

Seeing is Believing, but Hearing Could Be Misleading

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The game “spot-the-difference,” in which a player is presented with two photos and asked to pinpoint the variations, is an excellent example of the human brain’s ability to perceive detailed changes in complex images. Up until now, scientists proposed that our auditory and visual perceptions functioned through similar parts of the brain. But thanks to a study from the Université Bordeaux in France, that notion is about to change.

Psychologists Laurent Demany, Wiebke Trost, Maja Serman and Catherine Semal discovered that, despite popular belief, our ability to detect auditory and visual changes appears to be controlled by separate mechanisms.

“It is commonly believed that there is no major difference between auditory memory and visual memory,” explained the authors in the study. “Iconic memory and visual short-term memory are thought to have counterparts with the same properties.”

Iconic memory, which scientists propose is regulated within the eye structures themselves, and visual short-term memory are the main processes used by the brain to perceive and remember changes, such as the variations between images in “spot-the-difference.”

While humans find it even easier to detect change in simple images, such as a cutout shape, the psychologists discovered that the opposite was true of auditory processes: Participants in the study remembered complex sounds better than simple sounds.

The results of the study, which appear in the January 2008 issue of *Psychological Science*, a journal of the Association for Psychological Science, reveal that, despite the uncanny ability of the visual system to process detailed images, the human ability to detect and remember change in complex sounds is even stronger. This suggests that humans actually use different parts of the brain to perceive and remember auditory and visual changes.

And, to support the surprising abilities of our ears even more, the authors concluded that “the auditory counterpart of iconic memory has at least 20 times the storage duration of [visual] iconic memory.”