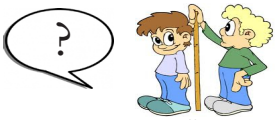
# MSU Language Acquisition Lab NEWS

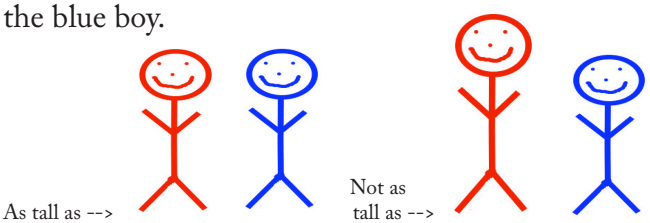
Fall 2012

## You Must Be as Tall as This to Ride the Roller Coaster!

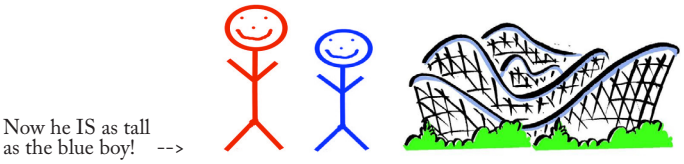



When you say "**The girl has two quarters,**" we assume that the girl has exactly two quarters. How about: "**You need two quarters to ride the roller coaster**"? Does this mean that if you had three quarters, which isn't exactly two quarters, you can't ride the roller coaster? Obviously, no—so in this case, "two quarters" means at least two quarters.

We are interested in how this works for as-comparatives—that is, when you compare two things/people by using the word "as." Take this sentence, for example: "**The red boy is as tall as the blue boy.**" How would you interpret this? Yes; that the red boy is exactly as tall as the blue boy.




How about this?: "**The red boy must be as tall as the blue boy to ride on the roller coaster.** "




Now that we are talking about the "musts" (linguistics call these modals), we understand as tall as to mean "at least as tall as."

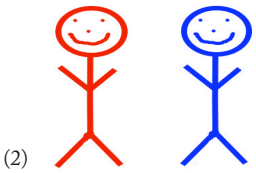
Other researchers have found that children often fail at calculating scalar implicature with expressions of "how much" or "how many" something is. For example, kids may not be sensitive to the fact that if you have all of the toys, you technically have some toys too.

But it seems that these children behave differently with numbers— if you say "She has two quarters," they tended to prefer "exactly two quarters" interpretations over "at least two quarters," just like adults.

So with as-comparatives, would they still prefer the "exactly as tall as" interpretation? Or would they prefer "at least as tall as"? Furthermore, would they notice that some contexts are better with the "at least as tall as" interpretation, but that other situations don't really allow for it (as we've seen with contexts with vs. without roller coasters)?

We tested this by recruiting adults and 4 year olds to make a judgment about the "correctness" of pictures depicting as-comparative situations. Half of the sentences encouraged the "at least as…" interpretation, and the other half discouraged it. So we would have something like this:


**(1)The red boy must be as tall as the blue boy to ride the roller coaster. The red boy <u>can't</u> ride the roller coaster. (Not true!)**




**(2)The blue boy is as tall as the red boy. (True!)**

Results showed that children and adults behaved similarly. When they were supposed to see it as "at least as tall," the did, and when they weren't supposed to, they didn't.

In our second experiment, we added more conditions to test the participants for—in addition to "as tall as," we added situations with numbers—"**The girl needs (at least) two quarters to get in the pool**" vs. "**The boy has (exactly) two quarters.**" We also tested two age groups of children this time: 4 year olds and 5 year olds.

It turns out that children behaved like adults again; when the context didn't allow the "at least" interpretation, they noticed it. 4 year olds didn't distinguish between the two contexts as clearly as 5 year olds, but nevertheless, they noticed the difference.

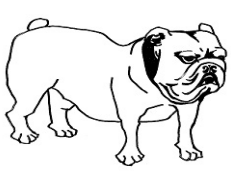
This means that the interpretation of "at least how many" and "at least as tall as" depends on the same sort of context. It also suggests that since children and adults performed similarly, we can interpret "as tall as" as meaning "exactly as tall as" in certain situations because of context and not some complicated logic, because kids seem to figure this out, too!

## Lions, Zebras, and Plurals, Oh My!

In English, we have a grammatical distinction of singular nouns versus plural nouns—dog, dogs; simple enough. But in some languages like Korean and Japanese, this distinction does not strictly exist; that is, *inu* in Japanese means 'dog,' but depending on the context, it could mean one dog… or multiple dogs. So, what happens when native English speakers are made to learn a new number system like this?

To test this, the MSU Acquisition Lab researchers created a simple artificial language where "bare" nouns without anything attached to it could refer to exactly one thing or multiple things. This new language also included a word describing a noun as "exactly one" and another word that meant "multiple." Linguists call these "singular determiner" and "plural determiner," respectively, and they are a feature of languages like Korean and Japanese as well. They are kind of an option for distinguishing a singular from a plural, but using it with a "bare" noun isn't obligatory.

In this language... *Tupi* means "dog."

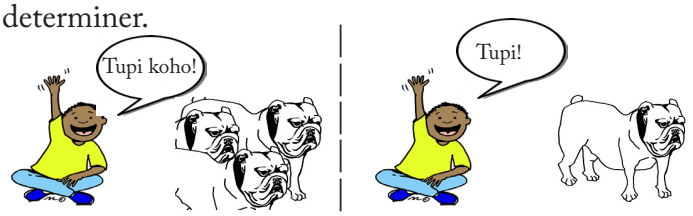


(1)

(2)

*Tupi* can refer to (1) or (2).
*Tupi paya* means "exactly one dog." It has to be referring to (1).
*Tupi koho* means "multiple dogs." It has to be referring to (2).

Several English-speaking adults were trained to learn this artificial language. During this process, we made sure that every participant heard the bare noun 60% of the time, the singular determiner ("exactly one") 20% of the time, and the plural determiner ("multiple") 20% of the time. Results showed that all of the participants learned the vocabulary and the grammar of this new language pretty well, but they differed in the acquisition of the number system. Everyone learned to use the word meaning "multiple," but not everyone learned "exactly one." Although a bare noun can be singular or plural, participants tended to add the plural determiner to it in multiple-item contexts; bare nouns were overwhelmingly used in single-item contexts. The few of them that did get the hang of the singular determiner were less likely to identify bare nouns with single-item contexts. These people were also more likely to describe a single-item picture by using the singular determiner.




This means that compared to how much they were exposed to the plural determiner during the instruction period, they used it a lot more of it when tested for it. They also had a hard time learning the singular determiner because they very often treated bare nouns as the singular; this is probably an assumption from English, because we add –s to "bare nouns" to mark plurals, right? They also seem to have a hard time thinking of the bare forms as the plural.


From this, we can conclude that when people learn a new language, certain aspects of your native language play a bigger role in it than others. From this experiment we saw that structure of words ("Well, we add –s to make things plural in English, let's try something like that in this new language, too") seems to be a bigger bias than meaning ("Well, bare forms can mean the plural in English, maybe that's what's going on"). It also seems that how often you hear an element of a new language isn't the only factor determining the patterns

# About the Lab

The MSU Acquisition Lab does research in child first language acquisition, with a particular focus on the acquisition of sentence structure and meaning, and the comparison of acquisition pattern in many languages including Spanish, Portuguese, English, Chinese and Japanese.

### Contact

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