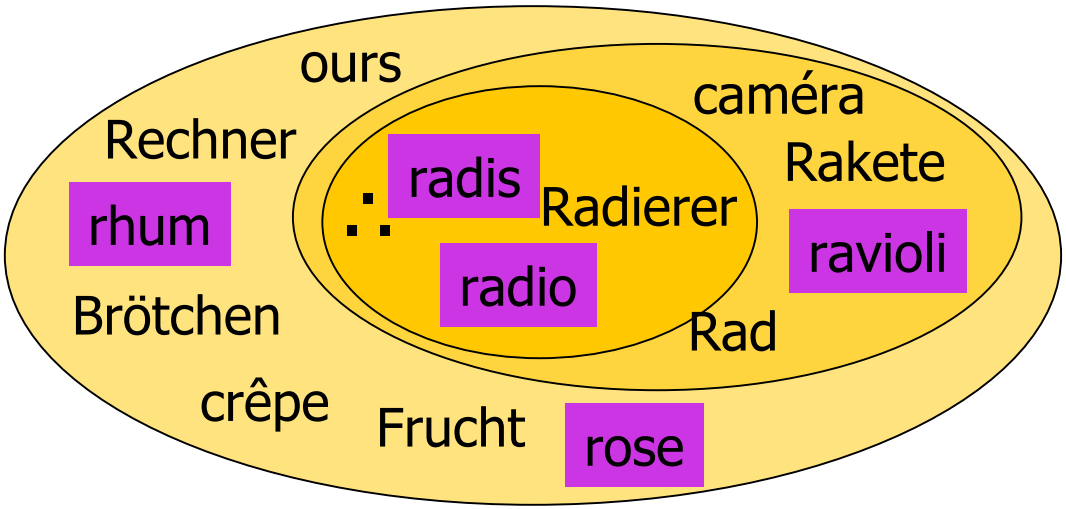
Spoken-Word Recognition

- Original Competition Model (Marslen-Wilson et al. '78, "cohorts"):
  - Word onset activates all words consistent with acoustic input
  - These candidates compete for recognition
  - As input unfolds, candidates which become inconsistent drop out of the competitor set

