

Crime and Punishment



McNair Scholars Research Journal
Summer 2022



McNair

Scholars Program

MERCY COLLEGE, DOBBS FERRY, NY

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The Ronald E. McNair Post-Baccalaureate Achievement Program

College students who are considering study beyond the baccalaureate level can realize their dreams through the McNair Scholars Program at Mercy college.

The program was established by the United States Department of Education in 1989 and named for astronaut and Challenger crew member physicist, Dr. Ronald E. McNair.

The Mercy College McNair Scholars Program begun in 1995 and targets low-income, first-generation students, and those who are from groups under-represented in graduate education.

The purpose of the program is to provide enriching experiences that prepare eligible students for doctoral study.

Faculty and Staff

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Dr. Mary Oleksowicz
Program Coordinator

Dr. Cynthia Walley
Core Faculty

Prof. Terrence Calistro
Core Faculty

Prof. Halley Collazo
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Geetha Surendran, Ph.D.
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Sanju Vaidya, Ph.D.
School of Liberal Arts

DR. CYNTHIA WALLEY - CORE FACULTY



Dr. Cynthia Theresa Walley is an educator, scholar, and counselor. As an educator, she believes that all students are capable of exceptional things when there are high expectations, support, and humor guiding them along the way. A student recently wrote to her stating "...Thank you for pushing us the way that you do and caring for our success." As a scholar, she is dedicated to the profession and is a recent recipient of the AAUW Community Action Grant for the project titled Counselors Advocating for STEM (CAS). This professional development workshop is for K-12 Westchester/Bronx school counselors to increase their knowledge, skills, and practice to expose, inform, and motivate underrepresented students and female students regarding STEM opportunities and participation. As a counselor, she is committed to professional service and is currently President Elect for the New York State School Counselor Association (NYSSCA). She is committed to uniting, representing, and supporting school counselors in New York State as they provide academic, socioemotional, and college/career services for all K-12 students.



PROFESSOR TERRENCE CALISTRO - CORE FACULTY

Since 2018, Terrence Antonio Calistro Jr. has been teaching faculty for the McNair Scholar Program at Mercy College. Currently, Terrence works as both an adjunct professor and learning support facilitator for Mercy College. Courses Terrence teaches include Statistics of the Social and Behavior Sciences, Computer Science of the Social and Behavior Sciences, Introduction to Psychology, and the McNair Research Design and Statistics. Aside from teaching, Terrence also works as a freelance data analyst.

DR. KIMBERLY RAPOZA - PROGRAM DIRECTOR



Kimberly A. Rapoza, PhD is an Associate Professor of psychology in the School of Social and Behavioral Sciences at Mercy College. She has a steady stream of authoring or co-authoring peer-reviewed articles, edited chapters, and presentations on family violence and health. As PI on institutional grants, she has led the Ronald E. McNair program at the college for nine years, supported by a renewed grant from the U.S. Department of Education, and pursued her research on childhood maltreatment and health, under an NIH-RIMI subproject, and multiple NIH-EARDA awards. Her most current research is funded by NIDILRR and she seeks to understand, with her two co-PIs, how patient-provider discordance alters the health and healthcare experience of teens with Lupus. She has been active in professional associations, including the American Psychological Association and Association of Psychological Sciences.



DR. MARY OLEKSOWICZ - COORDINATOR

In addition to her acupuncture practice, Mary Oleksowicz teaches Health Science courses and traditional Chinese Medical theory as an adjunct faculty member at Pacific College of Oriental Medicine and Kaplan University. A Mercy College and McNair Scholar alumnae, Mary fully understands the commitment necessary to juggle family, work, and school. It is this "can-do" message that Mary tries to convey to current and prospective students.

Two-thousand and twenty-two marks the twenty-seventh year of the Ronald E. McNair Post-Baccalaureate Achievement Program at Mercy College. Named after Ronald Ervin McNair, the second African American to fly in space, this federal grant serves as a living legacy to Dr. McNair. Dr. McNair was born and raised in rural South Carolina, graduated magna cum laude with a BS degree in physics from North Carolina A&T State University in Greensboro, and in 1976, earned his Ph.D. degree in physics from MIT. He was one of 35 applicants selected from among thousands for NASA's space shuttle program. His first space flight was in 1984 as the mission specialist aboard the space shuttle Challenger. Dr. McNair's second mission in 1986 ended tragically when the Challenger exploded seconds after take-off.

Dr. McNair was also a loving husband, son and brother, devoted father, accomplished jazz musician, and karate expert. In 1989, the United States Congress, honoring his memory, his achievements and promoting his inspiration, established the Post-Baccalaureate Achievement Program to encourage undergraduates who are low-income, first-generation or members of under-represented groups in higher education to pursue the path leading to the doctoral degree.

Since 1995, the McNair Scholars Program at Mercy College has provided research experiences and other scholarly activities to undergraduates who meet the program criteria and aspire to continue their education in graduate school. Each Mercy McNair Scholar makes an individual pledge of time and effort to develop the skills necessary for success in graduate school while working toward his or her bachelor's degree, and for some, holding outside employment and supporting families. The depth of their determination can be measured by the number who have presented their research papers at conferences and universities across the country and continued their education toward the goal of earning Master's and doctoral degrees.

The McNair faculty chose crime and punishment as the topic for the 2022 cohort of new McNair Scholars. The New Scholars closely examined issues identified by the McNair faculty as central to this current and ongoing issue in US society. Each New Scholar selected a topic from the list to work on during the summer. They joined the Continuing Scholars, a group of more experienced students, who continued working on independent research projects, with their faculty mentors.

The summer program invited Dr. Marina Soroichinski, a renowned scholar working in the area of behavioral analysis of victimization patterns in violent and sexual crimes, as our keynote speaker. This year the McNair program was able to resume travel and field trips in support of our scholarship. Scholars traveled to Philadelphia to tour the city's colonial landmarks related to a long history of social justice struggles, the Eastern State Penitentiary Museum, and were hosted by the Institute for Community Justice, a non-profit organization providing re-entry programs, support, and services for formerly incarcerated individuals.

We also did a deep dive into personal statements, financial literacy and optimizing habit formation. CUNY hosted us at the Graduate Center, where Scholars could learn more about PhD programs and admissions. The Stavros Niarchos (Mid-Town) Manhattan library also conducted research sessions and provided research database access. There were also many meetings with Prof. Haley Collazo, Prof. Susan Gaskin-Noel, Prof. Robert McKenna and Prof. Brian Levine our program librarians and writing specialists, who enable the Scholars to write and present their best work. We also made time for a McNair Scholars night out on La Barca Cantina. Tacos on a boat are a thing. Who knew?

Congratulations to our Scholars and Mentors on a successful year. Many thanks to our Advisory Board, the Mercy College Administration and faculty, and Associate Provost Dr. Saul Fisher. In recognition of their time and devotion to the Scholars, a huge thanks go out to summer program faculty Prof. Terrence Calistro and Dr. Cynthia Walley. Special thanks to Dr. Mary Oleksowicz, program coordinator, who keeps the program running smoothly and provides tireless support to the Scholars and faculty. Last but not least, a heartfelt thank you to graduate assistants RJ Bradley-Ortiz and Areli Prado—our alumni that came back to the summer program to “pay it forward”.

