PSYC 3320/5597: Psycholinguistics

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Unit 1 – The basics

What is psycholinguistics?

Psycholinguistics – the study of language from a psychological perspective

- we will focus on cognitive processes involved in language

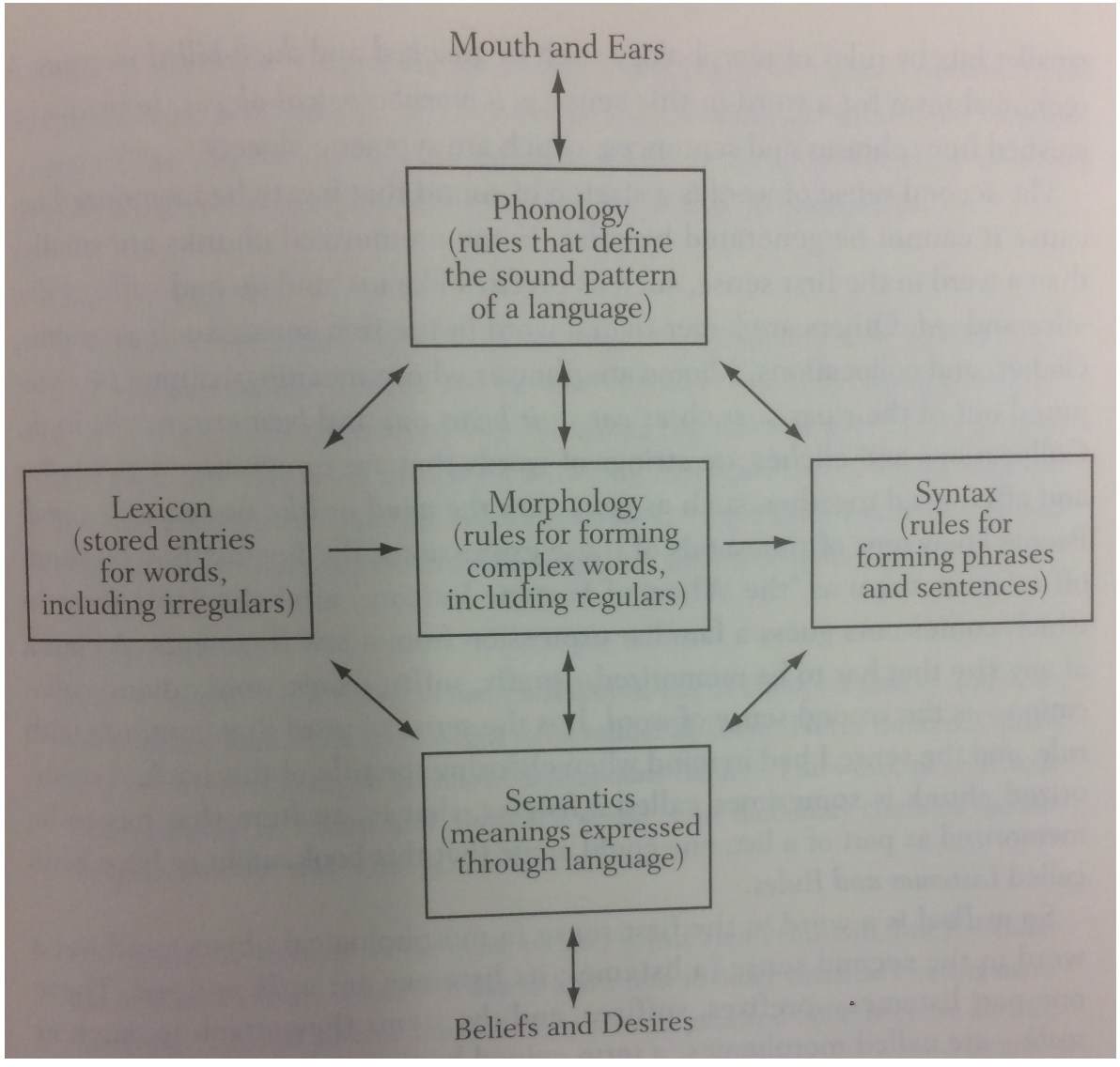
Cognitive processes

- short term memory
- long term memory
- encoding
- retrieval
- mental representations

