

The Eastern Washington University
COLLECTION OF ABSTRACTS
of McNair Scholars

in College of Arts, Letters & Education
College of Science, Health & Engineering
College of Social & Behavioral Sciences & Social Work

Ronald E. McNair Post Baccalaureate Achievement Program

The TRiO Ronald McNair Postbaccalaureate Achievement Program at Eastern Washington University prepares low-income, first-generation and/or underrepresented minority undergraduates for success in doctoral programs by providing scholarly activities and community engagement that empowers participants to become agents of positive change in a culturally diverse world.



McNair Scholars Abstract Journal

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Ronald E. McNair Postbaccalaureate Achievement Program

Eastern Washington University

107 Monroe Hall

Cheney, WA 99004

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The McNair Scholars Program is a TRiO Program.

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100%

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How Faculty Mentors Inspire the Future



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Atara

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McNair Scholars Abstracts Submitted to NCUR 2015



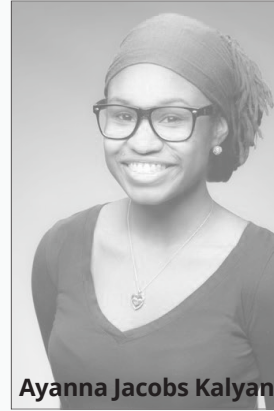
Alyssa Barton



Smantha De Abreu



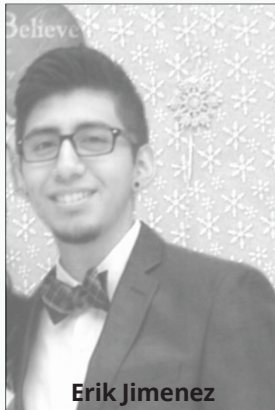
Amy Nuñez



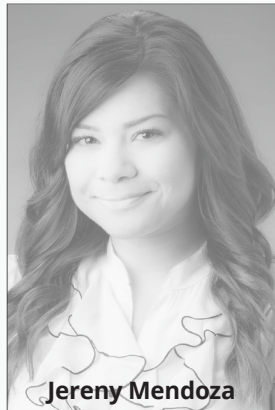
Ayanna Jacobs Kalyan



Devon Asmus



Erik Jimenez



Jereny Mendoza



Jessica Ochoa



Kelsey Rosales



Kimberly Cook



Laura Zamundio



Le'Naecha Roberts



Lisa Coyle



Mariana Garcia



Mikaila Leyva



Moses Ssemakula



Virginia Morales



Yuri Reyes

// Our Faculty Mentors play a key role in the transformation of our McNair Scholars. Faculty Research Mentoring is the foundation in which we (Eastern) have supported the success of the Ronald E. McNair program for 20 years. Gracias (Thank you) to all the faculty mentors who have worked so closely with our McNair Scholars to propel their research skills to the doctoral level. //

From the Director of the McNair Scholars Program



Christina Torres García, MBA, PhD.

We are proud to present our McNair Scholars Abstract Journal in which you will find the culmination of intensive research conducted by our McNair Scholars and their faculty mentors through our Ronald E. McNair Scholars Program at Eastern Washington University.

The Eastern's Ronald E McNair Post-baccalaureate Achievement Program is federally funded by a grant from the Department of Education to provide services to provide effective doctoral studies preparation and address the needs of low-income, first-generation and underrepresented students. These research projects provide a journey through the challenges and affirmation of scholarly work that prepare students for graduate studies and the pursuit of doctoral degrees.

Our Faculty Mentors play a key role in the transformation of our McNair Scholars. Faculty Research Mentoring is the foundation in which we (Eastern) have supported the success of the Ronald E. McNair program for 20 years. *Gracias* (Thank you) to all the faculty mentors who have worked so closely with our McNair Scholars to propel their research skills to the doctoral level.

This journal highlights the McNair Scholars' abstract submitted for NCUR 2015 and re-enforces the alignment of its mission statement with Eastern Washington University. Since the first EWU McNair grant was funded in 1995, McNair has worked closely with Eastern faculty to build a research center community where students thrive. Our quest is to continue this partnership with EWU McNair Mentors and continue the transformation of our students.

To participate in the McNair Scholars Program, complete the [Inspire the Future with McNair](#) form.

I also want to congratulate the McNair Scholars whose research is presented here. Your journey of overcoming various challenges during your scholarly endeavors speak to your talents and persistence in pursuing both your educational and life goals.

Finally, thank you to all the people who work behind the scenes to sustain this program, guide students to success, and dedicate time and energy to produce this journal. *Muchas gracias!*

Best,

Christina Torres García, MBA, PhD
Director of the McNair Scholars Program

A large group of people, likely students and faculty, are standing on a red football field to form the letters 'EWSU'. The field has yard lines and numbers like '30', '40', and '50' visible. The text 'CREATING ENVIRONMENTS FOR STUDENT SUCCESS!' is overlaid in white, bold, sans-serif font across the middle of the image.

CREATING ENVIRONMENTS FOR STUDENT SUCCESS!



KIMBERLY COOK: FACULTY GRATITUDE

EWU MCNAIR SCHOLAR • 2014

When I started at Eastern Washington University, I knew I wanted to study biology, but I had no idea what I wanted to do post-college. Once I met **Dr. Margaret O'Connell**, it became clear that I wanted to get a Ph.D. to teach and conduct research. On top of her teaching and Chair duties, Dr. O'Connell is still always happy to help me when I come tapping on her door. Whether I need help with a grant proposal, an application, or a simple question, she never hesitates to lend me her attention. The sheer quantity of duties Dr. O'Connell carries out on a daily basis is admirable, but when I consider the quality that she commits to everything she does, and her ability to maintain a slick sense of humor through it all, I am reminded why I want to go into academia.

As **Dr. Brown** sat under the hot sun with me counting grasses, it really hit me how lucky I was to have such a mentor. We both had very busy schedules over the summer, and it was hard to find a time we could gather grass stems. However, she insisted on coming out to help me tediously count grass stems. Dr. Brown's support did not end with fieldwork. We spent days in the library running statistics, a laborious task as she had to teach me to do the coding and analyses. She continues to help me as I work through the process of applying to graduate schools, and it is hard for me to imagine trudging through the process without her gracious help.

I feel exceptionally grateful to get to work closely with two fantastic mentors. They have both enriched my undergraduate experience immensely, and I honestly could not have asked for anyone better.

