

An Undergraduate's Perspective on the Undergraduate Research Experience: From a Trained Monkey to a Scientist

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The undergraduate stage in education is bursting with opportunities to guide students toward becoming scientists who can complete research projects. Take advantage of the opportunities given: begin as a trained monkey (complete the tasks of a research project that are so easy a trained monkey could do them,) learn the ropes, and deal with the frustrations of each new task in order to become a scientist.

My experience with undergraduate research began in my first semester of college. I did not even begin at trained monkey status. I was merely a student – the only freshmen student in a statistics course of upperclassmen. Because I had no other exposure to psychology courses, I did not know (as I assume the upperclassman knew) that part of the reason for obtaining a psychology degree was to learn how to become a scientist. Ignorant of the value of learning statistics for psychological research, I subsequently viewed the course as another math class in which I merely had to memorize formulas in order to compute correct answers on tests. Aside from a few terms like Chi Square (which I remember because I was scolded for pronouncing Chi as the coffee shop drink chai), I did not retain much knowledge from the course. I fully regret studying for a grade rather than studying to remember the valuable skill of computing statistics.

However, I did benefit from the course. I benefited from the required participation hours in other's research projects. Though I did not view the experience as beneficial at the time, I eventually learned from the frustrations I felt while participating. Most memorably frustrating of the required research participation was the project that consisted of a two-hour survey that addressed a few topics, chiefly religion, that I committed myself to filling out. By commitment, I mean that I wrote my name down on a sheet which then obligated my participation. If I did not participate, my grade in statistics would suffer by a few points. Although the notion of being docked points was frustrating, I realized later that it was not nearly as frustrating as

being the researcher whose participants did not show. Thus, the valuable lesson learned was that taking steps to ensure smooth participation may be frustrating to the participants, but is necessary for an efficient study.

Another frustration I felt with the required participation, which I later accepted as necessary due to guidelines set by the Institutional Review Board to ensure a study meets ethical standards, was the necessity of handing over photo identification in addition to a slip of paper signed by my parents permitting their 18 year old child, yet still a student at a university, to participate in research. However, the most frustrating part of the whole experience was the dullness of the experiment. I thought that I would be contributing to a research project, the type of research projects that people who watch too much CSI and people who think of NASA when they hear the word research conjure up. Instead, I found myself filling out question after question, most of which seemed too similar to each other to even be necessary to complete, for hours. However, again, I learned later that the two hour long survey compiled of repetitive questions was indeed a necessary tool for research. It was necessary for finding significance, or not, within a study. It was necessary for scientifically adding to a body of knowledge. In short, my first experience with undergraduate research afforded me the opportunity to later understand that protocol may not be fun but is always necessary, and that research does not have to be mind blowing to be important.

My next experience with research was still not even at the trained monkey level. Again, I was the only freshmen student in a research methods course. Again, I was merely attempting to memorize material in order to get a good grade. Fortunately, however, the course involved enough "hands-on" opportunities that I remember the basics of research which I was taught. The most important tool I learned about was the APA manual. The most important task I completed was becoming certified to do research. And the most important concept I retained was that of

confounding. Because I learned how easily a research project could be confounded, I also learned how to problem solve and eliminate those problems, and how to be critical of all research.

I used my freshly honed critical skills in every aspect of my life, except for completing research. It had not yet dawned on me that I should have been extending my undergraduate research experience outside of the classroom. Not until my advisor mentioned that I needed research experience in order to be accepted into graduate school did I decide to take the next step, which was to find and help with an area of research that I thought would aid my acceptance into medical school, but one that was still in the psychological field. Consequently, I sought out a professor and asked to help with a research project. When the professor informed me that I would be useful to help finish her study, I was ecstatic. Obviously, I took the opportunity to do research and remained ecstatic until I realized what she meant by the word help.

I helped by spending an entire summer sitting in a cold lab room staring at a tiny TV screen, watching tape upon tape of black-and-white film from a security camera. The tapes contained trial upon trial of dark mice running around a white, round table, either passing or sticking their heads into one of several dark holes around the perimeter of the table. My task was to record the time of each trial, the number of times the mouse stuck approximately the majority of its snout into a hole, and also several other discriminating factors, which meant I had to watch the same trial several times before I could move on to the next trial. I contributed a great amount of time to this project. I sacrificed time from my summer doing work I thoroughly hated and was thus frustrated when someone explained to me that I had actually contributed very little to the project. I was merely a trained monkey. I helped with a substantial research project, but I did not do anything of substance. A trained monkey could have done my job.

