RESEARCH SPEED NETWORKING

Abstract Book & Funding Opportunities

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Office of the Vice Provost for Research
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Abstract
Disaster prediction and risk assessment is a critical component of coastal urban sustainability and needs to incorporate fully the financial, environmental and social impacts incurred with the scale and scope of a disaster event. Environmental risk in the coastal zone is poorly understood, and largely ignored by financial markets in terms of long-term loss of ecosystem services, restoration costs and conservation. The focus of my research is to work across disciplines to examine the role of modern finance theory, practices, and innovations in promoting ecological sustainability in coastal systems of South Florida and the Small Island Developing States (SIDS) in the Caribbean. The greater Miami area, for example, is intensively studied and is acutely susceptible to coastal flooding, periodic droughts, extreme storms, hurricanes, and, in the near future, sea level rise. This research would examine the critical components of coastal urban resilience and asks: what are the financial, ecological and social benchmarks for sustaining coastal systems in a manner consistent with long-range financial and environmental goals through changing environments and natural disasters? These issues are confronted via a framework specifically aimed at tracking carbon and nitrogen through the coastal system. While this initial development focuses on urban environmental and economic risk, the format tested in this project can be applied to island coastal environments.

Direction
One direction this research might take is addressing the "Rebuild or Relocate" decision for neighborhoods in coastal and island environments. Weather-related events hurt rich and poor neighborhoods alike, but flooding events in coastal ecosystems pose a greater financial and ecological disaster for low-income residents (see Surging Seas, 2014). Flood disasters provide a special challenge for social, financial and ecological resilience. Fundamental decisions need to be made in the short-term and long-term viability of recovery: should residents rebuilt or relocate? But how well a community fares after disaster strikes depends very much on where the neighborhood is, and how the community is prepared for short-term and long-term prospects of recovery. The more vulnerable and less prepared coastal communities and households are, the more the region as a whole suffers. Despite the politics and emotional attachments to neighborhoods, there are very real physical constraints on reconstruction. Instabilities now engineered into coastal systems combine with degraded environmental systems preclude the possibility of creating a safe and secure home in the future. This was dramatically illustrated in New Orleans after Hurricane Katrina (see overview by Giegengack and Foster, 2011). The mitigation and restoration of natural environments along the coast can contribute to greater protection to homes and property (Barbier et al., 2011). South Florida is an ideal system to quantify the extent to which coastal protection and increasing natural areas, especially strategically increasing the area of mangroves, constructed wetlands, and urban upland forests, can reduce the frequency and severity of storm-driven flood events. Individual neighborhoods should understand what specific restoration or mitigation projects will benefit them in terms of flood...
abatement. Even with the best case scenarios, there will be winners and losers across the landscape of South Florida. Hydrological alterations in the Comprehensive Everglades Restoration Project (CERP) have already changed flood risk across South Florida communities. Some areas will flood more frequently, and severe flooding risk will increase over time, but unfortunately human communities are not prepared socially or financially to move after a disaster to new and safer areas. Developing the modeling tools to effectively design a program, “Re-build or Re-Locate to Better Communities”, is essential to the long-term adaptation of residents in South Florida. Neighborhoods that are abandoned can be re-purposed to functional ecological landscapes to mitigate future flooding events.

Notes:

Abstract #2
Eutrophication is defined as “increase in the rate of supply of organic matter to an ecosystem” (Nixon 1995). Eutrophication and hypoxia events are now documented in all major coastal ecosystems, with perhaps the largest persistent hypoxia zone occurring in the Gulf of Mexico from the Mississippi River drainage basin (Bricker et al 2007). The scale and persistence of hypoxia events can have profound changes in the ecology and energy flow of marine ecosystems globally (Diaz and Rosenberg 2008). However, on the Bahamian islands, nutrients and sediment also enter near shore waters through ground water seepage and surface storm run-off, and this nearly-ubiquitous exchange of freshwater and nutrients off small carbonate islands makes the coastal zone especially sensitive to eutrophication with human disturbances. Coastal eutrophication has increased with human coastal development in carbonate islands such as the Florida Keys; “phase shifts” in adjacent reef and seagrass systems have diminished biological diversity, fisheries production and other related ecosystem functions, even in the absence of surface water discharge (e.g. rivers and streams) (Lapointe & Matzie, 1996; Maliao, Turingan, & Lin, 2008). My research now addresses two questions,: 1.) What patterns and trends in hypoxic events and eutrophication are seen throughout the islands of The Bahamas?, and 2.) What impact are these hypoxic events having on the near shore diversity of faunal and flora in coral reef habitats, and are there species indicative of eutrophication?

Direction #2:
Weather-related events hurt rich and poor neighborhoods alike, but flooding events in coastal ecosystems pose a greater financial and ecological disaster for low-income residents (see Surging Seas ). Flood disasters provide a special challenge for social, financial and ecological resilience. Fundamental decisions need to be made in the short-term and long-term viability of recovery: should residents rebuilt or relocate? BInstabilities now engineered into coastal systems combine with degraded environmental systems preclude the possibility of creating a safe and secure home in the future. This was dramatically illustrated in New Orleans after Hurricane Katrina (see overview by Giegengack and Foster, 2011). The mitigation and restoration of natural
environments along the coast can contribute to greater protection to homes and property (Barbier et al., 2011). South Florida is an ideal system to quantify the extent to which coastal protection and increasing natural areas, especially strategically increasing the area of mangroves, constructed wetlands, and urban upland forests, can reduce the frequency and severity of storm-driven flood events. Individual neighborhoods should understand what specific restoration or mitigation projects will benefit them in terms of flood abatement. Developing the modeling tools to effectively design a program, “Re-build or Re-Locate to Better Communities”, is essential to the long-term adaptation of residents in South Florida. Neighborhoods that are abandoned can be re-purposed to functional ecological landscapes to mitigate future flooding events. The novelty of this research is the linking of finance to coastal ecosystem performance; the research can also develop innovations in pricing theory for carbon markets, water markets, as well as more complete economic accounting for ecosystem services (see example in Chen et al., 2014).

Notes:

Helena Solo-Gabriele  
Professor and Assoc. Dean for Research  
Civil/Arch/Environmental Engineering

Abstract  
hmsolo@miami.edu

Direction  
I am currently interested in evaluating chemical contaminants in the environment and I am also interested in evaluating the impacts of climate change on chemical and microbiological contamination of inland and coastal waters.

Notes:
Ali Ghahremaninezhad  
Assistant Professor  
Civil Engineering  
Engineering

Abstract  
The current research thrusts include energy storage materials in lithium-ion batteries; sustainable cementitious nanocomposites modified with recycled nanoparticles; High performance and lightweight nanostructured alloys for energy saving applications.

Future Directions  
Mechanically adaptive multifunctional hydrogels; stretchable electronics; multifunctional structure-energy storage materials.

Notes:

Joseph B. Treaster  
Professor  
Journalism & Media Management  
School of Communication

Abstract  
I'm working on water pollution and invasive species and experiential learning and interested in coral reefs, sea-level rise and public health issues.

Direction  
I'm interested in working on any aspects of the environment and public health. I have years of experience in interviewing and documents research and in professional writing for mass audiences. I am happy to work on a team as a polisher of journal articles and grant proposals and as a researcher on the human side of environmental and public health issues.

Notes:
Wangda Zuo  
Assistant Professor  
CAE  
Engineering  

Abstract  
Developing and applying advanced computer simulation technology for the modeling and simulation of building energy, water, environment and control systems to improve indoor environment quality, building energy and water efficiency. Current/recent projects include Model predict control for energy efficient operation of chiller water plants (US Department of Defense), Coupling of fast fluid dynamics and Modelica Buildings library for integrated simulation of indoor environment and building HVAC system (US Department of Energy), Model-based design and optimization for energy and water efficient hotel (Industry gift), and Model predictive control for energy efficient building ventilation (UM).  

