Language structure

- Phonemes
- Morphemes
- Words, phrases & sentences
- Grammar (semantics + syntax)
- Sometimes in line with function, sometimes not...
  - representation – relation to external reality
  - communication

Phonemes

- Smallest unit of speech – serves to distinguish one utterance from another
- In English: 40
- In Polynesian: 11; in Khoisian: 141
- There are sounds that no language uses (pftht) (though they are used to communicate!)
- Different combinations → different syllables
- Not all combinations used (e.g. pilk)
- Not all combos “natural” for a given language

Blurring

- The ear can distinguish sounds as separate only if they are given at less than 20/sec
- Normal speech: 10-15 phonemes/sec
- Fast speech: 20-30 ph/sec
- Artificially fast speech: 40-50ph/sec
- We combine phonemes to overcome the limits of the ear – we interpret >20 sounds/sec
- This can lead to misinterpretations...

Morphemes & words

- Smallest unit of language that carries meaning
- Can be single phonemes (“a”) but most aren’t
- Combine to form words
- Some can stand alone (“bat”) some can’t (-s)

Phrases & sentences

- Words combine to forms phrases
- Phrases combine to form sentences
- Again, constraints on sequence
- Grammatical ≠ meaningful
- Non-grammatical ≠ meaningless
Grammar

- **Semantics**
  - Rules used to derive MEANING from morphemes, words, sentences
  - e.g., laugh + ed = past tense
- **Syntax**
  - Rules used to order words into sentences
  - grammatical categories
    - Noun, verb, pronoun, adjective, determiner
  - relations between these categories
    - e.g. John kissed Jane = SUBJECT VERB OBJECT
    - e.g. adjectives before nouns (white house vs. la maison blanche)

Language acquisition

- Infants (in fantis!) begin without language
- Physiological changes
  - Larynx moves to throat from nasal passage by 3 months, tongue can move around
- Start experimenting with sounds
- 4 months – prefer to look at faces that match sounds they hear (ah, ee)

Language acquisition stages

1. Crying (birth)
2. Cooing (6 wks)
3. Babbling
4. 1-word
5. 2-word (telegraphic speech)
6. Basic adult sequences with grammar (~2 yoa)

(rate varies widely)

Language acquisition

- **Babbling** (7-8 months)
  - Spontaneous utterances of various sounds (ah goo), repetition of syllables (nanana, mamamamama)
  - teaches how sequences of muscle combinations lead to different sounds
  - Same in all languages (not imitation!)
  - Not communication attempts
  - Babies distinguish all phonemes but prefer melody/timing/stress of mother’s tongue
  - Respond differently to different intonations
  - By 10 months, resembles phonemic makeup of parents’ language: infant can no longer distinguish phonemes from foreign languages (Werker, 1989)
  - Deaf children babble with hands

Language acquisition

- **1-word stage** (1 year of age)
  - Sounds carry meaning ergo use sounds to communicate meaning
  - First words usually monosyllabic and barely recognizable
  - Inflection may equal sentence
Language acquisition

- 2-word stage (telegraphic speech) (2 yoa)
  - know many more words
  - similar meaning to words used in 1 word stage:
    - negation, nonexistence, call attention
    - soon branches out to other meanings
    (Brown, 1973)
  - leave out the ‘little words’ and inflections:
    - e.g. Mummy shoe NOT Mummy’s shoe
    - Two cat NOT two cats

- Full sentences
  - May still be telegraphic, but follow grammatical rules
    - e.g. Mummy get ball; big dog
  - Expansion of object nouns to noun phrases
  - Verbs added more frequently, then articles, then prepositional phrases
  - Inflections + inflected words (-ing, -s, irregular past tense, regular past tense...)
  - Generalization errors
    - overgeneralizations of grammar (runned)
    - overextensions (dog == all four-legged things)
    - underextensions (dog == Burek)

“Motherese”

- Adults talk differently to children than to adults
  - Slower
  - Exaggerated pitch changes
  - More here-and-now oriented
  - More grammatical
  - Lots of questions
- These properties may make it easier to learn
  - indication of meaning

