Polysemous words have two related senses, such as the filling in a pie, or the filling in a tooth. Two experiments investigated competing accounts of how polysemous senses are represented during sentence comprehension.

**Underspecified Sense Account.** On one view, readers retrieve an underspecified, core meaning (Caramazza & Grober, 1976; Ruhl, 1989) based on senses having a principled relation (Frazier & Rayner, 1990; Frazier, 1999; Pickering & Frisson, 2001; Willingham, 1992). The core meaning can then be filled out more fully depending on the later context.

- Frazier and Rayner (1990) found that polysemous words did not show dominance effects, while homonyms did. Similar results were found by Pickering and Frisson (2001).

**Separate Sense Account.** On another view, there is little semantic or feature overlap between senses (Cruse, 1986; Klein & Murphy, 2002; Rice, 1992), suggesting that different senses are represented separately.

- Klein and Murphy (2001) found facilitation for consistent senses of polysemes in a semantic judgment task, and a cost for switching from one sense to the other.
- Priming of different polysemous senses was only slightly different from results with homonyms.
- More recently, Klepousniotou, Titone, and Romero (2008) varied the semantic overlap between senses, finding that low overlap senses showed larger effects of context and dominance in a priming task.

**Design & Materials**

<table>
<thead>
<tr>
<th>context</th>
<th>dominant sense</th>
<th>subordinate sense</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOM</td>
<td>The caterer tested the filling that was in the pie before leaving.</td>
<td>The caterer tested the filling that was in the tooth before leaving.</td>
</tr>
<tr>
<td>SUB</td>
<td>The dentist tested the filling that was in the pie before leaving.</td>
<td>The dentist tested the filling that was in the tooth before leaving.</td>
</tr>
<tr>
<td>NTRL</td>
<td>She tested the filling that was in the pie before leaving.</td>
<td>She tested the filling that was in the tooth before leaving.</td>
</tr>
</tbody>
</table>

- The disambiguating word (pie/tooth) was equated for length, syllables, and frequency.
- We used the 25 polysemous words from Klein and Murphy (2001, 2002).
- Sense frequency ranged from strongly biasing (93% dominant, 1% subordinate for court) to relatively equal bias (53% dominant, 40% subordinate for chicken).

**Conclusions**

1. We found clear evidence that for polysemous nouns, inconsistent context-to-sense sentences were harder to understand than consistent ones.
2. There were numerous differences between dominant and subordinate senses, including differential difficulty in switching from dominant to subordinate sense and dominance effects in neutral contexts.
3. Dominance effects were stronger when equal biased items were removed from analyses; analysis of lexical bias predicted processing difficulty.
4. All these effects suggest that the different senses are represented separately in the lexicon, with the dominant sense having a stronger representation than subordinate senses.

**Expt. 1: Self-paced Reading**

### Blasing context

1. Inconsistent context-to-sense sentences were harder to understand than consistent ones.
   - Regression Path: Spillover, Wrap
   - First Pass: all regions
   - Total Time: Polysem, Disambiguating, Spillover

2. Earlier and more widespread difficulty for dominant-to-subordinate switch.
   - Dominant context conditions differed for:
     - Regression Path: Spillover, Wrap-up
     - Second Pass: all regions
     - Total Time: Polysem, Disambiguating, Spillover

3. The disambiguating and Spillover regions predicted the difference score of the item means, p < .06.

**Neutral context**

1. The dominant sense was significantly easier to read than the subordinate sense.
2. We included a neutral, non-bias condition.
3. Polysemes with one bias (53% dominant) 40% subordinate for chicken).

**Expt. 2: Eye-tracking**

**Neutral context**

1. The dominant sense was easier to read than the subordinate sense.
   - First Pass: Wrap-up (marginal)
   - Re-reading was shorter on the Polysem and Disambiguating regions.
   - Analyses without 7 equal bias items increased the significance of comparisons.
2. The magnitude of sense dominance for each item significantly predicted the difference between Neutral context conditions on the Polysem and following region.

**Results**

- The caterer/dentist/She * tested * the filling * that was in the * pie/tooth * before leaving.
- The caterer/dentist/She * tested * the filling * in the * pie/tooth * before leaving.