Language Comprehension (Listening and Reading)

Chapter 9

Language: Some Aspects

Turning thoughts into words. Distinguishes man from animals. Think if there was no language.

1. Language is a cognitive process/skill (listening, reading and talking).
2. Adult vocabulary: 20,000-40,000 words. Adult college-educated vocabulary: 75,000-100,000 words.
3. We speak at about 3 words per second.
4. 6000-7000 languages spoken in the world.
5. Infinite generation of sentences.

Psycholinguistics

An interdisciplinary field (psychology and linguistics) that examines how people use language to communicate ideas.
Nature of Language

**Phonemes:** (pronounced as “foe-neem”) The smallest distinctive sound unit in a spoken language e.g., *a, k,* and *th* are all basic sounds. There are 44 phonemes in the English language.

Different speakers of English will produce different actual sounds when articulating the word *the*, but the vocal organs of all physiologically normal speakers will perform similar motions.

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**Phoneme List**

<table>
<thead>
<tr>
<th>Consonant Sounds</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>as in bag</em></td>
<td><em>as in cat</em></td>
</tr>
</tbody>
</table>
| *as in dog* | *as in log* | *as in trip* | *
| *as in fun* | *as in man* | *as in wan* | *sh as in ship* |
| *as in get* | *as in med* | *as in wend* | *th as in thumb* |
| *as in hot* | *as in pet* | *as in pett* | *th as in the* |
| *as in gem* | *as in men* | *as in ship* | *sh as in elaboration* |

<table>
<thead>
<tr>
<th>Short Vowel Sounds</th>
<th>Long Vowel Sounds</th>
<th>Other Vowel Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>as in cat</em></td>
<td><em>ay as in day</em></td>
<td><em>ar as in chart</em></td>
</tr>
<tr>
<td><em>as in fan</em></td>
<td><em>ar as in far</em></td>
<td><em>ar as in chair</em></td>
</tr>
<tr>
<td><em>as in girt</em></td>
<td><em>ar as in cart</em></td>
<td><em>ar as in car</em></td>
</tr>
<tr>
<td><em>as in tag</em></td>
<td><em>ar as in bar</em></td>
<td><em>ar as in barn</em></td>
</tr>
<tr>
<td><em>as in bad</em></td>
<td><em>ay as in day</em></td>
<td><em>ay as in day</em></td>
</tr>
<tr>
<td><em>as in mat</em></td>
<td><em>ar as in arm</em></td>
<td><em>ar as in letter</em></td>
</tr>
</tbody>
</table>

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Nature of Language

**Morpheme:** The smallest unit, in a language, that carries meaning, may be a word or a part of a word (such as a prefix). Roughly 50,000 morphemes in English.

Milk = milk

Pumpkin = pump . kin

Unforgettable = un . for . get . table
Words

Roughly 100,000-200,000 words in English language.

Milk
Pumpkin
Unforgettable

Nature of Language

1. Symbolic (spoken-written).
2. Structured (grammar-syntax).
4. Pragmatics (social aspects of language).

Symbolic Language

1. Symbolic form of language can be easily understood when we think about written form of languages.
2. Many languages are written. And we use symbols (letters, alphabets, hieroglyphic symbols) to express a language.
3. Spoken language is also symbolic. Sounds generated while speaking are verbal symbols and often laden with affect.
Symbolic

Written symbols of language

A J M

English

Grammar

The rules with which language is put together is called grammar. Grammar extends all rules of a language.

a. i.e., viz.,
b. An elephant.
c. The truck slid on the icy road.
d. Rainbow is pleasant to watch.

Syntax

Syntax is a component of grammar and utilizes rules for combining words into grammatically sensible sentences in a given language.

a. Spotted owl is a nocturnal bird and is native to North America.
b. A bull is large animal.
c. Tomatoes are grown on my grandfather's farm.
d. You eat when you are hungry.
Semantics

The set of rules by which we derive meaning in sentences in a language. Semantics make sentences meaningful. One can make sentences that make no sense and yet may be grammatically correct.

<table>
<thead>
<tr>
<th>Meaningful</th>
<th>Meaningless</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irreparably wounded race horses are often terminated.</td>
<td>The spotted dreams wrapped green fingers around quivering ice in my navel.</td>
</tr>
</tbody>
</table>

Pragmatics

A system of rules in a language that enables us to communicate with and understand others. Communication with children may require a different kind of linguistic communication than adults. Pragmatics can change in lieu of audience.

<table>
<thead>
<tr>
<th>Child</th>
<th>Atom: A very small particle.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>Atom: Smallest possible form of matter that retains its identity.</td>
</tr>
</tbody>
</table>

Generate Sentences

The most fascinating human linguistic ability in generating sentences. Humans can generate an infinite number of sentences. However, under certain circumstances it is easier to generate sentences, than others.

<table>
<thead>
<tr>
<th>Flower</th>
<th>Airplane</th>
<th>Juxtaposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pot</td>
<td>Gravel</td>
<td>Armamentarium</td>
</tr>
<tr>
<td>Soil</td>
<td>Toast</td>
<td>Aglet</td>
</tr>
<tr>
<td>Water</td>
<td>Stream</td>
<td>Soliloquy</td>
</tr>
</tbody>
</table>
Phrase Structure and Constituents

Composed of many words (a long sentence)...
The young woman carried the heavy painting.

Components of a long phrase...
The young woman (noun constituent) carried the heavy painting (verb constituent).

Meaningful units... ball, cloud.

Smallest meaningful units... un, for.

Basic sounds... th, sh.

