Welcome to 2016! After the incredibly successful 2015 Team Challenge (read the Team Research Proposals on page 3, below), our Cadets are starting their individual research, while our Interns are hard at work on their faculty-mentored McNair Projects. In this month’s Challenger, our newest Graduate Assistant, Ms. Salam Taraben. Learn about the current work of Scholars William Trice and Victoria Fisher, and read an update on Fall semester academic accomplishments!

From Arabia to Ypsilanti: Meet Ms. Salam Taraben, B.A.

Welcome to McNair! Why have you chosen to study Psychology, and what are your ultimate career goals?

My interest in psychology stems from my experience growing up with an aunt with an intellectual disability as a result of perinatal asphyxia. I had always been interested in understanding why her thoughts and behaviors were atypical. During my junior year of high school, I volunteered at an organization that serves children and adolescents with intellectual disabilities. My experience as a volunteer helped further my interest in understanding human cognition and behavior and opened my eyes to the vast opportunities within the field to improve the quality of life for my aunt and other individuals like her.

Upon completion of my Master's degree in General Clinical Psychology at Eastern Michigan University, I plan to pursue a Ph.D. in Clinical Psychology, specializing in Neuropsychology, and thereafter would like to work in a hospital or rehabilitation center. I would also like to conduct studies on the brain's structure-function relationship and translate my findings into improved treatments for various neurological and psychological conditions.

What was it like to live and study in Saudi Arabia?

I moved to the city of Jeddah in Saudi Arabia from Missouri at the age of seven. Living in Saudi Arabia was a life changing experience. Because it is customary for foreigners in Saudi Arabia to live in gated communities and required for them to attend private schools with other foreigners, I had the opportunity to meet people from all over the world, including Nigeria, India, South Korea, and surrounding Middle Eastern countries. In addition to the multicultural immersion, being immersed in the Saudi Arabian culture was truly a unique experience. From incorporating their traditional food into my diet to riding camels to watching bedouins roam the deserts on our way to the holy city of Mecca, the experience was truly exhilarating and eye-opening.

What are your research interests?

I am interested in understanding the relationship of brain abnormalities or insults (as seen in cerebral palsy, traumatic brain injuries, brain cancers, and some neuro-development disorders such as autism spectrum disorder) to cognitive, behavioral, and social-emotional deficits by pairing advanced neuroimaging and electrophysiology procedures to assessments of different aspects of neuropsychological abilities.

What are the main differences between your undergraduate and graduate classes?

There are three main differences between undergraduate and graduate classes. The first one is the expectations professors have of their students. In graduate classes, professors expect their students to have in-depth knowledge and good research, critical thinking, and writing skills. They are also given more autonomy and are expected to be (continued on p. 2)
Thanks, Salam! We’re looking forward to working with you!

Finally, what do you like to do in your spare time? Hobbies? Special talents?
In my spare time, I like to read, travel, do yoga, and spend time with family and friends. I am also a big foodie and love trying different ethnic foods!

Thanks, Salam! We’re looking forward to working with you!

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**Current Research by EMU McNair Scholars**

**Seeking Optical Chaos**
by William Trice, Senior Scholar  
Dr. Ernest Behringer, Faculty Mentor

My graduate research interests are in Experimental Optics and Nanotechnology, and in particular, experimental research in nanoplasmics-based optically triggered sensors, metamaterials with potential for practical application, nonlinear fiber optics, and optomechanical light-matter interfaces. Currently I am finishing a project focused on demonstrating optical chaos in two dimensions by reflecting laser light off of cylindrical mirrors. This project is ideal for demonstrating the law of reflection for electromagnetic waves and the extreme sensitivity to initial conditions (chaotic systems). My background in researching optical chaos for the last two years was funded with support from the Eastern Michigan University McNair Scholars Program, and my research mentor, Dr. Ernest Behringer, from the EMU Department of Physics and Astronomy, assisted me in gaining experience in a research environment by allowing me to contribute particulate in his research team.

My research experience has helped me build upon my skills at computer programming, research budget construction, and mechanical design. I’ve improved my programming skills by coding a geometric ray-tracing algorithm for optical scattering. I learned how to construct a budget by proactively improving the experimental design and managing the necessary components toward constructing the optical chaos apparatus. I also improved my mechanical design skills by designing the optical chaos apparatus. My conceptual design for this project was published in Volume 8 of the EMU McNair Scholars Research Journal (www.commons.emich.edu/mcnair/), and I have presented my research and conceptual design at the Heartland McNair Undergraduate Conference, EMU McNair Research Colloquium, and EMU’s Undergraduate Symposium (2015). I will complete the research project and my Bachelor’s degree in Engineering Physics in April, 2016.