Direction  
- Modeling and simulation of building and community energy system  
- Urban scale simulation  
- Environment design and control for mission critical facilities (e.g. hospital and data center).  

Notes
Noam Alperin  
Professor  
Radiology  
School of Medicine

Abstract  
Our research focuses on development and applications of methods to quantify the brain morphology, characterize cerebral hemodynamics and hydrodynamics, and understand the coupling between them in the healthy and disease. We have employed advanced magnetic resonance imaging methodologies in a wide range of research areas including aging, cerebrospinal fluid related disorders including Chiari Malformations, Hydrocephalus, headaches, mild traumatic brain injuries, and idiopathic intracranial hypertension. More recently our methodology is being used by NASA to study the effect of long duration exposure to microgravity on the brain hydrodynamics. Out advanced imaging laboratory utilizes a wide range of image processing tools. In addition to mastering well established s/w packages for brain parcellation, we have developed our own novel methodology to quantify cerebral blood flow, perfusion, and pressure by MRI.

Direction  
cerebral auto regulation.

Notes:

Shahriar Negahdaripour  
Professor  
Electrical & Computational Engineering  
Engineering

Abstract  
2-D optical and forward-scan sonar imaging within scattering media

Direction  
While my main areas of research are focused on underwater 2-D optical and sonar imaging technologies, many commonalities exist with biomedical applications that involve imaging within a scattering media (human body). Applications are envisioned where acoustic and optical sensors on the same device may be employed to collect visual and acoustic/ultrasound images.

Notes:
Fabrice Manns  
Biomedical Engineering  
Engineering

Abstract  
I currently have two main research topics: a) the optics of the eye, with a focus on understanding the mechanism of accommodation and presbyopia, and b) the development of Optical Coherence Tomography and other imaging technology for ocular biometry. Current projects include: Study of the optics of the crystalline lens of the eye. The long-term goal of these studies is to better understand how the continuous growth of the crystalline lens changes the optical quality of the eye. Study of accommodation: The long-term goal of these studies is to better understand the mechanism of accommodation and presbyopia, the progressive loss of the ability of the eye to focus on near objects. The development of Optical Coherence Tomography and other technology for ocular biometry. The long-term goal of these studies is to develop imaging and biometry devices that will provide quantitative information about the eye that can be used to improve the outcomes of vision correction procedures.

Direction  
Currently no specific plans for future directions. Projects in the area of medical or biological applications of optics and lasers for diagnostic, imaging or therapy are of interest.

Notes:
Abstract
My research interests lie in experimental condensed matter physics, specializing in nanoscale physics, strongly correlated systems, new materials, spintronic phenomena, and superconductivity. My recent focuses have been on the fabrication of new materials, especially thin films, multilayer structures with built-in nanostructures, and on the studies of their unusual magnetic, transport (charge, spin, and heat), and superconducting properties. These studies not only reveal the novel physics, and when situation permits, also advance technological applications. Some of my other studies also include novel bulk materials, such as B20 Skyrmion single crystals. The research areas my group will pursue in the coming years include topological spin textures, pure spin current phenomena, spin caloritronics, and topological insulators

Direction
Application of large area nano-sphere lithography. New materials/nano structures and their applications in energy science or biophysics.

Notes:
Landolf Rhode-Barbarigos  
Assistant Professor  
Dept. of Civil, Architectural & Environmental Engineering  
College of Engineering  

Abstract  
Nowadays structural engineering, prompted by advances in mechanics, computing and the challenge of high performance sustainable structures, is evolving towards systems with complex forms, new materials and active components, able to perceive and adapt to changes in their environment and/or to the desires and needs of their occupants. I have been investigating passive and active structures, form-finding and optimization methods in various research projects. These projects investigate “form-finding” in a broad sense identifying forms that provide a general balance between the performance of the system and other related design criteria.  