McNair New Scholar



Abstract by: Jadelyn Alers

McNair Faculty Mentor: Dr. Kimberly Rapoza

A Push for Improvements in Correctional Staff Training

Abstract

In 1829, the first penitentiary held individuals with the intention to improve their behavior and return to society-- this is called rehabilitation. The concept of rehabilitation for those incarcerated has been suppressed by the implementation of laws that prioritize punishment, control, and power. The cycle of prison is a popular topic because a countless amount of research concludes that the United State prison system is overpopulated with no foreseeable change and recidivism, the inclination for former inmates to recommit, is a big factor in this overpopulation. The reality is that a large number of convicted individuals are serving time for offenses that include modifiable behaviors. Research finds common setbacks in prisoners' histories that contribute to their pathway to incarceration such as mental illness, substance use, and a family history of offenders. These factors, after imprisonment, are still prominent and more severe in some cases, which may cause a person to continue committing crimes. The purpose of this research is to push for coordination between correctional officer (CO) training using updated data on incarcerated people regarding mental health issues and life after release. While plenty of prison reforms are needed to fully realign with the goal of rehabilitation in prison, it is proactive to begin making changes to those departments in direct contact with the people incarcerated. Implementing personal assessments, more mental health training, and a “life-coach” aspect to Correctional Officer training can assist a person after release and reduce recidivism.

Biography

Jadelyn Alers, Bronx born and raised, is the youngest of three daughters born to Puerto Rican parents. Jadelyn, preferably called Jade, was always academically gifted as she brought home exceptional report cards every year. Jade considered college for the first time when she was in the 5th grade. While her goals and aspirations have shifted since then, Jade knew college was the right choice because it was where she unlocked her passion for serving others. At Mercy College, Jade brought her friendly, positive personality to the residential life department when she became a resident assistant (RA) in 2020. Now entering her third year as an RA, Jade expresses her fulfillment in making experiences for others more pleasant. Jade often says, “If I can be a breath of fresh air to someone or inspire them to be better for themselves, I’ve succeeded at my job.” After securing her bachelor's degree in Health Promotions in 2023, Jade aims to obtain a secondary degree and license in radiology. Jade aspires to become an ultrasound technician-- a smiling medical professional appointed to assist the public with their medicinal findings. Jade encourages everyone, no matter their age, to be fearless in exploring life beyond what they were born into; to be open-minded and travel as much as possible. As an avid reader, Jade often relates her life experiences to a book. She says, “My life is my story. I am the only author.”

McNair New Scholar



Abstract by: Amarachi Anyalewechi

McNair Faculty Mentor: Dr. Kimberly Rapoza

Racial Discrepancies in Incarceration in the U.S.

Abstract

The U.S. criminal justice system has successfully designed systemic racism into our lives through laws and policies like “Stop and frisk” or harsh drug conviction policies, which have continuously harmed black families. Today, black people experience oppression and racial injustices on multiple levels within the criminal justice system. According to the criminal justice facts sheet, the prison population has quadrupled since 1980 (NAACP, 2014). Even though persons of color make up most of this population, African Americans are locked up at six times the rate of whites. This injustice begins in the school system. This paper describes in detail how school policies result in the mass incarceration of black people through the school-to-prison pipeline. Many scholars have suggested that present-day regimes of school discipline criminalize student misbehavior in ways that mirror the criminal justice system. This paper elaborates on the risk factors for incarceration and the experience of school-based punishment for African American children. It also describes and defines the school-to-prison pipeline and how it has played a significant role in the mass incarceration of black people. The racial disparities in discipline affecting African American students are touched on, and the policies and steps to cut off the school-to-prison pipeline are extensively elaborated on. It is also essential to address the spiraling school-to-prison pipelines that result in higher arrest rates in schools. This paper highlights how schools should organize around the needs of black students by setting up a positive school climate, which is extremely important. Also, federal and state laws can put in place policies, some of which are mentioned above, that will dismantle the school-to-prison pipeline.

Biography

Amarachi Anyalewechi is a Nigerian American, born and raised in Nigeria (West Africa), and currently living in Queens, NY. She is a first-born daughter and a first-generation student. Amarachi started in Liberal Arts at Nassau Community College before coming to Mercy College after being accepted into the nursing program in the spring of 2020. She will graduate from Mercy College by Fall 2023.

Outside of school, she is a certified nursing assistant (CNA) working in a nursing home. She started working as a CNA a year after coming to the United States in 2015 and slowly took an interest in nursing as a long-term career. Her desire to be a registered nurse is not only to provide care but to be able to advocate for her patients when they are not able to do so for themselves. With experience in healthcare and stories she has heard from patients who were predominantly black and brown women, she is inspired to not only gain knowledge but learn how to care for her patients, especially those who are underrepresented. And that is why going into a labor and delivery specialty after nursing school is essential to her because she will have the ability to advocate for pregnant women of color whose voices aren't always heard.

Amarachi was accepted as a member of the Phi Theta Kappa honor society due to her outstanding GPA and is currently a part of the McNair Scholar Program. She looks forward to gaining more clinical experience in school, traveling the world as a travel nurse, and eventually settling down as an L&D nurse practitioner. She hopes that she will be able to impact and give joy to those around her and that Yahweh (God) will guide her throughout her journey.

McNair New Scholar



Abstract by: Mohammad Azhar

McNair Faculty Mentor: Prof. Terrence Calistro

Disparities in Correctional Medicine and Their Effects on Inmate Life

Abstract

The purpose of this paper is to explore disparities within correctional medicine and examine the many health problems incarcerated individuals face. Institutionalization has become a huge problem in the United States. About 2 million people are in the United States' prisons and jails—a 500% increase over the last 40 years. The United States has the highest incarcerated population worldwide. Much of the increase in the prisoner census results from the "War on Drugs" and the United States' failure to treat addiction and mental illness as medical conditions. Researchers have shown that prison population growth is associated with overcrowding and unhygienic prison living conditions. Due to the increased inmate population, infectious diseases are being spread within prisons at greater rates. Compared with the general public, newly incarcerated inmates have an increased prevalence of infection toward diseases such as human immunodeficiency virus, hepatitis B virus infection, hepatitis C virus infection, etc. The probability of transmission of potentially pathogenic organisms is increased in these settings due to overcrowding, delays in medical treatment, and lack of access to sanitary material. In addition, there are systematic issues regarding the mental health of inmates. Thousands of inmates in the correctional system suffer from mental health issues. Forty percent of federal inmates, 49% of state inmates, and 60% of jail inmates suffer from mental health issues.

Biography

Mohammad is a Pakistani-American first-generation college student attending Mercy College. He is the youngest of 3 siblings in his family. Mohammad grew up in Queens, New York, and attended private school most of his early life. Growing up, Mohammad had a huge passion for science and often found himself reading up chemistry and biology textbooks he would find laying around in his house. This passion for science led him to the healthcare field, where he became fascinated by the complexity and intricacy of the human body. This fascination sparked the zeal in him to pursue a career as a Physician Assistant and a researcher in the medical field. Mohammad is currently a junior at Mercy and has thoroughly enjoyed his time at the college. Mohammad is pursuing a degree in Health Sciences and during his time at the Bronx campus, Mohammad worked hard to bring more Health Science clubs to the campus. Mohammad is the President and founder of the new Healthcare Club on the Bronx campus. For his efforts in bringing more club activities to the Bronx campus, Mohammad was nominated for the Emerging Leader award in the 2022 Mercy College Mavie Awards.

McNair New Scholars



Abstract by: Morcey Felix

McNair Faculty Mentor: Dr. Cynthia Walley

In a Box (Inmate Behavior Management): The Adverse Effects of Solitary Confinement in the United States?