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**Revealing Corporate Corruption**
by Victoria Fisher, McNair Intern  
Dr. Lois Mahony, Faculty Mentor

We are in a time of globalization, which may be defined as a process of interaction and integration among the people, companies, and governments of multiple nations. As globalization has increased, the number of companies in different industries using Corporate Social Responsibility (CSR) reports has grown. CSR reports outline corporate initiatives to access and take responsibility for the company’s effect on the global environment and impact on social welfare. My research is a study of how environmental, social, and governance rankings in CSR reporting are affected in a globalized economy, in (1) different countries, and (2) different industries. I first compare total various CSR scores using Sustainalytics Global Platform data, incorporating each company’s total rankings, then compare differences in environmental, social, and governance CSR scores between industries in different countries, trying to find a correlation between the scores and a country’s culture.

CSR is a corporate initiative to access and take responsibility for the company’s effect on the environment and impact on social welfare. CSR implies that firms voluntarily integrate social and environmental concerns in their operations and interactions with stakeholders, and commit to practicing sustainable economic development working with employees, their families, local communities and society at large to improve the general quality of life.

I hope to eventually work to improve corporate behavior by serving as an agent of a federal agency that supports compliance in the corporate workplace.

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William Trice, (left), and Victoria Fisher, (right).
The McNair 2015 Team Challenge

During the Fall semester 2015, the McNair Cadet and Intern classes formed research-related teams of 4-5 students to create a research proposal on a topic from current culture. Teams had dedicated time during the weekly Research Seminars to work on their proposals, and an Intern served as the leader of each team. Each proposal included:

- A creative, interesting title that captured the essential focus of their work, but made the reader/listener want to learn more;
- Data from legitimate academic websites and research articles, and a Works Cited page with a minimum of five sources;
- A Literature Review that presented the group’s perspective on the issue, but also incorporated published academic research from websites and refereed journal articles;
- A Powerpoint, which was presented during our Team Challenge Symposium, on December 4.

The proposals and Powerpoints were read and judged by an all-star jury: Dr. Wade Tornquist, Associate Provost and Director of Graduate Studies and Research, Dr. Anne Balaz, Associate Dean of the Graduate School, Ms. Jennifer Fong, Director of EMU Upward Bound, Dr. Toni Stokes Jones, Professor of Education and member of the McNair Advisory Board, and Mr. Chris Haskin, Chemistry graduate assistant and EMU McNair alumus. Many, many thanks!

The winners, Team 5, will receive Amazon gift cards and be treated to a luncheon. Well done, Scholars!

Please enjoy the 2015 Team Challenge abstracts, below.

Team One: “If the Genes Fit: Examining the Link Between the MAO-A Gene and Violent Crime”
Mariah Brito, Mickael Dunn, Tayler Murphy, Tahsina Shimu, Jessie Smith

Abstract

Genetic sequencing has allowed the field of behavioral neuroscience to finally test the question that has vexed psychologists since the dawn of the discipline: nature v. nurture. The answer may prove to be more grey and black and white, as genetic information has given rise to a better understanding of the potential mechanisms behind mental health conditions. Brain physiology has been found to be influenced by an individual’s genetics, which, in turn can affect an individual’s behavior. Because of the intimate connection between mental health and genetics, there is a possibility that genetic testing can assist in criminality predictions (Ellis 1982, Stetler et al., 2014). However, current research on genetic testing as a predictive biomarker for criminal behavior has been inconclusive, especially when paralleled to environmental factors (Kuepper et al., 2013, Siegel, 2011). Whether genotype or upbringing plays a bigger role in a person’s actions has not been determined because past studies have usually only focused on one factor, rather than examining both as factors. This research will attempt to prove the proposed dichotomy of “nature v. nurture” false by acknowledging how these two factors influence a person’s behavior. The MAO-A gene will be our predictive genetic marker, as its influence on serotonin levels has been correlated to inducing violence and aggression in individuals (Kuepper et al., 2013, Stetler et al., 2014). We will link this gene to environmental conditions by performing a longitudinal study on school children to observe their development. We will test the presence of the MAO-A gene through blood and protein assays to develop a possible connections between criminal behavior and genetics.

