

Goals

1. To inform and promote enthusiasm about neuroscience to residents of North Carolina, targeting youth
2. To provide fun, structured opportunities for scientists at the UNC Bowles Center for Alcohol Studies to practice community engagement

Partnerships

North Carolina Museum of Life and Science provided hands-on lab space and support from museum staff

UNC Bowles Center for Alcohol Studies provided new, brain-centered exhibit staffed by scientist volunteers

Dana Foundation provided Brain Awareness Week supplies (activity books, pencils, brain erasers, stickers)

National Institute of Alcoholism and Alcohol Abuse provided funding the UNC P60 Alcohol Research Center

Materials

1. Brains

- Human brain (UNC Bowles Center for Alcohol Studies collection)
- Sheep brains, Carolina Biological Supply www.carolina.com
- Rodent brains from research labs (scheduled for euthanasia)
- Brain models, www.amazon.com, <https://www.shopanatomical.com>

2. Spot It! (Asmodee)

- Both regular and junior versions, www.amazon.com

3. Memory trays

- Plastic cafeteria-type trays
- Cloths to cover trays
- Small items to put on trays: toys, office & school items, rocks, flowers, candy etc.
- Paper and pencil for recall

The memory tray activity was adapted from Dr. Eric H. Chudler's book, *Brain Lab for Kids: 52 Mind-Blowing Experiments, Models, and Activities to Explore Neuroscience*, www.amazon.com

Brain Awareness Week: Race Your Brain! interactive exhibit

Activity Guides

Station 1: The brain. See the document "Brains, brains, brains." One person will staff this station, which has brain specimens (sheep, rat, mouse, human) and brain models that are props for talking to visitors about the brain and how it controls our muscles and behavior. We can talk about things like what parts of the brain control your thinking (the prefrontal cortex), what parts of the brain register what you see and hear (sensory cortices), and what parts of the brain are important in memory (hippocampus).



Station 2: Attention and Memory activities. The inner lab space is limited to a certain number of visitors per volunteer, so it will depend on how many volunteers we have and how long visitors stay at the activity. Visitors can wait to enter the lab space at the entrance, and this is a good opportunity to prepare and engage them prior to the memory activity. If people are waiting, a volunteer can tell them that this will be a lab on attention and memory, then engage them with the following example questions:

- *What do we use to see? (eyes, brain) What do we use to know what we see? (brain) What do we use to remember what we see? (brain)*
- *How do you know what you are seeing? How do you remember what you are seeing?*
- *What does it mean to pay attention? Can you remember things that you don't see? Can you remember things that you don't pay attention to?*

The idea is to introduce the concept that you need to see to sense things (sensation), as well as perceive them (attention) in order to eventually remember them (memory). AND there are brain systems for each of these steps. Note that this is very conversational and flexible – go with the flow, don't force a particular conversation!

"Spot It!" game. This activity can either occur in the lab space or while people are waiting, depending on the number of volunteers and the number of people waiting. "Spot It!" is a card game that requires players to spot items that are common on two cards – you need to pay attention (not so much memory). We have 4 decks, including two that are specifically for younger kids. The game consists of a deck of 50-60 cards, each showing several pictures. Each card will have one – and only one – item in common with each other card. Whoever can see the common item first wins that round. For this station, playing the game might be enough. Or, some variations:

- What makes it easier or harder to pay attention and find the shared picture? Is it easier/harder/ faster/slower when you are competing compared to just looking?
- What about when you are distracted by someone touching your arm or talking to you?



"Memory Trays" – how much can you remember? For this activity, one volunteer can work with 1-3 children (plus associated adults). Explain to the visitors that you have a tray of objects (like small toys and everyday items) and you want them to pay attention to them so they can remember as many of the objects as they can. You will give them 30 seconds to look at the tray, and then they can see how many objects they remember. For younger children (7 or younger), 10 objects works well to start; older children could potentially start with more.

- Older kids can compete against each other by writing down how many objects they remember, then comparing to the actual tray.
- Younger kids (non-writing) can work together, taking turns to call out items while you write it on a list for them. Alternatively, younger kids may want to have their parents write for them.
- You can talk about "mnemonic devices," tricks to improve your memory. These can include chunking (sorting into categories, making it easier to remember items by remembering categories) and making up a story with the items.

Variations on this activity:

- *Give visitors 30 seconds to look at the tray, move the tray behind the counter and add/remove something to it, scrambling the items. Who knows what was added/removed?*
- *Is it easier to notice something new or to realize that something is missing? How about when the number of items is ~10 versus ~20?*
- *Non-visual variation: Have visitors feel items under the cloth cover, without seeing them. Can they detect when you add an item or remove an item?*

Ending the lab... At some point the visitors need to leave, maybe because they are finished, and maybe to make room for others to enter. As a wrap up, you can ask, "Do you have any more questions or ideas about ____?" Invite the visitors to write on our feedback poster anything they learned or enjoyed. The feedback poster will be placed near the exit. Offer a freebie to the visitors (we'll have brain pencils and stickers until they run out) in exchange for giving us feedback.

The Exhibit - Specifics & Numbers

- 35 volunteer scientists from UNC and the community
- Approximately 860 visitors (600 children, 260 adults)
- Groups of 2-5 children (plus parents) came through the exhibit at a time
- Walk-up station: Brains
 - One or two scientists showed visitors the brains, asking questions
- Inside station: Memory Games
 - Two to three scientists worked with children (and parents) to test their attention and memory skills
- Feedback
 - Visitors wrote what they learned on a poster board and received BAW stickers and pencils



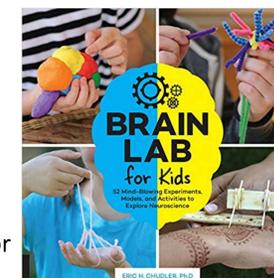
Public health messages. As always, we want some good take-home messages. A general public health message is to keep our brains healthy. As we chat with kids and adults, we can reinforce healthy behaviors: wearing helmets, eating healthy food, protecting our brains from drugs and alcohol (or excessive alcohol in the case of adults).

We will have brochures from NIH and SAMHSA on alcohol use – talking to your kids about alcohol, what is problem drinking, etc. Please encourage adults to take these, and talk about research we do to understand alcohol's effects on the brain and body.

Freebies to give to kids. We will have pencils with brain erasers, pins and stickers. Let children choose what they want (one item per child). We will also have brochures on underage drinking and how to talk to your kids about drinking for parents and teachers.

Acknowledgements

Thanks to many UNC students, postdocs, faculty and staff who participated in the events. Funding provided by NIH (P60 AA011605 "Molecular and Cellular Pathogenesis in Alcoholism: Information Dissemination Component") and the UNC Bowles Center for Alcohol Studies.



See Lab #45 on page 122: "Now you see it, now you don't"