Direction  
Tensegrity systems are form-found structures composed of tension and compression elements. They are thus good candidates for adaptive and deployable structures having applications in various scientific and engineering fields. Current design theory holds that bending is undesirable in tensegrity elements. However, by integrating bending in the form-finding process opens the door to the development of a whole new realm of systems that can sustain large elastic deformations without failure similar to natural systems. Moreover, encountering the influence of physical form in computation may further enhance the design of these adaptive systems.

Notes
Abstract
Adverse effects of cancer can be reduced to a great extent if it can be detected at an early stage. Analysis of isolated cancer cells in circulation is a promising method for early detection of cancer with metastatic potential. These cells are also proven to help determine the success of the cancer treatment and understand the genetic signature of cancer disease. Scarcity of these cells in blood circulation (1-10 CTC in 1ml blood) however, makes the isolation process extremely challenging. To this end, I am proposing a transformative system in order to detect and isolate the circulating tumor cells from the blood cells using the differential stiffness between them. Our preliminary studies suggest that stiffness of the blood cells and tumor cells characterized by atomic force microscope differ substantially, and therefore, variation in mechanical properties can be used as a biomarker to separate tumor cells in circulation. The specific aim of this study is to achieve a novel label-free CTC isolation system using differential stiffness between the blood cells and tumor cells. Both computational analysis techniques and experimental measurements will be used to optimize the proposed CTC isolation system. Efficiency of the proposed test technique will be measured by the number of captured CTCs in blood samples.

Direction
- Translational/clinical applications of the early-cancer-detection devices developed in this research
- Application of the developed screening technologies on minority/health-disparity studies.

Notes
Abstract

1. Physical-chemical properties of metal oxides in consumer products: Physical-chemical properties of metal oxides (TiO2, ZnO) used in consumer products (sunscreens) are investigated and the effect of contaminants on metal oxide nanoparticles in sunscreens will be studied. Various factors such as pH, the presence of organic matter, and oxidants attribute to aggregation property, which influences toxicity. The research findings could assist toxicological evaluation of metal oxides residuals due to potential effect of mutation of cells.

2. Fate and transport of nanoparticles in the environment: This project are to quantify fate of nanoparticles (NPs) in aquifers under various environmental factors, determine governing factors on changes in transport properties/behavior of NPs, and assess the impact of hydrodynamic conditions, natural organic matter, ionic strength on the fate of NPs residues.

3. Transformation of aquatic organisms by uptake of nanoparticles: This project involves investigating transformation mechanism using novel approaches, effect of adsorbed ENPs on algae in the absence and presence of contaminants, influence of aggregation on ecotoxicity of ENPs to algae, effect of ROS production on algae under dark and sunlight conditions, and bioavailability of ENPs in different types of water.

4. Application of membrane technologies for water reuse: Membrane technology has been widely as advanced wastewater treatment and reuse. This project aims to develop and apply novel adsorbed and biocide nanomaterials to membranes, evaluate the technology viability vs. conventional treatment, and demonstrate efficient disinfection with minimum disinfection byproducts formation. The work includes qualitative and quantitative determination of DBPs formed from the new treatment technology at typical treatment conditions and pilot-testing / field study applying the treatment option.

Direction

Type of Collaboration Sought: I am looking for a collaborator from the field of toxicology who is skilled in materials design and characterization.