Faculty mentors provide transformational leadership in the challenging, ever-changing, and fluid environment of higher education.

**Samantha De Abreu**[READ HER STORY](#)

Tuning single-ion anisotropy in molecular Ni (II) coordination complexes containing imidazole and pyrazole ligand types

While some molecular Ni(II) coordination complexes containing combinations of halide anions and organic ligands are known, truly systematic studies are lacking and often omit fluoride and iodide derivatives. We are especially interested in near-octahedral trans-coordinated NiN_4X_2 systems where X is F, Cl, Br, I and N is a donor atom belonging to an imidazole- or pyrazole-based ligand. The goal is to create high quality single crystals suitable for detailed structural and magnetic investigation. We aim to better understand the determining factors leading to single-ion anisotropy (D) while eliminating exchange interactions (J). Thus far, we have successfully synthesized several of the desired analogs and portions of this work, including X-ray crystallography, UV-Vis spectroscopy, pulsed-field magnetization, and electron-spin resonance will be presented.

**Dr. Jamie Manson**

TRiO McNair Faculty Research Mentor Dr. Jamie Manson is an Associate Professor of Chemistry. Manson's research involves design, synthesis and detailed characterization of novel molecule-based quantum magnets that present interesting properties. Coordination chemistry and the self-assembly of 1-, 2- and 3-dimensional polymeric networks that feature strong hydrogen bonds. He conducts x-ray studies of new magnets to understand the structure/property relationships.



Alyssa Barton

[READ HER STORY](#)

Using *saccharomyces cerevisiae* to identify *helicobacter pylori* T4SS effectors

Helicobacter pylori is a human gastric pathogen that infects 50% of the world's population. Although many infections are asymptomatic, gastric disease occurs in 10-15% of those infected. The more virulent strains of *H. pylori* often contain the cytotoxin-associated gene pathogenicity island (cagPAI), which encodes a type IV secretion system (T4SS). The T4SS is used by *H. pylori* to transfer the CagA protein from the bacterium into human gastric epithelial cells; this transfer results in a variety of cell changes associated with disease. The goal of this study is to identify additional *H. pylori* proteins that act like CagA. A recent study identified twenty-four potential CagA-like proteins by looking for key C-terminal amino acid residues present in CagA. Our goal is to determine if these potential CagA-like proteins negatively affect eukaryotic cell function. To do this, we have implemented a model yeast system used successfully by others to identify bacterial virulence factors that are naturally transported into eukaryotic cells; in this system we will express the *H. pylori* putative CagA-like proteins and look for reduced growth of yeast. Thus far, we have tested CagA in this system and found that yeast growth is reduced when CagA is expressed in yeast compared to when our vector alone is expressed in yeast. We have cloned our first putative CagA-like protein, HP0119, into our vector and are poised to test this protein for its ability to confer growth defects on yeast. In our future studies, we will test as many of the twenty four CagA-like proteins as possible.



Dr. Andrea Castillo

TRiO McNair Faculty Research Mentor Dr. Andrea Castillo is an associate professor of Biology. She earned her B.S. in Biology from the College of Idaho and her Ph.D. in Molecular Cellular and Developmental Biology from the University of Colorado, Boulder. Her first postdoctoral research project was conducted at Fred Hutchinson Cancer Research Center studying chromosome segregation and her second postdoctoral research project was conducted at the University of California, Santa Cruz studying the human gastric pathogen *Helicobacter pylori*. As a faculty member in the Biology Department at Eastern Washington University, she continues to study factors in *Helicobacter pylori* that contribute to human gastric disease.

**Kelsey Rosales**[READ HIS STORY](#)

Lec 12 synchronize threads within block and device memories

GPGPU (General Purpose Graphics Processing Unit) computing has created a new era of high performance computing in fields outside of its primary use for graphics, for example, in hurricane simulation and fluid dynamics. A GPU consists of hundreds to thousands of processing units, which enable to execute thousands of tasks simultaneously and to dramatically speed up computationally intensive applications.

In this work, we investigate the potentials of a GPU for improving database update operations, while most current research focuses on optimizing SQL queries using only the CPU. Relational database updates are time consuming, especially when calculating a value in a column in table T1 requires a complete walk through all records in another table T2. If the size of T1 and T2 are large, performance deteriorates. Our research focuses on a group of the similar problems and attempts to improve the performance on a GPU. In experiments, we used real-world datasets: a student table S and another table G that stores grades for each student S_i in table S. We computed a percentile value for each student by using all scores listed in the table G. Experimental results show a great performance gain by using a GPU over the traditional CPU.

**Dr. Tony Yun Tian**

TRiO McNair Faculty Research Mentor Dr. Tony Yun Tian is an assistant professor of Computer Science. He earned his PhD in Computer Science from the University of Mississippi. His research is in concurrent systems, distributed and parallel computing, grid and cloud computing, GPGPU computing, spatial index methods, and big data.



Kimberly Cook

[READ HER STORY](#)

Effects of fire and pocket gopher burrowing on annual grass invasion in a Mirra mound prairie

Bunchgrass prairies are critically endangered North American ecosystems threatened by invasive annual grass (IAG) presence. IAGs can decrease diversity and negatively impact wildlife and ecosystem function. Prairies were historically maintained by disturbance regimes including fire and animal activities, such as soil upheaval by burrowing mammals, but fire suppression and the introduction of exotic species has changed these dynamics. In Eastern Washington, Turnbull National Wildlife Refuge (TNWR) contains a large tract of semiarid prairie with Mima mounds (discreet mounds of deep topsoil surrounded by shallower rocky soils). These Mima mounds harbor a large population of native Northern Pocket Gophers (*Thomomys talpoides*), which create extensive soil disturbance. This area is also heavily invaded by annual grasses like North Africa Grass (*Ventenata dubia*) and Cheatgrass (*Bromus tectorum*). Reinstatement of historical fire regimes has been used for restoration in many areas. Previous studies showed short term reduction in IAG abundance one year following burning at TNWR, but long term effects of burning are not known. The goal of my research was to test the hypothesis that gopher burrowing and fire interact to affect IAG abundance with burrowing increasing and fire decreasing IAG abundance. I compared burned and unburned areas (40 one square meter plots each) three years following a controlled burn. Within each area, 20 plots were located on sites with high levels of gopher disturbance and 20 on areas of low soil disturbance. In each plot, I recorded percent cover of all vascular plant species and performed stem counts in a 0.04 square meter corner. I compared IAG cover, stem count, and species richness with and without gopher disturbance in burned and unburned areas using a mixed model. IAG cover and stem count were both higher in burned areas. *V. dubia* was most abundant in burned plots containing gopher disturbance. These results suggest that burning can, over the long term, increase abundance of IAGs in semiarid prairies (even after an initial decrease), and that it can interact with other forms of disturbance, such as burrowing.



