2nd annual early career Research Symposium

04, 2019
# Welcome

Thank you for joining us at the second annual Early Career Research Symposium presented by the Office of Research Administration.

This event showcases the emerging research programs of early career faculty at the University of Missouri-St. Louis and helps faculty connect with potential collaborators across disciplines. The Early Career Research Symposium and events like it are important components of strengthening the research culture at UMSL. They’re also a lot of fun.

Today you will hear about the fascinating social lives of microbes and the neurocognition of emotions and romantic love. You will hear from UMSL researchers working to improve our understanding of critical issues facing the St. Louis region and beyond including opioid addiction, human trafficking, health disparities in African-American neighborhoods, and life for local residents after the death of Michael Brown.

To our presenters: thank you for sharing your research with the UMSL community today.

To our audience: thank you for coming out to support our junior faculty and to celebrate the outstanding research occurring at UMSL.

Enjoy the symposium and the reception that follows!

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*Christopher D. Spilling, PhD, CChem, FRSC
Vice Provost for Graduate Studies and Research, Professor of Chemistry*
Understanding Psychological Response Following Cancer Diagnosis  Mei Bai, Assistant Professor, Nursing

Cancer is among the leading causes of morbidity and mortality in the world today. Cancer diagnosis introduces an immediate life threat; it may challenge patients’ former assumptions and beliefs about themselves and the world, threatening self-views and worldviews, generating negative emotions, and potentially compromising quality of life (QOL).

The study aims to address the psychological response following cancer diagnosis via affirming one’s most valued self-beliefs to enhance self-esteem, facilitate psychosocial adjustment, and improve QOL outcomes. The primary aim of this study is to assess the feasibility of recruiting adult patients with stage III or IV cancer within 30 days of being informed of the diagnosis into an intervention study testing the effect of self-affirmation. The secondary aim is to explore the short- and longer term effects of this intervention.

This is a feasibility and preliminary efficacy trial, using a pre-post single group study design. Patients will be instructed to write with a focus on affirming their fundamental values and beliefs. Potential subjects will be identified at the VA St. Louis Health Care System and the intervention will be conducted at patients’ homes. The targeted enrollment is 70 with an estimated 15% attrition, leaving approximately 60 to be analyzed. Measures include: the Rosenberg Self-Esteem Scale (RSE), the 12-item Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being scale (FACIT-Sp-12) (version 4), the Hospital Anxiety and Depression Scale (HADS), the Functional Assessment of Cancer Therapy-General (FACT-G) (version 4), demographic form and contact information, and the checklist of intervention implementation.

Building Better Systems of Support for Foster Youth Who Utilize Psychotropic Medications  Julie Bertram, Assistant Professor, Nursing

Child maltreatment significantly predicts future health problems and premature mortality (Campbell et al., 2016; Hughes et al., 2016; Kelly-Irving et al., 2013). Some, but not all, of the common Adverse Childhood Experiences (ACEs) lead to foster care placements, cumulative traumatic stress resulting in mental and behavioral health problems, and thus, high rates of psychotropic medication use in foster youth. Missouri foster care agencies struggle to care for children and youth with these complex trauma histories. My program of research examines and analyzes the processes by which stakeholders build knowledge, confidence, and advocacy skills around psychotropic medication management for foster children.

I am in process of executing a mixed methods design, using a combination of one scale and two qualitative sources (Creswell & Plano Clark, 2007), collecting data from participants who attend trainings I developed. To date, the pre- and post-tests ABC Medication Scale showed increased scores following the training. Artifacts from online training showed insight and motivation of a subset of volunteers to learn more about medications. An analysis of interview findings and informal conversations with leadership led to a revision of design for implementation of the training with foster parents. My next step is to deliver the modified trainings to foster parents, employing a similar 2-hour format, but I will use foster parent mentors to modify the curriculum for literacy. I will not offer a 3-month web-option for foster parents. Following training and data collection of foster parents, older youth will be trained. Collaborators include the Children’s Division of the State of Missouri, and specific private and public sector agencies within the St. Louis Region.

