

Aging, Culture, & Cognition Lab Newsletter

Brandeis University,
Waltham, MA

February, 2025



The lab went apple picking last fall!

Happy New Year!

We hope you've been doing well! We are excited to share what our lab has been up to.

As you may know, the Aging, Culture, & Cognition Lab (directed by Angela Gutches, Ph.D.) explores the effects of age and culture on memory and how people think. For our cross-cultural research, we study how the experiences people have over their lifetimes can influence aging.

Work in the lab uses a combination of behavioral methods and techniques that allow us to assess brain activity, including electroencephalography (EEG) and functional magnetic resonance imaging (fMRI).

As you'll read about in this newsletter, EEG and fMRI have distinct advantages in measuring brain activity. This newsletter highlights how we are implementing these methods to understand complex cognitive processes.

Finally, we want to thank you for supporting our research! Whether you're a past or current participant, collaborator, or lab member, we hope you know much we appreciate your involvement. The exciting findings that you'll read about here would not have been possible without you.

We look forward to sharing more details about our future research.

Warm regards,

The Aging, Culture, & Cognition Lab

In this newsletter,
you can expect:

**Intro to
Methods &
Ideas**

**Completed
Projects**

**Ongoing
Projects
(Currently
Recruiting!)**

**Lab
Happenings**

**Contact
Information**

We hope you enjoy!

Methods Overview

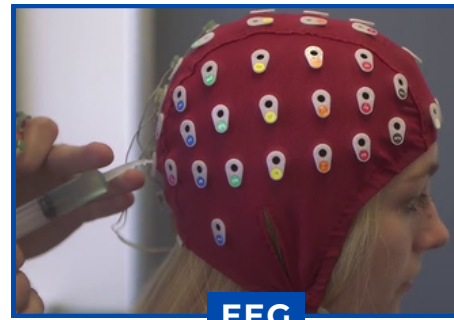


What is the difference between EEG & fMRI?



fMRI

&



EEG

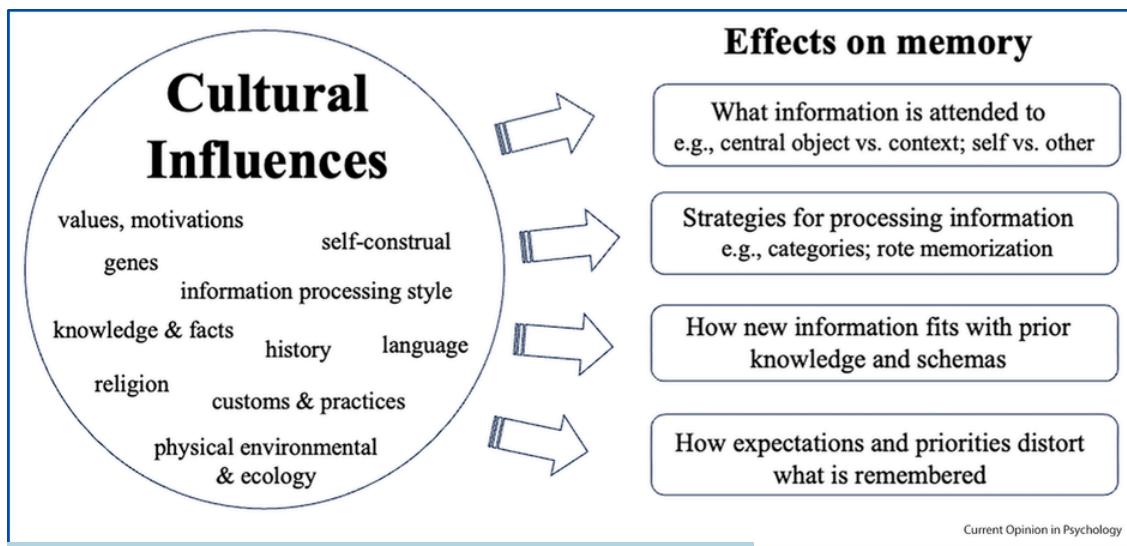
- Functional magnetic resonance imaging provides **spatial** resolution, allowing us to identify **which** brain regions are activating in response to a task.

- Electroencephalography provides **temporal** resolution, meaning that we can isolate **when** specific brain activity is occurring during the experiment.

Intro to Culture

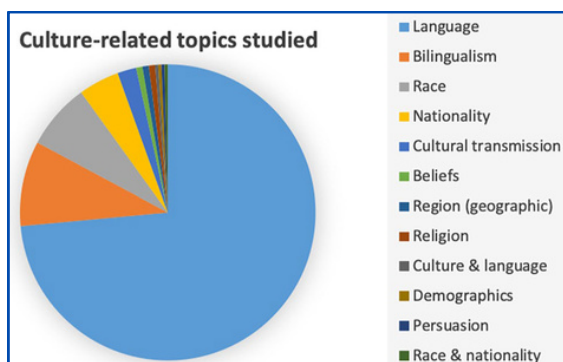


Why consider culture in the study of cognition?



Gutchess & Cho (2024). *Current Opinion in Psychology*

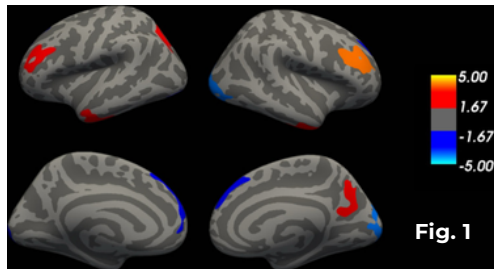
- Do you view the self more **independently** (separate from others) or **interdependently** (connected to others)? When processing information, do you pay more attention to **details** or to the overall **context**? Your answers to these questions are influenced by **culture**!