Linguistics

- phonology
- morphology
- syntax
- semantics
- rules

Describing language



Definitions

- Word – "smallest unit of grammar that can stand on its own as a complete utterance, separated with spaces in written language" (Crystal, 2010, p. 461)
  - pigs (word)
  - ing (not word)
- phonology – how sounds are used within a language
- morphology – how complex words are formed from smaller units
  - inflectional morphology – changes that do NOT alter meaning
  - deriviational morphology – changes that DO change meaning
- syntax – rules for combining words into sentences
- semantics – how words come to mean/represent something
- lexicon – "mental dictionary" / all we know about a word

Active research area!

Psycholinguistics is a very active research area with a lot of open questions! For example:

1. Computational models of language processing
   - independent versus interactive modules?
   - discrete stage model (serial processing) versus cascade model (parallel processing)
   - top-down (rule driven) versus bottom-up (data driven)
2. Is any part of language innate? (nature versus nurture)
3. Domain-specific versus domain-general processes

Some basic linguistic theory

Goal: describe building blocks of language

- sounds
- words
- sentences

Importance of sound

Example: say these two words

- pot ("p" is *aspirated*)
- spot ("p" is *unaspirated*)

- the "p" sound is a phoneme, denoted /p/
- the phoneme /p/ has two different sounds:
  - aspirated /p/ (denoted [p^h])
  - unaspirated /p/ (denoted [p])
  - these are allophones (different sounds, same meaning)

Importance of sound

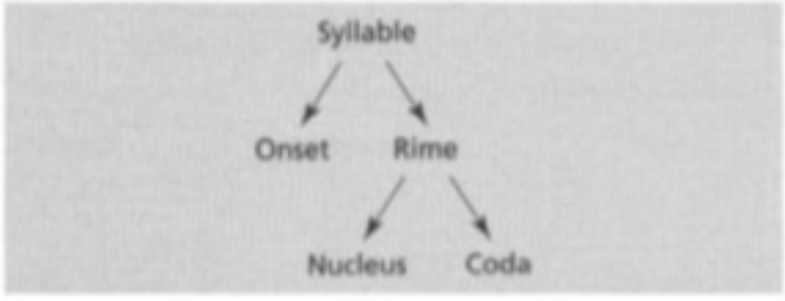
More examples: consider the sounds [l] and [r]

- in English, they are different sounds AND different phonemes (how do we know this?)
  - lice versus rice: these two words differ by just one sound ([l] versus [r]). Since the two words have different meanings, the sounds [l] and [r] must be different phonemes
  - i.e., lice and rice are minimal pairs
- in Japanese, they are different sounds, BUT SAME phoneme (allophones)
  - hence, native Japanese speakers have a hard time hearing (and speaking) the difference between [l] and [r]

Syllables

Words are divided into rhythmic units called syllables

- onset – initial consonant(s)
- rime
  - nucleus – central vowel
  - coda – final consonants



- Example: "horses"
  - Onset = "h"
  - Nucleus = "or"
  - Coda = "ses"

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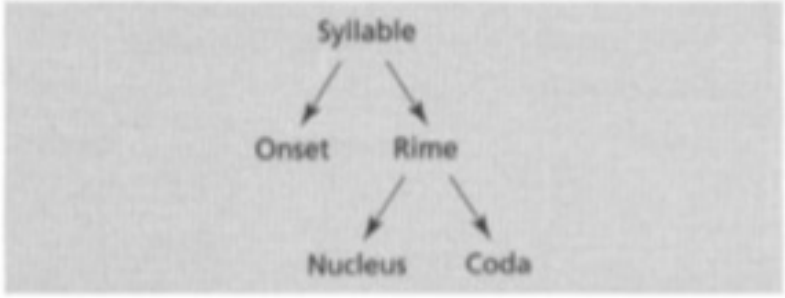