Language development

- Grammatical acquisition
  - Learning how to fit words together into meaningful sentences
- 2 categories of theories:
  - Nativist theories:
    - children are born with innate knowledge that helps them make sense of the world
  - Constructivist/behaviorist/empiricist theories:
    - language is learned by building up knowledge from the environment

Nativist views

- Humans learn language effortlessly, unconsciously
- Children must have innate principles/knowledge to guide them (Chomsky, 1957; Gold, 1967; Pinker, 1979)
- Language is ‘a distinct piece of the biological make-up of our brains ... distinct from more general abilities to process information or behave intelligently’ (Pinker, 1994, p. 18)
- Goal: find the universal knowledge and specify how children use this to learn their language

Chomsky

- Language acquisition device (LAD)
  - a mechanism with access to the grammatical rules of all human languages (Universal Grammar - UG)
- Some features of language are universal across the world’s languages: PRINCIPLES
  - e.g. noun category
- Others vary: PARAMETRIC VARIATION
  - e.g. English requires a subject (John kissed Jane)
  - Polish doesn’t
Nativist views

- Kids don’t learn by imitation
  - no parent teaches statements like “I hate mommy”
- They reinvent language
- But need proper environment to develop
  - Need exposure to other people for communication
- Critical period...

Statistical/cognitive views

- Theory implemented as computational model
- Learn based on statistical structure of language
- Positional and semantic commonalities in the language guide the learning of grammatical rules:
  - e.g. a dog, a cat, a bird, a car -> ‘a + noun’
  - e.g. past-tense
- Gradual changes in network connections based on experience
- We use commonalities to detect where words begin and end (which syllables appear most often together)

Second language learning

- For kids, up to age 7, no problem
- For adults, not so easy
- Suggests a “critical period” for language learning
- Chomsky was right after all?
- Among bilinguals, brain activation
  - of first and second language learned before age 7: identical
  - of first and second language learned after age 7: different

Thought influences language

- I think before I speak
- Phenomenon has to exist before it is named
- Phenomenon has to be understood before it is named
  - “gone” ~ after kids acquire object constancy

Nativist views

YAY!
- explains why language is learned relatively quickly
- explains how language learning is so generative

BOO!!
- very little evidence for adultlike grammatical knowledge in young children (Braine, 1976)
- young children make errors (Chomsky would not predict (e.g. omit obligatory constituents such as determiners, possessives))
- cannot explain why children make grammatical errors (e.g. doggie go walkies) even after extensive language exposure

Statistical/cognitive view

YAY!
- demonstrate that lots of information about language is present in the statistical distribution of language (e.g. Finch & Chater, 1992)

BOO!!
- Criticised by nativists:
  - Long-distance dependencies?
  - Unrealistic assumptions
Language influences thought

- Linguistic determinism (Sapir-Whorf)
  - language imposes conception of reality
    + e.g. the Hopi, who have no past tense, can not so easily think about the past (?)
    + we think differently in different languages
      + e.g. English quite self-focused, Japanese more interpersonally-focused (Markus & Kitayama, 1991)
  - subtle sexism
    + male pronouns - generic?
    + e.g. lekarz (lekarek?) vs. lekarka
  - vocabulary-building: crucial for education
    + expanding language = expanding capacity for thought

Problems with language

- Broca's aphasia
  - Speech production problems, tho no problem controlling mouth
  - Agrammatical speech (and writing)
    + Short sentences, skip function words, omit inflections
    + Difficulty with grammatical analysis
      + The lion was killed by the tiger. Which one is dead?
- Wernicke's aphasia
  - Speech comprehension problems
    + "empty" speech, vocabulary problems
- Anomia
  - Difficulty in naming things (can be very specific)
- Dyslexia
  - Impaired reading
    + Disconnect between visual input system and word recognition area in left hemisphere

Nonverbal communication

- Strongly related to verbal communication
- Facial expressions, tones of voice, gestures, eye contact, spatial arrangements, patterns of touch, expressive movement, cultural differences, and other "nonverbal" acts
- Speech + gesture improves comprehension
  - esp. of ambiguous or indirect communications
- E.g. gestures
  - Express feeling, tone, meaning
    + Can be representational (conveying meaning) or "beat" (no semantic content, just rhythm)
  - Visibility of listener affects representational gesturing

Paralanguage

- Part of vocal but nonverbal communication
- The vocal elements (vs. verbal elements – the words we choose)
- What accompanies your words to make up their true meaning
- Nonverbal voice qualities, modifiers, and sounds used consciously or unconsciously supporting or contradicting verbal messages, simultaneously or alternating with them
- Vocal lip control
- Pitch range
- Rhythm control
- Resonance
- Tempo
- Laughing, crying, grumbling, sighing, yawning,...

