

# EWU Ronald E. McNair Postbaccalaureate Achievement Program

## EWU McNair Scholars' Abstracts - 2019



*Before you can make a dream come true,  
you must first have one.*

# McNair Scholars Abstract Journal

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Ronald E. McNair Postbaccalaureate Achievement Program

Eastern Washington University

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The McNair Scholars Program is a TRIO Program.



# McNair Scholar Program Staff

We are a close team of creative professionals at Eastern Washington University who are dedicated to the mission of McNair. We provide support, connection, and guidance for EWU's McNair Scholars as they work to become scholars and excellent candidates for Masters and PhD programs across the country.



Christina Torres  
García, PhD



Cynthia Dukich, MFA



Najeda Patolo, MS



Brandon Flatgard, BA



Cori Jaeger, MEd



## What we do

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.

It is with great pride that I present the McNair Scholars Collection of Research Abstracts 2019-2020! One of the most exciting aspects of the McNair Scholar Program is the opportunity for undergraduates to participate in research experiences that prepare them for success at the doctoral level. Here you will find the culmination of intensive research conducted by our McNair Scholars with EWU faculty mentors during their McNair summer research internship and academic year. It also includes the research done by our EWU McNair scholars who were selected for summer research opportunities outside Eastern at MIT, Fred Hutchinson, and the University of Notre Dame.

Since the first EWU McNair grant in 1995, McNair has worked closely with Faculty to build a research centered community where students thrive in their pursuit of their Ph.D. and careers in university. Mentors are at the heart of what McNair facilitates for our scholars. While the role of advisor is usually focused on guiding academic progress, the significant commitment of our EWU McNair mentor's is centered on advancing the student's career through an interpersonal engagement that provides guidance while sharing experience and expertise. EWU McNair faculty mentors take this role seriously in the development of a future research colleague, especially for first-generation and low-income students with unique needs and unique rewards.

McNair is always looking for mentors who match the student's research interests, discipline and learning preferences, as well as faculty who are available during the summer and willing to commit to supporting the scholar throughout the research internship and their continued academic path.

If you are interested in mentoring McNair students and assisting in developing the new generation of scholars, please nominate a student who you would like to work with for the McNair orientation during the fall quarter by sending an email to me or using the McNair nomination card. Also, potential applicants will be completing a faculty interview assignment, and this is an opportunity for you to share your desire to mentor them in a research project. Our quest is to continue and extend our partnership with EWU McNair mentors and collectively support the transformation of our students.

The rewarding aspects of teaching and mentoring first-generation, low-income students are priceless. We have worked diligently to run one of the most prestigious and successful programs at EWU and one of the top programs in the region. In addition to the faculty-mentored research project, McNair scholars also participate in a series of seminars to support their academic development.

Winter: Building Scholarly Identity

Spring: Research Methods

Summer: McNair Research Internship

Fall: Graduate School Application Process

McNair utilizes a collaborative class setting, as well as personalized needs assessment and one-on-one academic coaching. Canvas modules for each seminar enhance face-to-face teaching by giving an overview of such things as how to write an annotative bibliography, develop and complete a research proposal, conduct a literature review, and formulate research methods. Seminars also emphasize elements of analytical writing. In addition to facilitating seminars, McNair staff support all elements of the graduate school application process as well as prepare scholars to seek out academic conferences, submit travel grants, apply for Summer Research Internships and graduate fellowships, such as NSF and Ford, along with other scholarships.

I want to thank the people who work behind the scenes to sustain the McNair program, especially to our McNair Staff: Cynthia Dukich, Najeda Patolo, Cori Jaeger, and Brandon Flatgard, for working diligently in advising and guiding students to success. I also want to thank the Writer's Center and the wonderful Scholars' Cafe speakers. I am incredibly grateful to all of you.