Abstract

What are the psychological and physical adverse effects of solitary confinement? Exploring this question and analyzing how solitary confinement differs in race and gender is imperative to understand. The literature demonstrates that most inmates who experience solitary confinement have increased mental and physical complications such as anxiety, depression, anger, insomnia, paranoia, cognitive disturbances, and lost identity. Physically, inmates confined in isolation are more likely to suffer from premature death than those inmates who were never assigned to solitary confinement. Furthermore, racial and gender disparities reveal that men were sent to solitary confinement more than women, and Black men were sent at higher rates than their White and Latino counterparts. While solitary confinement is a universal inmate behavior management tool used throughout correctional institutions, it does not prevent transgressions among inmates. In fact, solitary confinement may contribute to inmate regression. It is essential to acknowledge that inmate isolation does not impede recidivism. Therefore, solitary confinement is an unsuccessful behavioral management tool and has crippled inmates' physical and mental health rather than correct behavior.

Biography

" I got a greater purpose. God put something in my heart to get across, and that's what I'm going to focus on, using my voice as an instrument and doing what needs to be done" - Kendrick Lamar

Morcey Felix was born and raised in the South Bronx. Her mother is of Puerto Rican descent, and her father is African American. Growing up in an impoverished neighborhood and failing school system, she has always known she could overcome her circumstances.

Her mother's death when she was 20, and the birth of her son led to her finding solitude in writing, photography, and poetry. Morcey became a published poet in 2020 and is finishing up her first book titled "Saving Him." She headlined performances throughout the five boroughs and had her photography displayed in the Bronx Art Space Gallery. From her trials and tribulations early on in life, she became an avid commentator and protestor against social injustices. She wants to find a way to help children and families who came from similar backgrounds as she did and started her career in education. Morcey works as a Pre-K teacher in a charter school in Harlem. She is also the Co-chair of the Family Leadership Council at her son's school, where she facilitates community functions and workshops. However, she wanted to expand her education and decided to go back to school to continue her academic journey.

As a rising senior at Mercy College, Morcey is looking forward to earning her bachelor's and master's degrees in sociology. She hopes to liberate impoverished communities and motivate children and families. Morcey has been on the Dean's list several times and is a McNair Scholar, in which she will conduct research on inmate behavior management.

McNair New Scholar



Abstract by: Angelica Huerta

McNair Faculty Mentor: Dr. Cynthia Walley

The Impact Animal Assisted Therapy has on Inmates

Abstract

Animal-assisted therapy is a broad term that diversely uses animals of various species to benefit humans' physical, emotional, and mental health. Studies have indicated that animal-assisted interventions in a prison setting ameliorate incarceration's consequences, such as depression, anxiety, and difficulty adapting to everyday life. Most animal-assisted programs commonly use dogs due to their sociability and easily trainable nature. By introducing animal-assisted intervention, inmates have improved their mental health, social skills, academic skills, and emotional control. In addition to being beneficial to inmates, animal-assisted therapy positively influences those around the participants and animals. However, there are several concerns, such as the lack of funding, animal welfare, and lack of randomization assignment compared to selected participants in the studies to determine if services and outcomes are substantial enough to be generalized to all prisons. Despite concerns, studies have shown that inmates benefit from this physiologically. Through understanding the benefits, issues, and therapeutic value, improvements could be made in implementing more animal-assisted interventions in a prison setting, thus preventing recidivism.

Biography

Angelica Huerta is the youngest of three and will be the first in her family to earn a bachelor's degree. At a very young age, she was exposed to various species of animals, from the usual house pets to exotic lizards, birds, and fishes. She was always interested in science and math, so it seemed fitting to combine her interests into one. Before Mercy College, Angelica attended two other colleges and received her associate degree in General Science. Her interest in veterinary medicine developed into love and passion when she cared for a pregnant dog while visiting her family in Mexico. She witnessed this malnourished gray street dog transform into a playful, white-furred pooch with four beautiful puppies; this encouraged her to continue to pursue a future working with animals.

Upon graduation, she will obtain her license as a veterinary technologist. During her time in the Veterinary Technology program, she has met several veterinarians of different specialties. The one that interested her the most was a senior veterinary pathologist, Kenneth Conley. Through Dr. Conley, Angelica learned that studying the dead is essential to taking care of the living. Therefore, she is interested in pursuing an advanced degree focusing on pathology. With the extra knowledge of pathology, she could utilize this to aid in the prevention of the transmission of diseases.

McNair New Scholar



Abstract by: Samantha Jaghroo

McNair Faculty Mentor: Dr. Cynthia Walley

Humanizing Inmate Behavior Management

Abstract

Inmate behavior management policies (BMPs) have been utilized in correctional facilities and their functionality in order to reduce deviant behavior and misconduct. Exploring the importance of employing humane methods of inmate control to ensure the security and safety of the convicts and prison guards is needed. BMP methods including solitary confinement and physical force have been criticized for their histories of neglect and abuse towards inmates. Policies such as inmate classification, recreational, and educational programs have been shown to act as possible solutions to creating a safe environment for the workers and residents.

Biography

Growing up in a single-family household with no siblings, Samantha often escaped into her thoughts to ponder reality and the constructs of the human mind. This trivial way to pass time began her fascination with the vast field of psychology. Samantha had developed a passion for the subject and wanted to find a career that would allow her to continue to feed her curiosity. She was particularly interested in behavioral abnormalities that are apparent in many criminals and troubled individuals. Upon entering college, Samantha was certain that she would become a psychology major and minor in criminal justice in order to develop her knowledge in these fields. She wanted to achieve great things and get the most out of her short time at Mercy. After completing and passing eight Advanced Placement classes while in high school, Samantha was able to transfer enough credits to give her the opportunity to graduate an entire semester early. Along with this great achievement, Samantha has also been endowed with the honor of being a Mercy Scholar, a selective program offered by the school. After she gains her Bachelor's degree, Samantha hopes to continue her education in graduate school where she will major in clinical psychology with a specialization in forensic psychology.

McNair New Scholar



Abstract by: Khaiylah Johnson-Bustamante

McNair Faculty Mentor: Dr. Cynthia Walley

Burning Money and Minds: A review of the Literature on Financial and Mental-Illness Motivated Arson

Abstract

Arson is unique compared to other crimes. Arson occurs less, is extremely difficult to investigate, and causes extreme damage. A mathematical model to predict recidivism would be beneficial to help limit future arsons because predicting an initial offense is far beyond the scope of current research abilities. Based on the literature involving financially and mental-illness motivated arson, a beneficial allocation of resources would be improving the literature on both to begin mathematical model development. The literature on mental-illness motivated arson is difficult to compare for many reasons. The studies vary in ways that cause many caveats limiting the ability for proper comparison. Arson investigation and research require more exploration and resources; however, with this, it can improve the ability to predict repeated behavior. There needs to be a standardization of the research on arson. None of the two most predominant forms of arson have enough research to create a mathematical model to predict recidivism. While mental-illness-motivated arson is increasing, the paucity of research regarding financially motivated arson does not take an individualized approach. Future research should be more individualized focusing on those who commit these types of arson.

Biography

Having an extreme passion for math and fashion is one way to describe Khaiylah Johnson Bustamante or The Fashionable Mathematician. Khaiylah is a mathematics and computer science double major at Mercy College, scholar, and founder of the t-shirt line TeeFM. She wishes to combine her love for mathematics and fashion to achieve astronomical career goals.

