UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Is magnetoreception experience-dependent in humans?

Permalink

https://escholarship.org/uc/item/99x1j78n

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 46(0)

Authors

Kƒ±sa, Yaƒümur Deniz
Stengelin, Roman
Maurits, Luke
et al.

Publication Date

2024

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

Is magnetoreception experience-dependent in humans?

Yağmur Deniz Kısa
Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

Roman Stengelin
Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

Luke Maurits
Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

Daniel Haun
Max Planck Institute for Evolutionary Anthropology, Leipzig, Saxony, Germany

Abstract

Some humans, like other animals, may sense magnetic fields: Gurindji people from Australia can locate a hidden magnet solely based on magnetoreception, but an American control group cannot (Meakins, 2022). Why can only some humans use magnetoreception? One possibility is that human magnetoreception is experience-dependent: the fundamental capability may be universal, but the Gurindji learn to use it reliably because, unlike Americans, their language and culture promotes paying constant attention to cardinal directions and thinking about space using a geocentric cognitive map, which sensing the Earth's magnetic field would help with. If so, we might expect other cultures using geocentric thinking, such as the Hai//om people from Namibia, to have also learned to use magnetoreception. We tested this and found that, unlike Gurindji, Hai//om people could not locate a hidden magnet at above chance levels, suggesting that learning to think geocentrically may not be sufficient to acquire magnetoreception.

In L. K. Samuelson, S. L. Frank, M. Toneva, A. Mackey, & E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society.* ©2024 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY).