

MONMOUTH
UNIVERSITY

HONORS SCHOOL



Student Research Conference
Spring 2020

***With great pleasure, the
Honors School presents its
Spring 2020 Research Conference***

Students will be presenting their research in the following fields:

Anthropology (AN)

Biology (BY)

Business (BU)

Chemistry (CE)

Communications (CO)

Criminal Justice (CJ)

Health Studies (HE)

Marine and Environmental Biology Policy (MEBP)

Music Industry (MUMI)

Political Science (PS)

Psychology (PY)

Social Work (SW)

***SPRING 2020 HONORS SCHOOL
RESEARCH CONFERENCE candidates***

Dr. Nancy J. Mezey

Dean of the Honors School

Proudly Presents:

Jessica Baals, Chemistry

Chloe Barone, Communication PR/Journalism

Jarret Bird, Anthropology

Victoria Megan Cattelona, Political Science

McKenna Douglass, Psychology

Karalyn Hoover, Communication PR/Journalism

Hunter Hostage, Marine & Environmental Biology Policy

Angelique Ithier, Chemistry

Evan Jerolaman, Chemistry

Anna Lazur, Health Studies

Megan Leffler, Health Studies

Olenka Mallqui, Chemistry

Dally Matos, Criminal Justice

Taylor Nason, Biology

Liana Ploskonka, Social Work

Evan Pron, Political Science and Business Finance

Esoa Ruffin, Political Science

Zachary Sandler, Music Industry

Subah Soni, Biology

Allison Turturro, Business Finance

Opening Remarks

DR. NANCY J. MEZEY, *Dean of The Honors School*

JESSICA BAALS (CE) | *Behavioral Outcomes of C-Use of Alcohol & Amphetamine in an Adolescent Rat Model for ADHD*

Chief Advisor: Dr. Dennis Rhoads

Non-medical use of amphetamine and other stimulants prescribed for treatment of attention deficit hyperactivity disorder (ADHD) peaks in adolescence and is of growing concern when combined with binge consumption of alcohol. Previous studies in our lab modeled chronic ethanol-amphetamine co-use in adolescent Long-Evans rats and provided evidence that amphetamine attenuates alcohol withdrawal symptoms in a manner that may lessen an individual's awareness of impending alcohol dependence. The current project was designed to test repeated ethanol-amphetamine co-use in adolescent Spontaneously Hypertensive Rats (SHR), an experimental model for study of ADHD. The interest is in determining if this brain will respond differently to the co-use of alcohol and amphetamine, considering amphetamine is therapeutic for an ADHD brain. SHR adolescents were randomly assigned at P33 to liquid diets corresponding to one of four treatment groups: control (no drug), ethanol, amphetamine, or ethanol combined with amphetamine. Rats were withdrawn from treatment groups at four different time points: 5 days, 12 days, 19 days, and 26 days and tested for alcohol withdrawal symptoms after 6-8 hours. Computer controlled activity chambers equipped with a dark box insert were used to assess general locomotor activity and anxiety-like behavior. Overall alcohol withdrawal severity was also evaluated. The SHR adolescents appeared resistant to progressive signs of alcohol withdrawal used to gauge alcohol dependency in rodents. They showed withdrawal-induced hypoactivity only at early time points and this was not attenuated by amphetamine co-administration. In contrast to alcohol alone, amphetamine co-administration increased anxiety-like behavior as exposure continued. Thus, as a model for ADHD, adolescent SHR showed altered responses to alcohol and to the combined administration of alcohol and amphetamine. The results speak to the importance of better understanding alcohol-stimulant interactions in an ADHD population in developing educational and preventive strategies.

CHLOE BARONE (CO) | *Swiping Right for Romance*

Chief Advisor: Professor Nicholas Messina

Now, more than ever, technology is prevalent in mainstream society; it affects the way we complete everyday tasks like talk to loved ones, shop, cook, and even find romantic partners. In particular, the advent of dating applications has changed the way individuals of all ages seek romantic relationships. This study explores how dating applications, like Tinder, changed the process of forming romantic relationships for college students, 18-24 years old. The question of this study is as follows: How have romantic relationships created through computer mediated communication (CMC) with dating apps, altered how the younger generation's (college students 18-24 years old) perception of romance has changed. The study was conducted among 18-24 years old college students at Monmouth University who anonymously participated in focus groups. Information gathered from the focus groups was analyzed through Uncertainty Reduction Theory, and Social Penetration theory. From the focus groups 3 major themes were uncovered: Rejection of monogamy on dating applications, dating apps and objectification, and disclosure and dating apps. In contrast to previous literature, participants found dating applications to reject the practice of monogamy on dating applications. Participants felt that dating applications encouraged having multiple relationships, with multiple partners, at one time. In terms of dating applications and objectification, participants felt that on several occasions users put value on sex, and appearance over personality. Participants received several sexually suggestive messages, which they felt objectified their body or appearance in some way. This objectification caused participants to feel uncomfortable in the online dating community. Finally, participants felt they were less likely to disclose personal information online in fear of exposing detailed information to strangers. In sum this study showed the negative effects that dating applications have on 18-24 year old college students, and how they negatively impact the practice of monogamy.

JARRET BIRD (AN) | *Monmouth University as an LGBTQ+ "Safe Space"*

Chief Advisor: Professor Brooke Nappi

This thesis paper sought to explore LGBTQ+ experiences at Monmouth University. Data was to be collected via surveys and interviews with LGBTQ+ students about their experiences and perceptions about the campus and its culture as well as from surveys of general class populations without requiring LGBTQ+ identification. This data was to be used to find an answer to how favorably Monmouth compares to what the literature has to say on concepts of safety and "safe spaces", what this would look like if not, and whether or not there is a working definition of "safe space" that functions as an objective or even end goal of inclusivity for LGBTQ+ students. However, the paper also seeks to move beyond a "safe/unsafe" binary evaluation. Rather than simply comparing the policies of Monmouth to recommendations and results from literature on the topic, this thesis paper originally sought to incorporate the experiences and opinions of students, with explicit attention paid to LGBTQ+ students.

VICTORIA M. CATTELONA (PY) | *Creating Citizens: Civic Education's Role in Encouraging Youth Voter Turnout*

Chief Advisor: Dr. Joseph Patten

Second Reader: Dr. Stephen Chapman

No national uniform curriculum for civics education exists in the United States. As states have historically established their own policies on other aspects of public education, civics education is similarly subject to variation among the states. The states also present varying levels of youth voter turnout in federal elections. Though multiple factors affect voter turnout among 18- to 24-year-olds, including structural barriers such as voter identification laws and social influences such as academic priorities, the vitality of mandatory civics education requirements for secondary schools can impact students' understanding of political processes and of their political rights within democratic government. This paper identifies states' civics education policies, in terms of mandatory civic exams for high school graduation and the civics courses' duration, and states' youth voter turnout in the 2016 presidential and 2018 midterm elections. Linear regression models and independent sample t-tests suggest a significant relationship between a civics exam requirement in secondary schools and youth voter turnout in the 2016 presidential election, indicating that more intensive civics education requirements result in higher levels of political engagement. Though such a relationship was not evident for the 2018 midterm election, the findings reinforce education's primary influence in determining electoral participation.

MCKENNA DOUGLASS (PY) | *Viewing Distressed Marine Life and Its Impact on Perceptions of Environmental Conscientiousness*

Chief Advisor: Dr. Lindsay Merkhham

Second Reader: Dr. Lisa Dinella

Each year thousands of marine animals die due to plastic pollution (Sigler, 2014). That is why it is more pressing than ever to find what motivates people into making eco-friendly changes. Past research has done an excellent job examining if internal traits like empathy are correlated with people's thoughts on animal welfare (Rothgerber & Miccan, 2014). Few studies have examined if presenting people with photographs of animals in distress influences their environmental conscientiousness. The present study is a multi-group experimental design with between and within-subject elements. Participants took a series of surveys measuring their environmental conscientiousness. Between surveys participants either viewed images of marine animals in distress or the ocean. Additionally, participants rated how impactful each individual image was to them. Vignettes were used to manipulate attitudes of helplessness or control over the situation. Participants also underwent a behavioral choice measure. The participants were recruited through Monmouth University SONA participation pool with 89 people participating. The findings of the present study could help determine how people direct public service announcements to encourage these behaviors. It also could be used to help direct donation campaigns because it could determine if the use of these images produce a strong emotional response.

KARALYN HOOVER (CO.PR) | *Social Media's Effect on Undergraduate Academics*

Chief Advisor: Dr. Deanna Shoemaker
Second Reader: Professor Mary Harris

Though many factors contribute to academic performance in college, the growth of social media within the past decade has become a cause for concern. Referred to as connectivism, there has been a recent push for the use of social media and other technologies to create new opportunities for people to learn and share information across the World Wide Web. Yet, little is known about the actual effects social media usage has on academic performance. Does the usage of social media platforms affect the academic performance of college students? And, if there is an impact, are there certain platforms that contribute the most positively or negatively to undergraduate academic performance? Online surveys were distributed to 231 undergraduate students above the age of 18 who had completed at least one full year of college. These surveys measured social media usage (volume and frequency) as well as academic performance through a self-reported evaluation of participants' academic experience. The results of this survey suggest that time spent using social media has no major impact on academic performance in college.

HUNTER HOSTAGE (BY.MEBP) | *Red Mangrove Propagule Dispersal*

Chief Advisor: Dr. Pedram Danashgar

In Mangrove ecosystems are incredibly valuable for The Bahamas because the services they provide which include coastal protection, nurseries for fish, and carbon storage. In The Bahamas, mangrove ecosystems are constantly under threat due to habitat destruction and coastal development. In order to develop better conservation and restoration strategies for mangrove ecosystems, we need a better understanding of their ecology. For example, our understanding is limited about the dispersal of red mangrove (*Rhizophora mangle*) propagules, the most common mangrove species in The Bahamas, which is important for understanding how mangrove ecosystems establish and persist. We explored how tide, mangrove density and location impact propagule dispersal. We simulated red mangrove dispersal by dropping 120 marked wood dowels throughout Paige Creek on Eleuthera (at the creek mouth, mid-creek, and upper creek) at high and low tide and in dense and sparse mangrove cover. Global Position System (GPS) coordinates as well as descriptions of the drop locations were recorded. After ten days (the approximate mean time a mangrove propagule typically floats according to the literature), we searched the creek to try and recover as many wood dowels as possible. For each one recovered, a description of the location where it was found as well the GPS coordinates were recorded. All coordinates were input into mapping software (ArcGIS) and dispersal distances were determined. Slightly more than half of dowels (54%) were recovered. Of the recovered, 95% were found within the creek system itself. On average, dowels dispersed greater than 150 meters, which is greater than what is reported in the literature for other mangrove species. We observed no difference in dispersal distance between high and low tide drops or in high or low density drop locations. Dispersal distance was greatest for dowels dropped mid-creek, however dispersal distance for dowels dropped in the upper creek may have been limited by the creek limestone end. Our results suggest that propagation of new mangrove individuals in a creek come directly from the creek itself rather from outside the creek. Propagules moving from creek to creek is likely rare. This is problematic as genetic diversity in creeks is likely low due to no gene flow leaving mangrove tidal creeks highly susceptible to collapse in the face of disease and disturbance. A strategy for aiding in mangrove tidal creek resilience would be to introduce propagules from other creeks to increase genetic diversity and thus decrease vulnerability to collapse.

ANGELIQUE ITHIER (CE) | *Synthesis of Silver Nanoparticles*

Chief Advisor: Dr. Tsanangurayi Tongesayi
Second Reader: Dr. Massimiliano Lamberto

The major goal of this project was to study Ag-NP with respect to their fundamental properties, environmental impacts and potential applications in environmental remediation and water treatment. In this experiment, chemical methods were used to create the NPs. NPs were created using Sodium Borohydride as a reducing agent, Sodium Citrate as a stabilizing agent, and Silver Nitrate as the silver source. Various analysis methods, such as UV-Vis spectroscopy, were used to test the stability and formation of the particles. To date, we have explored various reducing and stabilizing agents in the synthesis of Ag-NP, and we are in the process of characterizing the NP. The next research step is to test the antimicrobial and filtration capabilities by coating an agar plate with NPs and bacteria to test the growth and building a filtration apparatus to test the filtration capabilities of the NPs.

EVAN JEROLAMAN (CE) | *The Opioid Crisis: Treating Opioid Addiction with Opioids*

Chief Advisor: Dr. Joseph Patten
Second Reader: Dr. Stephen Chapman

The opioid crisis is one of the most destructive issues facing Americans every year, causing thousands of deaths and trauma throughout our communities for over two decades. With this crisis, we have implemented many different policy measures, treatment options, and research to figure out how to best treat and help victims of addiction. Throughout this paper, the history of the crisis, the chemical biology of addiction, and the statistics will be explored in order to create a framework for how we got into this crisis, how we are trying to get out of this crisis, and who exactly is affected by this crisis. By reviewing these details and by looking to find trends in policy, demographics, and opioid related overdoses, we can answer the question whether our current plan and treatment methods are working and save the lives of those addicted.