French:
/R/
/Ra/
/Rad/
/Radi/



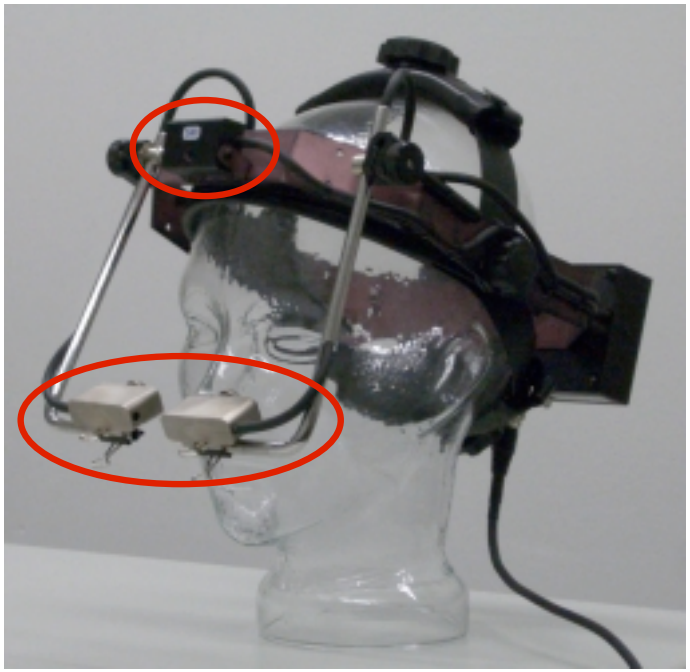
Comparison with Computers

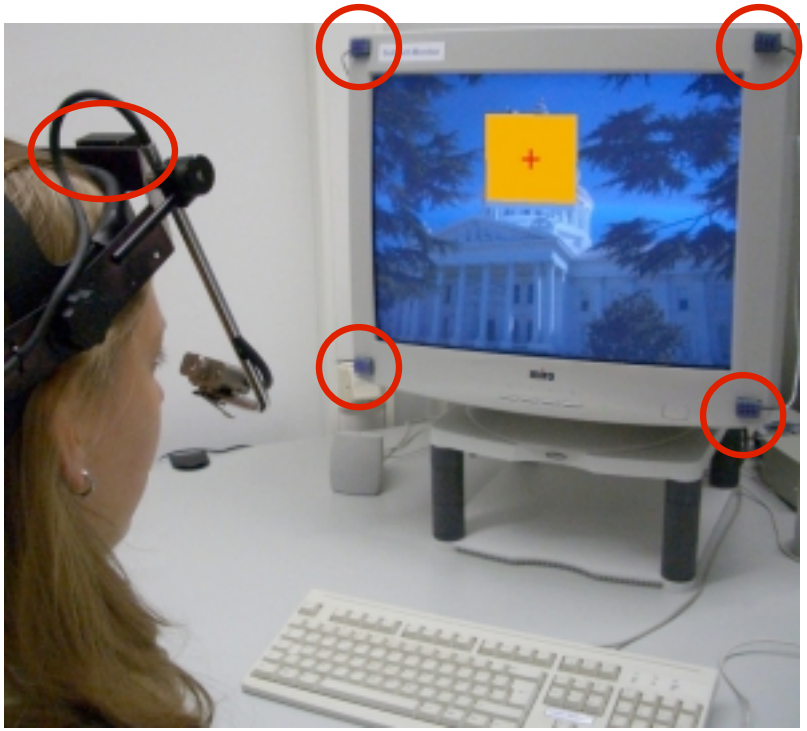
- Process complete words
- Search through a list of words
- Human processing: Incremental

More Properties of SPWR

- Not only onset but also sounds in the middle of the word and offsets activate candidates
- Syntactical context has an influence (e.g. part-of-speech)
- Words in all languages spoken are considered

Eyetracking in Visual Worlds



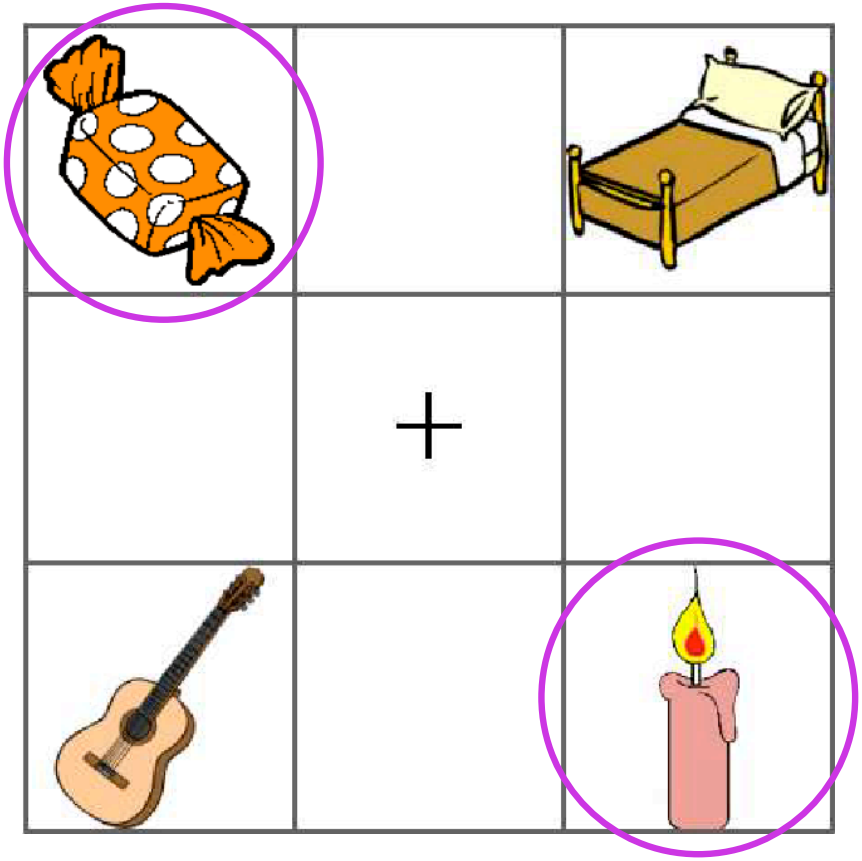


Example Study: Tanenhaus et al., '95

Eyetracking is well-suited to observe competition:

"Pick up the can…"

