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# Counting may be cultural, not innate

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By [Elizabeth Weise](#), USA TODAY

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Counting to ten may seem like child's play, but perhaps it's not as innate as we might think. A cross-cultural study of deaf Nicaraguans who communicate with home-made sign language finds that they aren't able to consistently communicate about groups of objects over three.

That's a common trait in many hunter-gatherer societies, where the numbering system is often one-two-three-many. For example, the [Munduruku](#) Amazonian people in rural Brazil don't have any words for exact numbers larger than five. Their neighbors, the [Piraha](#), no exact number words at all.

The researchers, from the [University of Chicago](#) and [Harvard University](#), wanted to make sure that they

weren't merely dealing with a cultural issue, because many hunter-gatherer societies don't have "culturally supported contexts in which exact numbers much be encoded," as the paper says -- in other words, they simply don't ever see the need to count that high.

Their research is published in this week's edition of the journal [Proceedings of the National Academies of Science](#).

So the researchers looked at a group of [deaf](#) Nicaraguans who don't speak Spanish and who never got the opportunity to learn conventional sign language.\* These are a very interesting group, because they live in a numerate culture that uses exact counting and large numbers, but because they were never educated in it, they lacked conventional language for numbers.

The researchers found that these individuals did not spontaneously develop representations of numbers over three. They used gestures to communicate about numbers but "do not consistently produce gestures that accurately represent the cardinal values of sets containing more than three items."

To make sure that deafness itself wasn't somehow a part of this, the researchers also tested native speakers of [American Sign Language](#). These individuals, raised and immersed in a language that uses counting, were just as good as speakers of Spanish and English at counting.

The research could mean that something anyone who's ever watched [Sesame Street](#) might think is as basic as it gets - counting to five - may in fact be a product of living in a numerate culture and not innate to humans at all.



CAPTION

By Elizabeth Weise

\* The [Nicaraguan deaf community](#) is one of the most fascinating linguistic stories in the world. Due to the lack of infrastructure and support for deaf people there, there was no Nicaraguan sign language until the 1980s. Deaf people typically lived at home and used a simplistic gesture based 'home sign' system to communication with their families. But beginning in 1977 the first center for special deaf education was created in Managua, bringing together about 100 deaf children.

Unfortunately for them, the teachers tried to teach them Spanish through lip reading instead of using established Spanish sign language, so the children didn't actually learn to communicate with adults. But in an amazing example of the how primed the human brain is for language, once that many deaf people came together, they began to create their own language to communicate.

The older children first began to naturally use a [pidgin](#), a simplified gesture based system of communication that didn't have all the features of a fully-formed language.

But in an act of creation that still sets linguists' hearts racing, when researchers started paying attention to the younger children at the school, they realized they were witnessing the birth of a new language right before their eyes. The little kids were taking the older ones' pidgin and turning it into a [creole](#) - a fully-realized language with its own grammar and vocabulary.

This language, the first whose creation was directly observed by researchers, is now called [Idioma de Señas de Nicaragua](#), or Nicaraguan Sign Language.

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[Benevolio](#) (0 friends, [send message](#)) wrote: 1d 22h ago  
Sigh, not the notorious Piraha again. who supposedly have "no exact number words at all".

This is \*far\* from established fact (like most of the fabulous stories about these people). There was one experiment reported, which involved only four subjects. When counting up, the subjects quite accurately used "one", "two" and "many" just where they should if they did have exact number words for "one" and "two" -- so they do have numbers! But when counting down used the

words for "one" and "two" when there were more than that to be counted -- so maybe they don't have numbers!

So far, no one has explained the contradictory results. They "no numbers" crowd pays attention only to the counting down results, but skeptics point out the contradiction with the counting-up results.

These new experiments with deaf signers sound much more substantial. Let's leave the Piraha out of this, until someone comes up with more reliable facts, and better explanations for them.

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