

Thought Question: What if eliminating classroom background noise improved a student's ability to learn to read?

Research Findings: *Children may struggle more with a noisy classroom than adults*
<http://www.jneurosci.org/content/39/15/2938> (original research article)

Subject Area: Learning; Neuroscience

Authors: Sarah Sparks

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Summary

A new study released by the Journal of Neuroscience examines how people learn to discern background noise from human voices and found the presence of background noise while a child is learning, may impede their ability to develop this skill. When researchers looked at the activity in the part of the brain responsible for processing sounds, the auditory cortex, they noticed the 6-9-year-old children had difficulty deciphering the speaker's voice as noise increased. This is particularly important when thinking about reading instruction for young students as classroom noise can influence their ability to decipher sounds which are critical to early reading skill and speech development. Researchers acknowledge the study, completed with children who spoke French, also has implications for English-speaking children, as English involves the brain processing "more rhythmic syllable accents."

Enjoy the article! **And remember...** background noises in the classroom may interfere with learning for some students.

Keywords: Neuroscience, learning, reading, classroom noise, background noise, auditory cortex

Children May Struggle More With a Noisy Classroom Than Adults

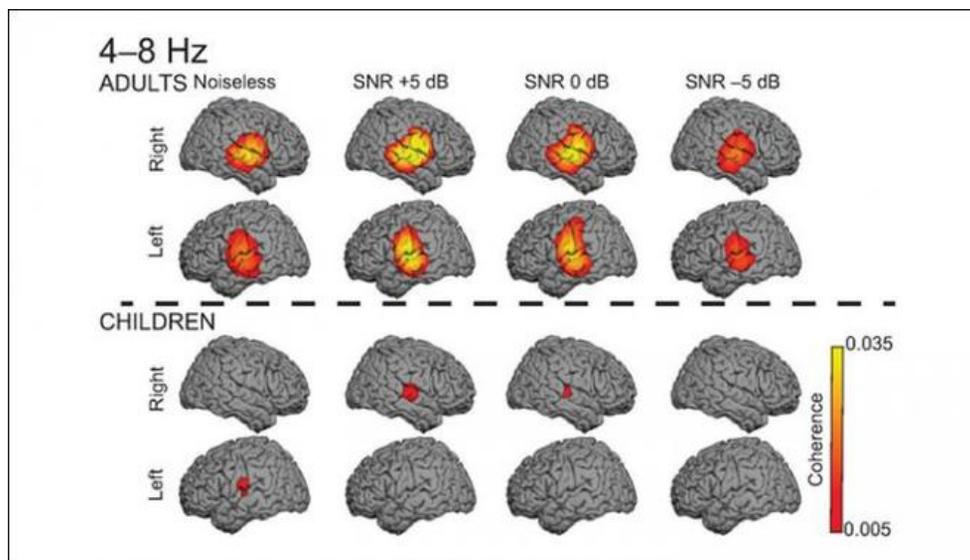
By Sarah D. Sparks on February 11, 2019 1:15 PM

Students develop the foundation for lifelong reading skills in early elementary school, and a new neuroscience study suggests they may be particularly hindered in that learning by background noise.

People often have trouble discerning one person's voice amid many conversations—think of trying to follow a conversation at a party—but generally adults easily distinguish a voice from other background noises. A [new study in the Journal of Neuroscience finds that we develop the ability to track voices over time](#), and children may be hampered more by additional noise than adults.

Researchers measured the brain activity of adults and children ages 6 to 9 as they listened to four recorded stories, each with different levels and kinds of background noise, either other people talking or just general sounds.

As the chart below shows, both children and adults showed brain activity in the auditory cortex—the portion of the brain associated with processing sounds—which tracked the speech of the storyteller in the recordings. However, children were significantly worse at distinguishing syllables generally, and they struggled much more than adults to follow the speaker as noise increased from other voices in the background.



Source: Ghinst et al., JNeurosci (2019)

Early reading instruction in the United States focuses heavily on teaching students phonics. These results seem to suggest that students may have a more difficult time distinguishing phonemes and following speech or instructions as classroom noise rises, and highlights the importance of quiet classrooms while children are learning to recognize language, said Marc Vander Ghinst, the lead author and a researcher at a developmental neuroscience center at the Free University of Brussels, in Belgium.

"The more teachers take time to do a correct pronunciation, the better the student understands," he said. "Furthermore, it has been demonstrated that this also brings a better speech representation in the brain. My advice would be: Take the time to do a correct pronunciation, and try to do it in a calm atmosphere."

Prior studies have identified similar differences in how children with and without dyslexia track speech in noisy environments, but Vander Ghinst said researchers still need to track students throughout their teenage years to tease out whether dyslexia-related listening comprehension problems are related to a developmental delay, or a separate issue. "We know that some differences persist in dyslexic adults, so we can probably hypothesize that a difference in their speech processing lasts," he said.

Some languages may be easier to follow than others, too. This study involved students who spoke French as their native language, and Vander Ghinst noted that there are likely differences in how students learn to process English, which has more rhythmic syllable accents, or to process tonal languages such as Mandarin.

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