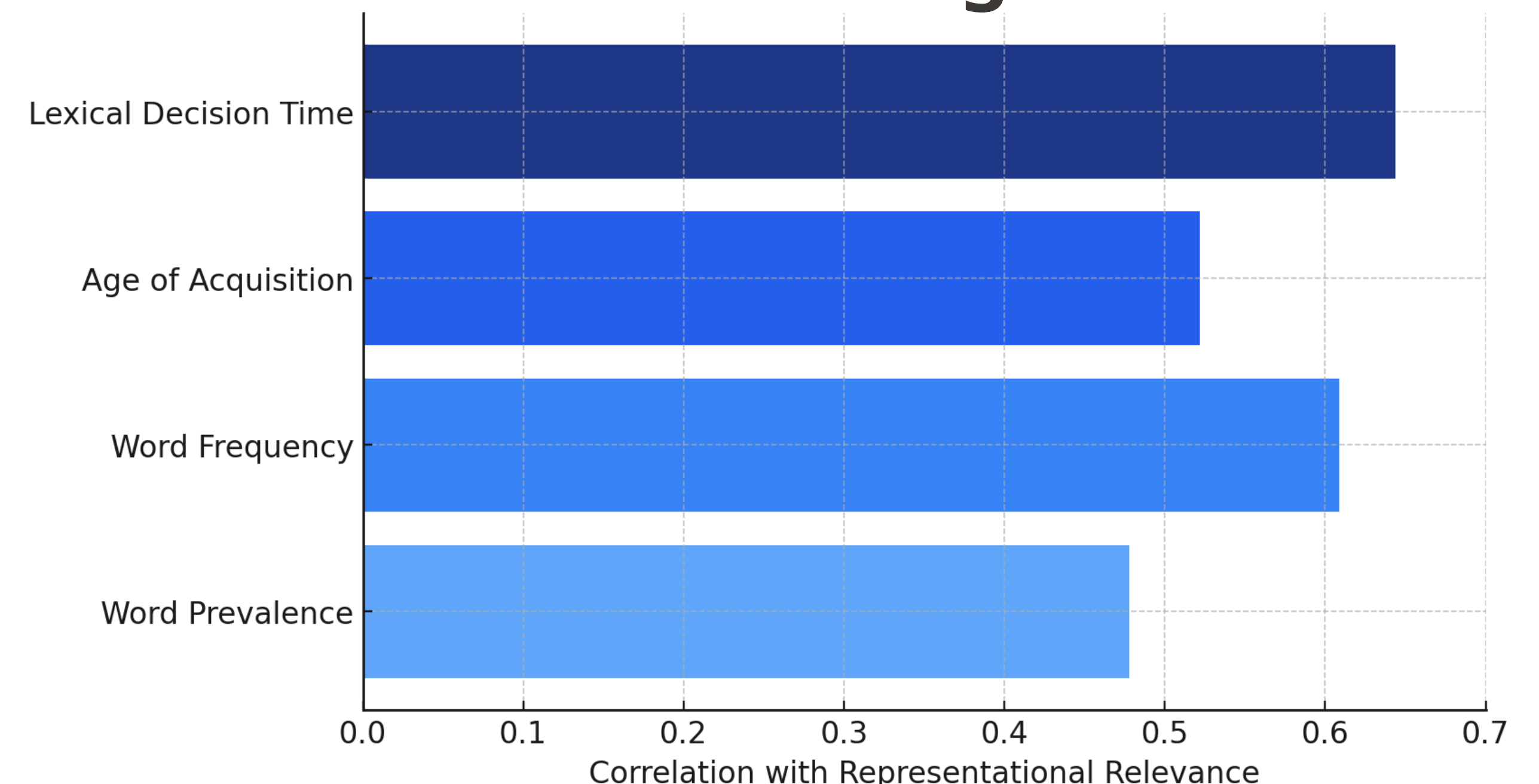
We ask participants to rank object words by how often they believe other people would spontaneously name them.



## 03. How does it relate to ...?

- **Lexical decision time**<sup>1</sup> → how quickly we recognize a word
- **Age of acquisition**<sup>2</sup> → when we learn the word
- **Word frequency**<sup>2</sup> → how often a word appears in language
- **Word prevalence**<sup>3</sup> → how many people know the word
- **Prototypicality**<sup>4</sup> → how well a word fits its category