Her first goal is to create a mathematical design language, of fashion, based in multi-variate calculus and three-dimensional geometry. This desire came about while Khaiylah was studying theoretical physics at Albion College. It was not the subject she liked, but the ability to use mathematics as a vehicle to complete a larger task. After discussing this issue with Dr. David Reimann, a professor at Albion and mathematical artist, she realized her dream. A dream of designing dresses from a system of equations.

After leaving Albion, Khaiylah became a mathematics tutor and started her own tutoring business. Understanding the constraints of the education system, she was able to use creative ways to interact with the curriculum. This was the impetus for her second goal of cultivating educational materials that change the way today's learners interact with knowledge. Although Khaiylah has experienced difficulties, her hard work and perseverance are what drive and motivate her to be The Fashionable Mathematician, pursuing her wildest dreams.

Today, Khaiylah keeps those goals at the forefront of her mind while attending Mercy College. She spends her spare time doing research with the McNair Scholars program and Summer Research Institute and designing clothes for her t-shirt line TeeFM. She will graduate in the spring of 2024 and continue to a doctoral program in mathematics. No matter the obstacle, this final goal has kept Khaiylah going. One day she will be Dr. Johnson Bustamante: The Fashionable Mathematician, research and curriculum developer extraordinaire.

McNair New Scholar



Abstract by: Emily Lokenauth

McNair Faculty Mentor: Dr. Cynthia Walley

The Role of Communication Disorders Within the Juvenile System

Abstract

Juvenile systems fail to properly assess and treat youth offenders for communication disorders. Adolescents within the juvenile system are more likely to struggle with communication and cognitive disorders. Youth offenders do not receive proper treatment and there is a lack of understanding regarding those that struggle with these disorders. The lack of treatment and constant misconceptions may lead to their behaviors being unfairly judged and misinterpreted. Adolescents within the system show lower cognitive and language skills than their non-offending peers and the lack of proper treatment stunts their developmental growth. Those with cognitive or communication disorders can be at increased risk for punishment due to neglect within the system. At times authorities may misinterpret their difficulties with problem-solving, expressive, and receptive language, and executive functioning. These constant misinterpretations within the system increase rates of unfair treatment and judgment. Because juvenile offenders lack the necessary resources to thrive as individuals, the system needs to evaluate and assist those incarcerated by administering proper treatment and resources. The system's goal should focus on rehabilitating and preparing these individuals academically and mentally for when they are able to reenter the world.

Biography

Emily is the middle child of three, in which her younger sibling has autism. Emily saw the effects that being nonverbal had on her brother and family. She realized how often we used our communication skills in life and decided that she wanted to aid in treating and supporting children with communication and cognitive barriers. Her passion for helping others is still expanding as she faces new experiences.

Emily currently works as a Registered Behavior Technician in which she works with several autistic and nonverbal children. Seeing her brother struggle growing up and her work as an RBT has driven her curiosity about communication and its role in our daily lives. It was this interest that has driven her to major in communication disorders. She hopes to one day enter NYU's graduate program to earn her master's and become a speech pathologist. She is now highly motivated and performs to her fullest potential using adaptability and leadership skills. With this direction, Emily is entering her junior year at Mercy College, where she has made the Dean's list each semester and maintained over a 3.5 GPA. Emily continues to strive for academic greatness while prioritizing the needs of the community she wants to help.

McNair New Scholar



Abstract by: Rayon Mantoos

McNair Faculty Mentor: Dr. Kimberly Rapoza

Exploring the Prevalent Factors Associated with Race and Gender Disparities as it Relates to Sentencing in the American Justice System

Abstract

The United States has the world's highest imprisonment rate and the largest number of persons under correctional control, including probation and parole. The scope of the American criminal justice system is unparalleled not only globally, but also historically. This apparatus is also racist. African Americans, Latinos, and other persons of color outnumber whites in American jails and prisons. Every non-white group gets imprisoned at a considerably higher rate than whites. Notably, while the extent of today's criminal justice system is unsurpassed, there are significant racial inequities in sentencing in the criminal justice system. People of color have longer sentences than whites; to understand why this is, we must deeply dive into the criminal justice system's policies and how sentencing is handled while recommending changes to ensure that everyone is treated fairly during sentencing. After examining various studies on racial sentencing in the criminal justice system, suggestions were made to reduce sentencing inequalities in the black and brown communities around the United States. Recommendations such as changes in sentencing policies, specifically minimum sentencing laws, should be amended. Secondly, those involved in the criminal justice system, whether they are judges or law enforcement, should be educated on diversity, prejudices, and bias. Lastly, the establishment of a sentencing commission is needed in each state to look at sentencing guidelines to ensure it is fair for everyone.

Biography

Rayon Orlando Mantoos was born and raised in Guyana. In 2018, he moved to the United States of America in search of better opportunities. He was the first in his family to complete high school and the first to attend college. In 2019, he enrolled at the School of Business at Mercy College and is currently pursuing a bachelor's degree in marketing. Rayon is passionate about his academic success, which earned him a spot in the 2022 McNair scholar program. Throughout his academic journey, he has received several academic awards and has been placed on the Dean's list several times. He volunteers with a non-profit organization whose mission is to help prevent suicide and bring awareness to domestic violence. Rayon's work experience exposed him to social and economic development, which triggered his desire and passion for acquiring higher education. His morals are grounded in his roots and culture, and the many struggles life has brought him. Coming from a place of limited resources, he embodied the true American dream. He plans to complete his undergraduate degree, go onto grad school, and obtain his MBA. Rayon is passionate about social justice and advocates for equality for all. His vision is to acquire stability and the true liberation of self-awareness. He hopes to expand his horizon and share it with those willing to learn. He believes that those who want great things must make great sacrifices.

McNair New Scholar



Abstract by: Felipe Marquez

McNair Faculty Mentor: Prof. Terrence Calistro

Crimes of Nature

Abstract

Wildlife crime is a worldwide organized crime that negatively impacts the world environment and judicial transgressions, and this paper's purpose will bring to light the many consequences leaving this crime unchecked will cause. Many animal and plant species on the endangered list have been placed there due to the ease of poaching them. This causes our planet biodiversity loss, affecting the local and international environmental web. The deforestation of large sources of greenery without having renewable practices in place causes the loss of habitat for none poaching animals as well. In addition to environmental damages, wildlife crimes can also be associated with other illegal activities such as drug trade, trafficking, and terrorism. The need to stop wildlife crime is becoming more and more necessary to preserve the planet's health. Forensic science methods can be used to combat wildlife crime by identifying and isolating facilitators of wildlife crime.

Biography

Felipe Marquez was born in White Plains, raised in Queens, then periodically moved around New York State. He is the youngest of two children in a family of Columbians who immigrated to the United States to look for new opportunities. While growing up, Felipe often had difficulties learning English, making it hard to communicate properly and learn effectively in school. But, with everlasting support from his family, he successfully passed this language barrier and was able to begin excelling in his academics. One specific subject area that's always captured his attention was the science field. Discovering the principles of the scientific method and learning how they're used to discover how our world works always fascinated him. This interest eventually progressed to using this knowledge to help find ways to give back to our world, from his constant exposure to the wonders of nature on a trip to Columbia and amazing rainforests.

