The truth about chickens and bats: Ambiguity avoidance characterizes the polysemy-homophony divide
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While the concepts we use to think about the world may well be unambiguous, the words we use to express them are clearly not. A critical task, then, is to align the two: How do ambiguous words map onto precise concepts?

For homophones like bat, theories typically assume that a single phonological form is associated with separate lexical entries, mapping to separate concepts.¹⁻³ But the relevant representations are more controversial for polysemes, words with multiple related senses (e.g., shirt/push button, noisy/delicious chicken). Underspecification theories assume that polysemous words map to concepts via a single underspecified lexical entry, which contains a limited set of information characteristic of both senses, and is only specified by pragmatic enrichment.⁴⁻⁵

Alternately, polysemy representation may be better characterized by a rules-and-conventions model.³⁻⁶ The senses of regular polysemes can be generated from a single base meaning by predictable lexical rules (e.g., animals alternate with meats (noisy/tasty chicken/lamb/penguin...)). But so-called irregular polysemes are not predictable (e.g., shirt/push button), and so these conventionalized senses have to be listed separately, like homophones.

To tease apart these theories, we turned to a speeded picture-naming paradigm that assesses ambiguity avoidance. Previous work¹ suggests that participants can avoid producing ambiguous names when two pictures depict different examples of the same thing (e.g., two flying bats), but mistakenly produce ambiguous names when two homophonous meanings are depicted (flying/ baseball bat). This invites a novel test of lexical representation. If polysemes are represented by a single underspecified meaning, ambiguity avoidance should be simple across-the-board. But under the rules-and-conventions model, only regular polysemes should permit ambiguity avoidance, while separately listed irregular polysemes should behave like homophones.

Method: We assessed 24 participants’ ambiguity avoidance for 6 homophones, 12 irregular polysemes, 12 regular polysemes and 6 same-meanings (Table 1). On each trial a participant named four pictures: Two fillers, a target and a foil. On critical trials the target depicted one meaning of a word, and the foil either an alternate meaning/sense, or a different example of the same meaning. On control trials, the foil had a different name.

The DV was the number of unmodified ambiguous names for the target (e.g., bat instead of baseball bat), which we analyzed as a function of test trial type (ambiguous vs. control) and lexical ambiguity type, using logistic regressions.

Analysis & Results: As can be seen in Figure 1, participants reliably avoided ambiguous names for same-meaning items (p < .05), but failed to do so for homophones. Critically, the patterns for irregular and regular polysemes diverged. Like homophones, participants failed to notice ambiguity for irregular polysemes. But regular polysemes patterned like unambiguous words, showing a reliable effect of ambiguity avoidance (p < .05).

These data are inconsistent with theories of lexical representation that ascribe polysemous words a single underspecified meaning, and instead support a distinction between irregular and regular polysemes that is consistent with rules-and-conventions models. Irregular polysemes map to concepts via conventionalized, separately specified senses, while regular polysemes are generated from base meanings.
Table 1

<table>
<thead>
<tr>
<th>Ambiguity Type</th>
<th>Example Targets</th>
<th>Example Foils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homophone</td>
<td>Bat (baseball); Flour</td>
<td>Bat (flying) Flower</td>
</tr>
<tr>
<td>Irregular Polyseme</td>
<td>Button (shirt); Pipe (drain)</td>
<td>Button (push); Pipe (smoking)</td>
</tr>
<tr>
<td>Regular Polyseme</td>
<td>Chicken (live); Tiger (soft toy)</td>
<td>Chicken (dinner); Tiger (live)</td>
</tr>
<tr>
<td>Same-meaning</td>
<td>Dog (small); Boat (large)</td>
<td>Dog (large); Boat (small)</td>
</tr>
</tbody>
</table>

Figure 1

Proportion of ambiguous unmodified names by condition and ambiguity type (bars = SEM)

Lexical Ambiguity Type