Language 4: Learning Words

More Baldwin experiments
2 boxes, X & Y
Experimenter looks in X: “Look! A gombey!”
Experimenter retrieves object in Y, shows child.
Experimenter retrieves object in X.
Then the two objects are placed side by side:
“Can you show me the gombey?”

Findings: Children choose the second object:
- removed in time from experience of hearing the word
- the apparent focus of the speaker’s attention at the time the word was uttered (even though the child couldn’t see it).

Still more experiments (Tomasello)
2 boxes, X & Y.
Experimenter says:
“Let’s find a gombey!”
Retrieves object in X: “oops!”
Retrieves object in Y: “Aha!”
Then the two objects are placed side by side:
“Can you show me the gombey?”

At 18 months, children choose the second object:
- again, removed in time from experience of hearing the word
- the apparent focus of the speaker’s intention at the time the word was uttered (even though the speaker wasn’t looking at it).
2) The Focusing Problem: reading intentions

By the time word learning begins, children can use direction of gaze and pointing to relate a speaker’s words to the things she is speaking about.

In the second year, children become able to determine what things a speaker is naming:
--even when the thing is out of view of the child
--even when out of view of the speaker at the time the word is used
--even when the speaker is mistaken about where the object is

In these contexts, children seem quite sensitive to a speaker’s intent and desires. (more on this in next case study)

3) What does a word mean?

Assume the best case:

What could Mom be talking about?

Some possibilities:

Rabbit (“sortal” or “basic-level” concept)
Peter (proper name of the rabbit)
Angora rabbit (subordinate concept)
Mammal, animal, living thing (superordinate concept)
Youngster (“phase-sortal”)
Uncle, herbivore, prey (role, job description)
Runner (temporary state)
Etc.

These are all ways in which we can describe this object.

More possibilities: Mom doesn’t have to be talking about an object

Fur (rabbit stuff)
Dinner
Tail (part)
Family (collection)
Species
Furry, pretty, swift (property)
Race (event)
Hopping (action)
Life, fecundity, nature (abstraction)
For children to learn words, there must be constraints on their interpretation of adult speakers’ meaning.

The constraints in the child must match the adult’s word-learning practices:

The question is: are these constraints specific to language (Markman) or domain general (Bloom)?

Example:

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“Look, a bunny!”
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Adults talk to children about whole objects.
Adults use basic level terms to label the objects: e.g., ball, chair, rabbit, daisy, rock…
When using other kinds of terms, adults use the basic-level term first.
Children’s word interpretations
(2) The taxonomic assumption (Markman experiments):

No-label condition: Look at this! Can you find another one?
Label condition: Look at this dax! Can you find another dax?

Children interpret words as names for kinds of objects, not thematic groupings (though they can form thematic groupings).

Children’s word interpretations
(3) The mutual exclusivity assumption (Markman):

“Look, a cat! Can you give me the toma?”
“Look, garlic! Can you give me the toma?”

Other things being equal, children interpret novel words as labels for objects that do not already have a known (or newly learned) basic-level name.

3) What does a word mean?
Mechanisms of Word Learning:
Two questions

(1) Does word learning depend on a dedicated system, used only for this task, or does it depend on systems used for other learning tasks as well?

(2) Are the word learning abilities and constraints found in children unique to humans, or are they shared by other animals?

Recall speech perception:
- elaborate capacities (categorical perception, etc.)
- not unique to the task of perceiving speech
- not unique to humans

3) What does a word mean?
Does word learning depend on a dedicated, domain-specific, core knowledge system?

Markman: yes.
- The whole object, taxonomic, & mutual exclusivity constraints are signatures of the child’s dedicated word-learning system
- The fast-mapping process is specific to the task of learning words.

Bloom: no.
- None of these features of word learning are specific to the task of word learning; all reflect more general properties of children’s learning.
Evidence: gaze following, pointing, reasoning about intentions

To be covered in the section on representation of people and intentions: infants and children use a person’s gaze direction to make inferences about her future actions, outside any language context.

These abilities are not specific to word learning.

Evidence: the whole object constraint

See our past section on object representation: infants, children, and adults tend to focus attention on objects in the absence of any word learning.

The whole object constraint is not specific to word learning.

Evidence: the taxonomic constraint

Markman’s evidence for special-purpose learning:

“Look at the dax. Find another dax” vs. “Look at this. Find another one.” taxonomic vs. thematic categories.

But other studies find evidence for taxonomic categories independent of language and prior to word learning.

example: Quinn & Eimas on animal categories.
Habituation to dog-1, dog-2, dog-3,…test dog 4 vs. cat
Habituation to pig, cat, rabbit, … Test dog vs. car

The tendency to represent objects as members of kinds is not specific to word learning.

Evidence: the mutual exclusivity constraint

Bloom: as a constraint on word learning, mutual exclusivity is strange because it’s false: many different words can be applied to the same object.

: bunny, rabbit, animal, mommy, prey,…

As a pragmatic rule, mutual exclusivity makes sense:

But the pragmatic rule might not be specific to word learning.
Evidence: the mutual exclusivity constraint
Testing the pragmatic interpretation (Markson & Bloom).
“This is a toma. Can you show me a blicket?”
“My sister gave this to me. Can you show me the one that dogs like to play with?”

The mutual exclusivity constraint is not specific to word learning. It reflects more general knowledge about communication.

Evidence: Fast mapping
Markson & Bloom (1997): (present 10 mostly unfamiliar objects)
Compared word learning (“Look: a toma.”) to fact learning (“Look: my uncle gave me this.”) about one object

Fast mapping is not specific to word learning.
Later studies: it occurs with no language context (rattle-sounds).

Word Learning: Summary
“Young children are word learning wizards.” (Carey)
Children learn many new words rapidly, from minimal exposure and with long retention (“fast mapping”).
Sources of children’s ability:
(1) children read the intentions of speakers: gaze following, pointing, distinguishing intended from mistaken reference.
(2) complementary dispositions in children and the adults who speak to them:
--whole object constraint
--taxonomic constraint
--mutual exclusivity constraint
(3) eventually, children use lexical contrast and syntax as information for word class and word meaning.

Word Learning: Summary
“Word-Learning Constraints” may not be specific to word-learning.
Reading intentions: interpreting pointing, predicting action
Whole object, taxonomic & mutual exclusivity constraints: hold for tasks other than word learning.
Fast mapping: of new facts as well as new words.
Does word-learning depend on a dedicated, domain-specific, core knowledge system? Likely Not.
What is domain-specific in Language: Syntax.