Announcements

Pick up your midterm & HW1 if you haven’t yet

Be working on HW2 (due 2/17/11)
- Note: Remember that working in a group can be very beneficial.

What does “gavagai” mean?

[gavagai! image]
What does “gavagai” mean?

- Rabbit?
- Mammal?
- gray rabbit?
- Animal?
- Carrot eater?
- vegetarian?
- Ears?
- Long ears?
- Is it gray?
- Fluffy?
- What a cutie!

Thumping
Hopping
Scurrying

Stay!
Look!

Meal!
Rabbit only until eaten!
Cheeks and left ear!
That’s not a dog!

Same problem the child faces

A little more context...
“Look! There’s a goblin!”

The Mapping Problem

Even if something is explicitly labeled in the input (“Look! There’s a goblin!”), how does the child know what specifically that word refers to? (Is it the head? The feet? The staff? The combination of eyes and hands? Attached goblin parts?…)

Quine (1960): An infinite number of hypotheses about word meaning are possible given the input the child has. That is, the input underspecifies the word’s meaning.
So how do children figure it out? Obviously, they do....

One solution: fast mapping

Children begin by making an initial fast mapping between a new word they hear and its likely meaning. They guess, and then modify the guess as more input comes in.

Experimental evidence of fast mapping
(Dollaghan 1985, Mervis & Bertrand 1994)

"Can I have the ball?"

Experimental evidence of fast mapping
(Dollaghan 1985, Mervis & Bertrand 1994)

"Can I have the zib?"

20 months
Knowing what to guess

Lexical constraints

Whole-object assumption: new word refers to entire object, rather than some subset of it

Goblin = ????

Mutual-exclusivity assumption: assume new word does not overlap in meaning with known word (can be used to overcome whole-object assumption)

Handle = some part of the cup

Known: cup

Social Cues

Speakers will look at the novel thing they’re talking about: assume new word refers to object of speaker’s gaze (children do this by 18 months – Baldwin 1991)

Siamese = ????

Known as “kitty”
Knowing what to guess

Social Cues

Speakers will look at the novel thing they're talking about: assume new word refers to object of speaker's gaze (children do this by 18 months – Baldwin 1991)

“Look at the siamese!”

Siamese = ????

Known as “kitty”

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“Look at the siamese!”

Siamese = ????

Known as “kitty”

Knowing what to guess

Clues from the input

Speakers generally talk to children about the here and now (Quine’s problem is not nearly so serious in child-directed speech)

“Look at the siamese!”

(Not “I just took her to the vet yesterday. Poor thing’s been sick all of last week.”)
Knowing what to guess

**Clues from the input**

Speakers also sometimes provide explicit correction for meaning, and provide additional information about the word’s meaning.

“Can I see the bugs again?”

“Those are goblins, honey, not bugs. Goblins live in the Labyrinth and occasionally take naughty children away.”

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**Knowing what to guess**

**Clues from the syntactic structure**

Different grammatical categories (nouns, verb, etc.) tend to have different meanings. Once children have identified some grammatical categories (after ~18 months), they can use the syntactic structure (how words appear together) as a clue to meaning.

“Those are goblins.”

- goblins = noun
- nouns = objects

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**Knowing what to guess**

**Clues from the syntactic structure**

“He’s sebbing!”

- seb = verb
- verb = action

Brown, 1957

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**Knowing what to guess**

**Clues from the syntactic structure**

“Look – a seb!”

- seb = noun with “a”
- noun = countable object like “bowl”

Brown, 1957
Knowing what to guess
Clues from the syntactic structure
Experimental evidence with 4-year-olds (Gelman & Markman 1985)

“Find the fep one.”

the__ one = adjective
adjective = property (like spotted)
fep =~ spotted

Brown, 1957
Knowing what to guess
Clues from the syntactic structure
Experimental evidence with 4-year-olds (Gelman & Markman 1985)

"Now find the fep."

the__ = noun
noun = object
fep =~ new object that's more familiar

Knowing what to guess
Clues from the syntactic structure
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Knowing what to guess
Clues from the syntactic structure
Syntactic Bootstrapping Hypothesis: primarily using the syntactic structure to get to meaning

Naigles (1990): 2-yr-olds can use syntactic structure to guess aspects of word meaning, even the difference between transitive and intransitive verbs

Transitive: The rabbit is gorping the duck.
   (expectation: rabbit is doing something to the duck)

Intransitive: The rabbit and the duck are gorping.
   (expectation: rabbit and duck doing actions separately)
Learning Semantic Organization

Words != Concepts

Words and concepts do not map one-to-one.

Lexical gaps: concepts that have no words associated with them

“couch hole” = gap between couch cushions child has to be careful to avoid when walking across the couch

“couch hole”
Words != Concepts

Words and concepts do not map one-to-one.
Words pick out some, but not all, conceptually available distinctions

Ex:

English: fingers vs. toes
Spanish: dedos vs. digits

Limb is foot
Attached to end of limb
Concepts
Limb is hand
Words ≠ Concepts
Words and concepts do not map one-to-one.
Words pick out some, but not all, conceptually available distinctions

Ex:

- Attached to end of limb
- Limb is foot
- Limb is hand
- English
- fingers

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Ex:

- Attached to end of limb
- Limb is foot
- Limb is hand
dedos

How the input can help
Children can use input to figure out which aspects of meaning are lexicalized in the language
Ex: Fastmapping experiment by Carey & Bartlett (1978)

“What colors are these?”
Children can use input to figure out which aspects of meaning are lexicalized in the language. Ex: Fastmapping experiment by Carey & Bartlett (1978). 

Children learned to give the olive tray.

Note: none of the children knew either the word “olive” as a color or the word “chromium” as a property.
How the input can help
Children can use input to figure out which aspects of meaning are lexicalized in the language
Ex: Fastmapping experiment by Carey & Bartlett (1978)
5 weeks later...

“red”  “yellow”  “green”  “blue”

“What colors are these?”

5 weeks later...

“red”  “yellow”  “green”  [“blue”]

“I don’t know”  [other previously unused color term like “gray”]

Via input (contrast with blue), children figured out that “chromium” referred to a color the same way that blue does...

And also that the dark green-ish color had a different name from “green”

Lexical Development Recap
Children have to figure out what concept a word refers to. Not all concepts are picked out by words. Languages tend to differ on which concepts they pick out.

Children may have different learning strategies they use when hearing a word for the first time, such as the whole-object assumption and mutual-exclusivity assumption. While these are helpful, they may lead to errors sometimes.

Children may benefit from a number of different sources of information, including social knowledge and knowledge of syntactic structure.
You should be able to do all the questions on HW2 and all the review questions for lexical development.