Notes
Abstract

Photoactivatable Fluorescent Probes for Imaging Applications

The goal of our research program is the development of operating principles to activate the fluorescence of organic chromophores under optical control. In particular, we design molecules capable of switching from a nonemissive to an emissive state, upon illumination at an appropriate activation wavelength \( l_{Ac} \), and then produce fluorescence, after irradiation at a given excitation wavelength \( l_{Ex} \). Under these conditions, the interplay of beams illuminating the sample at \( l_{Ac} \) and \( l_{Ex} \) can be exploited to activate fluorescence within a defined region of space at a specific interval of time. Such level of spatiotemporal control allows the monitoring of dynamic events in real time with the sequential acquisition of fluorescence images, after activation. Similarly, it offers also the opportunity to overcome diffraction and reconstruct fluorescence images with spatial resolution at the nanometer level. In fact, we are particularly interested in exploring both imaging strategies to investigate the ability of polymer nanoparticles to transport molecules intracellularly. In this context, we synthesize compounds pairing a fluorescent to a switchable component within the same covalent skeleton. The activation of the latter is engineered to turn on the emission of the former on the basis of changes in conjugation between the two. Thus, our investigations can eventually lead to the realization of valuable photoresponsive probes for the convenient investigation of the dynamics and structural properties of a diversity of samples, relying on the noninvasive character of light.

MINORITY/HEALTH DISPARITY/QUALITY HEALTHCARE

Pedro Villarreal III  
Assistant Professor  
Educational & Psychological Studies  
School of Education and Human Development  

Abstract:  
Current research examines the core issues related to college students, in particular, access to, persistence in, and the attainment of higher education. What are particular federal/state/institutional policies or practices that affect students progress into and through the higher education system? What aspects of higher education affect community poverty and other outcomes?

Direction:  
A number of research interests include how higher education may reduce poverty both in the US and abroad, how institutional factors affect students access to, persistence in, and attainment of higher education credentials.

Notes:
Abstract
Cannabis use has been a scientifically contested area of research for eight decades in the United States. Initiatives to legalize or de-criminalize this drug bring new focus on the potential problems in major policy changes. On the other hand, historical perspectives on the original initiative to criminalize Cannabis use and traffic indicate that the state of the science at that time did not contain clear evidence of the drug’s negative consequences. Therefore, it is incumbent on current scientists to navigate the legitimate scientific questions about Cannabis use and its consequence while simultaneously avoiding the traps and pitfalls presented by the current hodgepodge of policies enacted by government at all levels. My sabbatical semester last Spring involved a re-visiting of both scientific and policy questions with regard to Cannabis in the present century. I am in the process of writing a position paper that will serve as a platform for engaging in new research on Cannabis use.

Direction
My lifelong focus has been on the consequences of various forms of drug use in various cultural contexts. As that perspective has both broadened and matured, I have identified key areas in need of further evaluation: 1) Pursuit of the specific impact of Cannabis use on cognitive function among adolescents ("pruning hypothesis" etc.). 2) Investigation of the specific impact of high potency Cannabis on use patterns. 3) Rigorous study of Cannabis as a pain mitigation medicine. 4) Re-examination of long-term use and its consequences among North American users who have more than ten years’ experience smoking Cannabis.

Notes
Karina Gattamorta
Research Assistant Professor
El Centro
School of Nursing and Health Studies

Abstract
I began pursuing research interests examining mental health, substance abuse, and risky sexual behaviors among Hispanic LGBT adolescents and emerging adults. I was recently awarded the Provost Award to conduct a qualitative study with Hispanic LGBT emerging adults where I seek to understand the coming out experience of Hispanic emerging adults, barriers to sexual identity disclosure among this population, and how these experiences are associated with adverse outcomes such as depression, substance use, and risky sexual behaviors.

Direction
My long-term goal is to develop a family-based intervention for Hispanic LGBT adolescents that facilitates communication and provides support for family members navigating the coming out process and ultimately reduce the adverse mental health, substance use, and risky sexual behaviors experienced by this population.

Notes:

Patricia Byers
Professor
Surgery
Miller School of Medicine

Abstract
Motorcycle safety initiative using teachable moment. Also research on mechanism of injury and emergency care.

Direction
Psychological vs educational reasons for noncompliance of motorcycle riders with safety practices. Contact me at 3056139622 if further information is required.