This passion led him to attend Mercy College due to its distinguished VET tech program. VET tech is a career that uses Felipe's interest in both science and giving back to the natural world in the form of our human society's animal companions. During his time at Mercy College, Felipe became a CSTEP program student, joined The National Society of Collegiate Scholars, and participated in the National Technical Honor Society. In addition, he attended a summer research program led by Dr. Chun Zhou that focused on genetics research, where he discovered an interest in natural science research. These academic experiences shifted Felipe's perspective toward his career goals and motivated him to transfer towards becoming a biology major. Felipe's next steps are to apply for a master's degree to continue his academic studies and gain more experience in environmental research.

McNair New Scholar



Abstract by: Clarissa Melendez

McNair Faculty Mentor: Prof Terrence Calistro

The Evolution of Animal Rights Theory and Its Effect on United States Law

Abstract

Throughout history, the human-animal bond has been shaped alongside the evolution of our interactions with the world around us. The purpose of this paper is to understand this complex human-animal bond, how United States legislation regarding animal welfare is formed based on this bond, and strategies that can be applied to improve animal welfare legislation. For better or worse, our relationship with animals has impacted how we draft our animal laws. The broad scope of perspectives influencing such laws points to the difference between animal rights theory and animal welfare practices. In the U.S., there is a need for a consensus in defining the legal language used for our legislation. We also require a clear path toward enforcing laws once they are established. Our enforcement process must be well-defined at all points, including how and when public or industry professionals report wrongdoing, the investigative body's roles, and the creation of clear precedent for courts to pull from during prosecution. Further study into these gaps in our approach to lawmaking should include how to bridge the many categories that animals fall under so that all groups can be represented in a more concise doctrine. To ensure uniform education and well-care practices, intervention should unite key industry players at the local, federal, and international levels of policymaking. Our animal welfare journey has been a tumultuous one that has grown exponentially in recent decades. New obstacles and opportunities must be approached in science and ethically based manners to promote positive change.

Biography

Born and raised as a Manhattanite from a Puerto Rican background, Clarissa Jules Melendez is a new scholar within the McNair program and a first-generation college student at Mercy College. She is currently pursuing a Bachelor of Science degree in Veterinary Medicine. Clarissa transferred colleges twice before finding her home at Mercy. She plans to pursue licensure as a Doctor of Veterinary Medicine and open her sanctuary clinic in an underserved area one day. In addition to her major, Clarissa is also pursuing business administration and English minors. Her first minor is intended to support her future career goals as she seeks to build on her management experience to run a clinic and shelter top-down. Her second minor serves to expand on her passion for writing so that one day she can publish her young adult series. Her journey as a transfer student has taught her to persevere and thrive independently and has given her the resourcefulness that will serve her well in a veterinary environment. The McNair Scholars program is one way Clarissa has sought to expand her repertoire during the summer months. Other activities include volunteering as an assistant teacher to second and fifth graders, helping at her local NY Public Library branch, and working to care for adoption candidates as a part of the Kitty Kind cat adoption and shelter program. Aside from her career pursuits, Clarissa is also looking to become a child of the world and travel to gain a wider personal perspective on life. So far, she has traveled to Ecuador and Bermuda. Hopefully, soon she will be a part of the global experience initiative through her veterinary program at Mercy to learn about the clinical care of animals in places that might not have the same access to medical care that we do.

McNair New Scholar



Abstract by: Mary Petrova

McNair Faculty Mentor: Prof. Terrence Calistro

Prison Animal Programs as a Tool for Rehabilitation Within Prisons

Abstract

The purpose of this paper is to discuss the positive impacts that prison animal programs (PAPs) have on incarcerated individuals and the system as a whole. Regarding incarceration, society has a generalized norm to focus more on punishment and isolation than rehabilitation. This norm has a monetary incentive, as incarceration costs US tax payers about 80 billion dollars yearly. There is an inherent desire of these businesses to retain ‘workers’ (incarcerated persons) and have the taxpayers foot the bill (and profit significantly in the meantime). In addition, incarcerated persons generally experience a lack of access to medical, mental, and financial resources, which are associated with higher recidivism rates. Prison animal programs are a useful tool to break this cycle; they provide necessary therapy and education. Interaction with animals leads to calmer environments and helps build relationships that center around the animal, as it becomes a point of common ground. Several types of PAPs have been implemented worldwide, such as visitation programs, dog training programs (DTPs), and wildlife rehabilitation programs. PAPs are shown to improve mental health by allowing participants to develop the skills required for successful reintegration back into society, such as improving their patience and self-esteem. Other skills include job training so that the person has opportunities after being released, as well as learning how to properly identify and control emotions that lead to recidivism. These programs help build positive connections between incarcerated individuals, prison staff, and the local communities. Moreover, these programs help save shelter animals and give them a second chance to start their lives as well.

Biography

Mary was raised in a Russian-speaking household by her grandparents, having immigrated from Kazakhstan at a young age. In the past, she took a job with Brooklyn's city-owned animal shelter. Here, she truly learned and began to believe that her work and worth had substance and importance. In addition, her self-confidence and esteem grew due to her work. Helping animals and the people attached to them filled her life with the meaning that she felt missing before this point. She worked within the medical department as a coordinator and thus began her exposure to 'behind the scenes' veterinary care. It was exciting, sometimes heartbreaking, but always rewarding. Mary met selfless and hardworking techs, vets, and assistants, a few of whom ignited her spark to pursue medicine herself.

The opportunity to leave Brooklyn forced her forward, and Mercy accepted her first steps back into the folds of academia. With the support of her dear friends, she found herself thriving for the first time in a while. While pursuing her degree full-time in veterinary technology, Mary also works part-time at a veterinary clinic. Mary is interested in obtaining her vet tech license but is also thinking about applying to vet school. Mary currently has a 4.0 GPA and was on the Dean's list for the spring 2021 semester. Her interests lie in pharmacology and shelter medicine and how to improve shelter medicine for future generations. She often talks about the ingenuity and MacGyvering she experienced at the shelter; these innovations were brought about through the unfortunate lack of funds but plenty of determination.

She also enjoys tutoring! In that regard, she has been a biology recitation leader as well as a Learning Fellow for the Vet Tech intro class. She is slated to TA for Physiology of Domestic Animals in Fall 2022 (her favorite subject thus far). She draws ugly cats compulsively.

McNair New Scholar



Abstract by: Chandinie Puente

McNair Faculty Mentor: Dr. Cynthia Walley

Parental Incarceration Impacts on Child Development

Abstract

The beginning stages of life are thought to be the most crucial when it comes to development. As growing humans, we are impacted by our environment, absorbing all that is around us. Some children go through adverse experiences which may have a negative impact on emotional, behavioral, and cognitive development. The present scholarly study used peer-reviewed research articles to demonstrate that children who experience the trauma of parental incarceration need access to mental health treatment during their early childhood years because it is a crucial time in development. Without adequate treatment, the children of incarcerated parents can face developmental challenges such as school-related difficulties, insecure attachment issues, depression, and anxiety to name a few. The emotional, behavioral, and cognitive developmental issues examined in the research articles range across a variety of demographics. This project provides a wide view of the children and their families who are impacted by the effects of incarceration. Trauma-informed services specialized for children who have faced developmental difficulties due to this adverse childhood experience are discussed as well. Providing the proper mental health care for these children is crucial to improving resiliency to cope with trauma while they are young, enabling them to develop into successful members of society.