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



**Halim Acosta**

### **Application of Space Filling Curves to The Dynamic Mobility on Demand Problem**

Ride-sharing (also called Car-pooling), by having more people using one vehicle, may reduce each person's travel costs such as fuel, tolls, and the stress of driving. Ride-sharing is also a more environmentally friendly and sustainable way to travel as sharing journeys reduces air pollution, carbon emissions, traffic congestion, and the need for parking spaces. A ride-sharing system dynamically optimizes the process of dispatching riding providers to serve a set of riding requests, in attempt to minimize parameters, such as overall travel distance waiting time, for a large geographical region. Many challenges are confronted in the current research. First, the system is stochastic since riding requests can be made at any random time instant, which forces the system to recalculate the dispatching scheme constantly once a new group of requests are made. Second, the system must find the optimal solution based on a large volume of data, including a large set of ride requests, providers, and a large volume of geographical map data. Third, the system must find the optimal solution for all providers and requests in a real-time manner. Space filling curves have the property of mapping  $n$ -dimensional data onto 1-dimension and consequently turns it into a one-dimensional problem. Given this property, we apply it to the problem of efficiently routing a fleet of vehicles to a set of requests such that we minimize the total cost of service. In this study, we find an optimized dispatching scheme for the mobility on demand problem that works to minimize overall travel distance and waiting time for a large city such as New York. To do so we explore the locality preserving properties of space filling curves and their ability to map multi-dimensional data to a single dimension. We use the existing big data set that is provided on the website of the New York city taxi public dataset to test and verify our system.



**TRIO McNair Faculty Research Mentor** Dr. Yun Tian (Tony) is an Associate Professor of Computer Science at Eastern Washington University. His research interests include Grid and Cloud computing, parallel computing, GPGPU computing and Big Data.





**Madelyn Brown**

### **Maintaining Our Land: Traditional Ecological Knowledge and Wildfire Prevention**

For over 100 years, Euro-American strategies devised and implemented in the western United States have contributed to the exponential increase in wildfires. By enforcing suppressive measures to disrupt the natural fire regimes, U.S. fire management agencies changed forest structures, wildfire severity, and previous preventative methods utilized by Indigenous peoples in the Northwest. Heavily influenced by past policies and Eurocentric beliefs, the continued tactics used to eliminate wildfires from ecosystems have instigated a greater occurrence of fires throughout our western forests as burnable fuels grow rampant. Taking into account the historic discrimination against Traditional Ecological Knowledge and its benefits in forest—and wildfire—management, I propose that these care techniques, specifically the acceptance of fire as a viable influence in forest health, should be taken into consideration when utilizing preventative measures against human-caused events.

**TRIO McNair Faculty Research Mentor** Dr. Christina Torres García is the Director of the McNair Scholars Program at Eastern Washington University. Her research interests focus on historical, social, and political issues affecting Chicanas/Latinas in the Pacific Northwest.



**TRIO McNair Faculty Research Mentor** SimHayKim S. Jack is a lecturer for American Indian Studies at Eastern Washington University and a PhD student at UC Davis in the Department of Native American Studies.



**Miriam Carlson**

**COGNITIVE APPRAISAL AND DEBT AVERSION**  
**The Effects of Cognitive Appraisal on Postsecondary Education**

Few studies have gone beyond evaluating the students' socioeconomic status and how their status influences academic achievement in higher education. While previous research makes an attempt to address the notions surrounding attrition, retention, and persistence the findings are more multifarious than previously assessed. Therefore, the purpose of this study is to examine the concept of cognitive appraisal in relation to higher education. The study seeks to evaluate how the appraisal of perceived barriers, mainly debt aversion, influences individual resolutions to pursue and complete higher levels of education. Using a qualitative, correlational design, the researcher examines the differences between the perceptions of traditional and nontraditional students. The researcher hypothesizes the following: (1) Individuals who make positive appraisals are more likely to complete their undergraduate program, and if needed, obtain a graduate degree; and (2) individuals who are debt-averse may not consider the benefits of higher education, resigning themselves to lower-paying jobs and fewer opportunities. The research will help further our understanding of the role cognitive appraisal plays in debt aversion in nontraditional individuals, which can ultimately point to potential avenues for intervention. Research in mental processes that impact decision making is critical because as a society, it behooves us to find a way to challenge adverse mental processes (such as negative appraisals) of nontraditional students to better level the playing field for future education and career participation.



