Hello from the Project on Children’s Language Learning at the University of Maryland! Thank you so much for your recent participation in one of our studies! We’d like to share with you some of our findings... none of our research would be possible without your generous support.

Thank you!

Visit our newly revamped website for more information:

www.ling.umd.edu/labs/acquisition

Get in touch!
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Spring 2006
We had 217 children participate in our studies from several area schools from June, 2005 through May, 2006. Many of the children participated in multiple studies.

Many thanks to:
Center for Young Children, College Park
College Park Nursery School
Greenbelt Children’s Center
Greenwood Nursery School, Hyattsville
Julia Brown Montessori School – Olney
Julia Brown Montessori School – Silver Spring
Milestone Enrichment Center, Laurel
Montgomery College Child Care Center, Takoma Park
National Archives Child Care
New Hope Academy, Landover Hills
Silver Spring Presbyterian Church Children’s Center

Thank you to the parents and students from these schools for helping us discover more about language development. We look forward to continuing our research – we’ll let you know what we find out next!

Sincerely,
Researchers at the Project on Children’s Language Learning
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Our research continues under generous funding from the National Science Foundation
Phrases like “every boy” are interesting to study because they do not refer to individual people, but rather express generalizations about groups of individuals. Learning the meanings of words like “every” is difficult for two reasons. First, their meanings are highly abstract. Second, sentences containing them give rise to unusual patterns of logical inference.

Knowing the meaning of a logical word like “every” requires the child to be able to draw certain kinds of inferences. For example, if a sentence “Every dog is running” is true in a given situation, then another sentence “Every brown dog is running” must be true in the same situation. Interestingly, if “Every brown dog is running” is true in a given situation, it does not follow that “Every dog is running” must also be true, because there may be dogs of other colors that are not running in that same situation. So, the observation is that, in sentences like these, if the one that contains dog is true, then the one that contains brown dog must also be true, but not the other way around.

However, the pattern is even more complicated. It turns out that “every” treats another part of the sentence (after the verb) in exactly the opposite way. For example, if a sentence like “Everyone is chasing a dog” is true in a given scenario, it is no longer the case that another sentence with brown dog instead of dog, such as “Everyone is chasing a brown dog” must also be true. Notice that just because everyone is chasing a dog, it cannot be concluded from this sentence that every dog being chased is brown. Indeed, the opposite pattern is actually the case; if “Everyone is chasing a brown dog” is true in a given situation, then “Everyone is chasing a dog” must also be true. The inferences that we draw on the basis of “every” vary depending on the position of the other words in the sentence.

We conducted several studies to investigate whether children make meanings for sentences with the logical word every following these same patterns. These studies also made use of a story telling context. The stories featured two characters, the genie and Grover. The genie asks Grover to do something, using a sentence with the logical word every. For example, if the genie demands “Grover, bring me every dog belonging to the genie in the story, and Grover brings every brown dog of the genie’s, then the genie’s demand is not satisfied. However, if the genie asks “Grover, bring me every brown dog of his, and Grover brings every dog, then the Genie’s demand is satisfied. The child was asked to judge whether Grover did something good enough to make the genie happy. The way this works is that children’s comments about what Grover did can actually demonstrate their awareness of the relationships between the two sentences containing every, without the child feeling like they are being tested. These studies have revealed that children, as young as 4 years old, were indeed aware of the complicated facts about the logical word every and the inferences that can be made on the basis of sentences containing it.
In earlier research, we have found that preschoolers interpret sentences containing a quantifier like “every” and a negative word like “not” differently from adults. For example, a sentence like “every horse didn’t jump over the fence,” has two meanings. It could mean that no horses jumped over the fence, or it could mean that some but not all of the horses jumped over the fence. In general, four- and five-year-old children think it means only the former. For example, in a situation in which 2 out of 3 horses jump over a fence, children will say that “Every horse didn’t jump over the fence” is false because some of the horses did jump, suggesting that they think the sentence means that none of the horses jumped. In more recent research we found that this non-adult behavior can be affected by what happens before the horses jump over the fence. We compared two conditions. In the “early success” condition, the horses first all jump over a log and then two out of three jump over the fence. In the “early failure” condition, the horses first consider jumping over a barn and decide not to try. Then two out of three jump over the fence. We found that children are more likely to say that “Every horse didn’t jump over the fence” is true in the early success condition than in the early failure condition.

In the current project, we asked whether children who first judged the sentence in an early success scenario would then perform in a more adult-like fashion in an early failure scenario. Indeed, this is exactly what we found.

Another way we investigated children’s understanding of sentences containing logical words like “every”, we played a game in which children looked under cups to tell whether a sentence applied to a situation. In this game, there are four cups and the children help us guess what is underneath the cups. Before lifting the cups, a puppet who is afraid to talk to adults, but who really likes kids, makes a guess about what’s under the cups. For example, he might say, “Every dog doesn’t have a bone.” The child’s job is to look under the cups one at a time to find out whether what the puppet said is true.

Now, suppose that there was a dog under every cup and that the second and the last dogs have bones, but the others don’t.

