Finding the Right Word:
A Study of Irregular Past Tense Forms

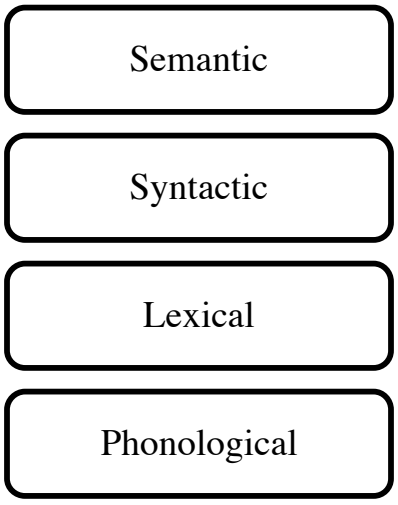
Hila Katz

Honors Presentation

April 27th, 2005

How Are Words Accessed?

- Different levels of representation
- Activation spreads through levels
- Inhibition - there may also be inhibitory connections



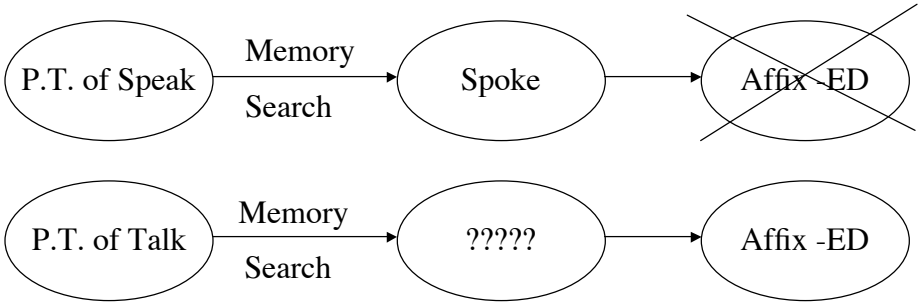
Why Study Irregular Verbs?

- Distinguishing past tense forms from present tense stems ought to be a particularly difficult task

  "Break - Broke" or **"Say - Said"**

- Closely related (often similar phonologically)
- Irregular past does not conform to general past tense pattern/rule (-ed suffix)
- **Why not say "breaked?"**

Pinker's Proposition



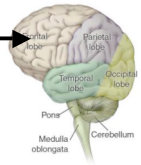
(*Pinker, 1984, 1999)*

- While searching one's memory for an irregular past tense form, what is happening to the present tense stem?
- Is it blocked or suppressed in some way?

Ullman's Perspective: Regular Rule vs. Irregular Retrieval

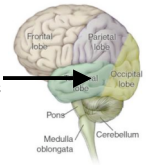
Generative System

Frontal Lobe Based



Associative System

Temporal Lobe Based

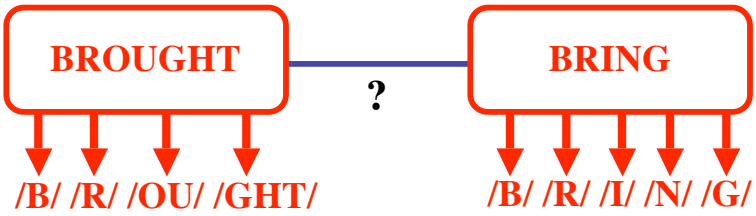


"The computation of a morphologically complex form involves the **parallel activation of the two systems**; the declarative system tries to compute a form in associative memory, while the procedural system attempts to compute a rule product in real time." - Ullman, 2001

Stems vulnerable to processes in the Generative System involving -ed suffix; what happens to stem during associative memory search?

