



Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: The Impact of Age on Pattern Separation and Completion

Finalist's Name: Juliet Huckabay

School and City: Skinner Middle School

Sponsor's Name: Kate Zappitelli

Category: Behavioral & Social Sciences

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

My project researched the impact of age on pattern separation and pattern completion. My great-grandparents suffer from Parkinson's Disease, which can, in some cases, lead to dementia and Alzheimer's. I wanted to do research that focused on neurological diseases to add to the body of research in this space and because I have a passion for neuroscience.

I hypothesized that older people would struggle more with pattern separation because the dentate gyrus is responsible for pattern separation and it deteriorates with age. I created two tasks, one testing pattern separation and one testing pattern completion. For pattern separation I showed words that looked very similar and then my participants would have to tell me if they were different. For pattern completion I showed parts of recognizable images and then participants would fill in the blank and tell me what the complete image was.

After I tested 80 participants I found that across all age groups, more people struggled with the pattern completion task. However, the older people had an 18% lower accuracy rate compared to the second lowest scoring group. Comparing the two tasks, everyone scored lower for pattern completion regardless of their age. The older people had a 6% increase during the separation task compared to the younger group. Although my hypothesis was not supported, this research still created helpful insights into the world of neurological diseases.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**