Across the four experiments, the results showed that the age at which a person learned a compound word significantly impacted AoA (Elsherif et al., 2023). Argued to result from gradual development of semantic representations and changing neural network throughout development (Chang et al., 2019). However, the account has been used for visual word recognition but has not been expanded to cross-modal and auditory processes, which allows us to manipulate the mapping between representations (Ernestus & Cutler, 2015).

**Aim of the study:** The variants of lexical decision task (LDT) to examine whether the AoA effect is situated within compound words by manipulating representations.

### Method

#### Participants
48 participants in Experiment 1, 48 in Experiment 2, 48 in Experiment 3, and 48 in Experiment 4. 226 noun-noun compounds from Elsherif et al. (2019) and Elsherif and Catling (2021, 2023) with various psycholinguistic predictors were included (e.g., length, lexeme meaning dominance and semantic transparency of the compound word, familiarity, AoA, and imageability of the compound word, modifier, and head lexeme.

#### Procedure
Fixation (+) appeared for 500ms. Word or Pseudoword was shown until a response was made or 2000ms. Afterwards, a blank screen followed the stimulus on the screen, lasting for 1000 milliseconds.

#### Experiment 1

**Psycholinguistic predictors across experiments**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Experiment 1</th>
<th>Experiment 2</th>
<th>Experiment 3</th>
<th>Experiment 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word length</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>CW Frequency</td>
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<tr>
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<td>✓</td>
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<td>X</td>
</tr>
<tr>
<td>CW Imageability</td>
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<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Semantic Transparency</td>
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<td>✓</td>
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<td>X</td>
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<tr>
<td>Lexeme meaning dominance</td>
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<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Modifier Frequency</td>
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<td>Modifier similarity</td>
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<td>X</td>
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<tr>
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<tr>
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<tr>
<td>Head imageability</td>
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<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
</tbody>
</table>

#### Experiment 2

**Interaction between experiment, spacing and predictors**

- **A**
  - Experiment
  - Time
  - WLogFrequency

- **B**
  - Experiment
  - Time
  - Familiarity

- **C**
  - Experiment
  - Time
  - WLogAoA

- **D**
  - Experiment
  - Time
  - Winage

### Results

**Conclusion**

- Across the four experiments, the results showed that the age at which a person learned a compound word significantly impacted visual unspaced and spaced LDT, together with auditory LDT latencies. However, the AoA of compound words did not contribute to cross-modal LDT latencies. In addition, we observed that the age at which the modifier lexeme was acquired, together with their familiarity in Experiment 2 was more likely to affect unspaced and spaced LDT latencies. In addition, the age at which the head lexeme was acquired, together with predictors related to form and meaning (e.g. word length) contribute to auditory LDT latencies.

- Notably, the interaction between AoA and task was observed. The current findings supports that the AoA effect within LDT would be the same across semantic representations but differ due to mapping between representations. occurs Put simply, the AoA effect arises due to the same mechanisms within different cognitive domain and the mapping between orthographic and phonological.

- However, this is limited to linguistic stimuli and needs to be expanded to novel compound words in order to assess whether the AoA effect occurs in a similar fashion to monomorphemic words, allowing us to determine if the integrated account should start at the pre-semantic level such as the perceptual representation or if it should remain at the semantic level.

### References


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