Emphasis

Statements can have different messages depending on what is emphasized:

She's giving this money to me

-SHE is the one giving the money, nobody else.
-She is GIVING, not lending.
-MONEY is being exchanged, not anything else.
-I am getting the money, nobody else.

Facial Expressions

Facial expressions are one of the first things we notice about another person and a rich source of information about underlying emotion.

There are 6 basic facial expressions:  🤗 😊 😖 😡 😢 😙
Research by Ekman and Friesen examined the encoding and decoding universality of facial expressions.

- Happiness is the most universal
- Most are negative
- Anger especially easy to identify (the face-in-the-crowd effect)
- Combinations of expressions possible
  - Dismay = Sadness + surprise
  - Shock = Disgust + surprise
  - Horror = Fear + surprise

Electronic communication often augmented with emotion markers:

- : - | Smirk : - | Disgust = o Shock
- : - ( Frown
- - ( Anger or Sleepy
- ^_^) (;_;)

It is relatively easy to control facial expressions so we look to other nonverbal cues to provide additional information:

- Vocal cues and intonation
- Eye contact (too much, too little...)
- Gestures
  - emblems, beat, regulators
- Postures & use of space
- Touching

These are not universal! Culture plays an important role! But we can get more accurate with time...

Cultures and situations vary widely in their prescriptions about the appropriate display of emotions. These display rules can produce a disparity between the underlying emotion and the overt expression and can lead to miscommunication.

- Posture & movement
  - control of privacy, relaxation/tension, height/dominance
- Touch & space language
  - the physical space we allow ourselves
    - Intimate space = 0 – ½ m
    - Personal space = ½ – 1m
    - Social space = 1 – 3m
    - Public space = 3m – (eye/ear)
- Time language
  - Arrival/departure, duration
- It’s about status
  - Location, distance, privacy...

- Why should we pay attention to NV cues?
  - They assist in drawing accurate conclusions
  - Non-verbal message is stronger
  - More frequent
  - Clarify meaning:
    - Repeat what is said verbally
    - Complement or emphasize verbal meaning
    - Contradict verbal meaning
    - Regulate verbal interaction
    - Substitute for verbal meaning
In spite of the harshness and ruthlessness I thought I saw in his face, I got the impression that here was a man who could be relied upon when he had given his word.

--- Neville Chamberlain, 9/15/38, writing to his sister after meeting with Hitler

When the situation seems to be exactly what it appears to be, the closest likely alternative is that the situation has been completely faked; when fakery seems extremely evident, the next most probable possibility is that nothing faked is present.

--- Erving Goffman, Strategic Interaction

If falsehood, like truth, had only one face, we would be in better shape. For we would take as certain the opposite of what the liar said. But the reverse of truth has a hundred thousand shapes and a limitless field.

--- Montaigne, Essays

That which has been believed by everyone, always and everywhere, has every chance of being false.

--- Paul Valéry

There's only one way to find out if a man is honest: Ask him. If he says yes, you know he's a crook.

--- Groucho Marx

It is discouraging how many people are shocked by honesty and how few by deceit.

--- Noël Coward

Nonverbal communication

Deception

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Nonverbal communication

Cues to Detecting Deception

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True emotions "leak out" through nonverbal channels

- Facial: Hard to interpret accurately because people may display blends of multiple affects simultaneously; easier to control
- Verbal (what is said, how things are said)
- Body: Difficult to control; "leakage" can occur (often the best indicator of deception)

Nonverbal communication

Modes of communication

- One-way
  - Signs & notices
  - PA announcements
- Two-way
  - Communication that seeks a response
- Effectiveness?

Nonverbal communication

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