Team Two: “Avoid the Scare...Be Aware: The social and scientific factors that contribute to the spread of HIV/AIDS in women of color”
Allante Moon, Larry Borum III, Precious Humphrey, Sina Webster, Ivan LeBron

Since the 1980s, Acquired Immunodeficiency Syndrome (AIDS) has been wrongfully attached to homosexuality in the minds of many Americans (Herek 1999). Yet in recent years studies have found that it is actually black American women who comprise 60% of the women living with HIV/AIDS, and in 2010, represented 64% of the new cases of HIV in the U.S. (Kaiser 2013). This research will explore (1) the causes for the lack of knowledge about HIV transmission, and (2) how gender roles among women of color influence the transmission of HIV. We will conduct a qualitative survey of their personal beliefs to understand our respondents’ knowledge about HIV/AIDS. We hypothesize that low socioeconomic status (SES) plays a major role in the prevalence of HIV in specific groups of African American women.

Team Three: “They’re Takin’ Our Jobs!! Undocumented Workers and the U.S. Workforce”
Nyambura Njee, Gwendolyn Dean, Debbie Munganga, Eris Lovato, Victoria Fischer

Abstract

Do undocumented workers pose a threat to the U.S. workforce? This qualitative study will explore the perceived impact of immigrants on the American labor force and determine whether undocumented workers pose a threat. For the purpose of this study, “undocumented workers” will refer to people who do not have the official documents necessary for legal work in a country. According to Passel et al., (2004) there are roughly 9.3 million undocumented immigrants in the U.S., with about 6 million participating in the workforce, respectively representing an estimated 5% of American workers. Undocumented workers make up two-thirds of those who earn considerably less than the minimum wage (2004). Fear that undocumented workers are depleting the nation of resources has resulted in strict immigration laws, and anti-immigration sentiment. Using data obtained (continued on page 4)
through an extensive literature review as well as the 2012 General Social Survey, we will examine (1) how immigrants benefit or hurt the U.S. workforce, and (2) offer potential solutions to their presence in the labor market. We expect to find negative perceptions of immigration and undocumented workers from the general public, and we expect that the data will disprove dominant beliefs surrounding this challenging economic situation.

**Team Four: “A Forgotten Group of Vulnerable Survivors”: Intimate Partner Violence and its Gendered Based Effects on Children**
Brandie Bentley, Alyssia Hence, Demarco Johnson, Rebecca Luth, Yeliani Valdez

**Abstract**
It is estimated that between 3 and 16% of United States couples engage in Intimate Partner Violence (IPV) each year (Fagan & Wright, 2011), resulting in millions of children being exposed to violent incidents. Youth that are exposed to IPV between their parents are likely to experience an array of adverse consequences (Fagan & Wright, 2011), often leading to impairments in cognition, emotion, and behavior (Lebendosky, Bogat and Torteya 2013). Using data drawn from previous research on the effects of IPV among children aged 1-18, we will further investigate the effects of IPV on exposed children and the differences between gendered responses. We will also survey 500 children aged 12-18 in Mideastern Michigan, who have witnessed IPV between their parents and analyze the differences in the boy and girl responses. Our surveys will consist of questions designed to provide us with a greater insight on how IPV affects their cognitive and emotional responses and influences their physical behavior. We expect that our survey will reveal more external responses of aggression and violence among male children, while female children will internalize the effects of IPV and display symptoms such as depression and high-risk behavior.

**Team Five: “The Let Toys Be Toys Project: Analysis of Gender Specific Toys on Children’s Complexity of Play”**
Kyana Dixie, Kala Sherman, Iris Vincent, Faith Williams

**Abstract**
Our daily social interactions and even our labeling of others are affected by our gender schemas, which are influenced by perpetuating stereotypes (Cherney and Dempsey, 2010). These stereotypes develop early in life and research has suggested a strong relationship between gendered toys and the formation of gender stereotypes (Kariol and Aida, 1997). Gender stereotypes not only affect how children choose to treat other, but also the complexity of their play with toys that are “gendered” or “gender neutral.” Gender stereotypes are omnipresent within child play, whether of not the toy is labeled as “gendered,” and this gendered behaviors ultimately affects the complexity of children’s playing behavior (Cherney et al., 2003). This research will analyze the effects of gendered and gender neutral toys on the complexity of playing behaviors in young children. Through a longitudinal study on children aged three to ten, we will observe the complexity of playing with either gendered or gender neutral toys in controlled play room. Also, a series of interviews with the children will be conducted to evaluate their reasoning for playing and how they played with specific toys. We expect the toys labeled as “feminine” to be utilized more frequently by female children, thus enhancing their play complexity, since female stereotyped toys have been shown to exhibit more complex play (Cherney et al., 2003). This will likely be due to the increased use of verbal communication and imitation of observed socialization of sexual scripts.