Dr. Margaret O'Connell

TRiO McNair Faculty Research Mentor Dr. Margaret O'Connell is a professor and chair of the Department of Biology. She received her PhD from Texas Tech University and conducted post-doctoral work at the Smithsonian Institution's National Zoological Park at Washington, D.C. Her current research areas are: wildlife ecology/conservation and ecological restoration. She has served on the McNair Selection Committee since the program's inception at EWU.



Dr. Rebecca Brown

TRiO McNair Faculty Research Mentor Dr. Rebecca Brown is a professor at Eastern Washington University. She conducts research on riparian and plant ecology and teaches Ecology, Botany, Research Methods, and Riparian Ecology. Recently she has been active in ecological restoration, working to restore prairie plant communities in Eastern Washington, and studying the effects of dam removal on riparian plant communities.



Laura Zamudio

[READ HER STORY](#)

Multiplying and dividing fractions in a meaningful way

Research in mathematics education shows that the concept of fractions is one of the most complex in elementary mathematics and one of the most difficult to teach and learn. According to Sowder and Wearne (2006), the results of the seventh mathematics assessment of National Assessment of Education Progress (NAEP) indicated that students have a very weak understanding of fractions. There is evidence that the instruction of fractions should focus on assisting students to obtain the knowledge of key concepts along with the ability to carry out procedures flexibly for later mathematical performance.

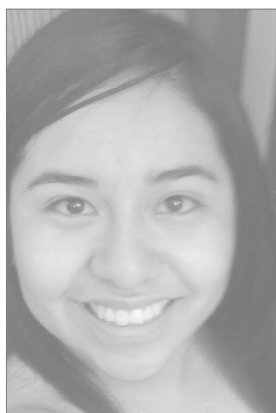
This study explores the question of how using a constructivist approach to instruction in a four week intervention can benefit 5th and 6th grade students' conceptual and procedural understanding of fractions. This study analyzed the work of four 6th grade students using triangulation, including observing student voice during the delivery of instruction, collecting student work, and using a pre- and post-assessment. This intervention is based on a hypothetical learning trajectory (HLT) consisting of a goal for the students' learning, the mathematical tasks that will be used to promote student learning, and a hypotheses about the process of the students' learning (Simon, 1995). The three parts to our HLT for this study are: (1) students will be able to use the splitting operation to solve multiplication and division problems with fractional amounts; (2) the mathematical tasks are Equal Sharing and Multiple Group problems based on the work of S. B. Empson (2011) to promote conceptual mathematical thinking; and (3) the hypotheses used are based on Steffe's observation of students' schemas that contribute to their understanding of fractions and fraction operations.

Preliminary results indicate that a constructivist approach did benefit 5th and 6th grade students' conceptual and procedural knowledge of fractions. However, the study showed that most students had only developed the part-whole scheme for fractions, leaving us to begin with whole number learning tasks and slowly progressing into Equal Sharing and Multiple Group problems that produced or used fractional amounts.



Dr. Gayle Millsaps

TRiO McNair Faculty Research Mentor Dr. Gayle Millsaps is an assistant professor since 2013 at Eastern Washington University. She earned her M.A. in Mathematics(1989) and PhD in Mathematics Education(2005) from Ohio University.



Yuri Reyes

[READ HER STORY](#)

Electrical conditioning of the chronic dopamine microelectrode for fast-scan cyclic voltammetry

The purpose of this research was to improve the sensitivity of the carbon fiber microelectrode (CFM) for monitoring the neurotransmitter dopamine with fast-scan cyclic voltammetry. The question for this research project was what amount of time, of electrical conditioning treatment, would improve the sensitivity of the chronic silica encased CFM? This electrode was developed by Clark et al. in 2010 and is currently being used to monitor dopamine long-term (weeks to months) in research animals. Fast-scan cyclic voltammetry is a technique used to record dopamine signaling by the repeated application potential to the CFM at a frequency of 10 Hz. Increasing the frequency of this applied potential to 60 Hz creates a renewed surface on the CFM (“etching”). This technique has previously been shown to improve the sensitivity of glass encased CFM (Takmakov et al., 2010) used for the acute (short-term, hours) monitoring of dopamine. For this research project, electrical conditioning was done at different time intervals of 0, 15, 30 and 60 minutes. Before and after each etching, sensitivity of the CFM was assessed by monitoring the current response to an application of 1 μ M dopamine solution in vitro. Dopamine current responses, background currents, and noise levels were recorded. The results from this project indicate a significant improvement in the sensitivity of electrodes etched for 30 and 60 minutes ($p < 0.05$). Results also suggest a trend in stabilization of the background current at 30 and 60 minutes, with no statistical significance. This data suggests electrical conditioning at 60 Hz for 30 minutes will significantly improve the sensitivity of the chronic dopamine CFM. With our findings we hope to promote and improve the use of chronic silica encased CFM for the in vivo monitoring of dopamine long-term.



Dr. David Daberkow

TRiO McNair Faculty Research Mentor Dr. David Daberkow is an assistant professor at Biology since 2010. His Undergraduate Degree is from Southeastern Louisiana University, B.S. Zoology. He received his Graduate degree at Utah State University, M.S Biology. He attained his graduate program from University of Utah, Ph.D. Neuroscience. His Post-Doctoral work: was at Illinois State University, Program of Excellence in Neuroscience and Behavior (POENB). He is an advisor for Pre-Med Dent Courses Taught are Biological Investigation; Human Anatomy and Physiology; Animal Physiology; Neurobiology. His research areas of focus are in the neurochemical messenger dopamine and its role in brain function. Specifically, his research has explored how drugs (e.g., amphetamine and methamphetamine) impact dopamine mediated behaviors and cellular signaling molecules implicated in memory formation. More recent research elucidated amphetamine’s cellular mechanism of action on dopamine neurotransmission. As a faculty member at EWU, his lab utilizes the technique of voltammetry which provides one the ability to monitor the activity of specific molecules (e.g., dopamine) in the brain. Future directions are to continue to investigate dopamine function, how drugs impact these processes, and dopamine dysfunction related to pathological conditions such as Parkinson’s disease.



