

# Musical rhythms can improve language processing of children with developmental language disorder, study

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A new study led by a Western Sydney University researcher has found that musical rhythms can help children with speech and language

processing difficulties in finding their voice by improving their capacity to repeat sentences they just heard.

Published in *npj Science of Learning*, the study was conducted at the Lyon Neuroscience Research Center in France with 15 French speaking children with developmental language disorder (DLD) and 18 typically developing French speaking children without [language processing](#) difficulties between the ages of five and 13 years.

Co-lead author, cognitive psychologist Dr. Anna Fiveash from Western Sydney University's MARCS Institute for Brain, Behavior and Development said the children listened to music with regular and irregular rhythms for 30 seconds before being asked to repeat back sets of six sentences as accurately as they could, with remarkable results.

"We found that across all of the children—including those with language problems—the sentences were better able to be repeated out loud after the children had heard the regular musical rhythms compared to the irregular musical rhythms," said Dr. Fiveash.

"This finding that regular rhythms can boost sentence repetition is striking, considering that children with [developmental language disorder](#) have particular difficulty in repeating sentences out loud, especially when they are grammatically complex."

Dr. Fiveash said there was no difference in performance on a control task that did not involve language, suggesting that the benefit of the regular musical [rhythm](#) was specific to the language task itself.

Researchers used regular rhythms that were at 120 beats per minute in 4/4 time, so that the listener would feel the beat two times per second. Irregular rhythms were created by scrambling the regular rhythms used so that it was not possible to extract a beat.

Co-author of the study, Dr. Enikő Ladányi from Vanderbilt University Medical Center said the results of the study are an exciting breakthrough that has shed new light on [neurodevelopmental disorders](#), specifically for the advancement of DLD research and speech therapy practice.

"Limitations in language processing in children with DLD can result in a struggle to understand their peers, teachers, and parents; making it difficult to efficiently express thoughts, which can lead to lifelong consequences in individuals' academic and social lives," said Dr. Ladányi.

"Effective speech-language therapy is essential to mitigate these consequences to improve developmental outcomes for children, and our latest findings could help supplement and improve current speech therapy guidelines and practices."

Examples of the regular and irregular musical rhythms used in the study can be accessed [here](#).

**More information:** Anna Fiveash et al, Regular rhythmic primes improve sentence repetition in children with developmental language disorder, *npj Science of Learning* (2023). [DOI: 10.1038/s41539-023-00170-1](#)

Provided by Western Sydney University

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