Psych 56L/ Ling 51: Acquisition of Language

Lecture 9
Lexical Development I

Announcements

Midterm returned, grades also available on EEE

Review questions for lexical development available

HW2 due 2/18/10

Lexical Knowledge in Adults

We know a lot of words

Average English-speaking college student knows ~150,000

Average first grader knows ~14,000 (and has only been alive ~2000 days) - that's 7 new words a day, assuming that the child learns right from the first day s/he is born!

What we know

Mental dictionary of words = lexicon

Each entry for a word contains a lot of information, including what the word sounds like, how to use the word in combination with other words, what the word means, what other words that word is related to…

/gɑblɪn/

goblin → creature

the goblin is…, some goblins are…

So what exactly is a word, anyway?

A word is an arbitrary symbol that stands for something in the real world (even if it's only a concept in someone else's mind): goblin, silliness, labyrinth

Important: words refer to things (referential). Not enough to simply have associations of sound with something (ex: saying "Eeek!" every time you see a spider)

Some greetings and social routines ("Hi!" "See ya!") might be considered non-referential language.

What we're interested in

How do children's lexicons develop? That is, how do they develop not just the sound patterns, but also how to use words syntactically and what they refer to in the world

/gɑblɪn/

goblin → creature

the goblin is…, some goblins are…

The Course of Early Lexical Development

First Words

10-15 months: first words that actually sound like the words the child is trying to approximate (and they have a fixed meaning, as opposed to being sound sequences the child likes to say)

These tend to be context-bound:

ex: “car” said when looking at cars out of apartment window, but not when looking at cars up close or when seeing a picture of a car

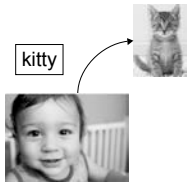
Children’s usage: have simply identified one particular event in the context of which it’s appropriate to use that word, but haven’t realized its more abstract coverage

First Words

Even if children realize a word has more extended use, they still may not realize it has the meaning that adults have for it

Ex: “more” = request for more, not general comparison

Often, first words are parts of routines or language games. Children must then realize that these words can be extended.



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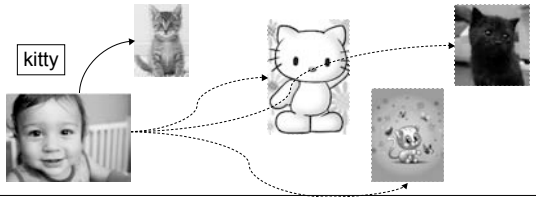

First Words

The extension process doesn’t happen at the same time for all words. Some referential words may coexist with words that are contextual. Which words are which will vary from child to child.

Jacqui: “no” = context-bound, used when refusing something offered by her mother (wouldn’t say it when offered by someone else or while indicating her dislike of something, etc.)

First Words

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Jenny: "no" = referential, used when pushing a drink away, while crawling to a step she was not allowed to climb, while refusing a request by her mother

First Words

In general, it's *not* because children don't hear these words in different contexts that they have a narrower meaning than adults do. Their parents used the words in many different contexts.

So what's the problem?

It's not an easy task to extract the common meaning from different contexts.

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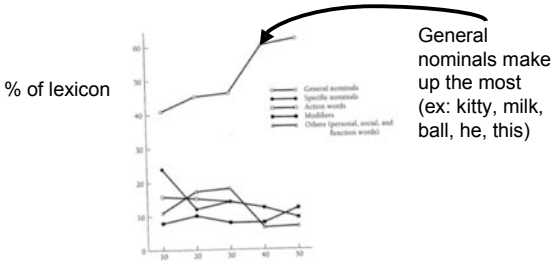
From 0 to 50 words

15-24 months: reach 50 words, adding them slowly to the lexicon one at a time



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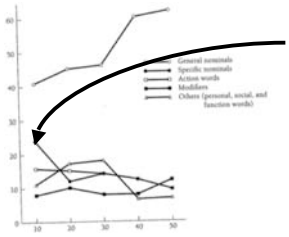

Specific nominals (ex: Mommy, Daddy, Felix)

# of words

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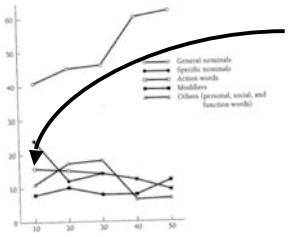

Action words (ex: go, up, look)

# of words

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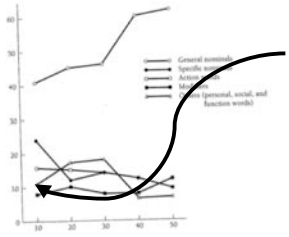

Personal, social, function words (ex: no, want, please, what, is, for)

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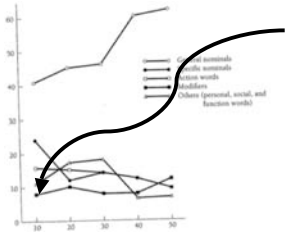


Modifiers (ex: big, all gone, mine, outside)

# of words

From 0 to 50 words

Vocabularies of children with 50 or less words are heavily concentrated on experiences child has: names for people, food, body parts, clothing, animals, household items. (In general, a lot of nouns)

Adult and older children have more variety, including more abstract nouns, as well as other grammatical categories like prepositions (with, from), determiners (the, a), and adjectives (silly).

The Preponderance of Nouns

One idea: the meaning of nouns is easier to identify than the meaning of other words, like verbs

kitty = ?

give = ?

