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LANGUAGE AND DEVELOPMENT LAB

What the eyes tell us

Children are learning language from the moment they are born, yet take many months to start speaking. How do we ask what children know before they can tell us?

Recent technological advances allow psychologists to infer what children know based on what they choose to pay attention to when watching pictures or movies on a computer (see example on the left). During the study, we use a webcam or a special eye-tracking camera to detect children’s eye movements. This way, we can study what pre-verbal children are paying attention to while learning language.

Researchers in our lab use this method to study what children understand about the color and number words that they are just starting to say. In the example on the left, we can discover how broad or narrow children’s initial understanding of “blue” is, to understand what their first guesses are about the word’s meaning.

We are currently recruiting infants aged 18 to 30 months old to participate in this study in our lab. Please contact us to find out more!

Example of experimental stimuli.
We track children’s eye movements while they hear a narrator saying, “Look at the balls! The blue balls are my favorite!”

Interested in participating?

Outreach
Visit us in KidCity at the Fleet Science Center, to speak to our researchers and participate in our studies!

Families - Call, email, or sign up online!
Our lab is located on the UCSD campus in La Jolla.
Directors and organizers - We’ll come to you!
Get your daycare, preschool, or story-group on board.

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Paying attention to color

Children are slow to learn color words relative to other words, such as object names. In fact, when children learn object names, they pay more attention to object shape and size than to color. In ongoing studies, we’re asking why this is, and how children ultimately figure out that some words label colors.

In our study, we reasoned that only children who can recognize color as a property that objects can share or differ on would be able to match objects by color. We asked 1- and 2-year old children, some who didn’t know how to say any color words yet, to play a matching game (see picture above).

First, we showed children three objects of the same color, and placed them into one pitcher while saying “Look, this one matches!”. Then, we gave children three more objects. One object matched in color but was a different shape than all of the first three objects. Another matched an initial object in shape but not color. The last object did not match at all. When asked to “Find one that matches”, even children who did not know any color words could choose the object that matched by color.

This suggests that children are able to recognize color as a property of objects. We are now studying why children take so long to learn all the color words, and how children might make guesses about which colors to include in the meaning of a word such as “blue”.

LATEST PUBLICATIONS


Developmental psychologists and linguists like to study logical operators and connectives – words like *and*, *or*, *if-then*, and *not* – because unlike many words, they can’t be learned simply by associating sounds with things in the world. Instead, they require learning logical relations between words. Perhaps because of this problem, children often make intriguing errors when learning them.

For instance, if you show a child the picture above and ask them, “Is every girl riding an elephant?” they will probably say *no*, point to the elephant with no girl riding it and explain, “There’s no girl on that one.”

Unlike adults, children as old as six clearly think the extra elephant is relevant. Why might they think so?

One explanation is that children might assume that there exists an extra girl who is not shown in the picture, but is within the context of the conversation.

We tested this idea by providing a story to introduce children to these three girls, and made it clear that we were talking about those three girls only. Then we showed them scenes with pictures like the one above and asked them questions using “every”. Surprisingly, children continued to answer “no”, pointing out that there was no girl on the fourth elephant.

Another explanation is that children need to see an example of an alternative outcome in order to interpret the sentence in the same way that adults do. In other words, they need to see what it looks like for *not every* girl to be riding an elephant.

To test this hypothesis, we showed kids pictures in pairs: first, a picture (below) in which only two of three girls were riding elephants, followed by a picture in which all three girls were riding elephants.

We found that first showing kids a false alternative helps them to answer questions with the quantifier *every* in an adult-like way. This means that although kids do not by default interpret “every” using the same logic as adults, they do have access to the adult interpretation and, given a little extra context, will interpret *every* like adults do.
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