I was so frustrated with the whole experience that I decided not to continue with that field of research. Instead, I found another research project to help with. Again, I was only a trained monkey because I was merely collecting demographics, but I thoroughly enjoyed the work. I read files of offenders at a forensic unit which included specific information on the most recent crime they had committed (if any), family history, school history, juvenile history, and much more. My task was to condense the files of information onto a demographic form and then enter the information into a database. Although the general task does not sound interesting, reading the files was fascinating. This brings me to the key to beginning

research. It is essential to first find an interesting project and then to determine if helping with low-level data entry or demographics is worth the effort. *Worth* is the operative word. Although I did not consider my first research assistant project (watching films of mice running around a table) to be worthy of my time, it may have been worth the painstaking summer hours to someone who wanted to gain more responsibility in a similar project.

The second research assistant position was worth my time. Not only was the research interesting, but my professor gave me the use of the dataset I helped to create in order to complete my own research project. And I took the opportunity, but only after the suggestion from my advisor to do so. Once more, I was still not aware of the benefits of completing undergraduate research, and would not have attempted to gain a grant to do research had my advisor not mentioned the value. Thus, I stumbled into completing a proposal for my project much as I stumbled into finding a research assistant project. I was not active in deciding the project's topic. I merely took on a project which my professor suggested. Consequently, it took a great amount of time to simply understand the material essential to the project, let alone form a hypothesis and create a proposal. Creating proposals was so new to me, and I was so busy with school work that writing the proposal was frustrating, perhaps the most frustrating part of completing the project. Condensing grand ideas for research projects into a short, yet comprehensive, breath-taking, yet understandable, proposal is not simple. However, I used the Internet, found many sources regarding proposal writing, and with the help of my advisor, I wrote a proposal that landed me one of two grants that I applied for, affording me the opportunity to understand the phrase "writing for an audience." Funds for a project will only come if the person funding the project deems it valuable. My university did not deem sex offender research valuable. However, Psi Chi did understand the value of my proposal and thus awarded me a grant.

Though I claimed that the proposal was the most frustrating part of my research project, I did not claim that it was the most difficult. As I mentioned earlier, I stumbled into the project. I knew nothing about the concepts of my project: cognitive deconstruction and anything related to sex offenders. Thus, I spent another summer contributing a great amount of time to only a small part of a research project, reading journal article after journal article just attempting to understand the basics. Eventually, I delved into the topic so greatly that even my advisor admits that I know more about some specific aspects of sex offenders than he does. However, I had no product at

the end of the summer. I had a couple drafts of introductions and methods, but no statistics or discussion. My motivation to complete the project waned. It took several months to finally attach a second author to the project in hopes of reaching completion. However, with the second author's excitement to be a part of the project and with my new motivation fired by my accountability to him, we worked fast and completed a poster which my partner presented at a conference.

The conference itself was another great undergraduate research opportunity. Only undergraduate students could display and discuss their projects with others at the conference, most importantly with the judges who were professionals in the field of psychology. Having the judges dissect the projects and give feedback allowed the students to understand which areas they needed to strengthen both within their project and within their presentation skills. Because my second author presented the poster at the conference, I have still not experienced a large scale conference. However, I took the opportunity to present at my university's student research conference in order to enhance my undergraduate research experience. Presenting to supportive professors eased my apprehension about

presentations. Discussing my project with naïve individuals who equated forensic psychology with the television show CSI allowed me to develop a precise, understandable discourse about my project. As a result, I will be more comfortable and perhaps more effective at professional conferences in the future.

Subsequent self assurance is a cardinal result of the undergraduate research experience. These experiences afford students the opportunity to learn how to complete research so that they can feel less reservation about working on substantial research in the future. Undergraduates are in college to hone skills, to become critical thinkers who can identify a problem, and to create solutions through scientific research. The sooner undergraduates realize that college provides opportunities which are incredibly valuable for personal growth and success in the research area, the sooner the undergraduate can begin to become a trained monkey, learn the ropes, and deal with the frustrations of a new task in order to become a scientist. However, undergraduates need guidance and assistance with the novelties of research. Therefore, if you are an undergraduate, seek out a mentor to help you realize that having a substantial undergraduate research experience is beneficial.