**TRIO McNair Faculty Research Mentor** Dr. Aryn Ziehnert is a Lecturer in the Psychology Department at Eastern Washington University. Her research interests include childhood adversity, early maladaptive schemas, stigma, and shame.



**Malachi Chukwu**

### **Economic development in the Global South: A case study of Niger Delta, Nigeria**

Although President Truman promised to invest in the economic development of the whole world in 1949, the Global South remains trapped in its abject poverty. For the last seven decades, the extant Eurocentric literature produced by mainstream scholars of economic development has promoted several prescriptive models presumably designed to improve the standard of living for people living in the Global South. With every new model, the Global South has been coerced into adopting such models. Tragically, these models have all failed mostly at the expense of people of the South. And with each failure, a different set of prescription has been offered and pushed. The long-term effects of such models have not short of immense capital accumulation for multinational corporation in the Global North and increasing (in absolute term) poverty, pollution, political instability, inequality, and social fragmentation for the Global South. After reviewing this background, this paper focuses on the pervasive stage of underdevelopment in Niger Delta and examines the failed policies of Eurocentric models of development that have helped create human insecurity, political instability, environmental disaster, and social fragmentation. Employing a qualitative analysis of the extant literature on the role of multinational oil companies in Niger Delta, the paper reviews such failed policies. As a case study of insecurity in Niger Delta, the paper relies on scholarship produced by critical scholars, such as Esteva, Babones, and Babcicky Cyril Obi, Tarila Marclint Ebiede, Philip McMichael and Tombori Bodo to make its assessment and make its final conclusion.



**TRIO McNair Faculty Research Mentor** Dr. Majid Sharifi is the Director of International Affairs and an Associate Professor in the Political Science Department at Eastern Washington University. His research interests include nationalism, security and insecurity, and violence and inequity.





**Rosa Espinosa Zuniga**

**Gratitude, Spirituality, and Religiosity as predictors of psychological well-being in Latinx Aging Population**

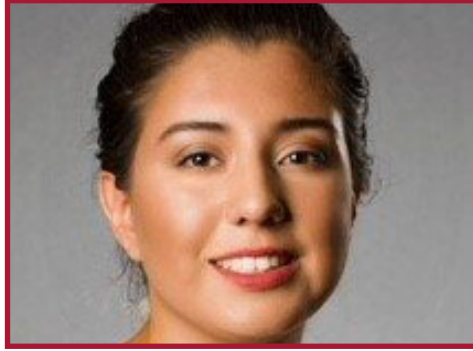
The purpose of this study is to test if there is a correlation between the level of spirituality, religiosity and the mental health of elders. Research has attributed the fluctuation in the mental health of older adults not only to spirituality, religiosity, meaning in life and gratitude but also to the physical health. A study that shows the correlation between the involvement in religious activities, having a clear meaning in life, and the level of spirituality displayed by the elders in institutionalized care or community living with the mental health that they show throughout their aging process.

The views of what encompasses mental health or whether or not an individual need to receive therapy or any kind of anti-depressive drugs to assure that they will continue to have a progressive aging process is shown to be different from culture to culture. This study will employ the gratitude questionnaire, satisfaction with life scale, and the meaning in life for the purposes of showing the way these affect the perception of mental health and the mental well-being of elderly from different cultural/ethnic groups.

**TRIO McNair Faculty Research Mentor 2019** Dr. Theresa Martin is a Professor in the Psychology Department at Eastern Washington University. Her research interests Social Psychology with an emphasis in Health Psychology and Intimate Relationships (including LGBTQ+, Gender, and Sexual Orientation).



**TRIO McNair Faculty Research Mentor 2018** Dr. Phillip Watkins is a Professor in the Psychology Department at Eastern Washington University. His research interests include how gratitude enhances happiness and wellbeing and the nature of joy and its relationship to well-being.