ANNA LAZUR (HE) | *Prevalence of Mental Illness in Elite Athletes*

Chief Advisor: Dr. Sasha Canan

Background: There is a strong stigma surrounding mental illness, and this stigma holds even more power in the athletic community, where an athlete's success is strongly influenced by their "mental toughness." Due to this stigma it is sometimes believed that elite athletes would have protection from mental illness and would have a lower prevalence than their non-athlete peers, but some previous research provides evidence that the prevalence rates of mental illness are actually comparable in both populations. Methods: A cross sectional survey was administered online to Monmouth University students, which included athletes and non-athletes. Students were selected using convenience sampling. Previously composed questionnaires including the PHQ-9, Depression Risk Assessment, and The Multidimensional Scale of Perceived Social Support were used to assess the participant's depressive symptoms. Results: There was no statistical difference between the athletes and non-athletes in regards to the prevalence of depressive symptoms, suicide ideation, eating disorders, and substance abuse. Conclusions: While previous research has had various findings, this study suggests that athletes are not protected from or more at risk for mental illness due to their physical activity. These results demonstrate the importance of having proper screening and treatment plans in place for elite athletes.

MEGAN LEFFLER (HE) | The Psychosocial Impact on Injured Athletes throughout their Recovery

Chief Advisor: Dr. Jennifer McGovern

There is research on the physical, psychological, and social impact on injured athletes, although it is not clear how all these aspects connect. This proposal established a holistic approach, by incorporating all of these aspects of health to understand how they all connect and affect one another during the recovery process. This proposal focused on the psychosocial reactions of intercollegiate student-athletes when dealing with a traumatic injury. The guiding research questions for this paper are what psychosocial responses does an athlete experience due to suffering from a traumatic injury? How do these reactions change throughout the phases of recovery: the time immediately after the injury occurred, the post-injury stage, the time of rehabilitation, and the return to activity stage? This proposal explored how individual personality traits, the phases of recovery, and social support systems all affect an athlete and how they change over time when dealing with a traumatic injury. I conducted semi-structured interviews for Division I, II, or III athletes that suffered from an injury. I will analyze any emerging themes to make conclusions.

OLENKA MALLQUI (CE) | *Impact of Microplastics on the Mobility, Speciation, and Toxicity of Heavy Metals (oid) in the Aquatic Environment*

Chief Advisor: Dr. Tsanangurayi Tongesayi
Second Reader: Dr. Massimiliano Lamberto

Microplastics are characterized as plastic particles with a diameter less than 5 mm. These particles can be categorized into different divisions; pieces of larger plastic eroded by sunlight and environmental stress, fibers from synthetic fabric or manufactured for specific purposes like exfoliating agents. Due to the popularity of personal care products, manufactured microbeads are the primary source of investigation for this research. Previous studies have found microplastics to be highly adsorbent to organic and inorganic molecules it comes in contact with. Microplastic particles enter the ocean, interacting with other chemicals found either in nature or as pollutants. In this experiment, 0.5 g of the extracted microbeads were left to soak in 5 mL of 4 ppm Pb solution for a period of time. Mixtures were filtered through and analyzed using the Atomic Absorption Spectrometer for changes in concentration. Across three different types of microbeads, adsorption of Lead was evident due to a decrease in the concentration of the solution. Pb solutions with microbeads were tested at different pH conditions (pH<7, pH=7, pH>7) to assess changes in adsorption. At pH<5, Pb adsorption is evident. At 512, adsorption cannot be assessed due to the presence of Pb(OH)₂ complexes. In highly basic solutions (pH>12), Pb(OH)₂ dissolves back into Pb⁻¹+2 and is able to adsorb back.