- In English, all components are optional
- Rules differ across languages (e.g., in Japanese, there are NO codas)

Syntax/Grammar

Chomsky (1968) – goal of study of syntax/grammar is to understand the rules that enable us to produce and understand language

- I-language: internalized language – the set of internal rules that produces language (lingustic *competence*)
  - focus of linguists
- E-language: externalized language – the result of those rule (linguistic *performance*)
  - focus of psycholinguists

Syntax/Grammar

Chomsky described grammar mathematically in terms of phrase-structure rewrite rules

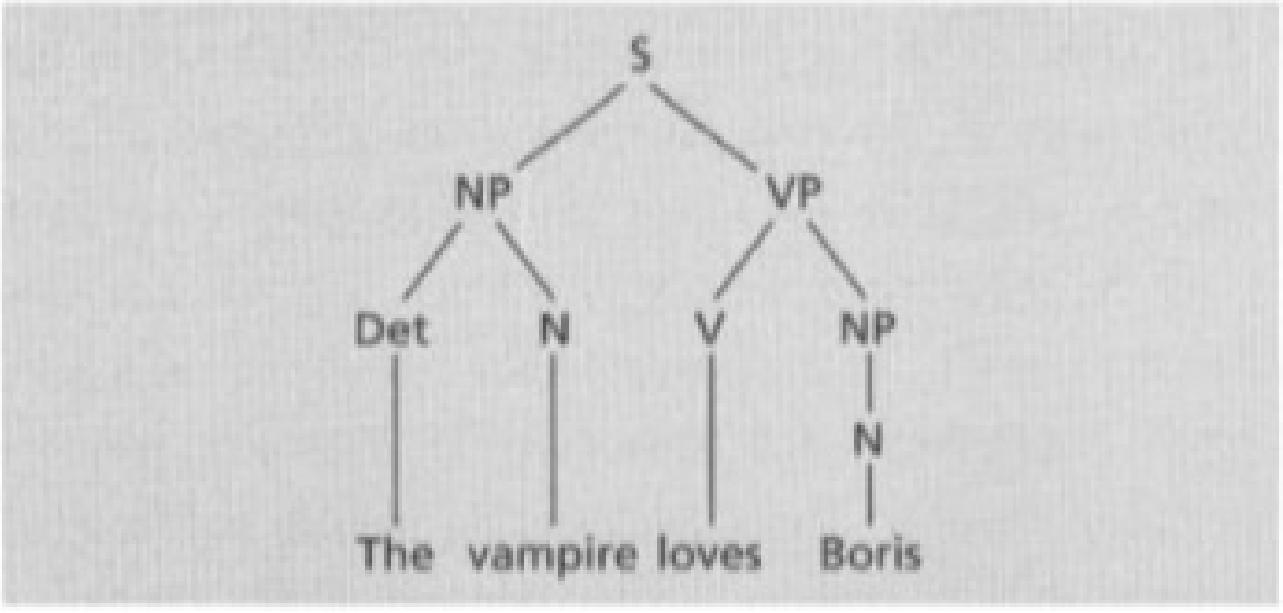
S	NP+VP (A)
NP	DET+N (B)
NP	N (C)
VP	V+NP (D)
VP	V (E)
N	Vlad, Boris, poltergeist, vampire, werewolf, ghost…
V	loves, hates, likes, bites, is…
DET	the, a, an…

Example:

- Rule A: $S \leftarrow NP + VP$
- Rule B: $NP + VP \leftarrow DET + N + VP$
- Rule D: $DET + N + VP \leftarrow DET + N + V + NP$
- Rule C: $DET + N + V + NP \leftarrow DET + N + V + N$

Syntax/Grammar

Chomsky described grammar mathematically in terms of phrase-structure rewrite rules



Summary

- Some basic definitions (e.g., phonology, phonemes, morphology, etc.)
- Big questions in psycholinguistics
- Basic linguistics – phonemes, allophones, minimal pairs, syllables
- Chomsky's formal model of grammar
  - I-language versus E-language
  - phrase-structure rewrite rules