EXPANDING CAMPUSWIDE COMMITMENT TO STUDENT SUCCESS



MICHAEL ZUKOSKY

ASSOCIATE PROFESSOR • ANTHROPOLOGY

Mentoring first generation and low-income students through the McNair program has given me interesting challenges and many rich rewards. Challenges include teaching student academic and life preparation at a basic skills level that transcends disciplinary knowledge and working intimately with students to problem solve personal issues related to self-esteem and self-confidence. At the same time, rewards include being part of the process of student self-transformation, growth, and professionalization, and simply knowing that you, McNair staff, and students are working together to both help empower individuals as well as lessen socioeconomic disparities.



MARTÍN MERÁZ GARCÍA

ASSISTANT PROFESSOR • CHICANO EDUCATION PROGRAM

Mentoring McNair Scholars has been one of the most rewarding experiences I've had in my academic career at EWU. Being an EWU McNair Alumni has given me a good sense of the personal and academic challenges these students face and prepare me well to be more effective as a mentor. Demystifying the act of conducting "research" for McNair students is always rewarding. Even though first-generation and low-income students often face many academic challenges with proper guidance and nurturing they become one of the most driven and goal oriented students. Experiencing their intellectual growth, self-esteem improvement, and exploration of possibilities they never thought possible will always be one of the most rewarding and fulfilling experience of being a mentor. I am thankful to the EWU McNair Program for providing me the opportunity to serve as a mentor.

Faculty mentors help students become engaged and excited about researching, writing, presenting, and learning.

**Devon Asmus**[READ HIS STORY](#)

Between the two: Medical interpretation across nature and culture

How do medical interpreters deal with the culturally specific concept of a disease across language and culture in clinical encounters in the United States? This project explores how medical interpreters compensate for culturally specific conceptualizations in a source language while maintaining fidelity in target languages during interpretation in the Spokane, WA area and tests existing theory provided by general translation and interpretation studies. In an I.R.B approved qualitative study with medical interpreters working with non-Indo-European languages in the Spokane area health community, I highlight interpreters' own narrative explanations of the process of interpretation. Furthermore, I evaluate the degree to which those explanations support or refute theories in translation and interpretation studies related to the notion of linguistic incommensurability, distinct languages often have culturally-specific vocabulary that is difficult or impossible to translate and interpret. Preliminary results from the interviews indicate that medical interpreters interpret American culturally specific ideas of disease which lack an equivalent in the target language by using that language's terms for the shared, physical referents of English anatomical and biomedical terms. My findings have implications for the development of new theory within translation studies because they show how conceptual fidelity of vocabulary should not necessarily be the goal within medical interpretation so much as the physical referents to which those words refer to, a theory I term "referential fidelity."

**Dr. Michael Zukosky**

TRiO McNair Faculty Research Mentor Dr. Michael Zukosky received his Ph.D. from Temple University with a dissertation on grassland policy and politics in China's Altai Mountains. He has general interests in international development and conservation policy. He came to Eastern in 2006 to teach linguistic anthropology, political ecology, and the ethnography of technology and science, and is particularly interested in the ethnographic study of scientific language and ecological discourse analysis. He is currently conducting a comparative project on social epistemology and discourse among a global network of European, Chinese, and Mongolian biologists involved in Przewalski horse reintroduction in Asia.



Lisa Coyle

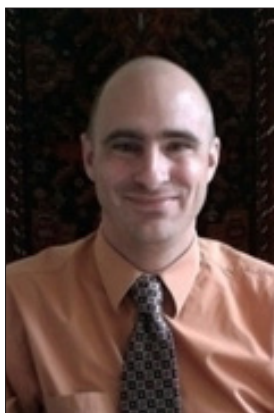
[READ HER STORY](#)

Bottled water: A quantitative study to determine how differences in pedagogy affect consumption

As a growing global population places greater demands on the existing water supply, it increasingly becomes necessary for individuals to become educated on matters that contribute to and influence their decisions about water use. The current world population is nearly 7.2 billion people and is projected to reach 9.6 billion people by the year 2050 (United Nations, 2012). As it stands, freshwater used for drinking constitutes only 1% of the total water on the planet (U.S. Geological Survey, 2014). Of the many influential factors surrounding human water consumption is the use of bottled water. Roughly three liters of water are required to produce every one liter of bottled water (Pacific Institute 2006; The Water Project, 2014). Despite the United States having some of the cleanest municipal tap water in the world, 85 million bottles of water are consumed each day and more than 30 billion bottles are consumed annually (Gleick, 2010; Hu, Mahler, and Morton, 2011), making the U.S the largest global consumer of bottled water.

Safety perception is among the top reasons for bottled water consumption (Hu, Mahler, and Morton, 2011). However, objective data does not support that bottled water is generally any safer than tap (Government Accountability Office 2009). On the contrary, when examining FDA regulation standards there is evidence to suggest that tap water is safer. Additionally, taste is often cited as being a reason for consumption. In a blind taste test study 389 subjects were presented with both bottled water and tap. Results indicated that many people were unable to distinguish between bottled water and tap (Cordelle, Schlich, Teillet, and Urbano, 2009). Disparities exist between perceptions of bottled water, such as safety or taste and objective factual data, warranting further investigation into how objective information may influence consumption.

This study proposes to examine bottled water consumption patterns before and after two different types of informational provision. Subjects in one condition will be exposed to an informational presentation about topics associated with bottled water use, such as monetary cost, environmental and energy implications, and recycling habits. Participants in condition two will be asked to inquire about bottled water and complete a 500-1000 word essay about what they learned. Writing is distinguished from observation and speaking. It can be seen as an inherently unique formation with an active learning component that encourages greater critical thinking (Emig, 1977; D., Holliday, 2009). Therefore it is expected that subjects exposed to the writing condition will exhibit a greater decrease in bottled water consumption rates than those who listen to an informational presentation alone.



Dr. Ryan Sain

TRiO McNair Faculty Research Mentor Dr. Ryan Sain is an assistant professor in Psychology Department. Dr. Sain earned his degree in Experimental Psychology and received his PhD in 2005 from Washington State University. His M.S. is also in Experimental Psychology from WSU and his undergraduate work was at Eastern Washington University in Applied Developmental Psychology.. His Research Interests are: Applied Behavior Analysis, pedagogy in higher education, curriculum reform, technology in higher education, FOSS (free and open source software), and risky behavior.