We asked when children would first say that the puppet’s guess was right. After seeing the first dog without a bone, the meaning that not all dogs have bones is verified. But, the meaning that no dogs have bones requires further confirmation. When they see the dog with the bone, this meaning is falsified. So, if children could access the “not all” meaning, then we would expect them to say the puppet is right after revealing the first dog. But, if children could only access the “no dogs” meaning, then we would expect them to say that the puppet was wrong after finding one dog with a bone. Overall, children did not say the puppet was right or wrong until all of the cups were lifted. This suggests that children can access the “not all” meaning that had been elusive in previous studies.
Reflexive Pronouns
Dr. Andrea Zukowski, Rebecca McKeown and Jaiva Larsen

This semester, we also studied what children between the ages of 4 and 6 know about the meaning and usage of words like “himself” and “herself”. Other researchers have asked children to use toys to act out a sentence like “Mom said that Grandma washed herself.” Adults know that this means Grandma was washed, but it doesn’t mean that Mom was washed. When they act out sentences like this, children almost always correctly make grandma wash herself — and only rarely do they mistakenly make mom wash herself. Such results seem to show that children understand words like herself perfectly. However, it is difficult to say for sure that children would not allow herself to refer to mom in sentences like this, because their first response may just reflect a preference. To investigate that possibility, this study more directly asks children who “himself” and “herself” can and cannot refer to. This is done under the pretext of judging whether a puppet makes mistakes when he talks.

Each child was introduced to a baby dinosaur puppet and the researchers explained that the puppet was just learning how to speak English. The researchers asked the child to be the puppet’s teacher and to help him learn by telling him when he made mistakes in his English. After a few practice sentences, the child was ready to give the puppet an exam. The puppet said many grammatical sentences like “Mom said that Grandpa washed himself” and many ungrammatical sentences like “Mom said that Grandpa washed herself.” Children stamped the dinosaurs test sheet with either a smiley face stamp or an “oops” stamp to indicate whether they heard a mistake. “Judging” sentences in this way is a difficult task for most 4-year-olds, but by age 5, children are usually able to perform a task like this. Almost all children who were able perform our task correctly rejected sentences like “Mom said that Grandpa washed herself.” Many children gave explanations such as “Grandpa isn’t a girl.” Our study confirms that children between the ages of 4 and 6 understand the meaning of words like himself and herself perfectly.
Adults know that if you say “Charlie likes him”, then “him” can’t be Charlie. To express that meaning, you would have to say “Charlie likes himself.” However, some previous research suggests that four-year-olds can interpret “him” as Charlie in certain contexts. We wanted to take a closer look. To do this, we played a game with children in which they first watched a story being acted out with toys and props. Then, a puppet, who does not go to school and sometimes gets confused, would say what he thought happened. Here’s a sample story:

There are three Barney characters: Farmer Barney, Teacher Barney and Baker Barney; and three M&M characters: Hat M&M, Green M&M and Red M&M. It is a really hot day outside, and they have to use a fan if you want to stay cool. The M&M’s each fan themselves to keep cool. Teacher Barney and Farmer Barney cool off in the sprinkler. Baker Barney asks each of the M&M’s to fan him. The first two agree, but Hat M&M declines because he is afraid he will melt if he stops fanning himself.

After this story, the puppet says, “I know what happened in the story. Every M&M fanned him.” If children allowed the sentence to mean “Every M&M fanned himself”, then we would expect them to say that puppet was right, since each M&M did indeed fan himself. However, if they know that this sentence must mean that each M&M fanned someone else, then they should say that the puppet was wrong, since Hat M&M refused to fan Baker Barney. In the end, children said that the puppet was wrong, leading us to conclude that they have correctly acquired the use of pronouns in English.
Why “why” is different
Stacey Conroy

Many preschoolers seem to be obsessed with asking “why,” often testing the patience of their parents. One thing we have observed, however, is that the form of children’s “why” questions is sometimes different from those of their parents. For example, in English questions the helping verb always precedes the subject, even though in declarative statements, the helping verb follows the subject. This contrast is illustrated here:

(1) Declarative: Elmo is helping Big Bird.
   Questions: Is Elmo helping Big Bird?
             Who is Elmo helping?
             Why is Elmo helping Big Bird?

Young children, however, exhibit an interesting asymmetry in their productions of questions, as a normal part of development. When the question-word is “why”, young children often do not put the helping verb before the subject:

(2) Prototypical Child Utterance: “Why Elmo is helping Big Bird?”

Interestingly, while this “error” occurs in virtually all children learning English and in all questions, it persists for a longer time with “why” than for others like “what”, “who” or “when”. One of the reasons this is interesting is that there is another question word in English that requires putting the helping verb after the subject, even in adult speech: “how come.”

(3) Normal Adult Utterance: “How come Elmo is helping Big Bird?”

In this project, we considered the hypothesis that children treat “why” as though it had the structure of “how come,” thus explaining the protracted misplacement of the helping verb. In order to investigate this option, we examined an additional difference between “why” and “how come”, namely the range of interpretations they allow in complex questions.

Consider the following pair of questions:

(4) Why did Big Bird say that Elmo ate the sandwich?

   How come Big Bird said that Elmo ate the sandwich?

These questions differ in their meanings. While both the “why” and “how come” questions can be asking about the motivation for Big Bird’s saying what he said, only the “why” question can be asking about the reason that Elmo ate the sandwich (i.e. Why, according to Big Bird, did Elmo eat the sandwich). This interpretive difference enabled us to ask whether children who put the helping verb after the subject in “why” questions (as they do, correctly, with “how come”), also interpret “why” in the restricted way that “how come” is interpreted.

We conducted two experiments to test this hypothesis. First, we elicited questions from children in order to find those who were still in the “no inversion” stage of development. Then we asked children questions in scenarios that licensed both the “why did Big Bird say it” interpretation and the “why did Elmo do it” interpretation.

The results were surprising. There was no relation between children’s interpretations of these questions and their productions. All children knew that a “how come” question in this context could only ask about the reason for saying. But all children, including those who produced questions like (2), also knew that the “why” question could ask about either the reason for saying or the reason for eating.

We are currently developing other hypotheses to explain the word order differences between “why” questions and other questions in preschoolers.