RESEARCH & INNOVATION RECEPTION
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Neighborhoods, Networks, and Crime  Adam Boessen, Assistant Professor, Criminology & Criminal Justice
My research focuses on neighborhoods and crime, and largely centers on why some areas of cities have more crime than others. Specifically, I am interested in spatial and temporal patterns of residents and neighborhoods, how these patterns change over time, and the consequences of this change for neighborhood crime. I examine these interests by investigating the spatial aspects of neighborhoods, including the land uses within and around neighborhoods. My work also focuses on social networks, their spatial distribution, and how these networks play a role in neighborhood processes. My approach is theoretically driven and interdisciplinary, drawing from criminology, sociology, and geography, while using a variety of quantitative and GIS techniques.

Serving Children of Incarcerated Parents: A Case Study of School Counselor’s Experience  Emily Brown, Assistant Professor, Education
One in every 14 children under the age of 18 has a parent incarcerated at some point since the child’s birth (Murphey & Cooper, 2015). An instrumental case study design was used to consider the experiences of school counselors who served children of incarcerated parents in a single school district in a southeastern state. Participants sought to meet the needs of children of incarcerated parents (CIP) using skills inherent in their professional roles; however, they experienced barriers navigating professional roles and meeting the needs of CIP.

Profiles of High School Students’ STEM Career Aspirations  Mary Edwin, Assistant Professor, Education
Science, technology, engineering, and mathematics (STEM) fields have a need for recruiting and retaining a diverse workforce. Understanding students’ aspirations to STEM careers is important for supporting underrepresented populations. Data from a nationally representative sample (N = 20,010) of high school students who reported career aspirations were analyzed. Analyses revealed significant relations between students’ aspirations and demographic variables, and differences in aspirations based on students’ race and gender. Findings highlight a need for counselors to implement career interventions that address students’ cultural contexts.

Religion and Women’s Reentry from Prison  Rachel Ellis, Assistant Professor, Criminology & Criminal Justice
What is the role of religion in the process of reintegrating into society after prison? Reentry is one of the biggest problems facing criminal justice today, and there are compelling reasons to believe religion is a crucial aspect of reentry for some formerly incarcerated people. Quantitative studies have shown that those who are religious are less likely to reoffend than their nonreligious counterparts. In this study, I draw on in-depth interviews with 48 formerly incarcerated women in the St. Louis metropolitan area to interrogate the role of religion in assisting with the challenges of reentry. Preliminary findings suggest that the social capital and community support offered by religious institutions bolster, in tangible ways, religious narratives of personal transformation.

The National Association for Gifted Children estimates that 10% of children in the U.S. could be eligible to receive gifted education services (NAGC, 2019). Previously, I found that only 1% of secondary art educators nationwide reported receiving in-service training regarding the academic and affective needs of high ability visual artists (HAVAs) (Fisher, 2016). This indicates that up to 10% of students in the U.S. may not be receiving proper support, instruction, and resources within the art classroom. This study aims to outline the findings of a follow-up study, which sought to determine whether the same trends existed among elementary art educators. Data collection involved questionnaires, checklists, open write-in answers, and one-on-one interviews. Utilizing a grounded theory lens, data I collected from elementary art educators mirrored the data previously collected from secondary art educators. Both data sets indicated that respondents generally felt undertrained, yet confident in their ability to meet the academic and affective needs of high ability visual artists within their classrooms.
August and Everything After: The Next Five Years after Michael Brown
Michael Gearhart, Assistant Professor, Social Work

Data for this presentation is drawn from two studies conducted in Ferguson. The first study is an evaluation of the Ferguson Community Empowerment Center (FCEC), which was completed in the fall of 2019. The second study is an ongoing community assessment of Ferguson that focuses on police-resident relationships.

A respondent from the FCEC evaluation stated that “Ferguson is a mirror of our culture.” Many of the structural factors that contributed to the death of Michael Brown are pervasive in the fabric of St. Louis and United States. Respondents shared nuanced perspectives of personal responsibility and structural racism, community stigma and assets, and the links between our past and present as it relates to racial equity and inclusion.

