

My Life as a Lab Rat: Participating in a Long-term Longitudinal Study

Julia Coltri

Department of Biology
Lake Forest College
Lake Forest, Illinois 60045



Julia Coltri '13 is involved in a study at the Child Development Lab of the University of Maryland.

The year I turned three, my mom took me to a white room where people in lab coats watched me play with legos through a one-way mirror. Then, when I was seven, I remember a woman squeezing cold blue gel into what looked like a floral swim cap she had placed on my head. I watched faces flash on a screen while sitting in an oversized armchair that accommodated the wires coming out of the cap. That summer I chewed on cotton rolls flavored with grape kool-aid once a week. My mom had me spit them into cups and put them in the freezer. Then, when I was twelve, I returned to the oversized armchair and the EEG cap, but this time I wore a collar that blew puffs of cold air at my neck when shapes were displayed on the TV screen. When I turned eighteen, I played games in an fMRI machine for the first time.

While these recollections and experiences may seem odd to most people, they were a regular part of my childhood. I have been involved in a study at the Child Development Lab of the University of Maryland since I was an infant, and my mom was a PHD student in the department. These experiences were all experiments in an ongoing study. This study investigates infant temperament over time, the biological basis of behavior, and many other related topics. A recent grant from the NIH allowed the study to use the NIH's fMRI technology to further investigate the biological processes that occur while people are performing certain tasks. One recent finding was that when performing tasks, shy adolescents had increased activation in the brain's reward centers when the task was performance based as opposed to performance independent tasks. Another recent finding indicated preliminarily that very young infants can associate a vocal noise more so than a tonal noise with a stimulus. Findings from this lab have been published widely in journals such as: *Developmental Neuroscience*, *The Journal of Neuroscience*, *Developmental Psychobiology*, and *Psychiatric Genetics*.

This past summer, I returned to the lab, perhaps for the last time, to participate in another phase of the study. My memories from previous visits are fuzzy, and I did not notice many of the scientific aspects of the tests they were

performing. As a second year biology student who has attended a number of neuroscience conferences and talks, I was much more aware of the scientific basis for the strange things I was asked to do. This visit was held at the National Institutes of Health in Bethesda, Maryland, a huge research hospital with its own fire station and school. Security there is stricter than it is on an international flight, and I felt like I was entering some sort of top-secret base. We were met in the lobby by a graduate student who looked like she was only a few years older than I am and I was reminded of how, as a science student, I am usually on the other side of these interactions. After filling out paperwork and getting an ID tag, she led me into the pediatric wing. Although there are many people being treated as inpatients in the NIH, they also have outpatient facilities. A nurse practitioner gave me a full psychiatric and physical evaluation, informing me that I had a stuffy nose, but that it would not preclude me from participating. I was given the go-ahead to participate in the rest of the study.

A week later I came back for the fMRI visit. The graduate student led me down countless hallways into the basement of the NIH hospital where the fMRI machines, large tubes containing powerful magnets that take images of the brain as it functions, are kept. I lay down on the MRI table and they attached a pulse oxymeter to one hand and a set of buttons to the other. They put a pillow under my knees, put headphone earplugs in my ears—MRI machines are very loud, and tucked a blanket around my body. Then, with the push of a button, the table moved me into the fMRI machine. A little mirror above my head reflected a TV outside of the machine so I could see it. Then I played games while the fMRI showed the researchers what was going on in my brain. In one game, I had to click the button as fast as possible when a certain shape appeared on the TV, and if I was fast enough I would win money. After several hours of playing games in the fMRI scanner, I was done. Aside from being a little stiff and achy from lying still for so long in the fMRI machine, the study has had no adverse effects. They even printed out a picture of my brain for me to keep.

Participating in this study encourages me to think about designing experiments from the perspective of the subject. Maintaining a good relationship with human subjects is crucial to the success of long-term longitudinal studies, which rely on following the same person over time. If a subject drops out of the study early, the time spent following them is wasted. Since medical ethics dictates that participants can stop participating at any point during a study, it is important to keep their trust. The Child Development lab maintains good relations with its participants by sending us newsletters detailing recent findings, sending small gifts like water bottles, and making us comfortable by meeting us in the lobby, for example. Researchers also need to think about the comfort of the participant during the experiment, if at all possible. All these things lead to greater success over time and general respect for the participants.

Aside from the monetary benefits and the cool gifts they sometimes send me, I think I have gained a lot from the experience of participating in this study. As a student in the biological sciences, I frequently rely on journal articles that use data collected from human subjects. Every drug we take and every major medical discovery relies on the generosity of human study subjects. The impact of the data that is collected from these subjects is absolutely

staggering. Participating in this study helps me give back, in a sense, for all the research that I use in my studies and in my daily life. I would encourage other students to become involved in research as participants because of the unique perspective it offers and the moral obligation to give back to the community.

More information about the University of Maryland Child Development Lab may be found at <http://www.education.umd.edu/EDHD/faculty/Fox/>.

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