Psycholinguistic

LECTURE 1

Psycholinguistic Research Methods

words 1

An Important Fact :

"Research in this field therefore requires that metal language-processing events be inferred from observable behavior" O'Grady *et al* (2010).

One example of "observable behavior" is what some people call *slips of the tongue* or *speech errors*.

Examples of **slips of the tongue :**

Intended**:** rules of word formation

Produced**:** words of rule formation

Intended : I'd forgotten about that

Produced: I'd forgot aboutten that

Intended: easi**ly** enough

Produced: easy enough**ly**

So what does this tell us about the brain and word processing? ▪

It tells us that morphemes function

independently from words during sentence planning

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LECTURE 2

Psycholinguistic Research Methods

Words 2

A Basic Question

How are "words" organized in the mind?

Comparison

A desktop dictionary is usually consulted when we:

What a word means

How a word is spelled

How a word is pronounced

And the words are usually organized alphabetically !

Our **Mental Lexicon** is organized a little bit different it:

It can accommodate new words

It can be accessed very quickly

One example of how quick we can access our mental lexicon is what is commonly referred as the**:**

"Tip-of-the-tongue phenomena"

Tip-of-the-tongue phenomena

This is the situation where you are unable to ***access*** a word (or remember a word)in your mental lexicon and all you needed was the:

meaning of the word

the sound of the word

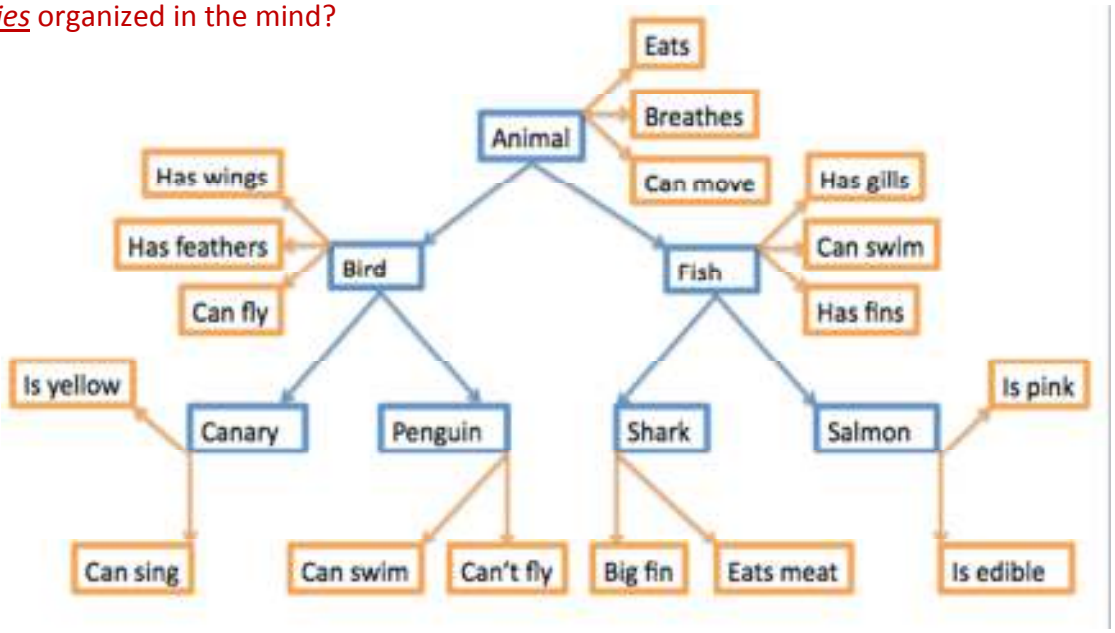
the first letter

or what the word rhymes **with**

A technical term

At this pint we should stop calling them ***words*.** The technical term for the items in the lexicon is ***entries*.** So we should re-phrase the question we posed at the beginning of this lecture and ask:

How are *entries* organized in the mind?



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More questions

How are entries linked together?
How are entries accessed?
What information is contained in an entry?

Big problem

The mental lexicon cannot be observed !

So how can we know?

Through creative experiments such as:

Lexical decision and **priming**

*References

LECTURE 3

Lexical Decision and Priming

Lexical Decision

A lexical decision experiment is conducted by asking a native speaker to sit in front of a computer screen where he/she is asked to judge as quickly as possible if the word that appears on the screen is a real word. If the word is real the participant clicks “yes”; if not, the participant clicks “no”.

What are we looking for?

Usually what we are looking for in this task is:

Response latency: and that is the ***time*** it takes for the a participant to respond “yes/no”.

Response accuracy: and that is whether or not the participant responded ***accurately*.**

Details

When designing this task the participants are usually tested on one set of stimuli against another set of stimuli. For example:

“Nouns” compared to “Verbs”. “concrete words” compared to “abstract words”

This test ***measures the speed and accuracy*** in which the mental lexicon is accessed.

