# People with Blindness Have Refined Spatial Hearing

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*Does loss of sight enhance a person's sense of hearing? New research supports this commonly held belief in one intriguing way: by testing blind people's ability to navigate their surroundings.*

The Marvel superhero Daredevil, though blind, fights crime with the aid of his superhuman hearing, which gives him a clear picture of his surroundings. But outside of Hollywood, can the brain use hearing to compensate for the loss of vision to help navigate the world? A new study published in the journal Psychological Science suggests that sight is not a prerequisite for spatial hearing, or the brain's ability to locate the source of a sound; on the contrary, a lack of vision might actually enhance an individual's sense of spatial hearing. These results contradict past studies that concluded vision is necessary for the auditory system's translation of sounds into representations of space as well as for the development of spatial-hearing skills.

Researchers studied how well 17 congenitally blind (blind from birth or before 3 years of age) and 17 sighted participants of the same age and gender distinguished the position of two sources of sound located in either central and peripheral, horizontal and vertical, or frontal and rear spaces. Results showed that congenitally blind participants had significant advantages over sighted participants in identifying the source of a sound, regardless of its location. Additionally, congenitally blind participants were able to place sounds in front of or behind them with similar levels of accuracy, whereas sighted

participants were much more accurate at placing sounds in front of them than behind them.

The researchers found that blind participants showed enhanced activity in the visual region of the brain when they located sounds, indicating that they had sharpened their auditory-spatial abilities by relying on spatial hearing to navigate their environment. Although further research is needed to understand how the brain reorganizes in response to blindness, these findings suggest that brain plasticity may allow people without sight to develop enhanced auditory spatial skills.

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**Reference**: Battal, C., Occelli, V., Bertonati, G., Falagiarda, F., & Collignon, O. (2020). General enhancement of spatial hearing in congenitally blind people. *Psychological Science.* Advance online publication. https://doi.org/10.1177/0956797620935584