**Angelica Garcia-Macias**

### The Latiné vote, representation through whiteness

The Latiné demographic is estimated to surpass 30% of the United States population by 2060 (Taylor, P. 2013). Our political institutions will inevitably be shaped as the electorate demographic changes. However, the Latiné community has varying identities and this project captures their turnout based on the identity of whiteness. This MIT Summer Research Program project will analyze the voting behavior of Latiné turnout based on family income in order to understand the potential impact of their political behavior built on the US Census Bureau identification data . Furthermore, this project reflects state by state voting turnout. Simultaneously, Critical Race Theory is utilized to outline the voting behavior within the Latinx community and formulate the methods used in this investigation. The mixed methods that are incorporated are the statistical reviewal of previous voting records using the language Stata to audit the United States 2014 and 2018 midterm elections. Those that did not identify as white, but Latiné have a decrease rate of voting turnout versus Latine that is white identifying. Yet, the limitations presented in the research is the small sample size that is used to represent the Latiné community. The pan-ethnic label minimizes the experiences that occur within the Latiné community.



**Research Mentor** Dr. Charles Stewart III is a Kenan Sahin Distinguished Professor of Political Science at MIT. His current research about Congress touches on historical development of committees, origins of partisan polarization, and Senate elections.



**Darlene Gilroy**

**Chemical Weathering of the Sediments Deposited by the 1980 Mt. St. Helens Eruption  
and its Effect on Stream Water Chemistry**

The chemical weathering of the volcanic sediments deposited by the 1980 Mt. St. Helens (MSH) eruption was investigated using a sequential leaching process. The following three leachates were used to simulate chemical weathering: ultra-pure water ( $H_2O$ ), 1 N acetic acid ( $CH_3COOH$ ), and 1 N nitric acid ( $HNO_3$ ). The aim of the study was to determine the relative resistance of MSH rock types to chemical weathering. This was done through evaluation of the chemical composition of individual leaches analyzed using an inductively coupled plasma optical emission spectrometer (ICP-OES).



**TRIO McNair Faculty Research Mentor** Dr. Carmen Nezat is a Professor of Geology at Eastern Washington University. Her research interests include water and soil geochemistry, biogeochemistry, mineral dissolution, and environmental geology.





**Theresa Lee**

**Prisoner Reentry:  
College Perceptions of Reentry Barriers in a Northwest Community**

The United States has experienced an enormous rise and fall in crime rates, while incarceration rates have continued to soar. One of the many pressing concerns about the era of mass incarceration, especially in times where decriminalization of drug offenses occurs, communities are faced with increases in returning inmates and resources needed for successful reentry. This study is focused on community perceptions of college students toward barriers faced regarding incarceration, prisoner reentry, and improving recidivism rates in communities. Qualitative data are collected from interviews and focus groups conducted in an Inland Northwest community, to shed light on the community's perception of barriers to reentry that might interrupt successful reentry for inmates or that may be viewed as more helpful for inmates' successful reentry. This research extends our understanding of community perceptions of barriers faced in interrupting the cycles of incarceration as well as provides an assessment and evaluation of what exists, what is needed, and what has worked in this community. The research has implications for local criminal justice reform efforts to better provide services and resources for returning inmates.



**TRIO McNair Faculty Research Mentor** Dr. Lindsey Upton is an Assistant Professor of Sociology at Eastern Washington University. Her research interests include social justice, gender and crime, homelessness and poverty, and public policy.



**Lily Ann Long**

### **A Thematic Analysis of First-Generation Students' Experiences of Shame in University**

The purpose of this study was to explore first-generation students' experiences of shame as they relate to academic contexts, with the intention of furthering the discussion about effective university interventions. Sohn's (1977) model of 'morally un/neutral affects' was considered to demonstrate that attributions of academic performance to shame often have significant affective impacts. Brown's (2006) Shame-Resilience Theory (SRT) was also considered to demonstrate how experiences of shame affect marginalized individuals. In this study, 7 first-generation, undergraduate students at Eastern Washington University participated in semi-structured interviews. These interviews consisted of 11 questions and lasted approximately 90 minutes. A thematic analysis of transcripts identified themes of shame related to feelings of institutional connectedness, access to resources, external responsibility, and persistence and resilience. These findings further implicate the vitality of university resources for non-traditional students. Additional research exploring the relationship between shame, academic performance, and marginalized identity is needed.