Interesting findings

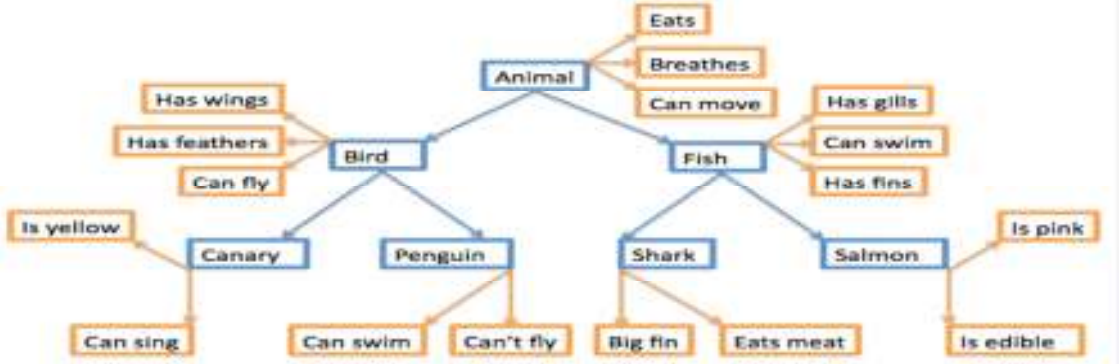
It has been found that it usually takes participants about a half a second to press “yes” for word they know or frequently used words. However, it takes three-quarters of a second to press “yes” for less common words. This is commonly known as the **frequency effect**.

What we can infer from this is that our mental lexicons are probably organized in a way that words we use often are more ***easy to access***.

Priming

Priming can be considered as an extension of lexical decision task. However, in this task before the participant is asked to choose “yes” or “no” the target word is preceded by another stimulus (called the **prime**). What is measured is the extent the prime influences the participant’s lexical decision on the ***target stimuli***.

When the target is preceded by a related word the response is usually *quicker*.



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LECTURE 4

Sentence Processing

There is a difference between investigating the *mental lexicon* and investigating *sentence processing*.
A sentence is understood(either in the case of reading or listening) through the meaning of its words and analysis of its syntactic structures.
This unconscious ability as ***parsing***.

Parsing

Much of the work in psycholinguistics regarding sentence processing is focused on:

How parsing happens
What are the steps that take place in parsing
Parsing speed
The conditions when parsing doesn't work

Timed-Reading Experiments

Among the most common timed-reading experiments is the ***bar-pressing*** **test**.
In this test the participant is asked to sits in front of a computer screen and read a sentence one word at a time. The participant presses a bar on the keyboard to read the next word till he/she reaches the end of the sentence.

What we can learn from this experiment

We can learn about the amount of time required to process certain words (content words/function words)
How long participants pause at the end of clause boundaries
Results usually show interesting time patterns**.**

Eye Movement

Tracking eye movement on words during reading revealed that eye fixation time is usually longer for less frequent words and that the points of fixation are usually content words rather than function words.
Research has shown that the more difficult the sentence is in structure the more ***regressive saccades*** there are in addition to longer ***fixation times***.

What happens in the Lab

LECTURE 5

Sentence Processing

Event-Related Potentials (ERPs)

ERP experiments measure electrical activity in the brain. That is voltage fluctuations resulting from the brain's electrical activity.
(Those things they puton a person's head are called "***electrods***")

What happens in the lab?

The participant sits in front a computer screen.
The participants reads words or sentences.
The computer records the instant at which a stimulus is presented.
Then the computer compares the voltage fluctuation to on going activity in the brain.

6TH LECTURE

Processing

Phonetics Phonology

What happens when we hear a sentence?

If you hear someone say

"The dog bit the cat"

- You will probably hear the segment /ð/
- Then the segment /ə/
- Then at enormous speed you're able to access the representation of the word ***the*** in your mental lexicon.
- By that time you have realized that the next word is going to be a **noun**.
- Then the segment *d-o-g* are analyzed
- After that you hear the segments /bi/ and you biased to the possibility that this word is going to be ***bit*** because of the association with dog.

This is what is called:

"bottom-up processing"

Where a phonetic analysis is used to isolate phonemes and word boundaries and relate these items in the mental lexicon.

You do not rely on phonetic analysis alone in trying to understand the sentence:

"the dog bit the cat"

You also used the information you know about cats and dogs and what to expect from one another. This process is called:

"top-down processing"

Features

Consider the *phonetic feature* [± voice] in the following speech error or *slip of the tongue*.

big and **f**at

pig and **v**at

Notice that the sounds /b-p/ and /f-v/ only differ from each other in the feature [± voice] whereas the place of articulation is the same.

Psycholinguists consider such speech errors as evidence that language production makes use of the individual feature components of phonemes and that the phonemes that we produce in speech may actually be put together out of bundles of such features O'Grady *et al* (2010).

Phonemes

Marslen-Wilson in the 1980s proposed the "**cohort model**" of lexical access. This model states that a word's **cohort** consists of all the lexical items that share an *initial sequence of phonemes*.

For example:

When someone hears the word glass he/she initially considers all the words that begin with the sound [g]. When the sound [l] is recognized, the number of possible words (the **cohort**) is reduced to those words that begin with [gl]. This process continues until the cohort of possible words is reduced to one, which is the intended word.

This suggests that the phoneme is the fundamental unit of auditory word recognition.