Mariana García

[READ HER STORY](#)

Unaccompanied immigrant minors in private U.S detention facilities

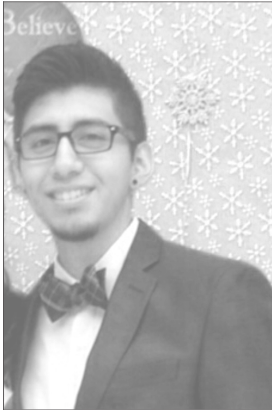
How has privatization of immigration detention facilities affected unaccompanied immigrant minors prospects of obtaining legal representation? With the recent surge of immigrant minors from Central America, thousands have been placed in overcrowded detention facilities across the United States. For the majority of these children, legal representation is a scarce reality and many must face the labyrinth of immigration channels alone. In the past few decades, privatization of immigration detention facilities has brought new actors into the context of both detention facilities and U.S immigration policy. With this in mind, how does privatization affect unaccompanied immigrant minor's legal opportunities? This research aims to answer this question by comparing the quality of services provided to unaccompanied immigrant minors in both private and public detention facilities. This study will use a qualitative approach utilizing the snowball sampling method with thirty minute interviews conducted on individuals providing services to unaccompanied immigrant minors. The focus of this research will assess to what extent these minors' rights are being respected and provided for. My anticipated findings are that private detention facilities hinder the services provided to unaccompanied minors by non-profit organizations and other groups willing to provide legal services. The latter is part due to the fact that the majority of subcontracted groups hired to run these detention facilities are the largest private prison businesses in the U.S. This then creates a situation where profit trumps the interest of unaccompanied immigrant minors.



**Dr. Martín Meráz
García**

TRiO McNair Faculty Research Mentor Dr. Martín Meráz García is currently an Assistant Professor of Chicano Studies at Eastern Washington University. His research interests include the U.S.-Mexico relations with respect to the war on drugs, drug cartels, as well as revolutionary movements in Narcotrafickers Book cover Martín Meráz García Mexico and other Latin American countries. Meráz García has presented his research in various regional, national and international conferences He has also engaged in field research in Nicaragua, as well as in various states in the Pacific Northwest including Washington and Oregon. Current publications include "The Psychology and Recruitment Process of the Narco" in the Global Crime Journal and "Cooperation Among the Nicaraguan Sandinista Factions" in the Latin American Policy Journal. As an Eastern TRiO McNair alumnus, he provides valuable insight as a McNair faculty research mentor.

Dr. Martín Meráz García earned his PhD from Washington State University in Political Science. His book, Ordinary Individuals Who Become Narcotrafickers, was published by Kendall Hunt Publishing in 2012.

**Erik Jimenez**[READ HIS STORY](#)

The effect of large numbers on the mental representation of even and odd numbers

This research aimed to explore whether using a large standardized numeral scale would cause a more noticeable SNARC effect than the scales used in previous experiments. Past research on numerical awareness in adults suggest that persons who were raised in an environment where reading is done from left-to-right also have a spatial representation of number lines which are also oriented from left-to-right (Zebian 2005). The investigation set out to determine whether using a larger scale than that which was used in Dehaene's study would elicit a more noticeable SNARC effect for different numbers along a number line from 10-99. 8 (1 male) right-handed participants aged 19-43 ($M=25.14$, $SD=8.36$) were used for this particular study. Each group participated in two blocks with randomized numbers, 50 trials per block (total 100). The responses were recorded using the letter A and L keys on a standard keyboard. Responses were then counterbalanced across blocks: block one A=Odd, L=Even, while block two A=Even, L=Odd. The numbers were presented on a standard computer screen using E-Prime application suite. A number, or trial, was presented on the screen for 1200 milliseconds, each a fixation screen preceded trial with a cross for 400 milliseconds. After which, the participants had 1200ms to respond. The hypothesis is not supported, as there was no significant difference found while using a larger scale to test for a SNARC effect. When participants were asked to differentiate between even and odd numbers, on a scale from 10-99, the results indicated that they did very well. However, the results also indicated that there was no significant difference between response time in answering correct and incorrect. The findings support previous research, which demonstrate that magnitude had no significant effect on the accuracy or response rate. Future research might include a larger more balanced sampling group so that more male participants are included.

**Dr. Debra Griffiths**

Faculty Research Mentor Dr. Debra Griffiths is a Experimental Officer in the School of psychology at the University of East Anglia.



Ayanna Jacobs Kalyan

[READ HER STORY](#)

Teachers mindset and opinions regarding inclusion of children with mild disabilities

A growing number of students with mild-disabilities are included in general education classrooms and expected to progress with Common Core Standards (IDEA, 2004). However, many general education teachers express resistance to the idea of inclusive classrooms because of debatable concerns (Avramidis, Bayliss, & Burden, 2000; Ergas, 2014; Ford, 2013). For decades, we have recognized the strong effect of teacher perceptions on student outcomes (Rosenthal & Jacobson, 1992). Mindset theory offers a newer understanding regarding teacher perspectives by identifying growth and fixed mindset (Dweck, 2008). Those with fixed mindsets support beliefs that qualities are permanent while those with growth mindsets espouse beliefs that individual qualities can develop greatly with effort (Dweck, 2008). Teachers with growth mindsets are most likely to expect greater gains for students with the thought of outstanding outcomes. As such, my study will survey teachers regarding mindset and opinion regarding inclusion of students with mild-disabilities in the general education classroom. I am distributing electronic, anonymous surveys to teachers in kindergarten – third-grade classrooms in a large urban school district in the Pacific Northwest. I hypothesize that teachers with fixed mindsets will have less favorable opinions about student inclusion. These less favorable opinions will most likely influence student performance given what we know about the effect of teacher expectations on student performance (Rosenthal & Jacobson, 1992).



Dr. Susan Ruby

TRiO McNair Faculty Research Mentor Dr. Susan Ruby is the Director of Eastern Washington University's specialist level School Psychology Program. She received her Bachelor Science in Psychology from Texas A&M University in 1990 and Masters Science and Education Sciences. Degrees were received from the College of William and Mary in 1993/1994. She worked as a school psychologist in Virginia, Texas, Hawaii, and California before returning to school to obtain her Ph.D. in Education with specialization in School Psychology in 2005 at the University of California, Riverside. Dr. Ruby's research interests involve practices associated with Response to Intervention and development and delivery of academic and social-behavioral interventions for students at-risk in Pre K-12 settings.