## 04. Correlations with Cognitive Factors

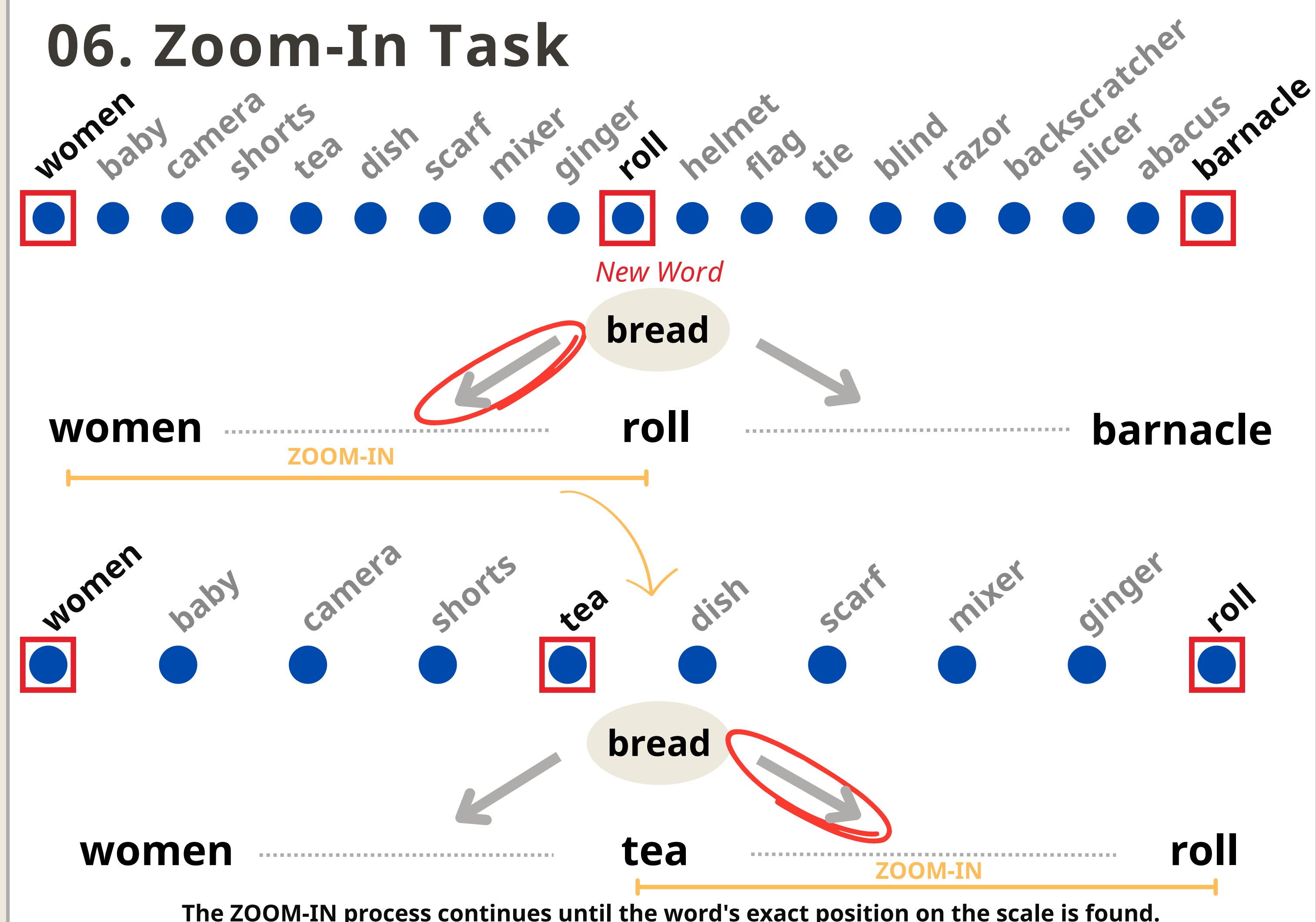


- closely linked to cognitive accessibility and linguistic experience
- but not fully explained by them, suggesting it may be a distinct construct capturing a unique aspect of conceptual importance.

## 05. Future Directions

- ◆ **Data Collection Expansion**
  - Improve sampling to avoid clustering and get a better spread of relevance scores.
- ◆ **Neural Validation**
  - Compare representational relevance to brain activity using fMRI.
  - Test whether relevance predicts activation patterns beyond frequency and AoA.
- ◆ **Zoom-In Comparison Task**
  - Allows more efficient data collection for large samples where ranking is impractical.

## 06. Zoom-In Task



<sup>1</sup>Mandera, P., Keuleers, E., & Brysbaert, M. (2020). Recognition times for 62 thousand English words: Data from the English Crowdsourcing Project. Behavior Research Methods, 52, 741-760.

<sup>2</sup>Kuperman, V., Stadthagen-Gonzalez, H., & Brysbaert, M. (2012). Age-of-acquisition ratings for 30,000 English words. Behavior research methods, 44, 978-990.

<sup>3</sup>Brysbaert, M., Mandera, P., McCormick, S. F., & Keuleers, E. (2019). Word prevalence norms for 62,000 English lemmas. Behavior research methods, 51, 467-479.

<sup>4</sup>Stoinski, L. M., Perkuhn, J., & Hebart, M. N. (2024). THINGSplus: New norms and metadata for the THINGS database of 1854 object concepts and 26,107 natural object images. Behavior Research Methods, 56(3), 1583-1603.