Reading Questions for Chapter 6, pp. 113-124
in *Psycholinguistics: An Introduction* (Smith-Cairns)

Perceiving Speech

1) What are three features of the speech signal that pose a challenge for speech perception?

2) What is the goal of speech perception?

3) What helps us overcome the variability in speech? To help yourself answer this, answer the following: What are the two things that psycholinguists can say with confidence about the speech perception system?

    a. First: *This answer includes categorical perception. Why?*

    b. Second

4) If you haven't done so already, check out the McGurk Effect demo (see the link to it on the class website).

5) Explain **phonemic restoration**. When does it work best?

6) Explain **perceptual displacement**.

7) p.121: What does she mean by **lexical retrieval**? (Note, lexical retrieval is also sometimes called lexical access).

8) Explain what is meant by **post-access matching**. What is being matched? Why is it called "**post**-access?"

9) How does post-access matching explain phoneme resoration?

10) What evidence tells us that we can perceive speech based on the acoustic signal only?

Bottom-Up and Top-Down Information

1) Based on her explanation, what do you think bottom-up information is with respect to perceiving speech?

2) Based on her explanation, what is top-down information? (NOTE: Ignore the two sentences about Broca's aphasia for now.)

3) Describe the Garnes and Bond experiment:
    a. What were the stimuli

    b. Were they synthesized or spoken by a person? Why do you think they were designed this way?

c. Results:

i. How did speakers perceive the words that were acoustically clear?

ii. What type of information were they using to understand the acoustically clear words?

iii. How did speakers perceive the words that were acoustically ambiguous?

iv. What type of information were they using for the ambiguous words?

15) Why do you suppose bottom-up and top-down information are so named? (Hint: look at the diagram on p. 11)

Reading Questions for Ch 6, pp. 124-131 in
Psycholinguistics, An Introduction (Smith-Cairns)

Lexical Retrieval and the Hearer

1) If you didn't figure out what lexical retrieval was in question (7) in **Perceiving Speech**, can you understand what it is from this section?

2) What do you use to access the lexicon when you are speaking?

3) What do you use to access the lexicon when you are hearing speech?

4) Do your answers to (2-3) fit with the Production/Comprehension Diagram on p. 11? Why or why not?

5) How often do you consult your lexicon when listening to a sentence?

6) What is a lexical decision task?

7) Try the lexical decision task below. Next to each word, write a Y if it is a word, and a N if it isn't. (This is the same task as in your book).

    a. clock
    b. skern
    c. doctor
    d. nurse
    e. tlat
    f. plim
    g. book
    h. hut
    i. table
    j. chair
    k. urn
    l. bat
    m. zner

8) Now that you've made your decisions, did you notice that you judged some words very quickly, while others took longer to judge? If so, which words took longer? Why do you think they took longer? (Try to answer this before reading ahead).

9) Okay, now compare you answer to the previous question with her explanation in the book for why some words are accepted or rejected faster than others. Does your response match her explanation? If not, what is her explanation? Does it make sense to you?

10) What is PET? What does it show?

11) What results did Bower get using PET? Do different parts of the brain handle different word types? (real words, non-real but phonotactically possible, non-real and phonotactically impossible).

12) Different things can affect the speed of lexical retrieval. Discuss each in turn:

a. The **frequency effect** is described on p. 126, paragraph 2. Describe it in your own words.

b. Why are **ambiguous** words accessed faster than unambiguous ones? (Does the analogy make sense?)

c. Is there a separate lexical entry for each meaning of a word? Why might this be advantageous or disadvantageous?

d. What is a **homophone**? Are *marr*y and *merry* homophones in your variety of English?

e. What is **priming**?

f. What is **semantic priming**?

g. What other types of priming are there? (She mentions two others).

h. What do results from experiments involving priming tell you about how the lexicon is organized?

13) What is **morpheme-stripping**? Actually - before you answer that, think about this: since we can use bound morphemes like *-ing*, *-ed*, plural *-s*, etc. on many words, do we

a. store all words with all possible bound morphemes, like

apple	pencil	walk	flip
apples	pencils	walked	flipped
		walking	flipping

b. OR - store words without bound morphemes and store only one copy of the bound morpheme because we can use it over and over again?

apple pencil -s walk flip -ed -ing -er

14) What does the book say about derivational morphemes? Why should they be stored differently from inflectional ones?

15) Based on the previous discussion in (27-28), how would you store the following words?

a. skip skipping
b. jump jumping jumped
c. take took taken
d. shaken
e. serene serenity
f. divine divinity
g. national rational maniacal

16) Here is a good place to summarize: After reading through this section, what do you know about lexicon organization?

Note: Lexical Access is another term for Lexical Retrieval

The Cohort Theory of Lexical Access

NOTE: Ignore the paragraph at the top of page 129 about what the brain is doing.

1) Her explanation of the cohort theory of lexical access is not too thorough. In spite of this, try to explain what happens when you access the word **banter**. Include the recognition point.

