3 major concerns in psycholinguistics

I. Comprehension:
   - how we understand spoken language (listening)
   - how we understand written language (reading)

II. Speech production
   - how we produce spoken language (speaking)
   - how we produce written language (writing)

III. Acquisition: how we learn language
   - how children acquire first language (developmental psycholinguistics)
   - how children acquire subsequent languages (second and foreign language acquisition)

Your Study Plan

- Week 8-14: Chapters 6, 7, 8
- Chapter 6: Speech Production
- Chapter 6: Speech Perception and Lexical Access
- Chapter 7: Sentence Processing
- Chapter 8: Discourse Processing
- Tugas 2 (Study Questions: Chapter 4 & 5) - 15% (Due 4 Nov)
- Tugas 3 (Review of Research Articles) - 15% due 3 Dec 2011
- Turnitin requirement
- Review tutorials/submissions

Speech Production (Chapter 5)

Key question = Study question 3

How does the study of speech errors demonstrate that speech is represented at various processing levels before it is actually produced?

A model of Speech Production

Processing operations involved:

- Ideas (Preverbal message)
- Lexical Selection
- Syntactic Representation
- Phonological Representation
- Articulation

Speech production processes

Figure 51. Diagram of some processing operations, ordered left to right.
Can you think of situations when you are stuck at a particular process?

- **Preverbal message:**
  don't know what to make out of a particular situation

- **Lexical Selection:**
  have the idea but can't find the words to describe it

- **Pre-articulation (thinking/reading in silence)**
  have the ideas and the words but not saying it out loud

These situations are observable at the conscious level.

How do we know we build syntactic and phonological representations?

- Evidence for this is less intuitive
  (non easily observable at the conscious level)

- Indirect evidence from studying speech errors
  (there are lots of examples of these from the textbook)

We will review these examples to see what they tell us about the processing involved in speech production.

Evidence from speech errors

Errors share semantic and syntactic properties
  ➔ Some storage location ➔ retrieval errors

- I just feel like whipped cream and mushroom.
  [I just feel like whipped cream and strawberry]

- All I want is something for my elbows.
  [All I want is something for my shoulders].

- Put the oven on low speed.
  [Put the oven on low temperature.]

Form-based errors vs meaning-based errors

Substitution by phonological neighbours

  e.g. If you can find a gangle around the house...

  [If you can find a garlic around the house...]

  We need a fewlaughs to break up the mahogany.

  [We need a fewlaughs to break up the monotony.]

Phonological neighbours

- are words that look or sound alike

  e.g. pine
  mine dine line mane etc

Word/Phrase exchange errors

- *Tell the business I'm in the [businesse]ran.*
  [Tell the business I'm in the [businesse]ran.]

- *So [pipe and [pipe and]...]
  [So [pipe and [pipe and]...]

- *The Grand Canyon went to my sister.
  [My sister went to the Grand Canyon.]

The resulting sentences are still grammatically well-formed
sentences in English.

- Evidence for syntactic representation because errors respect the grammatical
  constraints of the language.

- Errors are systematic, not arbitrary.
Morphemes are added before morphophonological rules

- We roasted [roast] a cook.
  [We cooked [k] a cook]

- He had a lot of guns [s] in that bullet.
  [He has a lot of bullets [s] in that gun]

- If you give the nipple an infant
  [If you give the infant a nipple]

Syntactic representation are created before phonological representations are spelled out.

Evidence for phonological representation

- Segment exchange errors: 'hash or grass'
  [hash or grass]

- Preservation errors: 'I can't cook worth a camp'
  [I can't cook worth a damn]

- Anticipation errors: 'taddle tennis'
  [paddle tennis]

- Prosodic prominence: 'When the paper hits the story...'
  [When the story hits the paper...]

Producing speech after it is planned: articulation

- What is involved in articulation?

- Translating/transforming speech into acoustic signals

- Phonological representation is sent to central motor areas of the brain where it is converted into instructions to the vocal organs to produce the required sounds.

- The rest of the chapter reviews speech production which should have been covered in the course on phonetics and phonology.

Speech Perception (Chapter 6)

Decoding speech:

Using information from the acoustic signal, the hearer reconstructs a phonological representation (PR), retrieves lexical items that matches the PR, recovers semantic and structural information, and decodes the meaning of the sentence uttered.