Mikaila Leyva

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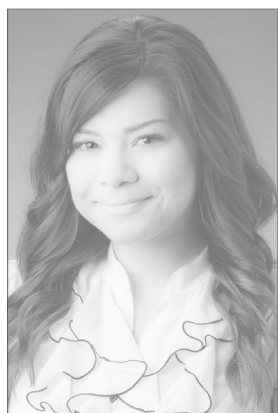
Globalization and the gest worker phenomenon

With the ever increasing ability to access different corners of the earth, the number of migrant workers leaving their homelands in search of transnational labor has grown as well. My research follows the effects of globalization on the group identified as “guest workers.” Due to an extremely globalized society the ability to travel to any country is fairly easy and has prompted the normalization of guest and migrant workers. Therefore, this has had varying effects on the communities of both the home and host countries. By isolating two of the most prominent guest worker populations, Latino migration to North America and the ethnically diverse migration to the Gulf region of the Middle East, I can better connect similarities and highlight differences that both join these communities as well as distinguish them from one another. Together these groups share a lifestyle that is becoming increasingly prominent in present times and has yet to be looked at internally. The first segment of my study examines various investigations and studies performed by scholars previously, this provides a solid background in the history of migration within the given areas and its relation to the current labor force. The second segment of my project required the gathering of first hand interviews from Latino agricultural workers within the Eastern Washington area and mirroring it to the available documentation of the experiences of guest workers within the Gulf region. This internally focused study looks to provide a greater insight into the life of guest workers across the globe as well as connect them to the larger theory of globalization. This will in turn create an alternative view of the populations at hand and the lifestyle that has been forced upon them.



**Dr. Dorothy Zeisler
Vralsted**

TRiO McNair Faculty Research Mentor Dr. Dorothy Zeisler Vralsted is a Professor of Government and International Affairs at Eastern Washington University. Before coming to Eastern Washington University, she was a Professor in the History Department at the University of Wisconsin-La Crosse. Her publications trace the historical development of rivers, water resources in the arid West and the religious and spiritual representations of rivers. Her research includes a manuscript with Berghahn Press that is to be published in November 2014. The manuscript, *Rivers, Memory and Nation-Building: A History of the Volga and Mississippi Rivers* is a comparative study of the two rivers from indigenous use to the present. Her work has been presented at the American Society for Environmental History, American Historical Association, International Water History Association and Western History Association, to name a few. She is currently working with David Pietz of Washington State University in establishing a UNESCO Chair in Water and Environmental History.



Jereny Mendoza

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Reducing population and recidivism rates among racial and ethnic minorities in U.S. prisons

According to the U.S. Bureau of Justice Statistics (BJS), approximately 6,937,600 offenders went under the supervision of adult correctional systems in 2012 and their recidivism rates have remained at 76.6 percent. Aside from having a high prison population rate and high recidivism rates, U.S. prison populations are disproportionately African American or Latino. According to the Sentencing Project, racial and ethnic minorities represent more than 60 percent of the U.S. prison population. Previous studies have found educational/vocational programs to be effective in reducing recidivism and successfully reintegrating ex-offenders into society. However, these studies have mostly collected quantitative data to prove their effectiveness. Despite this, funding for programs that have proven to reduce recidivism rates remains a low priority for policy makers both at the state and federal levels. The main focus of this research project is to identify the attitudes and perceptions of correctional staff and non-violent drug offenders on the effectiveness of correctional education in order to identify possible solutions to reduce the prison population and recidivism rates in the U.S. Through the approval of the Institutional Review Board at Eastern Washington University, the research team was able to interview non-violent drug offenders and correctional staff face-to-face. The total sample for this study is 14 (N=14). Two distinct questionnaires were designed using social learning theory, social identity theory and image theory; significant data was derived from these interviews. Preliminary results from this study show that correctional education is effective in helping ex-offenders gain employment but are deficient in helping them deal with other obstacles they face upon release. Potential solutions for reducing prison population and recidivism rates include the implementation of community development programs among high risk populations and an increase in educational, vocational and rehabilitative programs in prison.



**Dr. Martín Meráz
García**

TRiO McNair Faculty Research Mentor Dr. Martín Meráz García is currently an Assistant Professor of Chicano Studies at Eastern Washington University. His research interests include the U.S.-Mexico relations with respect to the war on drugs, drug cartels, as well as revolutionary movements in Narcotraffickers Book cover Martín Meráz García Mexico and other Latin American countries. Meráz García has presented his research in various regional, national and international conferences He has also engaged in field research in Nicaragua, as well as in various states in the Pacific Northwest including Washington and Oregon. Current publications include “The Psychology and Recruitment Process of the Narco” in the Global Crime Journal and “Cooperation Among the Nicaraguan Sandinista Factions” in the Latin American Policy Journal. As an Eastern TRiO McNair alumnus, he provides valuable insight as a McNair faculty research mentor.

Dr. Martín Meráz García earned his PhD from Washington State University in Political Science. His book, Ordinary Individuals Who Become Narcotraffickers, was published by Kendall Hunt Publishing in 2012.

**Virginia Morales**[READ HER STORY](#)

Brazilian land disputes: The state and the Indigenous community

As Brazil emerges as a key economic player, land projects of development have increasingly violated indigenous rights to the land. Under the Brazilian Constitution of 1988 the state recognizes indigenous' right to pursue their traditional ways of life as well as the permanent and exclusive possession of their traditional lands; however, article 231 and 232 are continuously violated. As for the state intervention, the National Indian Foundation (FUNAI) is inadequate in the protection and implementation of the law. Since, the state and other nongovernmental actors violate allocated policies, revisions should address the outlets that grant this model of conduct. Throughout my literature review, policies from the 1980s onward depict the undermining of indigenous concerns to enhance economic development in the region. Although revisions of policies are discussed, it fails to incorporate suggestions from the indigenous community. The lack of the implementations of treaties, laws, and reservations of the land suggests a need for a new model by which to reformat policies. In future research, I seek to evaluate case studies of indigenous groups in Latin America who have addressed the outlets of allocated policies through grassroots and international actors. All with the purpose of developing technics and practice methods to construct a possible model that would address the alternatives taken in pursuit of economic development and the incorporation of indigenous concerns, as well as their suggestions. As the consequences of climate change emerge, there is a need to revise policy to incorporate a sustainable ecological environment. Therefore, incorporating indigenous groups that have been successful in the maintaining and sustaining of the land would be necessary.