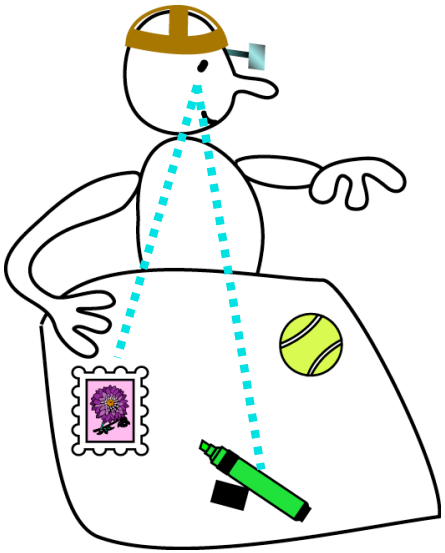
When participants heard the noun onset *"can"*, they fixated both a *"candle"* and a *"candy"* in the display

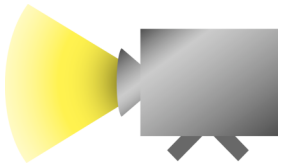


Eyetracking with Bilinguals

- Stimuli from the irrelevant language are never presented
- Bilinguals look at crosslinguistic competitors whose name is phonemically similar to the target
- E.g., when asked to pick up a *marker,* Russian-English bilinguals also briefly look at a stamp, */marka/* in Russian (Marian & Spivey, 2003)

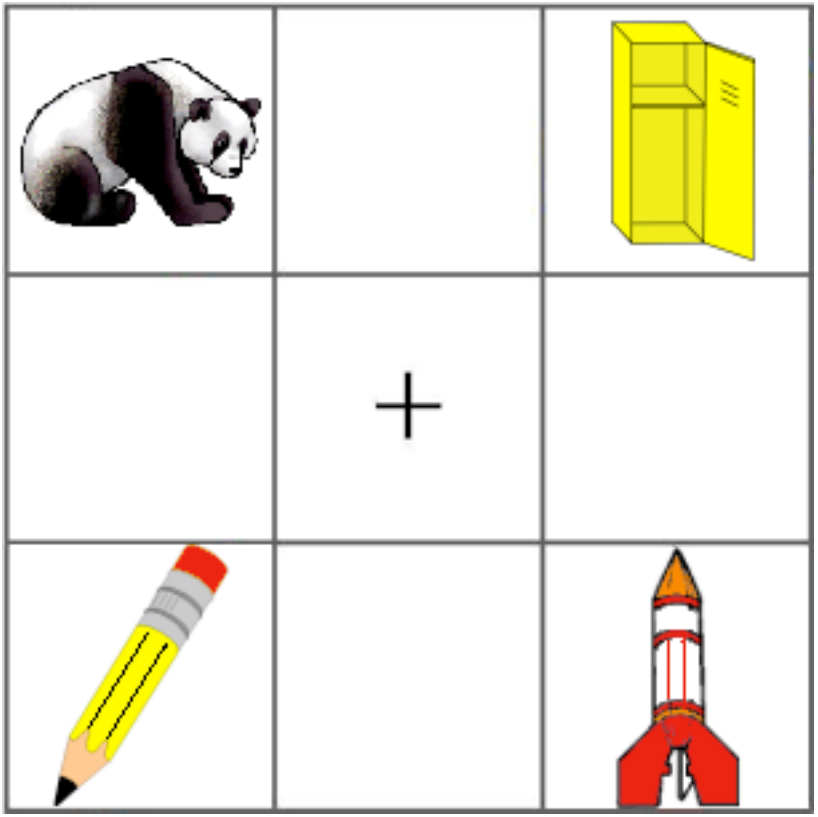
"Pick up the marker"





L1 Interference in L2 Processing

- But: Not only the lexicon interferes, other levels do, too!
- Here: Phonemes from L1 interfere with SPWR in L2



Modelling

- Forces clear specification of theories instead of vague descriptions by requiring sufficient detail for implementation
- Test the coherence of a theory, especially when interactions between parts is complex
- Generate testable predictions
- Permit manipulations that may not be possible in experiments (lesioning, long term changes, e.g. learning vocabulary in a foreign language)

Connectionism/Neural Networks

- Metaphor: Neurons
- Simple units passing activation (// electric brain activity)
- Parallel processing
- Learn from data
- Modelling human processing (“Coli”) + also used today in NLP