2) What two pieces of experimental evidence indicates that word beginnings are more salient (prominent) for listeners than word endings?

3) There is a basic assumption that each word in the lexicon has some level of activation all of the time (think of it this way: each word is like an engine that is idling, ready to drive into action when needed in a sentence). How do you use this notion of activation to explain the frequency effect?

4) On p. 130, she mentions that some words will have larger cohorts than others. What does she mean by a cohort? I don't think she ever tells you this directly, but you may figure it out based on her discussion.

5) What does the **phonological neighborhood** look like for the word *banter*?

6) Can you think of a word that has a really sparse phonological neighborhood?

7) Why does it take longer to access a word in a dense phonological neighborhood?

8) What two different types of similarity affect the rate at which you access a word in a phonologically dense neighborhood? Describe each one.

9) Which of the two similarities in (8) is relevant for the phoneme restoration results? Why?

10) On pp. 130-131 an experiment related to the answer for (9) is described (Connine, Blasko, and Titone). Break it down:

    a. What are the stimuli

    b. What is the basic task? What do you think the researchers want to know, i.e., what are they expecting to learn from this experiment?

    c. Assume that the word *doctor* comes from a **dense** phonological neighborhood. What results would you expect, according to their study? In other words, for the following three word pairs, in which was the semantic associate (the second word) primed? How would you know that priming had taken place?

        doctor - nurse

        toctor - nurse

        zoctor - nurse

d. Now assume that the word *doctor* comes from a sparse neighborhood. What results would you expect, according to their study? In other words, for the following three word pairs, in which was the semantic associate (the second word) primed?

doctor - nurse

toctor - nurse

zoctor - nurse

e. What is the larger conclusion to be drawn from the results? Does neighborhood density matter when retrieving a word?

Reading Questions for Ch. 6, pp. 131-139 in
Psycholinguistics, An Introduction (Smith-Cairns)

Lexical Retrieval in Sentence Comprehension (or, what happens when we try to understand words as sentences unfold).

Methodology

1) What is the goal of psycholinguistics in sentence understanding?

2) Do you think we wait until the end of a sentence before we process what it means? Why or why not?

3) What is the **parser**?

4) What is an online method? What is an offline method? (We'll see examples of these later).

Effects of word frequency in sentence processing:

5) What is a phoneme monitoring task?

6) If a reaction time in a phoneme monitoring task is long, what does that mean?

7) The task in paragraph 2 on p. 133 is an example of an online task. Explain the results: why did it take longer to recognize the sound "b" after the low-frequency word. Would you expect this result? Why?

Effects of ambiguity in sentence processing:

8) Why should psycholinguists be interested in ambiguity?

9) What is a garden path sentence?

10) On pp. 134-135 is described another phoneme-monitoring task. Instead of testing frequent vs. infrequent words, ambiguous vs. non-ambiguous words were tested. Why is the reaction time to detect the phoneme **longer** after an ambiguous word? Why is this result different from the results in lexical decision tasks?

11) What happens when you place the target phoneme (that you push the button for) a few words later than the ambiguous word? Does the ambiguous word have an effect on the reaction time to the phoneme in that case? Why or why not?

What influences the listener's decision to choose one meaning over any others?

12) On pp. 136, we learn of yet another online task: the **cross-modal priming task**. Describe the task in your own words below.

13) Note that Swinney (1979) ran this experiment three different times.

a. In the first run, the targets for lexical decision were presented right after the participant heard the ambiguous word *bug*. What was the result?

b. In the second run, the targets for lexical decision were presented right after the participant heard the word *bug* AND the sentences had information in them prior to the word *bug* that biased the meaning of bug one way. What was the result? Did the biasing context have any effect on lexical access of the meanings of *bug*?

c. In the third run, the targets for lexical decision were presented a few syllables AFTER the participants had heard the ambiguous word *bug*. What was the result? Were all meaning of the word primed?

14) Are these results similar to those obtained from the phoneme monitoring task, described previously?

15) So, knowing all of these experimental results, what happens when you encounter an ambiguous word as you listen to a sentence, and the meanings of the ambiguous word are equally frequent?

16) What happens when you encounter an ambiguous word in a sentence, and the various meanings of the word vary in frequency?

17) Returning to the cohort theory, how does it account for the observations in the above experiments?

18) When encountering an ambiguous word in the context of a sentence, what is bottom-up information used for, and what is top-down information used for?

Modularity - we'll discuss this one in class, but for now, write down in your own words what it means:

1) What is modularity?

2) What does "informationally encapsulated" mean?

NOTE: Ignore the paragraph on p. 138 about Broca's and Wernicke's aphasics.

The chapter concludes with a reminder that you first have to segment words from the continuous speech signal before you can perform lexical retrieval. It also asks when top-down information gets used to help you choose the relevant meaning of a word. We'll talk about this more in class and in Ch 7.