This presentation will share findings from the Ferguson community assessment regarding challenges in terms of creating positive change in Ferguson, and what is needed to create positive change in Ferguson. Key challenges include, “admitting there is a problem,” “leadership,” and fatigue from fighting systemic issues over an extended period. Social interactions, equity, and inclusion are key to addressing the challenges facing Ferguson. For example, one respondent stated that there needs to be “integration events, and invite all groups: LGBTQ, white, black, Muslims, Christians, all religions, men, women. Invite everybody.”

Empathy is frequently discussed as a key component to addressing the lack of racial equity and inclusion, “because if everyone is so defensive it’s hard to get points across.” However, respondents voiced skepticism in terms of developing empathy - particularly among white people. A key implication for my future work is developing methods of sharing my work that not only results in calls to action, but also a call to care about others.

Addressing Health Disparities in African American Communities Utilizing Non-traditional Methods
Sheila Grigsby, Assistant Professor, Nursing

In this presentation, the importance of addressing health disparities in African-American communities utilizing non-traditional methods will be highlighted. These non-traditional methods include grassroots approaches, such as social networks and coalition development and maintenance. Several current research projects showcase the importance of having academic-community partnerships that drive these methods. Three research projects will be addressed using a participatory approach: The 100 Black Men Barbershop Tour utilizing both undergraduate nursing and graduate public health students providing education and health screenings for community members; Patient-Centered Outcomes Research Institute (PCORI) Engagement Award—“Community Collaboration toward Reducing Health Disparities in St. Louis Area Youth”; and National Institute of Health (NIH) sponsored research exploring micro-economic strategies for HIV prevention in transgender women in the St. Louis Region.

The Social Lives of Microbes
Fredrik R. Inglis, Assistant Professor, Biology

Microbes are social animals. Although single-celled and seemingly not very complex, they have incredibly busy social lives. They talk with each other using chemical signals, perform collective behaviors to move and acquire nutrients, and even engage in toxic warfare. But how and why do these complex interactions evolve in such simple organisms? The research in my lab seeks to better understand the evolution of these interactions and the consequences they have on infection and resistance to antibiotics.

Critical Global Teaching: A Model for Decolonizing Teacher Education
Shea Kerkhoff, Assistant Professor, Education

Contemporary education leaders recommend that global competence—a global citizenship mentality and knowledge for global participation—be incorporated into school curricula. Such globally competent teaching requires sociocultural consciousness and authentic pedagogy using global topics.

To ascertain teachers’ global perceptions and practices, this self-study examined data from 28 teachers taking a globally-focused graduate teacher education course.
Cosmopolitanism and critical pedagogy frameworks guide this concurrent nested mixed methods study. Quantitative data was collected via knowledge inventory and a survey using the Teaching for Global Readiness Scale (Kerkhoff, 2017) and the Global Competence subscale (Morais & Ogden, 2011). Qualitative data included course artifacts and one-on-one interviews with selected participants.

Research questions for this study included: How do participants perceive the role of global learning? How do participants report enacting global learning in their K-12 classrooms? According to participants, what influenced how they enacted global teaching? Results suggest that teachers value global competence, and most desire to infuse globally competent pedagogy, but need practical direction for classroom effectuation. Our data corroborates three well-documented barriers to global education implementation: (1) lack of resources and support, (2) mandated curriculum devoid of globally competent content, and (3) instruction tied to high-stakes tests devoid of global competence. This research contributes a model of practice on research and teaching of global competence including situated relevant practice, integrated global learning, critical and cultural consciousness raising, and intercultural collaboration for transformative action.

**Human Trafficking in St. Louis** Erica Koegler, Assistant Professor, Social Work

Human trafficking is a growing social problem, yet little empirical evidence is available to inform policy and practice decisions. Given the hidden and illegal nature of the issue, it is difficult to know the true scope of the problem. It is estimated that 1.3 of 1,000 people in the U.S. experience human trafficking (Global Slavery Index, 2018). Victims come from urban and rural communities throughout the U.S. Understanding this vulnerable population can be challenging. My research aims to work in partnership with community organizations who work with survivors to improve their lives.