Gutchess & Rajaram (2023). *Psychonomic Bulletin & Review*

- This chart refers to articles published in Psychonomic Society journals between 2016-2020.
- Little research** has explored how **other aspects of culture** (beyond language) influence cognition.
- On the next page, you'll see how our lab is addressing this gap.

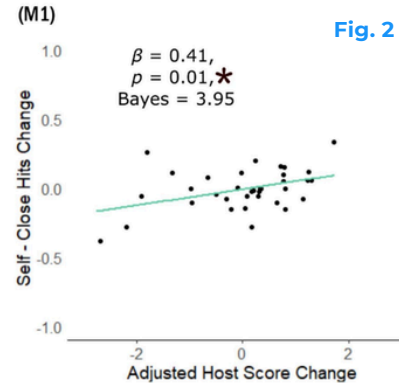
Culture, prefrontal volume, and memory



- **Key Takeaway:** In younger adults across cultures, **lower scores** on a **standard memory test** were associated with **larger volumes** of a particular **brain area** - the bilateral rostral anterior cingulate. This means bigger isn't always better, when it comes to brain regions!
- The volume of some brain regions (**Fig. 1**) even differed for younger **Americans** and **Taiwanese**.

Barber et al. (2024). *PLoS One*.

Use of self-referencing memory strategies change over time with acculturation



- **Key Takeaway:** We studied **Chinese students new to the US**. Over time, those who became more **acculturated** to **American culture** benefited from a **memory strategy** used by **Americans** (**Fig 2**).

Gilliam & Gutchess. (2025). *Cognition*.

How age and culture impact the neural correlates of memory retrieval

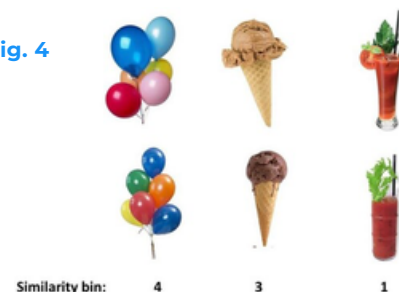


- **Key Takeaway:** Some **cultural differences**, like in the engagement of **memory regions**, **persisted** with **age** (**Fig. 3; left panel**). However, cultural differences in other regions, such as the left inferior frontal gyrus (**right panel**) were **eliminated** with **age**. These findings give a glimpse into what effects of **aging** may be **universal or affected by culture**.

Cho et al. (2025). *Cognitive, Affective & Behavioral Neuroscience*.

Cross-cultural comparison of the neural correlates of true and false memory retrieval

Fig. 4



- **Key Takeaway:** Memory between Taiwanese and Americans was compared for **new** items and items that were **similar overall** (see examples in **Fig. 4**).
- There were cross-cultural differences in the recruitment of regions related to **vision** and **attention modulation**.

Leger et al. (2024). *Memory*.

(Some) Ongoing Projects

Note: These studies are recruiting **younger adults (ages 18-35)**, but we will be conducting more aging studies with older adults soon. Please stay tuned!

Culture & Memory Study

- Studies how culture (East Asian vs American) influences false memory for pictures.
- Project lead: **Nicolette Barber**



Nature & Cognition Study

- Examines the effects of nature vs urban settings on memory and attention.
- Project lead: **Chun-Yi Lee**



EEG Culture & Memory Study

- In collaboration with **Dr. Audrey Duarte**'s group at UT-Austin.
- We are recruiting **Non-Hispanic Whites (at least 3rd generation)**, meaning you were born in the US, as were both of your parents and both of your grandparents), and **Chinese-Americans (2nd generation)**, meaning you were born in the US, but at least one of your parents were born in China).

- Project leads: **Iva Dujmic**, **Ahhyun Seo**, & **Hailey Fuchs**







Scan or email aginglab@brandeis.edu if interested!

Lab Happenings

- December 2024:** Congrats to honors student, **Qihao Xie**, on being named a 2024 Donnan Canavan Honorary Undergraduate Scholar by the New England Psychological Association. Qihao also just graduated with his B.S. in neuroscience and psychology!
- November 2024:** Several of our lab members presented posters at the 2024 meeting of the Psychonomic Society in New York City! We would like to congratulate **Dr. Angela Gutchess** on her service on the Governing Board of the Psychonomic Society!
- September 2024:** Welcome to our new Ph.D. students, **Sagarika Devarayapuram Ramakrishnan**, **James Qian**, and **Chun-Yi Lee** (visiting Ph.D. student)! This fall, we were also visited by **Dr. Elizabeth Kensinger** from Boston College!
- July 2024:** Congrats to our previous lab manager, **Ioannis (Giannis) Valoumas**, on joining Binghamton University as a Ph.D. student in Dr. Michael Dulas' lab!
- May 2024:** Congrats to **Alena Lokhmanenko** (master's student) and **Iva Dujmic** (honors student) on graduating! This spring, we were also visited by our collaborator, **Dr. Joshua Goh**, from National Taiwan University!
- January 2024:** Congrats to our previous postdoctoral research fellow, **Dr. Isu Cho**, on accepting a faculty position at Sungkyunkwan University in Seoul, South Korea!

Please check our website to stay updated.

Thank you for reading!

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