

Is Bilingualism a Superpower? | Otherwords
<https://www.youtube.com/watch?v=EGGFsOPQaAU>
Transcript: <https://dontveter.com/ec/bilingualism.pdf>

What do you see when you look at this picture?

Hopefully it's either a duck or a rabbit.

Most of us can see both, but not at the same time.

We sort of switch back and forth.

This is known as an ambiguous figure.

You've probably seen lots of them.

And they're often used by psychologists and neuroscientists to study things like visual perception and cognition.

Recent studies have found that bilingual children, those that speak two languages fluently, are more adept at switching back and forth between such images than monolingual children.

For a long time, people thought that bilingualism was a handicap, that it stunted development and language acquisition.

Maybe that's because no one really studied it until recently.

Over the last several decades, research and experiments have suggested that being bilingual significantly impacts brain function in ways that might surprise you.

I'm Dr. Erica Brozovsky, and this is Otherwords. (quirky music) [Narrator] Otherwords. (quirky music) Who is Dr Maria Arredondo Do you want to try and put that on?

[Erica] Dr. Maria Arredondo is a developmental psychologist who studies the cognitive impacts of bilingualism in young children.

I'm an assistant professor in the Department of Human Development and Family Sciences at the University of Texas at Austin.

And I am the director of the child's lab.

We study how bilingual children and infants are acquiring their languages and what are the mechanisms that are supporting the acquisition of both languages.

So what drew you to the field of bilingualism in general?

So I was born in Argentina, my first language is Spanish, and I moved to the United States when I was 12.

I acquire a language very quickly, in one or two years, but my siblings and my parents struggled a lot.

So I always became curious why some people are learning their languages very quickly and why are others seem to struggle in bilingual acquisition.

What is Bilingualism [Erica] There are two kinds of bilingualism, simultaneous and sequential.

Simultaneous bilinguals learn both languages at the same time in infancy while sequentials learn their dominant language first and a second later in life.

While a sequential bilingual may maintain a similar level of proficiency, there are fundamental differences in how these languages are acquired and used.

One of the most significant is phonetics.

It's estimated that humans can make around 800 distinct verbal sounds, known as phonemes, like ch or oo or ss.

Any individual language will only use a few dozen, and the ones you don't use, you can't really hear.

For instance, r and l may sound distinct to English speakers, but the Japanese only have one phoneme for both, and in French, there's a sound between p and b that English speakers can't discern.

But here's the amazing thing. Babies can hear all of these sounds.

[Maria] So from very early on, infants can distinguish the different sounds in all the languages, but with time, they begin to specialize in the sounds for their own native language.

Perceptual Narrowing [Erica] Multiple studies suggest that infants under six months can perceive the whole spectrum of phonemes.

As they develop, they focus only on those used by their native language and essentially lose the ability to hear the rest.

It's called perceptual narrowing.

As you can guess, bilingual children keep all the phonemes from both languages, but only if they learn both from infancy.

Sequential bilinguals, those who learned a second language later in life, almost always retain a perceptible accent, no matter how proficient they are in all other aspects of a language.

There's pretty much just that one narrow window to learn all the phonemes you'll use for the rest of your life.

But if you're picturing all these phonemes sloshing around like a bowl of alphabet soup, it's actually a lot more organized than that.

Can Children Distinguish Between Languages

So can children distinguish between the two languages?

Bilingual-raised children can distinguish between their two languages very early on, during the first year of life.

We know that they can do that as soon as they're born.

There are studies showing that neonates, they can distinguish between the languages that their mom spoke while they were in utero.

As they're acquiring both languages, they are beginning to figure out on their own which sounds are for each language, but also what is the syntax for each of their languages.

The two languages are very clearly separated and delineated in a bilingual's mind, which makes sense since they have different sounds, rules, and rhythms.

When they change from one language to another, even mid-sentence, it's like a mental switch is flipped.

One language is given full attention and the other one is turned off, so as not to cause confusion.

[Maria] They're very aware of their code-switching.

So, for instance, my niece, she will mix between both of their languages when she's speaking to me because she knows that I am bilingual and that I am capable of understanding when she is code-switching, but she wouldn't do that to an English monolingual speaker.

Prosody

But how would an infant brain know that it's learning two different languages?

One possible answer is prosody, the patterns of rhythm in speech.

For example, English is a stress-timed language, which means that the rhythm is based on the important words and all the unimportant words are just jammed in between the beats.

I'm gonna go the store, I'm gonna buy some snacks, and then I'll come home.

Spanish, however, is a syllable-timed language where each syllable is given more equal timing.

Voy a ir al supermercado, a comprar unos bocadillos, y ya vuelvo de regreso. Prosody is also influenced by word order.

English and Spanish are both subject-verb-object languages.

The dog ate his bone. El perro se comió su hueso.

SVO languages usually have articles like "the" before the noun, giving it an iambic sound pattern. The dog, el perro. My mother, me madre.

Subject-object-verb languages, like Japanese, place the article after the noun, which creates a somewhat more inverse sound pattern. Kare ni Soko de

[Erica] It's possible that even in the womb, a fetus may be able to pick up on these distinct patterns

and start to sort linguistic information into separate mental containers.

How are the strategies that bilingual children use to learn language different from monolingual children?

Strategies

We know that monolinguals, around 18 months, they use mutual exclusivity, which is a strategy in which they are mapping a novel word to a novel object.

So for instance, if you present a child with two objects, one is a familiar object, one is an unfamiliar object, and you provide a name that they've never heard before, then they're going to map that novel name to that new object.

But bilinguals, there's evidence showing that they're not relying on mutual exclusivity as much as monolinguals.

And that's because they know that two labels are given to one object.

There are other strategies that bilinguals rely on when they're learning words, so we do know that they are looking at audio-visual cues, the mouth of the speaker.

The more that they look at the mouth, the higher their retention is when they are naming a new object.

Brain

- As you can see, the mental demands on bilingual children are pretty heavy, and it does mean that some language milestones may show a delay when compared to a monolingual child, which makes sense considering that the developing brain of a bilingual child has double the workload.

But, like a bodybuilder, that extra effort means extra muscle, neurologically speaking.

[Maria] In the brain, we see that bilinguals are showing different activity during executive function tasks.

The mechanisms that we are relying on are attention and inhibition.

So with attention, we are focusing on the language that's being in use right now, so I'm focusing on English and I'm inhibiting my Spanish.

[Erica] That's why bilingual children are better at tests involving ambiguous figures.

It's easier and faster for them to turn off rabbit and turn on duck. [Maria] So the better your executive function abilities are, the better that your academic abilities seem to be during the school years.

What's fascinating about this work is that it's showing that the brain is plastic and that experiences like bilingualism can alter how the brain is organized.

There is research showing that bilingualism is associated with a delay in Alzheimer's diagnosis.

With age, obviously, the brain begins to deteriorate, but bilinguals are showing that this is a much slower deterioration.

But what we still need to try to understand is how these changes in the brain are related to bilingual acquisition.

And that's where the field is heading now.

That's not even mentioning the social and cultural benefits of bilingualism that are harder to test in a lab.

The more people you can communicate with, the more opportunities life can offer and the richer your experiences can be.

Unlike the cognitive advantages, these are available to simultaneous and sequential bilinguals, so it's never too late to benefit from learning a second language.