A Reflection on My Research Experience

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From my first semester of classes at Oklahoma State University, I have known that I want to dedicate my life to scientific research. Over the past two years, I have learned that there is much more to research than hours spent conducting experiments in the lab. No scientific pursuit is complete without extensive background research upon which to base new explorations. The Edmon Low library at Oklahoma State University and the guidance of other topic experts have been invaluable tools in my research process. I have spent the last two semesters learning about animal behavior, speciation, and the role that genetics play in these phenomena. Some of the things that I have learned in the process of preparing my first long-term research project and my first academic research paper have answered questions about both the topics I studied and myself that I never even thought to ask.

When I applied for and received the Wentz research grant, I had no idea what I wanted to study for my research project. I had previously worked with my faculty mentor, Dr. Campbell, when I was completing my research project for the Freshman Research Scholars program. She guided me through the process of choosing a topic. Dr. Campbell’s lab focuses on the effect that genetic factors can have on animal behavior. She suggested that I do some research on genomic imprinting and find a related topic that interested me. I was given a few books from her personal library as well as tips on how to use the OSU library’s resources to access peer-reviewed articles and other important sources. After extensive reading and hours spent in the library, I found a few articles and books through Edmon Low’s Big Orange Search System that discussed links between genomic imprinting, a unique genetic process involving only one set of parental genes rather than two during conception, and several autism spectrum-like human diseases. I also
found articles detailing different mouse models for these diseases. One book given to me by Dr. Campbell, *Speciation* (Coyne and Orr 2004), described mice that were hybrids of two unrelated mouse species that displayed classic signs of genomic imprinting disruption. Interestingly enough, these signs of genomic imprinting in hybrid mice mirrored symptoms of human genomic imprinting diseases such as Prader-Willi and Angelman syndromes. I decided, from this information, to research whether or not hybrids bred in Dr. Campbell’s lab also displayed these characteristics and whether or not the mice we bred could serve as a new model for these poorly-understood diseases. Dr. Campbell fully supported my choice of research question, and thus my project began.

Although my topic had been chosen, I was not done with the background research process. Before behavioral trials could begin, I had to choose what types of test I would use. The two types of tests that I chose were open field trials and retrieval call recording and analysis. The open field trial proved to be the best choice for the anxiety-related behaviors I was interested in studying. There were a plethora of peer-reviewed works that made successful use of these trials, so I decided that this was the best choice for me. The retrieval call analysis came later as a result of further research into the effects of hybridization on neonatal mouse behavior. After reading papers about the calls young mice make to their mothers for protection and retrieval to the nest, I wanted to see how the hybrids I was working with would in similar situations. Therefore, the vocalization trials were added to the agenda. There were many tests that I studied that were poor fits for the information I wanted to obtain. Light-dark box tests and social exposure tests were ruled out after hours of study. This was discouraging, but I kept working towards my goal despite any setbacks. Eventually, through trial and error, I had a plan for my research process. After all the data was collected, I began writing the paper that represents the fruits of my hard
work. I realized at this point just how important the background research that I had done really was. As I wrote the paper, I was able to relate each fact to an article or book that I had read. I was certainly glad that I had done such thorough research at the beginning of the project as it made writing the paper that much easier.

Before embarking on this journey, I was unfamiliar at best with the resources that the Oklahoma State Library and my research mentor had to offer. I had never used the Big Orange Search System, much less any of the more specialized databases that the library offers to students. Along with offering me access to her personal library, Dr. Campbell taught me how to use search engines to my benefit. I learned how to narrow down articles by date published, subject, journal, and topic. When I visited the library to begin my research, I still found the sheer amount of information available overwhelming. I then met with one of the librarians who specialized in the topics I was researching. They helped me to narrow my search even further and find extremely relevant journal articles and books, both physical and digital. Alongside BOSS, I used Web of Science and JSTOR to find the information that I needed. These more specialized search engines required a few new search methods, but after learning from my faculty mentor, I was able to use them efficiently. After so many hours spent in the library with these programs, I went from having no experience in the realm of library research to being able to find the article or book that I need at the drop of a hat.

The two types of sources that I used for this research project were peer-reviewed journal articles and books written by experts on the topic. Some of the books that I used were older books, but the information that they contained was still relevant as they covered topics such as the mechanics of speciation that still apply today. The journal articles, however, were more up to date. Great advances in the field of genetics and animal behavior have been made in the last
decade, so papers that are older than that might not be relevant to the things that I am researching. I always made sure that the journals that these articles were published by were credible journals as well. I learned the hard way that some journals are less credible in the scientific community for a variety of reasons. I had to reconsider the use of several sources due to this issue.

Overall, I consider this project to have been a great opportunity for both personal and academic growth. I plan to begin the process of publishing my first academic article soon as well as starting a new project with Dr. Campbell based on the data that I collected in this research project. I learned a lot about library research and I will continue to use this knowledge for the rest of my career. I thoroughly enjoyed every part of this journey and I hope that my next research project and all those that follow will be as enriching as this experience has been.