I work with the International Institute of St. Louis, examining their anti-trafficking work over a decade of federal funding. Our published research highlights that people of all backgrounds in St. Louis are being exploited for labor and/or sex - U.S. born and foreign born, young and old, men and women. Additional manuscripts examine who makes trafficking reports and the overlap between trafficking and domestic violence. As a follow up to this work, I have conducted qualitative interviews with key anti-trafficking stakeholders in St. Louis. These topics explore substance use, legal needs, and ideal interventions for survivors of trafficking. A parallel study funded by UM system will examine anti-trafficking efforts in Cape Town, South Africa.

**Studies of Pre-Kindergarten Supplemental Vocabulary Intervention in MTSS** Na-Young Kong, Assistant Professor, Education

Early development of vocabulary plays a critical role in reading achievement. Preschool children who demonstrate delays in vocabulary are at risk for delays in comprehension skills and reading disabilities in later school years. Research shows that early intervention using differentiated, supplemental vocabulary instruction may reduce the risk for delays in language and literacy development. The Multi-Tiered System of Supports (MTSS) is a framework for differentiating instruction based on each child's assessed needs. A tenet of the MTSS is that evidence-based interventions will not be effective with all children. In MTSS, when children fail to demonstrate adequate growth in response to the core instruction provided to all children (Tier 1), they are provided additional support of greater intensity, frequency, or individualization. My research uses a problem-solving intervention protocol in MTSS to develop interventions for children who are not making measurable progress. Intervention selection involves matching a child's assessed need with evidence-based practices likely to address this need. Using the problem-solving intervention protocol, I designed additional supplemental vocabulary intervention for children who were not responsive to evidence-based storybook intervention. The results indicated that children who received the additional supplemental vocabulary intervention acquired new vocabulary words faster than peers who did not receive additional support. This study was one of the first to improve preschool children's response to early literacy intervention in MTSS by adding more intensity to children's experiences based on response to intervention. In response to growing concerns about dual language learners (DLLs) with limited vocabulary word knowledge, including children with disabilities, I am currently conducting research synthesis on vocabulary interventions that are effective for DLLs in order to design Tier 2 supplemental vocabulary intervention in a technology-assisted format for preschool DLLs with language and learning difficulties within the MTSS framework.
Neurocognition of Emotions and Romantic Love  Sandra Langeslag, Assistant Professor, Psychological Sciences

My research focuses on the interaction between emotion/love and cognition. Romantic love affects virtually everybody and has profound positive and negative effects on individuals and society. Thus, there is a critical need for a thorough scientific investigation of romantic love. I use event-related potential, functional magnetic resonance imaging, behavioral studies, and self-report measures to study the emotion/love-cognition interaction.

The way we feel changes how we think. Emotional and beloved-related information is better attended and remembered than neutral information, resulting in enhanced cognitive performance when that information is task-relevant. I have, for example, shown that infatuated individuals have increased attention and memory for their beloved and for information that has to do with their beloved. When emotional or beloved-related information is task-irrelevant, however, it may distract from the task at hand and impair cognitive performance. For example, I study whether and how romantic love distracts people from other tasks they should be doing.

In addition, the way we think changes how we feel. That is, we can use cognitive strategies to up- and down-regulate emotions and romantic love. I have shown that thinking positively about the beloved increases love feelings, while thinking negatively about the beloved decreases love feelings. We are currently studying whether and how people can increase sexual desire for a long-term partner. Love up-regulation could reduce the incidence of break-ups and divorces due to declining love feelings, and love down-regulation could reduce heartbreak.