DALLY MATOS (CJ) | *Service Providers' Perspective of LGBTQ+ Victims and Law Enforcement Interactions*

Chief Advisor: Dr. Shannon Cunningham
Second Reader: Dr. Marie Mele-Thomas

This study examines the relationship between LGBTQ+ victims of intimate partner violence and law enforcement through the perspective of service providers. The study conducted interviews of service providers from both private and public agencies. The study set out to find if the relationship between LGBTQ+ community and law enforcement influences the rate of reporting crime/abuse, what are the barriers to reporting for LGBTQ+ victims and police training on LGBTQ+ victims. The findings suggest

TAYLOR NASON (BY) | *Analyzing the Expression Level of GABAA Receptor Genes in Gallus gallus Chick Tissues during Developmental Timepoints*

Chief Advisor: Dr. Cathryn Kubera

Fetal Alcohol Spectrum Disorders (FASD) are a class of neurological disorders that arise from overactivation of the GABAA receptors within neuronal cells due to an ethanol-induced environment during fetal development. Due to the varying subunit composition of these pentameric ionotropic receptors during different locations in the brain and timepoints during development, this experiment characterized the expression levels of 9 GABAA receptor subunits in an embryonic chick model. RNA was isolated from three brain tissue regions (cerebellum, forebrain, optic tectum). After, the RNA was converted to cDNA by reverse transcription and the gene transcripts were assessed using RT-qPCR with specifically designed primers for each GABA subunit type. Expression of the GABAA receptor genes were consistent throughout all brain tissue types and only showed a slight variation level of expression when it came to the different developmental timepoints of E7-E17. Based on the collection of all the data gathered it can be concluded that the 9 different GABA subunit genes are expressed throughout the chicken embryonic timeline. There is currently only standard data as to how their gene expression levels change as the embryo develops. Further research will need to be conducted in order to determine the distinct differences between the different subunit types. These subtle differences between the expression of each GABAA receptor subunit gene will point to a better understanding of the influence ethanol has on the developing fetus in the chick model. This evidence may hold meaning to why alcohol exposure during certain time periods in fetal development for humans prove to have more severe effects on the fetus, like FASD, than during other time periods during embryonic growth.

LIANA PLOSKONKA (SW) | *Smartphones and Social Skills: College Freshmen*

Chief Advisor: Dr. Sanjana Ragudaran
Second Reader: Dr. Cory Cummings

For college students in the 21st century, smartphones have become a necessity. Smartphones offer college students ways to stay connected with people, through texting and social media. However, it is unknown how these devices can negatively affect the social skills needed to succeed in college, such as working cooperatively or communicating with professors. This study looks at the effects using smartphones has on these social skills.

EVAN PRON (PS/BUBF) | *Predicting the United States' Next Economic Downturn: And the States Most Greatly Affected*

Chief Advisor: Dr. Joseph Patten
Second Reader: Dr. Stephen Chapman

The business cycle depicts the steady path that economies generally follow, rising and falling, peaking then lowering. The United States has experienced some very high peaks over the course of its history; however it has also endured some extreme lows. The great depression, which followed the 1920s and the recession of 2008 are notably the most well-known economic downfalls that the people of the United States have witnessed. While it is natural for economies to rise and fall, extreme lows such as these are unnatural and brought about by some hidden root cause. The United States will undoubtedly experience another economic setback at some point in the future. This paper identifies the country's massive unfunded pension liability as the root cause of the next notable economic downturn in the United States and the states most significantly affected.

ESOSA RUFFIN (PS) | *Impact of State and Federal Educational Opportunity Programs: Why Their Existence and Expansion are Critical*

Chief Advisor: Dr. Stephen Chapman

The United States is one of the wealthiest countries in the world. Yet, less wealthy countries have more holistic and equitable education systems. One of the biggest pitfalls in the United States is the disparities in access to higher education. These disparities are inextricably linked to the concept of white privilege. Since the founding of the country, there has always been a category of 'other' to separate those who are different on the basis of race, religion, physical ability, economic status, etc. This is extremely problematic as it creates a gap in resources ultimately needed for individuals to become self-sufficient active citizens.

In order to remedy this disparity, the United States has crafted Educational Opportunity Programs (EOPs) both on a state and federal level. EOPs exist in order to make higher education more accessible to minority, low-income, and first-generation college students. College access and degree attainment is imperative given the linkage between higher income and quality of life for college graduates. EOPs offer counseling, academic and financial assistance to marginalized students in order to provide them better access to college, while also working to ensure successful degree completion. State-level programs vary in their programmatic functions as do federal level programs. One of the largest EOP's in the United States' are the federal TRIO (TRIO) programs.