Biography

Chandinie Puente is a proud first-generation Guyanese and Puerto Rican woman who was born in the Bronx. She is the oldest of two children who were raised by a single mother. Growing up her mother instilled a strong sense of the need for education in her children. This led Chandinie to become a very driven individual with big aspirations. In her senior year of high school, she applied for the Mercy Scholars Program at Mercy College. After going through the interview process, she was selected and was able to have her tuition along with book fees covered by the college. This was a huge accomplishment, and it enabled her to get the education she always wanted, without her mother having to worry about the financial aspect of college. Since then, she has been majoring in psychology with a minor in business administration. Sadly, in the summer of 2020 Chandinie's uncle was tragically murdered in her mother's birth country of Guyana. Although this was a devastating event that she and her family are still trying to heal from, she has maintained her focus on achieving her academic goals. Chandinie is now a rising senior at Mercy College achieving Dean's List in her last two semesters. She is also a part of the McNair Scholars Program and is working towards the completion of her summer research project on how parental incarceration impacts children's cognitive development. She hopes to have a career in developmental psychology where she plans to help children who have experienced trauma during their childhood cope with those feelings and become successful members of society.

McNair New Scholar



Abstract by: Leilany Rodriguez

McNair Faculty Mentor: Dr. Cynthia Walley

Solitary Confinement and Its Effects on Mental Health

Abstract

Every 2.27 days there is at least one suicide attempt within the incarceration system. Forty-three percent of those attempts have one thing in common, they were placed in solitary confinement. Since its inception in the late 19th century, solitary confinement was intended as a way of self-reflection and rehabilitation. Solitary confinement is the practice of forced isolation with the hopes of the individual seeing the error of their ways, however, it is a custom that quickly began to show detrimental effects on mental and physical health. Its purpose was to protect the prison guards and inmates from each other while preventing further violence. With the development of several segregation types such as administrative/punitive segregation, disciplinary segregation, and protective custody to carry out the practice of solitary confinement, more inmates are placed in inhumane conditions. Examining the literature regarding the effects of social isolation, sensory deprivation, and other mitigating factors on an individual's psyche is warranted. Along with critically analyzing the legal history of segregation and legal standards for Eighth Amendment violations to acknowledge its impact on inmates' rights, the legislative and judicial systems play a major role in keeping this tradition intact. Although solitary confinement is necessary for certain situations to protect the general prison population, it has been seen as torture and can harm inmates' mental health and physical well-being.

Biography

Leilany Rodriguez is the oldest of five children and is a first-generation college student. Leilany has always been drawn to law and how that might affect people in society. Being of Latina descent, growing up and moving from one place to another she was able to see the injustices and obstacles minorities faced at an early age. She is a rising senior at Mercy College and is majoring in legal studies with a minor in psychology, with a goal of attending law school. With a special interest in the criminal law or family law field, she hopes to help to start closing the misunderstanding gap between people of her background (Latinos/Hispanics) and the law. Being a product of family court herself, Leilany was able to witness firsthand how most cases involving children slip through the cracks. Being exposed to the family court atmosphere she saw how disposable children in these situations really are.

During her time at Mercy College, she has attained many useful academic and life skills such as problem-solving, critical thinking, and better communication skills. She also has achieved Dean's lists for both the spring and fall semesters of 2021. One goal, after attending law school and passing the New York State Bar Exam, is to make important and memorable connections with the people she might encounter along the way.

McNair New Scholar



Abstract by: Jennifer Rosa

McNair Faculty Mentor: Prof. Terrence Calistro

The Relationship Between Environment, Genetics, and Trauma in People Who Commit Crime

Abstract

The purpose of this paper is to examine the relationship between environmental factors, epigenetics, trauma, and criminal behavior. Generational trauma is a psychological response to an event that can result in a change in genetic expression. The impact on children who experienced trauma while in the womb, experienced trauma directly, or have parents who experienced trauma all suffer developmentally, specifically with DNA methylation. DNA methylation is responsible for behavioral and conduct problems in developing children because it can express or silence genes like MAOA (known as the warrior gene), DRD4 (a dopamine regulating gene), and 5-HTT (a serotonin regulating gene). The relationship between trauma and genetics results in a decrease in the production of these hormones and can result in aggressive behavior, anti-socialness, and impulsivity. All of which can drive a person to commit criminal acts.

Biography

Jennifer Rosa is a first-generation, full-time college student working hard towards completing her bachelor's degree in biology at Mercy College. Jennifer is originally from Boston, MA, and noticed her passion for sciences early. So much so that she even attended one of the top three secondary education exam schools in Boston dedicated to math and science. Attending the John D. O'Bryant School of Mathematics and Science was hard for Jennifer while being a student, athlete, employee, and an NJROTC cadet. She began slacking off towards the middle of her high school journey, which impacted her GPA. Jennifer is extremely determined to make it to the next level because of her rocky finish in high school on top of graduating mid-pandemic. Jennifer knows what she is capable of and is ready to prove that she can do anything she puts her mind to. A setback for a major come back, as she likes to say.

While keeping busy, Jennifer likes to do nails, crochet, read books, and care for her beautiful plants. In this recent academic year, Jennifer had the amazing opportunity to conduct a small research experiment with Dr. Anthony Canger (Ph.D.) in her cell biology class. Jennifer researched differentiation in neuro 2a cells using retinoic acid and fetal bovine serum. Not being a part of any college-level research before this gave Jennifer a glimpse of what research would be like in the real world. This experiment excited her and made her think about cellular specialization in the body related to cancer.

Jennifer plans to pursue graduate school, where she can study cells at the molecular level and focus on stem cells and cancer biology research. Her dream is to publish scientific articles and contribute to the field of natural science.

McNair New Scholar



Abstract by: Cynthia Valencia

McNair Faculty Mentor: Dr. Cynthia Walley

The Impact if SANEs on Sexual Assault Victims' Healing

Abstract

The area of forensic nursing is expanding and getting the recognition it deserves as a forensic nurse profession that caters to the victims holistically. There are many subcategories of forensic nursing, but this project is focusing on SANEs or Sexual Assault Nurse Examiner. They play an important role in sexual assault victims' healing. Sexual assault is a traumatizing experience for any victim. Some of these victims reach out to SANE clinics to seek help. SANEs care for the patient's psychological, physiological, and legal needs. SANEs impact victims psychologically. If victims have a supportive experience, they feel comfortable and listened to, and secondhand trauma is less likely. SANES impact victims physiologically; collecting evidence is a very invasive process. The goal is to make the victim comfortable; SANEs do this by explaining procedures step by step and making them feel like they have a choice to continue or stop. SANEs impact the victims legally; if the victim has a pleasant experience with a SANE, they are more likely to report the crime. Also, SANEs are qualified to be expert witnesses and testify for the victim. SANE clinics were implemented to treat the victim and collect evidence more effectively. Many victims state that the emergency room is not a pleasant experience for sexual assault victims; they are questioned and rushed through the whole process, which then leads to mistakes in data collection. Overall, SANE clinics are expanding over the country; having this resource for victims hopefully can get them the correct and best possible care, and especially to have a pleasant experience.

Biography

Cynthia Valencia is an only child born in New Rochelle, NY, raised by two Mexican parents, Norma and Jose, who came to the United States with little education. She is a proud first-generation student, who graduated high school in 2018 and is now a student at Mercy College in the nursing program. Cynthia is proud to be a mental health advocate spreading awareness about these issues. Cynthia's dream is to become a nurse. While in the nursing program she has had amazing clinical experience. During these times she has experienced giving medications, feeding patients, taking blood sugar levels, bed making, and building relationships with patients. Also, she has learned new skills and has been able to network. Her most recent accomplishment at Mercy College is being a McNair Scholar. Overall, Cynthia's goal is to graduate Mercy College with her bachelor's in nursing and receive her license to practice. She plans to work and get experience as a psychiatric nurse, after that she plans to go to graduate school and receive her master's as a Psychiatric Nurse Practitioner.

