MACQUARIE University

Speech-Sound Mismatch

A LANGUAGE GAME

If you've done the "Listening to Faces" worksheet, you'll know that your eyes can help you listen.

In this game we will experience that our brains combine what we *hear* with what we *see* of someone's moving face – even if the two don't match!

These language games will help you find out what happens when what you *see* doesn't match with what you *hear*.

Do you want to know more before you start playing the games? Go straight to The Science on the next page!

THE GAMES

The games go from low-tech to high-tech. The high-tech games may be more suitable for older children.

1. EXPERIENCE IT FOR YOURSELF!

1 or more players; in person

1. Listen to this entire video with your eyes and ears. What does the person say?
2. Then close your eyes and only listen with your ears. What do they say now?
3. Curious what is happening here? Go straight to The Science!

2. CREATE YOUR OWN SPEECH-SOUND MISMATCH VIDEO

1 player; in person

First step – go to your computer!

Audio recording:
1. Open an audio recording software (e.g. Voice Recorder on Windows or Voice Memos on Mac).
2. Record yourself saying "ba ba ba…" over and over again in a steady rhythm.
3. Stop the audio recording, but leave it open

Video recording:
1. Open a video recording software (e.g. Camera on Windows or Photo Booth on Mac).
2. Start recording, using the front-facing camera, so that your face is in the centre of the picture.
3. Keep the recording running.

Audio and Video recording:
1. Now press play on your audio recording.
2. Silently (!!!) mouth "ga ga ga…" in time with the recording of "ba ba ba…"
3. Stop the video recording once you reach the end of the audio playback.

Your speech-sound mismatch video is all done!
- Play your mismatch video
- With your eyes shut, you probably hear "ba ba ba…"
- But, with your eyes open, you might hear "da da da…"

THE SCIENCE

In 1976, two researchers called Harry McGurk and John MacDonald stuck together a video of someone saying "ga, ga, ga" with a sound of the same person saying "ba, ba, ba". When they played it back, what do you think they heard?

What Harry and John saw and what they heard didn't match, but their brains still tried to put it all together anyway. So, their brains thought the person said "da", which is in between the "ga" they saw and the "ba" they heard. We make the sound "ga" at the back of our mouth and the sound "ba" at the front of our mouth. We make the sound "da" in the middle of the mouth, and that is what Harry and John heard when they listened to the "ga-ba" mismatch!

Since 1976, many other researchers have investigated this illusion, which is often called the McGurk Effect. Other mismatches between what we see and what we hear also result in 'in-between' sounds. You have seen and heard this for yourself in the YouTube video of Game 1.

What if you don't hear "da" when seeing "ga" and hearing "da"? Don't worry, nothing's wrong! In fact, kids are less likely to be tricked by the McGurk Effect than adults. So, if you don't hear the in-between sound "da", maybe try it out on some adults around you and see if you can trick them instead!

CAN YOU SHARE THE FUN?

The Child Language Lab would love to hear how your family finds playing these games. Let us know whether you experience the McGurk effect, or share your "ga-ba" mismatch video on the Child Language Lab Facebook page:

www.facebook.com/CLLMQ

You can see examples of Child Language Lab members having a go at these games on Facebook too!

MEET THE TEAM!

This worksheet was developed by Rebecca Holt. Her PhD research in the Child Language Lab tries to find out how we can make listening easier for children with hearing loss. Titia Benders, one of the Child Language Lab's Deputy Directors, helped here and there. Leanne Trinh, a third-year student in the Bachelor of Speech, Hearing and Language Sciences who is completing an internship in the lab, chose the pictures and fixed the layout. They hope you enjoy the result!

The Child Language Lab studies the process of child language acquisition. Our goal is to understand the nature of language development in children in order to inform theories of language acquisition and more targeted language therapies, providing an evidence base for health and education policy.

POPULATIONS: *Our research group studies language development in infants, monolingual and bilingual children, children with hearing loss and children with language delay.*

TOPICS: *We focus primarily on issues at the phonetics/phonology/morphology interface, including the acquisition of grammatical morphology and language processing more generally.*

METHODS: *We do our research with specifically designed tasks to gather behavioural and neurological evidence of children's developing language abilities in both comprehension and production. Our methods include: behavioural speech perception and production tasks, eye-tracking, EEG/MEG (KIT-Macquarie Brain Research (MEG) Laboratory), various standardised tests of language, working memory, cognition and executive function*

MAIN RESEARCH AREAS:
- *Hearing loss: What are the challenges faced by children with hearing loss when it comes to language, communication and listening effort?*
- *Bilingualism: How do bilingual or second language learners acquire language? What are their unique strengths and challenges in language processing?*
- *Production/speech planning: What are the factors that determine how children produce sounds, words, morphemes, prosody and sentences, and how does this change over time?*
- *Perception/comprehension/processing: When are children able to recognize sounds, words and morphemes, and predict what's coming next in the sentence?*

FIND OUT MORE:

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