**Dr. Majid Sharifi**

TRiO McNair Faculty Research Mentor Dr. Majid Sharifi is an Assistant Professor in Eastern Washington University in Government and International Affairs. His Past research has explore the paradoxes of nationalism in the Middle Eastern, Muslims countries in general and Iran in particular. His current research explores the intersection between security and violence on the one hand, and subaltern nationalism and social movements on the other hand.



Jessica Ochoa

[READ HER STORY](#)

Latina mothers' health perceptions of childhood obesity in Yakima, WA

Childhood obesity is a serious problem across the United States, especially as children who are obese are likely to become obese in adulthood. According to the Centers for Disease Control and Prevention, obesity has more than doubled in the past 30 years. The city of Yakima, Washington, where Latina/os make up 45% of the total population, was ranked the 8th fattest city in 2008 (29.7%) and by 2013, it ascended in ranking to the 4th fattest city (35.7%). This study examines Latina mothers' perceptions of childhood obesity and what the effect of poverty and migrant status are on these perceptions. The purpose of this research is to identify possible factors that contribute to the increasing rate of childhood obesity in the Latino population of Yakima, an understudied population. Information from published sources and interviews with Latina mothers were conducted to identify the social determinants of childhood obesity. Using a community based participatory research (CBPR) approach, I interviewed 10 Latina mothers in the Yakima area to examine the maternal attitudes toward obesity and weight more generally in children as shaped by poverty and migrant status. The study illustrates how structures affect the food preparation and consumption and the ways in which mothers and children construct and manage identities in relation to food. Also, it documents both Latina maternal attitudes about weight and how they manage the difficulties of serving healthy food given time and money constraints to prevent the incidence of childhood obesity in the area. The study discusses the consequences of definitions of health and alternative criteria with tenable action steps that the community might take as interventions.



Dr. Jerry Galm

TRiO McNair Faculty Research Mentor Dr. Jerry Galm received his B.A. degree from Michigan State University and his M.A. and Ph.D. degrees from Washington State University. His dissertation research focused on Archaic (Wister) and Early Woodland (Fourche Maline) archaeological cultural developments in eastern Oklahoma. Following stops at the University of Oklahoma and the University of West Florida he accepted a position at Eastern in 1981. Dr. Galm spent many years in applied research in addition to teaching and has specialized in lithic technology and the prehistory of the Pacific Northwest since 1981. His previous research includes a coastal erosion study in West Africa as well as archaeological studies throughout the Pacific Northwest. Dr. Galm also traveled to South Kazakhstan State University in Shymkent, Kazakhstan, during the winter of 2007-2008 on a Fulbright Grant.



Dr. Norma Cárdenas

TRiO McNair Faculty Research Mentor Dr. Norma Cárdenas is a Lecturer in Chicano Studies. She holds a PhD in Culture, Literacy, and Language from the University of Texas at San Antonio, where she was a HLPANR fellow. Her interdisciplinary research and teaching interests are in Chican@-Latin@ cultural studies, Chicana feminisms, and food studies. She is currently working on a book titled Forgetting Tex-Mex: Food Representations in San Antonio's Culinary Borderlands.



Le'Naecha Roberts

[READ HER STORY](#)

Treatment for autism spectrum disorder symptoms: Available options and barriers for families

According to Center of Disease Control (CDC), 1 to 1.5 million Americans live with Autism Spectrum Disorder (ASD) with the prevalence estimated at 1 in every 68 births (Center of Disease Control, 2012). Autism spectrum disorder (ASD) is a developmental disorder that appears in the first 3 years of life and affects the brain's normal development of social and communication skills (Autismspeaks, 2014). The severity of ASD may vary from person to person and symptoms, as well as signs, are diverse among the affected population (Center of Disease Control, 2012). Furthermore, methods for treating symptoms of those diagnosed with ASD vary between Westernized Medicines and/or multiple forms of therapies including but not limited to occupational, music, and behavioral. This research will outline current available treatments for Autism Spectrum Disorder and the effectiveness of these treatments with children ages 1-18. In addition, this study will identify factors that influence the parent's or guardian's choice of treatment for their autistic child. The purpose of this study is to identify parent's perception of treatment options and the perceived barriers to treatment. The research will be conducted by administering an anonymous survey to the parents and guardians of autistic children. The researcher received permission to post the survey link on the Autism Speaks website. Data will be analyzed using qualitative phenomenological analysis to identify themes. These themes will be used to answer the original research question. Questions within the survey include demographic questions, such as household income, education, transportation, socio economic status, access to therapeutic facilities, and treatments currently and previously used. The results of this study may provide a view of treatment options, and perceptions of these options from the viewpoint of parents and guardians. This information could lay a foundation for further research on access to services, public health efforts, and methods to remove barriers to treatment.



Dr. Rebecca Rudd

TRiO McNair Faculty Research Mentor Dr. Rebecca Rudd has over nine years of clinical experience working in a variety of mental health settings: private practice, schools, college campus, for-profit agencies and community mental health settings. Her area of interest includes play therapy and mental health counseling. I have been a long-time advocate for play therapy, and she has served as a board member and President for both the Washington and Nevada Association for Play Therapy. Dr. Rudd maintains a strong line of research on parental bereavement due to a sudden and unexpected death. She has presented on parental bereavement and play therapy at universities, agencies, regional and national conferences.



Moses Ssemakula

[READ HIS STORY](#)

Gaining agency among the local communities of northern Uganda

Most of the literature published on Northern Uganda has failed to acknowledge the effort that residents of the region have invested in collaborating with one other to collectively rebuild their communities in response to ongoing direct and structural violence that came as a result of the recent civil war. The local communities of Northern Uganda has gained agency in response to ongoing direct and structural violence in their region. My claim is that agency is going to be utilized as a tool to ensure independence and self-emancipation in reinventing the communities. This desire to advance will be demonstrated through stories that portray autonomy and collective action hence increasing solidarity among community members. The Eastern Washington University I.R.B. committee has approved the research. I have conducted 5 transcribed interviews with people who lived in the region during and after the civil war in Northern Uganda. All my participants moved from Uganda to Washington State. Two of these participants live in Spokane and the three of them live in Tri-cities. I asked them questions about how they define leadership, community engagement, violence and progress. Aside from sociological concepts, the interviews have equipped me with an extensive knowledge of how the local communities define agency. Through the interviews, I was able to categorize three forms of gaining agency among the local communities. The first one is through the implementation of traditional practices, such as art. The second one is through the formulation of projects. The third one is through collaboration with outside organizations. However, the main focus of the research paper is to critique the complexities and ambiguities of agency as it relates to both the individual and the collective.