McNair New Scholar



Abstract by: Laura Vazquez

McNair Faculty Mentor: Dr. Kimberly Rapoza

A Second Chance into Society with Prison-Based Animal Programs

Abstract

Prison-based animal programs (PAPs) are programs in which incarcerated people gain the opportunity to build vocational skills and work ethics. To a number of people, prisons are thought to be a place for prisoners to be punished for the crimes that they have committed, instead of a place for rehabilitation. Prison-based animal programs support prisoners by providing them with knowledge in animal training and husbandry for a variety of species. Animals from shelter kill lists are in these programs to be trained for people with disabilities or to become emotional support animals. These programs appear to have beneficial factors regarding the mental health of both staff and inmates, lower recidivism rates, and give both the animals and prisoners a second chance in the world. Studies indicated the therapeutic effects that PAPs have on prisoners are noticed by the staff in participating facilities. Research results indicate positive changes in behavior and attitude the prisoners have toward other individuals. The benefits that PAPs provide for incarcerated people and sheltered animals will hopefully result in the implementation of these programs in more facilities. Various private companies have donated goods and funding for PAPs to continue operating. With the evidence of these programs being successful it is hoped that there will be a chance for these programs to be fully funded by the government.

Biography

Laura is a first-generation college student, who was born and raised in Yonkers. She is the youngest of three siblings and the only U.S. citizen in her family. She is also the only member of her family to attend college. She's a junior at Mercy College and intends to attain her B.S in Veterinary Technology with a minor in business. She is also a new McNair Scholar. Her love for animals started when her parents allowed her to have a pet cat at four years old. At the age of five years old, she decided to become a veterinarian when her cat passed away in her arms due to major injuries caused by an animal abuser. She dreams of attending Ross University of Veterinary Medicine and studying small animal medicine, wildlife medicine, and veterinary chiropractic care. In her spare time, she likes to read books and play animal crossing with her friends. She is also an avid collector of Funko Pops (currently over 400 figures), books, and book bags. With her enjoyment of traveling, she aspires to one day travel to different countries with her friends and help people in rural areas who do not have access to veterinarian care for their animal(s). Her goal in life is to build her own animal hospitals in the U.S. and Mexico. A project she also hopes to work on and open in the future is a tutoring center for low-income students of all ages to give them an opportunity to improve their academic skills.

McNair Continuing Scholar



Abstract by: Isha Bajaha

McNair Faculty and Research Mentor: Prof. Terrence Calistro

Parental Styles, Personality, and Well-Being

Abstract

The purpose of this study is to examine the relationship between parental love, personality factors, and overall well-being. Four common parenting styles are authoritarian, authoritative, permissive, and uninvolved. An authoritarian parent tends to fear losing control over a child, causing them to strictly make sure their children abide by their rules. An authoritative parent tends to have moderate control over the child with open communication. Permissive parents are overall non-demanding and are not strict at all. Finally, uninvolved parents, are usually parents that do not have a specific level of strictness and have the least control over their kids since they do not have much of a role in their lives (Joseph & John, 2008). According to the OCEAN five-factor personality model, a person's personality can be measured using five distinctive traits: conscientiousness, agreeableness, neuroticism, openness to experience, and extraversion. There were N= 29 young adults ages 18-29 participating in the study. Participants were asked a series of demographic questions and given measures of parental style, personality, and well-being. Upon the completion of this study, the analyzed data showed no correlations between parental-love withdrawal (both mother and father) and a person's overall well-being. Positive correlations were found between overall well-being and extraversion, conscientiousness, and GPA. Father's withdrawal in relation to emotional stability had a positive correlation compared to the mother's withdrawal.

Biography

Isha Bajaha is a Muslim, Gambian, first-generation McNair continuing scholar majoring in Biology. Isha aspires to pursue a career in nursing by attending an accelerated nursing program to obtain her Master of Science in nursing, allowing her to gain experience as a registered nurse. Eventually, Isha wants to get her doctorate in Nursing Practice, allowing her to work as an independent healthcare provider and open up a private practice. She resides in the Bronx and has four brothers. Living in the Bronx and being from a minority background has shown Isha that her community deserves equity and the best when it comes to healthcare. Also, coming from an underdeveloped country is Isha's main motivation to pursue a medical career. Most of her family lives in The Gambia, and Isha has noticed that The Gambia does not have easy access to many medications easily purchase over the counter in the United States. Because of Isha's Muslim background and since Islam encourages helping those in need, Isha believes simple acts of kindness can help promote change. This pushes Isha to pursue a career in the medical field because change starts with one person, and she believes if she does not step up to instill change in her country/community, who will?

Isha has maintained over a 3.5 GPA and has been a part of a career/college readiness program called Breakthrough New York since the sixth grade. She is a STEM scholar in biology and part of the TriBeta Honors Society for biology majors. Being in McNair for the past year has allowed Isha to gain experience in many ways regarding research. McNair has taught her how to develop and implement research projects, the importance of research ethics, procedures, analyzing collected survey data, and how to present research findings. This past fall and spring semesters, Isha chose to focus her research on the effect that different parenting styles and parental withdrawal may have on the overall well-being of young adults. This topic has always interested her and meant a lot to carry through since she finds mental health and overall well-being important aspects of life. She always wondered if a person was raised differently or supported by their parents differently, would it affect their overall well-being? In the future, Isha has an interest in conducting clinical research.

McNair Continuing Scholar



Abstract by: Melissa Matamoros

McNair Faculty Mentor: Prof. Terrence Calistro

Research Mentors: Dr. Renee Haskew-Layton

Impact of Cell Swelling on Glutathione Levels in the Brain

Abstract

Our main purpose in this research project is to study astrocytes (a type of cell) and neuronal cells in the brain to gain better insight into each of their roles and functions. More specifically, their role(s) in the brain that leads up to the onset of different types of neurodegenerative disease. The main role of astrocytes, a major cell type in the brain, is to maintain homeostasis for proper neuronal function. Glutathione, an antioxidant molecule, contributes to astrocyte-neuron homeostasis by maintaining low levels of reactive oxygen species (which are harmful to cells at high levels). Glutathione is composed of three different amino acids: glutamate, cysteine, and glycine. One of these precursors, glutamate, is released through an anion channel called the volume regulated anion channel (VRAC), which is highly expressed in astrocytes. It is hypothesized that astrocytic glutamate released through VRAC contributes to glutathione production in neurons, ultimately contributing to neuronal protection against oxidative stress. Glutathione levels were measured in day 8 chick embryos astrocytes. These cells were treated with hypoosmotic media to induce cell swelling, which stimulates VRAC activation. Our preliminary results suggest that hypoosmotic media, and subsequent VRAC activation, modulates glutathione levels in astrocytes. However, to fully test our hypothesis, we are in the process of treating neurons with this astrocyte conditioned media to determine if glutamate released from astrocytic VRACs increases neuronal glutathione levels.

Biography

While Melissa is not the first person in her family to graduate from higher education, she is the first to plan to pursue a double Master's and to enter a pre-professional program with a concentration in medicine. While schools keep Melissa busy most of the time, she often finds herself keeping up with activities outside of Mercy College as well. This includes volunteering, completing graduate courses, traveling, and playing the piano. Most recently in the past two years, Melissa has found other interests outside the field of medicine which has led her to explore programs that have a concentration in law and psychology. While Melissa has been in school for much of her life, that does not take away from the things that she finds interest in doing outside of Mercy College and the degree she is working towards.