If There Are True Heroes in Kenya, It is Our Sportsmen and Women  Kara Moskowitz, Assistant Professor, History

In 1965, Kip Keino burst onto the global stage, breaking the 3000-meter world record by over six seconds. From then on, sports fans eagerly watched Kenya’s runners. ‘If There Are True Heroes in Kenya, It is Our Sportsmen and Women’ explores the politics of Kenyan running in the 1960s and 1970s. As Kenyan athletes became a global phenomenon, sports competitions became a site for postcolonial political activism, and newly independent nations exploited their athletes in order to exert power on an international stage. The broader project moves from the local to the global, beginning with an examination
of how the independent government deployed its famous runners—who came almost exclusively from the Kalenjin ethnic group—in service of nationalism. The research then turns to pan-African politics, revealing the successes of the Supreme Council for Sports in Africa (the sports body of the Organization of African Unity). From there, I explore the contentious 1968 and 1972 Olympics, illustrating how new postcolonial nations and citizens engaged in the global anti-apartheid movement. This presentation will focus on Kenyan political activism ahead of the 1968 Mexico City Olympics, focused on prohibiting apartheid South Africa from participating. The threatened boycott by African, Asian, and Caribbean states in 1968 led to South Africa’s expulsion from the games, and ultimately, from the International Olympic Committee altogether, exposing the immense soft power these new nations possessed in the arena of sports.

Examining Distinct and Shared Neural Signatures of mTBI and PTSD

Carissa Philippi, Assistant Professor, Psychological Sciences

Mild traumatic brain injury (mTBI) and posttraumatic stress disorder (PTSD) are highly prevalent in military populations. Common symptoms across these conditions can often lead to diagnostic ambiguity. In this talk, I will present findings from a recent study using neuroimaging to examine the distinct and shared neural signatures of mTBI and PTSD.

Effects of Substance Use on Neurocognitive Performance in HIV-infected and HIV-uninfected Adults

Rebecca Preston, Research Scientist, MIMH

A large percentage of people living with HIV (PLWH) exhibit reduced neuropsychological functioning, most notably impairment in executive functioning, attention, psychomotor/processing speed, and learning/memory. Drug abuse is disproportionately prevalent in PLWH, such that problematic substance use and substance use disorders affects 40%-74% of PLWH. The combined influence of HIV and drug use is a major concern, as evidence suggests that drug abuse may interact with and intensify deleterious neurocognitive outcomes associated with HIV. However, studies examining the dynamic interplay between HIV, drug abuse, and neurocognitive outcomes have generated mixed results.

Previous studies examining the relation between substance use and neurocognition in PLWH have typically stratified participants based on substance use disorder diagnosis (i.e., Y/N). In contrast, the current study utilized a continuous measure of lifetime drug use exposure (KSMK: Kreek-McHugh-Schluger-Kellogg) based on the duration, dose, and frequency of drug use by class (marijuana, alcohol, cocaine). Here we examined group differences in HIV status (infected vs. uninfected) and drug use severity on neuropsychological performance. Specifically, we tested independent and interactive effects of HIV status and drug use severity on domain and global measurements of neuropsychological performance. Participants included 138 PLWH and 130 HIV-controls.

We found that irrespective of HIV status, cocaine use severity was associated with lower neuropsychological performance on all domains of functioning. Results indicated PLWH with more severe cocaine use performed worse on measures of verbal fluency. Likewise, HIV-infection and a greater severity of lifetime alcohol use was associated with worse executive function. Our results suggest the KSMK is useful in separating the effects of HIV-infection and substance use on neurocognition. These results have important public health implications, as substance use has negative health consequences in PLWH, including HIV medication nonadherence, HIV sexual risk behaviors, HIV disease progression, and exacerbated HIV-related brain and cognitive effects.