Usefulness of Phrase Structures

Q: Why should we bother ourselves with phrase constituents in speaking and reading?
A: Constituents provide context cues. The word painting in the previous sentence could be a noun or a verb. Constituent heavy painting suggests that it is a noun.
Research on Phrase Structures

People remember words better if they from constituents currently being processed (working memory) than an earlier constituent (Jarvella, 1971).

The confidence of Kofach was not unfounded. To stack the meeting for McDonald, the union had even brought outsiders. Kofach had been persuaded by the international to stack the meeting for McDonald. The union had even brought outsiders. Memory recall was excellent for last line in both passages. However, second line in passage 1 was recalled better than in passage 2.

History of Psycholinguistics

Behaviorists: believed that language like any other behavior was based on learning principles (S-R-S). Skinner in particular, suggested language is verbal behavior (talking and listening behaviors), and that these behaviors were governed by antecedent conditions (stimuli), behaviors (responses) and consequences (reinforcing stimuli).

ABC of Verbal Behavior

Based on Skinner (1957)

<table>
<thead>
<tr>
<th>Type</th>
<th>Antecedent (A)</th>
<th>Behavior (B)</th>
<th>Consequence (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mand</td>
<td>State of Deprivation or aversive stimulation</td>
<td>Verbal utterance</td>
<td>Reinforcer that reduces state of deprivation</td>
</tr>
<tr>
<td>Echol</td>
<td>Verbal utterance from another individual</td>
<td>Repetition of what the speaker says</td>
<td>Conditioned reinforcement (praise) from the other person</td>
</tr>
<tr>
<td>Tact</td>
<td>Stimulus (usually object) in the environment</td>
<td>Verbal utterance naming or referring to the object</td>
<td>Conditioned reinforcement from the other person</td>
</tr>
<tr>
<td>Autoclitic</td>
<td>Verbal utterance (often a question) from another person</td>
<td>Verbal response (answer to a question)</td>
<td>Verbal feedback or reinforcement</td>
</tr>
</tbody>
</table>
Skinner’s Critique: Noam Chomsky

1. Behaviorism does not explain all behaviors including language.
2. Language is not learnt through imitation, otherwise we would need to learn infinite number of sentences to communicate.
3. Reinforcing ungrammatical sentences should lead to learning ungrammatical sentences but the children learn to correct themselves.

Noam Chomsky

4. All humans have the innate ability to acquire language [Language Acquisition Device (LAD)].
5. Language is modular. Language abilities do not follow other cognitive processes, like memory or decision making. Children develop language abilities before arithmetic abilities.

Noam Chomsky

6. People, in their minds, have complex set of rules and principles when they make sentences. Thus surface structure of two sentences may differ, their deep structure can imply the same message, e.g., She throws the ball or the ball is thrown by her. Or as in ambiguous sentences one sentence may mean differently.

The shooting of the hunters was terrible.
I saw her duck.
Squad helps dog bite victim.
Reactions to Chomsky

1. A great deal of interest was initially developed in Chomsky's *transformational grammar* among linguists and psychologists.
2. Chomsky prediction that sentences that require numerous transformations will take longer than those that do not, was challenged.
3. Chomsky modified his original theory and emphasized information contained in single word in a sentence.

Cognitive-Functional Theory

1. In 70’s psycholinguists became discouraged with Chomsky’s emphasis on the grammatical aspects of language, instead they started paying more attention to how people understood language.
3. This theory also emphasizes other cognitive processes, like attention and memory intertwined with language comprehension and production.

Interactionist Theory

Piaget combines both behavior and nativist approaches to explain language acquisition. He believes that both maturation and experience were required to learn a language.
Culture, Language and Thought

Is thinking affected by language? Whorf in 1956 proposed Linguistic Relativity hypothesis and suggested that our thoughts are affected by language. Since there are many words to say the word “Snow” in Inuit language than English, thinking about snow is affected by Inuit language.

Culture, Language and Thought

Rosch (1973) questioned Linguistic Relativity hypothesis and showed that thinking was not affected by language. For example, people living in New Guinea can name colors as bright and dark, but yet can think about a variety of colors like English-speaking people who can name 11 different colors.

Animals & Language

Animals possess the ability to use sound and gestural signals to communicate. Insects like bees, and mammals like non-human primates use nonverbal signals to communicate with one another.
Can Animals Learn a Language?

Hayes and Hayes (1951) tried to make chimpanzees to speak, however discovered that chimps do not have vocal apparatus like humans to make speech like verbalizations.

Is speech required for language?

Gardner and Gardner (1969) used American Sign Language (ASL) to train a chimp named Washoe, who learnt 160 signs.

Animals and Language

Savage-Rumbaugh (1991) trained bonobo pygmy chimpanzees (Kanzi and Panbanisha) to touch geometric symbols on a computer to learn a language. Kanzi is regarded as the first ape to demonstrate real comprehension of spoken speech. Today, his vocabulary includes more than 500 words! His comprehension of spoken language is at least equivalent to that of a two-and-half-year-old child.

Kanzi, means treasure in Swahili.
Animals and Language

Panbanisha, Kanzi’s sister, became linguistically competent without specific training. Her language comprehension and production skills are the most advanced of all great apes. She is currently participating in studies of linguistic communications, dialogue analysis and vocal communications. Like her brother Kanzi, Panbanisha likes music and has a very high level of interest in creating musical constructions at the keyboard.

Criticism

1. Do animals really comprehend the language they learn?
2. How good is this approach of teaching animals a language? A three-year old toddler surpasses the most brilliant chimp.