A model of Speech Perception

Processing operations involved:

1. Auditory perception
2. Phonological Representation
3. Lexical Selection
4. Syntactic Representation
5. Ideas (Preverbal message)

Speech Perception processes

Figure 6.1 Processes involved in speech perception
Speech production processes

What is so difficult about speech perception?
1. The speech acoustic signal is continuous. Unlike writing, there are no spaces between consonantal sounds or even between words. Our experience of speech is very different from our usual physical form.
2. Information about the speech units is transmitted in parallel. Different information is transmitted at the same time and distributed over the whole word because of coarticulation.
3. The speech signal is weak, although the phonological representation isn't. Four sources of variation:
   a. Variability among speakers due to different physical size
   b. Variability within speakers: speed, emotion
   c. Variability resulting from noise in the environment
   d. Variability caused by phonemes that occur together

But we perceive speech almost effortlessly. How do we do it?
1. Speech perception is constructive. It uses both visual and auditory information to construct the phonological percept.
   a. Speakers also fill in missing information (phonemic restoration). This explains why we can still comprehend speech in a noisy environment.
   b. Speakers use both bottom-up information and top-down information to make sense of what they are hearing.
   c. Speakers use post-sentence matching to check the phonological form of the word retrieved with the acoustic information from the signal.

Lexical Access (Chapter 6)
Speakers use information about meaning to retrieve the phonological structure of appropriate words to convey the meaning they are constructing for a sentence.
Heavers look for a lexical entry whose phonological representation matches what he has heard.
Factors that influence lexical access

1. Phonotactics:
   - Phonological knowledge about possible and impossible sequences of sounds in a language
   - E.g., Blick (possible word in English)
   - Znit not a possible word in English

   In a lexical decision task, we reject impossible non-words like znit faster than possible non-words like Blick.

2. Word Frequency
   - Words that are used more often are more easily retrieved.
   - In a lexical decision task, the time taken to recognize high frequency words is shorter compared to low frequency words.
   - How do we know the frequency of words?
   - Linguists usually consult a large language corpus. For example, British National Corpus (BNC).

3. Lexical Ambiguity
   - Lexically ambiguous words have more than one meaning.
   - Such words have more than one lexical entry.
   - E.g., ball, tank, peck (homonymy), multiple unrelated meanings: eye (polysynomic words with multiple related meanings)
   - Physical eye, eye of the needle, aperture of a camera

   Ambiguous words with unrelated senses or meanings (homonymy) slow down word recognition because the meaning competition during lexical access.
   - However, words with related meanings (polysemous words) facilitate retrieval.

The cohort model of lexical access

- Page 935
- How are words retrieved from our mental lexicon?
- A word’s cohort consists of all the lexical items that share an initial sequence of phonemes.
  - E.g., pin, pill, pit, pink, pool, palo, etc.

   The initial part of a word is more important than the end of a word for lexical access. As more information is retrieved, only a subset of words remain activated. At some point, a single lexical entry is selected.

Experiment Demo

- Speech perception task
- Lexical decision task
- Priming experiments

Demo on how to search for journals

- Using the database from the library
- ScienceDirect
- Scopus

- Using google search
- Keyword search from google
- Keyword search from subscribed journals
Guide to Homework 2

Topics:
- Review of Research Articles: due Dec 1
- Identify one research article that was published within the last year of the following research areas in psychology:
  - Second Language Speech Production (Chapter 6)
  - Second language Language Learning (Chapter 7)
  - Second Language Language Processing (Chapter 7 & 8)
- Provide a summary of the study by answering the following information from the article:
  - What was studied? (Problem investigated)
  - What were the independent variables? (Variables manipulated)
  - What were the dependent variables? (Variables measured)
  - What did the study find? (Hypothesis tested)
  - What is a possible mechanism for the results of the study?
- Then describe how the problem investigated in the article is related to any issues discussed in the textbook (Chapters 7 & 8). Your discussion should not exceed 2 pages.

Guide to the Final Exam

- Similar to what you have for the mid-term
- BUT focus = on chapters 5-8
- Multiple-choice questions (10-20 questions)
- Essay questions (3-5 questions)
- Similar to study questions at the end of the chapter