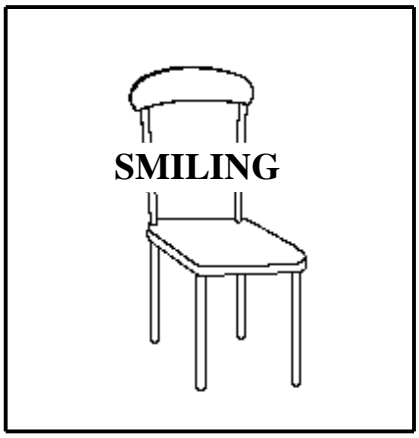
Tense Relationship:
Nature of the Past-Present Link

- BRING
  - Bringing, brings, brought



- In regular verbs, close relationship between stem and past tense form (**walk-walked, lurch-lurched**)
- What involvement, if any, does the stem have in the selection/activation of the past tense form?

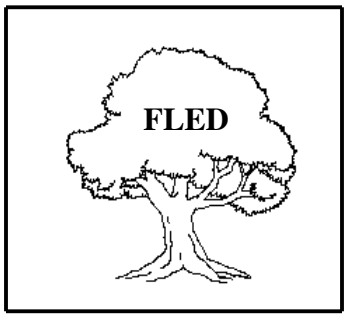
Experimental Approach



- Picture-Word Interference Paradigm
- Picture-word combinations flashed on screen; subjects name picture as quickly and accurately as possible
- Reaction times measured
- Any distractor will interfere with picture-naming, but different distractors interfere to different degrees

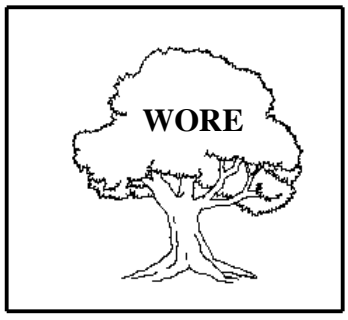
First Experiment

Related Condition



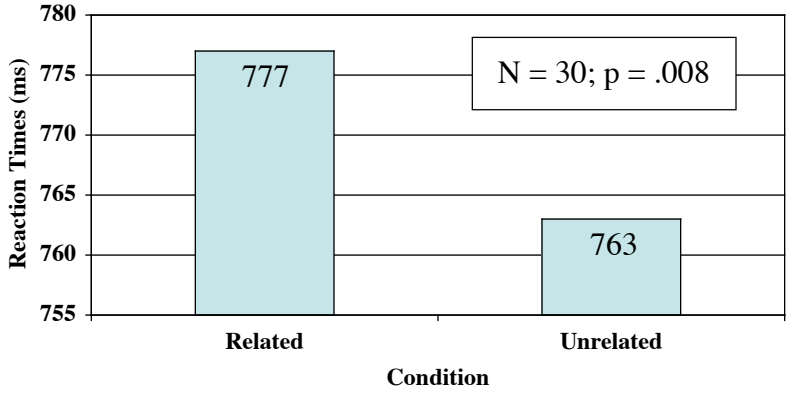
TREE - FLEE - FLED

Unrelated Condition



- 30 related-unrelated pairs; experimental pairs = 1/3 of items
- Other items = rows of xxxx's and filler words (nouns, adjectives…)
- **Will FLEE, though not present, play a part in picture-naming?**
- Phonological facilitation: phonologically-related word interferes less

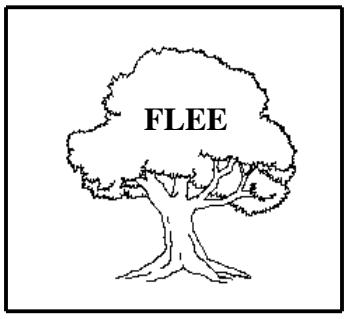
Results of First Experiment



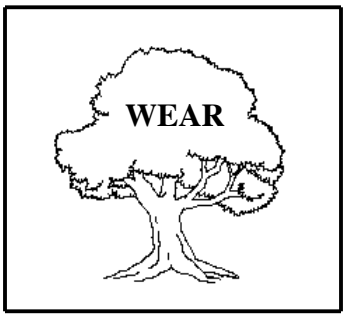
Unexpectedly, there is an inhibitory effect