The Preponderance of Nouns

One idea: the meaning of nouns is easier to identify than the meaning of other words, like verbs

Natural partitions hypothesis: physical world makes obvious the things that take nouns as labels (whereas verb meaning has to be figured out more from the way verbs are used in language)

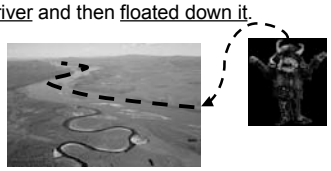
related

Relational hypothesis: verb meaning does not naturally emerge from the structure of the world, so the way verb meaning is encoded in a language will vary from language to language

Learning Verb Meaning

Example of linguistic variation in verb meaning:

English:
The goblin fell into the river and then floated down it.



Spanish:
The goblin entered the river falling and then went down it floating.

Learning Verb Meaning

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The goblin fell into the river and then floated down it.
Go + Fall In Go + Float Down

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Learning Verb Meaning

Example of linguistic variation in verb meaning:

English:
The goblin fell into the river and then floated down it.
Go + Fall In Go + Float Down
Manner of Motion encoded in verb

Direction of Motion encoded in verb

Spanish:
Go + In Fall Go Down Float
The goblin entered the river falling and then went down it floating.

However…

There is some crosslinguistic variation in the preference for nouns over verbs in the early lexicon.

Korean, Japanese, and Mandarin children show less of a noun bias. These languages have several ways of making verb information more salient to learners: verbs appearing sentence-final (very prominent for children), nouns optionally omitted

Common mistakes children make with meaning

Once children figure out that words are referential, they have to figure out what range of concepts words apply to. This isn't so easy.

Underextension: using words in a narrower range.
Ex: Only siamese and persian cats are cats.

kitty

Not kitty

Common mistakes children make with meaning

Once children figure out that words are referential, they have to figure out what range of concepts words apply to. This isn't so easy.

Overextension: using words in a wider range. (more common)

Ex: All fuzzy creatures are cats.

kitty




Not kitty


Causes of extension errors

Underextension: perhaps child is conservatively extending hypothesis about what word refers to; correctable from experience with word's usage by adults

Overextension: Likely to simply be because child doesn't know appropriate word and uses one that's known. Overextensions tend to have some aspect of meaning in common, though. Corrected as children learn appropriate words for meanings they want to express.

Some more overextension examples

Ball = ball, balloon, marble, apple, egg, wool pom-pom, spherical water tank

common feature = "round-ish shape"

Cat = cat, cat's usual location on top of tv when absent

common feature = "associated with kitty"

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Moon = moon, half-moon-shaped lemon slice, circular chrome dial on dishwasher, ball of spinach, wall hanging with pink and purple circles, half a Cheerio, hangnail

common feature = "crescent or round-ish shape" + a memory retrieval error?

A Little Later Lexical Development

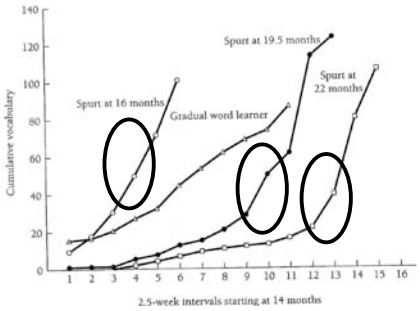
The difference after 50 words

Up to 50 words: about 8-11 words added every month, adding words is a slow process

After 50 words: about 22-37 words added every month, words often added after a single exposure

Called the “word spurt”, “word explosion”, “naming explosion”.
Occurs for most children around 18 months.

Does every child have a word spurt?



Some seem to (13 of 18)

Goldfield & Reznick (1990)

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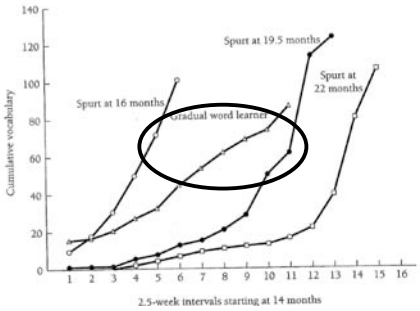

Others don’t (5 of 18)

Goldfield & Reznick (1990)

Word Comprehension

The word spurt refers to words children actually produce. However, another way to test children's developing lexicons is via their comprehension of words.

Production usually lags behind comprehension.

Ex: At 16 months, children typically produce less than 50 words, but parents report they comprehend between 92 and 321 words.

Production vocabularies are different from comprehension vocabularies. (This may be because communication works just fine with a minimal verb vocabulary. Ex: *go* is very versatile. Go + night-night, go + car, go + park, etc.)

How learning works: Links between phonology and word-learning

phonological memory = ability to remember a sequence of unfamiliar sounds

Children's phonological memory has been linked to their vocabulary size from 22 months up to 9 years old. (This makes sense since the ability to remember the forms of newly encountered words would be vital if a child wants to learn the mapping between sound and meaning.)



Recap: Children's Lexical Development

Children must figure out the lexicon of their language, including the correspondence between sounds and meaning

Children typically acquire their first 50 words over a series of months, and then increase their rate of lexical acquisition suddenly (word spurt)

Learning word meanings isn't easy: often, children make mistakes by either assigning a narrower or wider meaning to a word than adults do. Eventually, through experience with the language, they hone in on the correct meaning.

Questions?