As of right now, Melissa is currently working on expanding her neuroscience project that she has been working on since her sophomore year at Mercy. Melissa has a particular interest in neuroscience and research related to children with autism spectrum disorder (ASD). Melissa currently is a part of a wonderful team of physicians and doctoral fellows that work with families of all backgrounds and with their children who are undiagnosed and/or diagnosed with ASD. This opportunity stemmed from previous years of work and volunteering that Melissa has encompassed since early on in her educational career. While it may seem unrelated to the work that she does now and what she plans on pursuing after graduation, it is a passion that Melissa has grown to love and continuously learns from every day. Melissa also is in partnership with the New York City Department of Education working alongside faculty and students. She handles various assignments that pertain to a broad group of students including those who are English Language Learners (ESL). This offers a great opportunity to understand the barriers many students face in a public-school setting in NYC and how we can help to aid them in becoming successful students. Whether this means adjusting curriculums, offering support services not currently offered at their school, and more.

At this time, Melissa is now wrapping up her degree in biology/biomedical sciences and is currently waiting to hear back from graduate and doctoral programs of interest to see where she is headed next year. The McNair program has been a very important backbone for Melissa throughout her time at Mercy College and the support from all directions is ever going. This is a very new and exciting chapter in Melissa's life, and she cannot wait to continue this journey with the McNair Scholars program now and hopefully in the future as well.

McNair Continuing Scholar



Abstract by: Bisma Rafiq

McNair Faculty Mentor: Prof. Terrence Calistro

Research Mentors: Dr. Chun Zhou

The Impact that PLTL has on the Learning of Students in a Bio 160 Course

Abstract

This study examined the effects of Peer-Led Team Learning (PLTL) on Biology 160 students learning outcomes. PLTL is an international program designed to strengthen students' skillset by having peer leaders, individuals who have taken the course and are trained to educate others, teach the course to their student peers. This study hypothesized that using the scaffolding method to teach the students would give improved quiz results. Previous studies and published PLTL data over the past 20 years have shown success with peer leaders in small group workshops in required first-year courses, including core math, science, and engineering. PLTL helps to build better study skills, develop critical professional skills like teamwork, listening skills, critical thinking, and leadership development, and encourages learning communities that increase confidence and an eagerness to learn. The sample size for this study consisted of N=8 undergraduate college students. In this study, the main findings showed improvement in two out of four students' quiz grades when comparing the pre-quizzes to final quiz scores. Students showed improvement when more discussions took place during class and the scaffolding method was used. It is suspected that the diagrams used in class helped the students to think on a higher and more complex level about biology topics.

Biography

Bisma Rafiq is a first-generation college student and a 2nd year McNair Scholar. As of Fall 2022, Bisma will be a senior in her undergraduate career, majoring in biology. She is very excited as this summer is her second time participating in the McNair's Summer program, in which she researched conspiracy theories on Covid and the Covid vaccine last year. Last semester she worked as a peer leader for Bio 160 Course with Dr. Chun Zhou as her mentor. They examined ways to best instruct students, as she has already taken this course. This year she will focus on researching more about what are the best ways that students that work in the PLTL program as Peer Leaders can impact student learning using scaffolding and other instructional methods, as well as analyze data that she received from giving quizzes to the students to measure their learning outcomes.

Bisma is a fun and happy person who loves to try new things such as bungee jumping and ice skiing. Although it sounds scary, it is something she has on her bucket list for the future. Currently, her goals consist of finishing her Bachelor's in Science Degree and applying for PA school to become a Physician Assistant in specialties including internal medicine or Ophthalmology, and she is still considering more options. Bisma was part of Student Government last year as Bronx Campus Executive. She is also in the Scholars in Biology Program and CSTEP program. This year, she joined the Tribeta program, designed for biology students with research opportunities. Her goal is to become a helping hand to as many people as she can with this degree and make real impacts in distinct parts of the world, especially in less developed countries. Bisma also wants to be a good role model to her younger brothers.

McNair Continuing Scholar



Abstract by: Jessica Williams

McNair Faculty and Research Mentor: Dr. Kimberly Rapoza

Childhood Abuse: The Toll on Adult Health

Abstract

The purpose of this research study was to examine how childhood abuse and exposure to traumatic experiences during childhood impact the physical health and mental health of adults. The types of childhood abuse that were examined included physical abuse, emotional abuse, and neglect. This study hypothesizes that childhood abuse would be associated with long-lasting impacts on adult substance use (i.e., alcohol and tobacco) and would be associated with negative physical (i.e., general physical health, diabetes, obesity, etc.) and mental health outcomes (i.e., general mental health and depression). This study was done with an online survey hosted on Redcap by participants 18 and older. There were N=2044 participants. Most were 18-21 (56%) and female (79.7%). Most participants were born in the US (87.6%), white/ Caucasian (59.6%), single (43.9%), and there were a high number of participants with some college (38.6%). Physical abuse, emotional abuse, and neglect were positively correlated with psychological distress. The Mann-Whitney test showed those who have high blood pressure and pre-diabetes often reported more physical abuse, emotional abuse, and neglect than others without the disease. Additionally, t-tests found people who smoke, use e-cigarettes, or had a diagnosis of depression reported more physical abuse, emotional abuse, and neglect.

Biography

Jessica Williams is a first-generation college student from the Bronx, New York. She is a rising senior and will graduate in May 2023 with a Bachelor of Science in communication disorders and a minor in psychology. Jessica became a part of the McNair Scholars program in 2021 and is very excited and proud to be a part of such a program. Jessica is an only child, keeps to herself, and has grown up allowing herself to see light in the little things. She is very humble, wholesome, and positive-minded. Some hobbies Jessica has picked up over the years are writing and reading poetry and exploring nature, such as going on walks. Jessica understands everything in life has a deeper meaning and not to take everything literally.

With going through this past year, junior year, she had a tough time overall and it was something she wasn't used to. Having the same cycle over the years in school of doing great, maintaining a certain GPA, and being on Dean's list, during COVID Jessica was pushed in a different direction. She learned that you must get comfortable being uncomfortable and realize change will happen. Jessica is now able to appreciate those years she partially took for granted and to know moving forward she must accept and continue, not to dwell on or hurt. Since Jessica was young many people have said she has a gift and believes in all she can achieve but at this point in her life it's time for her to see it for herself. To know she has the power and can manifest all that she wants. Over the past year, she also became involved with the process of believing in and manifesting your goals but also having a plan and knowing what you want. Throughout school or life in general, strength is what you need to change and to get through each obstacle. A quote that she follows is “You wouldn't be in the spot you're in if you weren't meant to do it”.

With looking to apply to graduate schools in the fall of 2022 in Speech-Language Pathology, she is nervous but ready for this new adventure in life wherever it is meant to take her. Jessica will continue to grow and learn in her last year at Mercy College. She will continue to keep investing in writing her poetry book to be published one day. Jessica's McNair project studied the toll child abuse can have on adults and looked specifically at mental health (i.e., depression, anxiety, PTSD and so much more) that experiencing trauma can cause. This summer she will be continuing the same topic but also looking at physical health, such as obesity, type 2 diabetes, or heart conditions.

A voyage of discovery to the land of knowledge

- Mary Shelley

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