Health Information Seeking Behaviors

Stephanie Van Stee, Assistant Professor, Communications

Health communication, as an area of study, has the potential to generate research findings and implications that are highly relevant to people’s everyday lives. My research agenda in this area of study focuses on the role of mediated messages (and the content/design of those messages) in improving people’s health. More specifically, my most recent research addresses health information seeking, direct-to-consumer advertising, and mobile health interventions. To address questions related to these topics, I use several research methods, including meta-analysis, content analysis, experiments, and surveys. My presentation, as it relates to the three aforementioned topics within health communication, focuses on my recent publications, current projects in progress, and future research directions.
**Posttraumatic Stress Disorder and Traumatic Brain Injury in Women Survivors of Intimate Partner Violence**  
*Kim Werner, Assistant Research Professor, MIMH*

This presentation will provide an update on Dr. Werner’s study *Posttraumatic Stress Disorder and Traumatic Brain Injury in Women Survivors of Intimate Partner Violence*. Research in traumatic brain injury (TBI) and posttraumatic stress disorder (PTSD) in women survivors of intimate partner violence (IPV) is very limited. The aim of this ongoing study is to describe the clinical and neurological health of women survivors of IPV, paying particular attention to TBI and PTSD pathology. This presentation will provide information on the type of data the study is collecting and discuss the participant population, describing trauma history, psychopathology, head injury, and TBI, as well as unique factors that have presented during the course of the study.

Additionally, Dr. Werner will introduce a sub-study treatment trial to examine the feasibility and effectiveness of massed Cognitive Processing Therapy (CPT) delivered over a one-week period, compared to the standard course of CPT that is delivered over a 6-12 week period. These two studies will provide some of the first and most comprehensive data in this field and allow for formulation of hypotheses pertaining to the complex etiology and sequelae of IPV-related PTSD and TBI.

**Increasing Racial Disparities in Opioid Overdose Deaths and Opioid Use Disorder Treatment Outcomes in Missouri**  
*Claire Wood, Assistant Research Professor, MIMH*

Opioid overdose deaths in Missouri increased 19% between 2017 and 2018 (951 to 1132), despite national decreases. Particularly problematic is the increasing disparity in overdose deaths among black and white populations in Missouri, primarily in the St. Louis metropolitan area. In 2018, black males in Missouri were approximately 2.5 times more likely than white males, almost three times more likely than black females, and more than five times more likely than white females to die from an opioid overdose. Researchers from the Missouri State Targeted (STR) and State Opioid Response grants (SOR), which aims to improve access to evidence-based treatment for Opioid Use Disorders (OUD) such as methadone and buprenorphine, assessed the extent to which improvements in treatment outcomes resulting from the implementation of these grants reflected similar disparities in overdose deaths by race. Data analysis involved assessment of billing data from the Missouri Department of Mental Health on uninsured individuals with OUD in fiscal year 2017 (prior to the implementation of STR) and fiscal year 2018 (STR treatment). Preliminary findings revealed that, among publicly-funded substance use treatment programs in the St. Louis metropolitan area, although there were no differences in treatment retention prior to the implementation of STR, treatment retention was significantly lower among black individuals relative to white individuals for those in the STR program. Overall differences in treatment retention were driven by retention rates among treatment episodes involving buprenorphine, even though black and white populations were equally likely to receive buprenorphine in their treatment episodes.

**Tailoring Care to Target Symptom Clusters vs. Distinct Diagnoses in Individuals with Complex Chronic Health Concerns**  
*Jodi Woodruff, Assistant Research Professor, MIMH*

Mental health diagnoses have been touted as a successful model of symptom clustering that defines patterns of behavior, thought processes, or emotional states. Typically, mental health has been defined separate from other “physical health” symptoms. However, individuals who have chronic mental health concerns often have other chronic health conditions that may (or may not) have common etiological mechanisms. As a result, chronic mental health conditions are often treated in a manner that may exacerbate other health conditions. This is bi-directional, as treatment for chronic health conditions can also exacerbate mental health symptoms. Because the tendency is to examine mental and physical symptoms as separate and unrelated, we fail to achieve optimal outcomes. Our group is working to examine potential symptom clusters, optimal treatment protocols, and health outcomes by considering the symptoms experienced in a person, rather than distinct diagnoses. We conduct epidemiological, interventional, and health outcomes research to understand patterns of symptoms that cluster, and respond or fail to respond to treatment. Our work is informing future treatment, best practices, and prevention strategies for persons with complex chronic health concerns.
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Carl Sagan

SOMETHING INCREDIBLE is waiting to be known