**TRIO McNair Faculty Research Mentor** Dr. Aryn Ziehnert is a Lecturer in the Psychology Department at Eastern Washington University. Her research interests include childhood adversity, early maladaptive schemas, stigma, and shame.



**Alex Lopez**

### **Ungulate Activity: Effects of Season, Hunting Pressure, and Plant Type**

Quaking Aspen (*Populus tremuloides*) is considered priority habitat because it supports diverse understory flora and provides critical nesting and foraging habitat for wildlife. Aspen populations in western North America have declined due to fire suppression and browsing. Turnbull National Wildlife Refuge in eastern Washington addressed declining aspen with prescribed burns. However, aspen growth stimulated by burning was offset by browsing, especially by Elk (*Cervus elaphus*). Increasing elk numbers prompted initiation of a limited hunt to cull and disperse elk off refuge. To address the impact of these management strategies, we used remote video cameras to monitor activity of Elk, deer (*Odocoileus virginianus* and *Odocoileus hemionus*), and American Moose (*Alces americanus*). Cameras were positioned at five locations on the refuge. Video footage from March 2018 to January 2019 was analyzed to examine differences in seasonal activity, activity between hunt and non-hunt units during the hunting season, and browsing activity on different plants. Elk were recorded 153, deer 228, and moose 99 times. Although mean activity between seasons was not significantly different, elk activity tended to decrease in winter. Elk are known to move off refuge in the winter. Low sample size limited comparisons of activity in hunt versus non-hunt areas during archery, modern firearm, and muzzleloader periods. Nonetheless, no species exhibited decreased activity in the hunt areas and deer activity was greater in these areas. Elk and deer spent more time browsing on dogwood than on aspen or grass; there is evidence that dogwood has higher nutritional value.

**TRIO McNair Faculty Research Mentor** Dr. Paul Sprell is a professor in the Biology Department at Eastern Washington University. His research interests include fisheries biology, molecular ecology, and conservation genetics.



**TRIO McNair Faculty Research Mentor** Dr. Margaret O'Connell is a professor in the Biology Department at Eastern Washington University. Her research interests include animal population ecology and community structure and conservation wildlife-habitat relationships.





**Wendolyn Martinez**

**Propaganda: USSR and US: Comparing Propaganda from the US and the USSR Produced for the Advancement of Public Approval for Hydro-Projects in the 1930s**

The Union of Soviet Socialist Republics (USSR) came into power in the late 1910s toppling the Tsar regime in Eastern Europe. Known for its massive propaganda scheme and anti-United States (US) rhetoric, it was ingrained in history books throughout the western world. Its massive propaganda state contributed to the massive anti-Soviet rhetoric being produced in the West, this project will be a comparative analysis of the production of propaganda in the US and USSR. The United States continually denounced the various uses of propaganda in the Soviet Union through the republic's lifespan, from its beginning to its collapse. Unknown to the public of this era is that the United States contributed in similar practices of state sponsored artwork, photographs, music, and publications rebranded as promotional work instead of propaganda. For example, when building the Grand Coulee Dam in the state of Washington the US produced music and commissioned photographers in order to inspire hope during the Great Depression. Similarly, the USSR had a state sponsored magazine. The USSR in Construction to document and show the public the monumental works the government was building in order to modernize the state. This project will focus on one hydro-project from both states and the propaganda affiliated with each work in order to find similarities and differences in the countries use of propaganda during the interwar period. As a result, this project will bring awareness to US audiences about its influences and use of propaganda on its public during the interwar period which duplicate USSR strategies and may be seen today.



**TRIO McNair Faculty Research Mentor** Dr. Zeisler-Vralsted is a professor of Government and International Affairs at Eastern Washington University. Her research interests focus on the historical development of rivers and water resources and the religious and spiritual representation of rivers.



