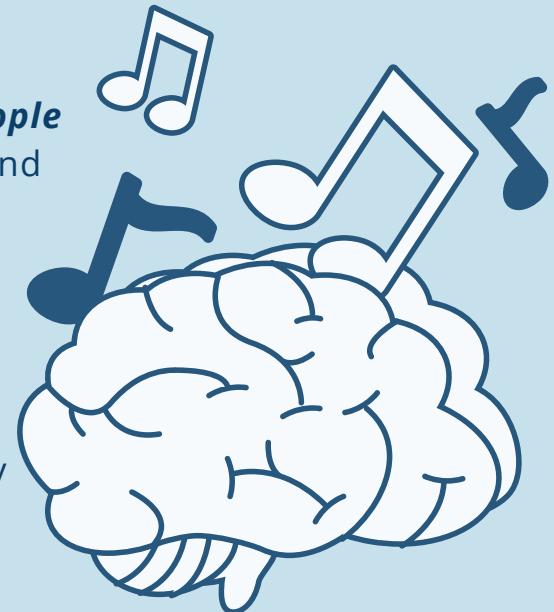


# ROCHESTER RESEARCH ROUNDUP

## AUDITORY PROCESSING OF SOUND PATTERNS IN INDIVIDUALS WITH AUTISM SPECTRUM DISORDER

### WHAT did you study?

- Neuroscientists are trying to understand how people with autism process sounds in the environment and how this might relate to their social and repetitive behaviors.
- Many scientists have suggested that people with autism might have different responses to unexpected sounds than people without autism. They wonder if this is why people with autism may have more difficulty with communication and prefer predictable environments.



### HOW did you study it?

- Researchers used an EEG (a test that detects activity in your brain by attaching small, metal discs to the top of the head) to measure brain waves while individuals with and without autism (age 6 to 21 years old) listened to patterns of beeps. Sometimes, they would "surprise" the brain by playing a beep at the wrong time in the pattern.
- Participants also completed measures about language, communication, repetitive behavior, attention, and anxiety.

### WHAT did you find?

- In general, both people with and without autism had the same brain responses to these beeps, even the surprising ones.
- People with stronger brain responses to the surprising beeps tended to have better language understanding, but there was no relationship between a person's brain response to the beeps and their social communication, repetitive behaviors, attention, or anxiety.

Conducted by the Cognitive Neurophysiology Lab



## WHY does it matter?

- This research study suggests that **people with and without autism may show some similarities in the way they process sounds**. Brain responses to simple sounds may be able to give us some information about the **building blocks for how people understand language**.
- By understanding how people with autism experience the world, researchers can work toward important goals like making a diagnosis earlier or designing new therapies.

## What's NEXT?

- Researchers need to continue this work with more people who have a **wider range of intelligence and language abilities**.
- We also want to study **other types of sound and language processing** to look for where there are differences, what these differences mean, and how they change with age and intervention.



## THE FULL ARTICLE CAN BE FOUND THROUGH THE FOLLOWING CITATION:

Knight, E.J., Oakes, L., Hyman, S.L., Freedman, E.G. and Foxe, J.J. (2020), Individuals With Autism Have No Detectable Deficit in Neural Markers of Prediction Error When Presented With Auditory Rhythms of Varied Temporal Complexity. *Autism Research*. <https://doi.org/10.1002/aur.2362>

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