By means of quantitative analysis on New Jersey's state EOPs and exploratory research of the federal TRIO programs, a key finding is the consistency in effectiveness of these programs as it relates to student graduate rates. This consistency may serve as an indicator to the significance of EOPs very existence and the tremendous need for their expansion, both by increased funding and number of students served.

ZACHARY SANDLER (MUMI) | *The Creation of Clark Westfield: What Drives a Musician to Create a Stage Persona?*

Chief Advisor: Dr. Nancy Mezey
Second Reader: Dr. Stuart Rosenberg

Perhaps one of the most admirable and respected positions to be in for a musician is on stage in front of thousands of people singing and talking about what you love. Right there on that stage, the musician is in control. They have the power and the choice to belt out rock anthems or to slow things down with a ballad. They can choose how to dress themselves, what words to use, how to curate the music, and most important - how to represent themselves. I have been a professional in the music industry since my freshman year of high school as a performer, tour manager and on musical tours. Drawing on my first-hand knowledge and experience, as well as scholarly research, this honors capstone project explores the question: What drives a musician to create a stage persona? I have uncovered four bottom-line reasons as to why artists create this person, which are to create more marketability and ultimately profitability, to better reflect their music and relate to their fan base, to live out a life-long fantasy, and/or to represent their hometown, ethnic background or important figure in their life. I have also created the persona of Clark Westfield, my own version of the 'ideal' stage persona, which exemplifies the concept of an artist that creates a persona in order to capitalize on marketability and the overall profitability of the persona's brand.

SUBAH SONI (BY) | *The Effects of Kumquat Essential Oil on the Proliferation and Viability of Cancer Cell Lines and Normal Human Fibroblast Cells*

Chief Advisor: Dr. Dorothy Lobo
Second Reader: Dr. James Mack

Kumquats are small citrus fruits produced by the *Fortunella japonica* tree. In addition to its aroma, kumquat essential oil may have anti-proliferative effects, however research on the effects of kumquat essential oil on human cell lines is limited. The goal of this project is to treat cancer cell lines with kumquat essential oil at different concentrations and ascertain the effects on cell proliferation. To conduct this study, HT-1080 fibrosarcoma cells and HeLa cervical adenocarcinoma cells were grown on 24-well plates and sub-confluent cultures were treated with varying concentrations of kumquat essential oil for 24 hrs. For comparison, the proliferation of normal human fibroblasts (CUA-4), which display contact inhibition, were also tested after treatment with the oil. Proliferation was quantified by direct cell counting utilizing the trypan blue dye exclusion assay, and viability was also measured using a 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide (MTT) assay. As the concentration of kumquat essential oil increases, proliferation and viability decreased among the cancer cell lines as well as the normal cell line. To determine if the decreased cell number is the result of apoptosis, poly-ADP-ribose polymerase, PARP cleavage assays were performed along with western blot assays to detect PARP cleavage. Western blots were also used to detect MAP kinase proteins that may be involved in the stress response.

ALLISON TURTURRO (BUBF) | *Radicalization: The Association Between Personal Relationships and Joining Terrorist Organizations*

Chief Advisor: Dr. Brian Lockwood
Second Reader: Dr. John Comiskey

Terrorism is a major threat to our nation today. In order to prevent future terrorist attacks, it is imperative to understand why individuals become radicalized; that is, why they join a terrorist organization or cause. There have been numerous terrorism-related incidents since September 11, 2001 that have caused major destruction and death to our nation. One potential factor of radicalization that has not yet been empirically examined is the impact of personal relationships on the likelihood of becoming radicalized. In that vein, Social Identity Theory can provide insight regarding why and how some individuals radicalize based on these relationships. In order to examine this potential relationship, data from the National Consortium for the Study of Terrorism And Response to Terrorism (START) will be analyzed by conducting inferential bivariate statistical tests. The importance of this research is to explore how individuals become radicalized in nature through a social identity theory lens. The independent variables of this study are the absence/presence of a parent, close/not close family, presence/lack of a romantic relationship, and/or the presence/lack of platonic relationship. The dependent variable will be if these factors influence how an individual becomes radicalized in nature: actively recruited or self-recruited.

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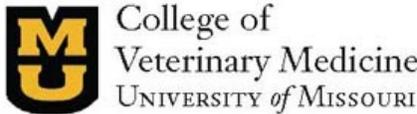
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