

Can echolocation help those with vision loss?

2 June 2021



Credit: Pixabay/CC0 Public Domain

Known as nature's own sonar system, echolocation occurs when an animal emits a sound that bounces off objects in the environment, returning echoes that provide information about the surrounding space.

While echolocation is well known in whale or bat species, previous research has also indicated that some blind people may use click-based echolocation to judge spaces and improve their navigation skills.

Equipped with this knowledge, a team of researchers, led by Dr. Lore Thaler, of Durham University, UK, delved into the factors that determine how people learn this skill.

Over the course of a 10-week [training](#) program, the team investigated how blindness and age affect learning of click-based echolocation. They also studied how learning of this skill affects the daily life of people who are blind.

The findings are published in the journal *PLOS ONE*.

The study involved blind and sighted participants between 21 and 79 years of age who trained over the course of 10 weeks. Blind participants also took part in a 3-month follow up survey assessing the effects of the training on their [daily life](#).

Both sighted and blind people improved considerably on all measures, and in some cases performed comparatively to expert echolocators at the end of training. Somewhat surprisingly, in some cases sighted people even performed better than those who were blind.

Importantly, however, neither age nor blindness was a limiting factor in participants' rate of learning or in their ability to apply their echolocation skills to novel, untrained tasks. Furthermore, in the follow up survey, all participants who were blind reported improved mobility, and 83% reported better independence and wellbeing.

Overall, the results suggest that the ability to learn click-based echolocation is not strongly limited by age or level of vision. This has positive implications for the rehabilitation of people with vision loss or in the early stages of progressive [vision loss](#).

Currently, click-based echolocation is not taught as part of mobility training and rehabilitation for blind people. There is also the possibility that some people are reluctant to use click-based echolocation due to a perceived stigma around making the required clicks in social environments.

Despite this, the results indicate that [blind people](#) who use echolocation and people new to echolocation are confident to use it in social situations. The potential barriers relating to perceived stigma are perhaps much smaller than previously thought.

Dr. Lore Thaler, in the Department of Psychology at Durham University, said "I cannot think of any other work with blind participants that has had such

enthusiastic feedback."

"People who took part in our study reported that the training in click-based echolocation had a positive effect on their mobility, independence and wellbeing, attesting that the improvements we observed in the lab transcended into positive life benefits outside the lab. "

"We are very excited about this and feel that it would make sense to provide information and training in click-based [echolocation](#) to people who may still have good functional vision, but who are expected to lose vision later in life because of progressive degenerative eye conditions."

The human brain continues to surprise us with its capabilities for complex learning strategies and the neuroplasticity to alter its very structure to better process information from its senses.

More information: Human click-based echolocation: Effects of blindness and age, and real-life implications in a 10-week training program, *PLOS ONE* (2021). journals.plos.org/plosone/article?id=10.1371/journal.pone.0252330

Provided by Durham University

APA citation: Can echolocation help those with vision loss? (2021, June 2) retrieved 17 June 2021 from <https://medicalxpress.com/news/2021-06-echolocation-vision-loss.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.