

Study sheds new light on a classic question in psychology and neuroscience

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A study from Karolinska Institutet in Sweden shows, that our imagination may affect how we experience the world more than we perhaps think. What we imagine hearing or seeing "in our head" can change our actual perception. The study, which is published in the scientific journal *Current Biology*, sheds new light on a classic question in psychology and neuroscience – about how our brains combine information from the different senses.

"We often think about the things we imagine and the things we perceive as being clearly dissociable," says Christopher Berger, [doctoral student](#) at the Department of Neuroscience and lead author of the study. "However, what this study shows is that our imagination of a sound or a shape changes how we perceive the world around us in the same way actually hearing that sound or seeing that shape does. Specifically, we found that what we imagine hearing can change what we actually see, and what we imagine seeing can change what we actually hear."

The study consists of a series of experiments that make use of illusions in which sensory information from one sense changes or distorts one's perception of another sense. Ninety-six healthy volunteers participated in total.

In the first experiment, participants experienced the illusion that two passing objects collided rather than passed by one-another when they imagined a sound at the moment the two objects met. In a second experiment, the participants' [spatial perception](#) of a sound was biased

towards a location where they imagined seeing the brief appearance of a white circle. In the third experiment, the participants' perception of what a person was saying was changed by their imagination of a particular sound.

According to the scientists, the results of the current study may be useful in understanding the mechanisms by which the brain fails to distinguish between thought and reality in certain [psychiatric disorders](#) such as [schizophrenia](#). Another area of use could be research on brain computer interfaces, where paralyzed individuals' imagination is used to control virtual and artificial devices.

"This is the first set of experiments to definitively establish that the sensory signals generated by one's imagination are strong enough to change one's real-world perception of a different sensory modality" says Professor Henrik Ehrsson, the principle investigator behind the study.

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