Second Experiment

Related Condition

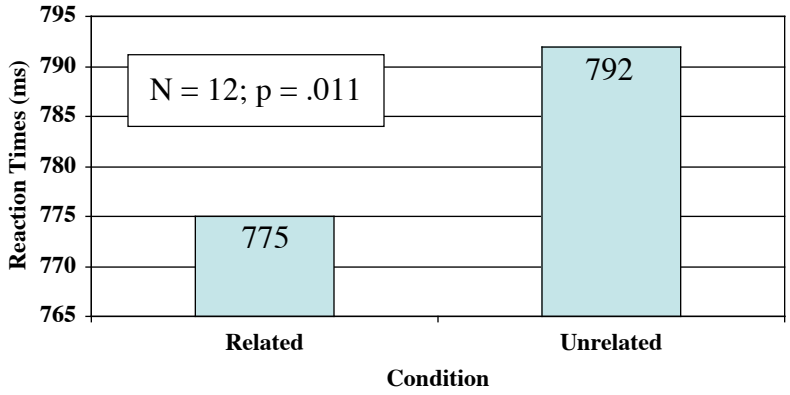


Unrelated Condition



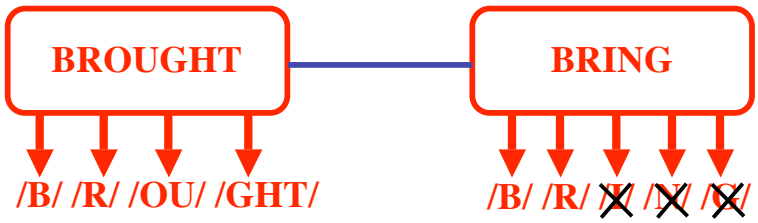
- Experiment checks that phonological facilitation effect does apply to this category of verbs
- Stem in place of past tense
- Different group of subjects
- All other aspects of experiment unchanged from first experiment

Results of Second Experiment



The expected phonological facilitation effect

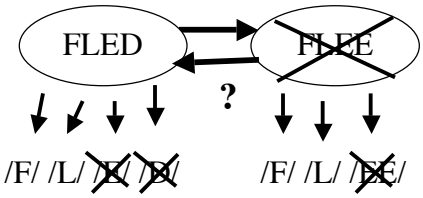
Why an Inhibitory Effect?

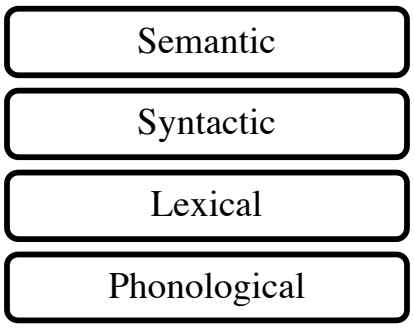


- Effect might arise because a part of the stem phonology is inhibited
- Slower to name a picture that shares that phonology
- **Because general past tense suffix (-ed) is affixed to a stem, inhibiting/blocking the stem helps prevent mistakes like "bringed" and "fleed"**

How Are Words Processed For Selection?

- Inhibitory links should be considered in future models
- Prevalence of inhibition in word processing; can it flow between levels?
- Direction of inhibition: also from stem to past tense?





A test of that can be to place stem on picture that rhymes with past tense form; same effect?

Concluding Points

- Stem, which was not present, affects picture-naming; processing involves more than what meets the eye
- Plausible explanation: activation of past tense form leads to stem phonology suppression; "breaked" less likely
- Consider prevalence of inhibition
- Producing the right word is a complex process, vulnerable to error; yet ultimately we often do produce the correct word

Acknowledgements

I'd like to thank…

- Professor Miozzo and the members of his language laboratory
- Professor Krauss, Professor Putnam, and the students in the honors research program