Tip-of-the Tongue Elicitation of Homophones: Against Shared Lexeme Frequency Effects

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Background
- A powerful predictor of retrieval success is frequency of use
- The nature of the frequency effect in language production is vigorously debated
- Jescheniak & Levelt (1994) argue (1) that “word frequency is encoded as a lexeme threshold activation” and (2) that homophones share a single lexeme node
- Numerous subsequent experiments by those two labs and others have continued to find contradictory results

The Current Study
- We tested for Homophone Frequency Inheritance by eliciting tip-of-the-tongue (TOT) states and Why TOTs?
- Frequency inheritance may be more easily detected among related words—where small differences in frequency have large effects—or when lexical retrieval actually fails
- Strongest evidence for inheritance came from bilinguals (Gollan et al. 2008), who exhibit stronger frequency effects than monolinguals
- The TOT elicitation paradigm provides several measures of retrieval difficulty

Participants and Methods
- Participants: 20 English-only speakers
- Materials: 55 triplet sets of targets: 1) Low-freq homophone target (e.g., ewe) 2) Matched low-frequency (LF) non-homophonic control (e.g., wick)
- 3) High-frequency (HF) control, matching the cumulative frequency of the homophone set (e.g., day, where freq (day) = freq (ewe) + freq (wick))
- Presentation: Target word production was elicited using a definition, a picture, or both

Sample Stimuli: Definitions

<table>
<thead>
<tr>
<th>Homophone</th>
<th>LF Control</th>
<th>HF Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homophone</td>
<td>5.97</td>
<td>5.88</td>
</tr>
<tr>
<td>Frequency</td>
<td>(per mil.)</td>
<td>(per mil.)</td>
</tr>
</tbody>
</table>

Homophone Frequency Inheritance
- Homophone Frequency Inheritance predicts homophones (e.g., ewe) should be as easy to retrieve as HF controls (e.g., day)
- Alternative models predict homophones (e.g., ewe) should be as difficult to retrieve as their low-frequency controls (e.g., wick)
- Both models predict a frequency effect: HF controls (e.g., day) should be easier to retrieve than LF controls (e.g., wick)

Dependent Measures
- GOT = Current retrieval
- TOT = Speaker reports a TOT and later confirms target word had in mind
- notGOT = Failure to retrieve target followed by reported recognition/knowledge of that target

Results
1) Homophone targets and LF controls were more difficult to retrieve than HF controls
2) Surprisingly, homophone targets were more difficult to retrieve than LF controls (significantly so for GOTs, TOTs and TOTs) — a “homophone interference” effect

Additional Post-Hoc Control
- Preliminary Result (2) is difficult to explain on any account of language production. Were homophone-eliciting stimuli less effective than those for the LF controls?
- To evaluate this possibility, an additional 21 participants rated the effectiveness of the elicitation stimuli on a scale of 1–7.
- “We’d like you to judge the performance of a person in a game show. Please rate how good the clue is for the purpose of helping their game-partner think of the meaning of the word...”

Dependent Measures (cont’d)
<table>
<thead>
<tr>
<th>Frequency Condition</th>
<th>BFA per mil.</th>
<th>LF per mil.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF</td>
<td>5.8–143.2</td>
<td>9.8–25</td>
</tr>
<tr>
<td>LF</td>
<td>5.9–2.2</td>
<td>5.8–2.0</td>
</tr>
<tr>
<td>Homophone</td>
<td>5.8–2.2</td>
<td>5.8–2.2</td>
</tr>
</tbody>
</table>

Homophones & LF Controls Do Not Differ

Conclusions
- A low-frequency word does not accrue any retrievalbenefit from having a high-frequency homophone in the TOT paradigm which should be sensitive to any possible inheritance benefit. Is there any Homophone Frequency Inheritance
- At least one of Jescheniak & Levelt’s claims must be incorrect:
- lexemes are not the locus of frequency accumulation (but this is unlikely, cf. Kittridge et al. 2008), so:
- homophones do not share lexemes

Further Discussion
Why varying results across studies?
- Population: Jescheniak & Levelt (1994) was a study with bilinguals; Baddeley & Nicaud (2006) was a study with one ethnic; our study & Carazza’s studies were done with monolingual English-speaking speakers
- Tasks: Jescheniak & Levelt used a translation task; Baddeley & Nicaud used a list learning task; training varies in some studies a target phonology was provided (and didn’t manipulate frequency); Baddeley et al. elicited speech errors (don’t compare frequency-matched homophones), and frequency was not across all studies
- Homophone frequency distribution: Specific frequency does not- perhaps our study, Carazza et al. are about lexical retrieval & TOTs is about phonological retrieval

References