**Abdulrazik Mohamed**

### **Sudanese in Diaspora: Perception of the conflict in Darfur, Sudan's past and the future of Darfur**

A strong scholarly focus and interested in Sudanese studies has come to life corresponding to Sudan's past and present conflicts and instability. Many scholars have extensively explored Sudan's Darfur and present a major literal contribution of otherwise limited Sudanese studies. The main focus of this research is the genocide in Darfur and the international response. While there's an extensive research on Darfur among a vast number of scholars, there's limited comparative research that collate Darfur to the past civil wars in Sudan. A major focus on this research is looking Darfur from Alex de Waal's center-periphery hypothesis in Sudan (2007), assessing how the Government of Sudan used this strategy to displace the peripheries in order to extract resources. The second aspect of this study is to analyze the failed international response to the Darfur genocide from the perspectives of Sudanese in diaspora. While the international response to Darfur is widely acknowledged as failure, this study takes additional step to investigate these sentiments from the perceptions of Sudanese/Darfurians in diaspora with a survey analysis of (N=200) individuals. A combined analysis of current literature on Darfur with the surveys will reveal a perceived nature and solution to the contemporary crisis as well as future of the Darfur at the height of international presence. The perceptions from the survey result would contribution a unique perspectives to the current literature on Darfur, Sudan Studies. Reflecting the voices of Darfurians in diaspora with present literature on Sudanese studies, the goal of this research is to combine the past and present, and predict the future of Darfur under its current circumstances.



**TRIO McNair Faculty Research Mentor** Dr. Zeisler-Vralsted is a professor of Government and International Affairs at Eastern Washington University. Her research interests focus on the historical development of rivers and water resources and the religious and spiritual representation of rivers.



**Marcos Monteiro**

### **Bioengineering *Escherichia coli* as a Tool for Understanding Carcinogenic Products of Bile Acid Metabolism by Gut Bacteria**

Conjugated bile acids (CBA) are synthesized by the liver from cholesterol and released into the small intestine to emulsify fats and insoluble vitamins. *Bacteroides vulgatus* is a gut microbe that efficiently metabolizes CBA into unconjugated bile acids (UBA); its genome encodes three distinct bile salt hydrolase (bsh) genes. UBA can be further modified by gut bacteria to produce deoxycholic acid (DCA), high levels of which are linked to colorectal cancer and colorectal adenomas. It is unclear how multiple encoded bsh genes relate to robust deconjugation by *B. vulgatus*. We hypothesize that one or more bsh genes encode enzymes that are efficient in deconjugation and that co-expression of multiple bsh genes enables efficient deconjugation by *B. vulgatus*. Our goal is to functionally characterize each *B. vulgatus* bsh genes via recombinant expression in *Escherichia coli* using the pBAD plasmid system. To validate our use of the pBAD plasmid system, we cloned the red fluorescent protein (RFP) gene into pBAD. Our results show that bsh 2, bsh 3, and RFP were cloned into pBAD in the desired region and successfully transformed into *E. coli*. We verified our results through plasmid extraction followed by PCR targeting the gene of interest, and via capillary sequencing. Future work will involve assessing the deconjugation ability of each bsh gene by culturing these *E. coli* constructs with conjugated bile acids. This work will further our understanding of *B. vulgatus* and other bsh-expression microbes contribute to the production of DCA and the development of colorectal cancer.



**Research Mentor** Dr. Neelendu Dey is a physician-scientist at Fred Hutch who studies how the microbial communities residing in our intestinal tracts - the gut microbiome - influence health and disease. His research lab seeks to develop microbiome-based strategies for preventing and treating cancer.





