

In Brief: The cocktail party problem

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People can identify a repeating sound in a noisy room, but only when the noise includes mixtures of distinct distracting sounds, according to a study published this week in the *Proceedings of the National Academy of Sciences*.

Sound researchers have pondered this so-called "cocktail party problem," which underlies the ability to focus on a specific, unfamiliar sound.

To determine how the [auditory system](#) parses sound seemingly effortlessly, Josh H. McDermott and colleagues presented listeners with a synthesized audio recording that resembled everyday sounds, such as spoken words and animal [vocalizations](#).

When the target sound was presented with one other sound, the listeners heard the mixture as a single sound and were unable to identify the target correctly.

However, when the target sound was presented repeatedly, mixed with a distinct distracting sound each time, the listeners developed an impression of the repeating target and identified it in the mixtures.

Further, the listeners' ability to recognize the target sound depended on the number of different mixtures in the audio recording, not the number of times the target was presented.

Hence, the authors suggest, the auditory system detects sounds based on patterns of time and frequency, such as might be produced by feet

pounding on pavement or by branches swaying in the wind, and interprets the patterns as sound sources.

More information: "Recovering sound sources from embedded repetition," by Josh H. McDermott, David Wroblewski, and Andrew J. Oxenham, *Proceedings of the National Academy of Sciences*, January 2010.

Provided by Proceedings of the National Academy of Sciences

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