Dr. Sean Chabot

TRiO McNair Faculty Research Mentor Dr. Sean Chabot has studied social movements for nearly fifteen years. As a graduate student, he became interested in the transnational dimension of the U.S. civil rights movement. Eventually, he decided to focus on how African American activists learned to understand and apply the Gandhian repertoire of nonviolent direct action in their own struggles against racial segregation. Besides these two social movements, he has also written on the gay and lesbian movement, landless workers' movement in Brazil (MST), Zapatistas in Chiapas, and Iran's Green movement.

In a March 2012 dialogue with McNair scholars, Dr. Chabot discussed his newly published book which highlights the role of collective learning in the Gandhian repertoire's transnational diffusion. Collective learning shaped the invention of the Gandhian repertoire in South Africa and India as well as its transnational diffusion to the United States. In the 1920s, African Americans and their allies responded to Gandhi's ideas and practices by reproducing stereotypes. Meaningful collective learning started with translation of the Gandhian repertoire in the 1930s and small-scale experimentation in the early 1940s. After surviving the doldrums of the McCarthy era, full implementation of the Gandhian repertoire finally occurred during the civil rights between 1955 and 1965. This book goes beyond existing scholarship by contributing deeper and finer insights on how transnational diffusion between social movements actually works. It highlights the contemporary relevance of Gandhian nonviolence and its successful journey across borders. Dr. Chabot focused on transnational diffusion between the Indian independence movement and U.S. civil rights movement, which is the subject of his book. He also suggested that his approach applies to the wave of revolution and resistance that is currently making history around the world.

Transnational Roots of the Civil Rights Movement: African American Explorations of the Gandhian Repertoire, was published in 2012 by Lexington Books, an imprint of the Rowan and Littlefield Publishing Group.

ENHANCING AND SUPPORTING FACULTY RESEARCH PROGRAMS



AMY NUÑEZ: FACULTY GRATITUDE

EWU MCNAIR SCHOLAR • 2014

It has been a privilege to have **Dr. Martín Meráz García** as my faculty mentor for the McNair Scholar Program these past two years. It has been through his support and encouragement that I have grown as a student, community organizer, and future scholar.

I first met Dr. Martín during my first year in college when I enrolled in the Introduction to Chicano Culture course. Since then, we have continued to communicate regarding my academic goals and career aspirations. I still remember the day when Dr. Martín approached me to speak about the McNair Scholar Program and the potential he saw in me to someday obtain a doctorate degree. I was completely unaware at the time of how to pursue an education after a bachelor's degree as well as how the McNair Scholar Program would positively impact my life.

Through this program, I have had the opportunity to work with Dr. Martín on an extensive research project regarding "The Perceptions of College among Latino/a Elementary Students." This research has proven to be a vital topic and has ignited necessary academic discourses surrounding how race/ethnicity and gender affect the perceptions of pursuing college in Washington State. It has been presented at conferences nationwide, including the National Conference of Undergraduate Research in Lexington, Kentucky, and the Pacific Northwest Political Science Conference in Bend, Oregon. This experience has been extremely rewarding and has substantially prepared me for the rigors of graduate school.

Dr. Martín has been, and continues to be, a significant role model in my life, and I cannot refer to my successes without attributing much credit to his guidance. It has been through his mentorship that I have had the opportunity to present at conferences, study abroad in Cuba, become a teaching assistant, and apply my research findings by actively engaging in my community. It has been an honor to work with an individual whom I humbly look up to, and I have no doubt that his mentorship will continue to provide guidance as I continue my education in graduate school.

Faculty mentors become recognized and valued by students as professionals and as people who can facilitate their capacity to move beyond the constraints of any preconceived role.



Amy Nuñez

[READ HER STORY](#)

Parents, teachers & the educational system: The disconnect between perceptions and realities regarding the education of Latino children

Research supports the statement that the educational system in the United States can improve the services provided to Latino students in order to increase their chances of attending college. Some concerns raised by scholars include the lack of parental involvement in their children's education due to the un-welcoming environment of schools in addition to the often demanding and inflexible jobs they often perform. These scholars also address issues of the lack of cultural competence among teachers and administrators who can effectively manage issues regarding students' socioeconomic and/or undocumented status, language barriers, and lack of positive appreciation for their cultural identity. This study includes parents and teachers in the discourse surrounding the academic achievement and access to higher education of Latino students.

With approval from the Institutional Review Board, focus groups of parents were conducted as well as a survey to teachers totaling approximately 37 participants (N=37). Parents and teachers were recruited using the Snowball Sampling Method. The focus groups with Latino parents aimed at identifying the educational aspirations they have for their children as well as factors they believe may be contributing to the academic perceptions of Latino students. Additionally, the survey of approximately 25 teachers in several school districts across Washington State was conducted with questions aimed at gauging their cultural competency. The study finds that parents are highly optimistic of their children's educational futures and teachers are overly confident in their cultural competency and ability to prepare Latino students for the rigors of higher education.



**Dr. Martín Meráz
García**

TRiO McNair Faculty Research Mentor Dr. Martín Meráz García is currently an Assistant Professor of Chicano Studies at Eastern Washington University. His research interests include the U.S.-Mexico relations with respect to the war on drugs, drug cartels, as well as revolutionary movements in Narcotrafickers Book cover Martín Meráz García Mexico and other Latin American countries. Meráz García has presented his research in various regional, national and international conferences He has also engaged in field research in Nicaragua, as well as in various states in the Pacific Northwest including Washington and Oregon. Current publications include "The Psychology and Recruitment Process of the Narco" in the Global Crime Journal and "Cooperation Among the Nicaraguan Sandinista Factions" in the Latin American Policy Journal. As an Eastern TRiO McNair alumnus, he provides valuable insight as a McNair faculty research mentor.

Dr. Martín Meráz García earned his PhD from Washington State University in Political Science. His book, Ordinary Individuals Who Become Narcotrafickers, was published by Kendall Hunt Publishing in 2012.

Empowering participants to become agents of positive change in a culturally diverse world



McNair helped me break down my personal barriers of self-doubt, which haunts all first-generation and low-income students. McNair provided the guidance in application, personal support during my academic journey, and celebration when I finished both my Master's in Biology (EWU) and Doctorate in Anthropology (WSU).

–Kerensa Allison, PhD • EWU TRiO McNair 1996



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