**Rachel Silverthorn**

### **The Effects of Pregnancy on Jury Perceptions**

Given the impact pregnancy has in other areas of life it makes sense that when a woman is brought into the criminal justice system pregnancy will play a role in how others perceive her. While research exists on the implications of pregnancy on incarceration, there is a gap regarding the trial phase and the effects of pregnancy on the adjudication process. The purpose of this study was to determine whether pregnancy status impacts jury perception of female defendants. It was hypothesized that a pregnant defendant would evoke sympathy in a trial situation and consequently a pregnant woman would be judged less harshly by a juror than a non-pregnant woman when committing similar crimes. Participants were an anticipated 200 undergraduate students from a regional university in the Pacific Northwest of the United States. Data collection is currently in progress and 150 males and females have completed the study to date. Participants signed up for the study through the University Research Site and completed the study online through Survey Monkey. There were two independent variables (male vs. female) and (pregnant vs. not pregnant). Participants completed a general demographic survey as well as the Attitudes Towards Jury Service Questionnaire, and the Marlow Crowne Social Desirability Scale, (MC-SD; Crowne & Marlow, 1960). Additionally, six scenarios, created by the primary author, with women committing crimes of varying degrees of seriousness. Scenarios included the first name and age of the woman, pregnancy status, and crime she committed. Participants each read six scenarios followed by questions regarding each scenario. Participants were asked to make decisions regarding guilt. Perception of guilt and severity of sentence served as dependent variables. Research regarding the role pregnancy plays in a trial the judicial system is important to understanding the potential biases present for women in the criminal justice system and ensuring a fair trial process. By understanding how pregnancy status can affect a juror's perception of women on trial jurors can be chosen with these biases in mind. This can also be helpful in simply educating jurors and jury selection committees of the potential for these biases in the trial phase.



**TRIO McNair Faculty Research Mentor** Dr. Kayleen Islam-Zwart is a Professor in the Psychology Department at Eastern Washington University as well as the Department Chair. She is also the Director of Psychology at Eastern at Bellevue College. Her areas of specialization are clinical psychology, forensic psychology, and cognitive and neuropsychological evaluation.



**Marixza Torres**

**Predicting Work Orientation among Adolescents with ADHD:  
Importance of Co-Occurring Problems and Parenting**

Work orientation reflects one's work skills, quality of performance and capacity to experience pleasure in work (Greenberger, 1974). Given characteristic symptoms of ADHD, adolescents with ADHD may have lower work orientation than typically developing adolescents (Smith, 2018). Co-morbid problems such as learning disabilities and externalizing and internalizing behaviors may also affect work orientation among adolescents with ADHD (Smith, 2018). However, the ADHD population is heterogeneous, and it is unclear what specific factors are likely to influence work orientation. The goal of the current study was to examine the relative contributions of ADHD symptoms, internalizing and externalizing behaviors, and parenting to the prediction of work orientation among adolescents with ADHD. The sample included 107 mother-adolescent dyads recruited from local schools (adolescent M age = 12.57 years, SD age = 1.18; 69.2% male). Adolescent ADHD diagnosis was confirmed via maternal interview. Mothers reported adolescent ADHD symptoms with the ADHD Rating Scale, and adolescent internalizing and externalizing behaviors with the CBCL. Mothers also provided demographic information. Adolescent IQ was assessed with the KBIT. Adolescents rated maternal parenting behavior with the APQ, and their own work orientation with the Psychosocial Maturity Inventory (Greenberger et al., 1975). Work orientation was correlated at  $p < .05$  with internalizing and externalizing behaviors ( $r_s = -.21$  and  $-.29$ , respectively), a composite (sum) of the APQ positive parenting and involvement subscales ( $r = .38$ ) and family income ( $r = .23$ ). The remaining variables (e.g., KBIT total, ADHD total symptoms) were not correlated with work orientation ( $p_s > .05$ ) and were not analyzed further. Hierarchical regression indicated that family income (step 1) adolescent externalizing (step 2), and parenting (step 3) all accounted for unique variance in work orientation. Of interest, parenting significantly accounted for unique variation in work orientation over and above the other predictors. Although work orientation might be considered an individual characteristic, parenting may provide an important context in which it is fostered. Our results suggest that interventions to increase life skills including work orientation among adolescents with ADHD should consider the influence of co-occurring problems and the impact of the family context.



**Research Mentor** Dr. Dawn M. Gondoli is a Professor at the William J. Shaw Center for Children and Families at the University of Notre Dame. Dr. Gondoli's research focuses on adolescent development within the family context with an emphasis on parenting practices and the determinants of parenting.

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