Notes:
Abstract
How to Integrate Mindfulness in Cardiovascular health to change outcomes

Direction
Implementation

Notes:
James D. Englehardt, Ph.D., P.E.
Professor
Civil, Arch, and Environmental Engineering

Abstract:
I. Inferential Dose-Response Assessment     Partly in collaboration with US EPA, we have developed dose-response functions that can be assessed from virtually any level of available data or information, including professional judgment. Results are robust to differences in professional judgment and data, because they are integrated across uncertainty and variability. The functions have been theoretically-derived and empirically demonstrated, by viewing illness severity analogously to other complex system outcomes. These results cut across fields in which general laws emerge at one scale, from complex causal mechanisms at smaller-scales. Hence, a small set of expressions is general across medicines, chemicals, and other health stressors, across cancer and non-cancer endpoints, and across systems in which saturation kinetics are important/not important, though the values of the parameters will change. Input information may include genomic, mechanistic, toxicological, and/or epidemiological data, as well as professional judgment.     II. Mobile Clean Water Stations     In National Science Foundation (NSF) research we are developing a net-zero water station that can be deployed to provide clean, sterile running water at remote health care centers such as Ebola treatment units in Africa. This work is based on our current major NSF project to build and demonstrate a net-zero water system, that has been converting 90% raw sewage/10% rainwater to drinking water at an occupied UM residence hall apartment for return to the apartment. The product water meets 115 of 115 Florida drinking water standards, and is being used by residents for all uses except drinking wand cooking. Microbes, pharmaceuticals, and all other organics are oxidized completely (to below detection in terms of chemical oxygen demand) in the process, which is competitive in cost to current water/wastewater treatment systems. The system produces no brine or other residual requiring routine disposal.

Direction:
I. Inferential Dose-Response Assessment     The results described in (I) above can be used to develop algorithms capable of screening candidate pharmaceuticals or quantifiable treatments based on virtually any type of available information.     II. Mobile Clean Water Stations     We are interested in developing mobile or fixed net-zero water systems such as described in (II) above, for use in international and other health-care applications.

Notes
Natalie Leblanc  
Doctoral Student  
Nursing  
SONH  

Abstract  
Following nursing school I became an oncology nurse resident at the Veteran’s Hospital in Gainesville, Florida. I left the clinical experience to pursue a doctorate in nursing. My academic course work has and continues to expand my knowledge in nursing epistemology, various data analysis techniques and research methodologies in issues regarding disparities in health. It also provides the ability to think critically about these issues and allows me to explore different research possibilities to address the needs of vulnerable populations. My assistantship experiences have expanded my knowledge of broader contexts related to the vulnerability of people to HIV acquisition, such as juvenile incarceration and mental health and other HIV testing barriers, as well as to new data collection methodologies such as qualitative metasyntheses. Independent projects have also expanded my knowledge of new perspectives to framing the issues of race/ethnic and gender based health disparities such as using structural equation modeling to exemplify syndemics and HIV risk among Latino men who have sex with men and other at-risk populations. I am about to begin a project with a professor at the School of Nursing on HPV awareness among HIV positive men. I entered the field of nursing after obtaining and Masters in Public Health and several years of working in the field both globally and domestically. My area of public health focus was infectious disease surveillance, and program support and development in Dracunculiasis eradication and HIV prevention. My research and work involved helping agencies and programs enhance their ability to implement disease preventative health activities through data management, personnel training and program evaluation via formative research activities. Previous research also involved conducting a need assessment for a hospital to formalize their hospital-based universal HIV testing program in Ghana, West Africa. Subsequent experience involved providing technical assistance to health facilities contracted through the New York City Health department to integrate HIV testing and linkage to care strategies in their current health and social support services.  

Direction  
My long term research interests involve exploring the feasibility and acceptability of innovative health promoting strategies to address health disparities and health as social justice issues among vulnerable populations. By vulnerable populations I mean people who have been historical marginalized and belong to sexual minority status. I remain committed to studying within the field of HIV prevention but I am aware of the role syndemics, intersection of people’s identities and the influence of environmental/political issues on the vulnerability of health and health outcomes. In this research I would like to include both qualitative and quantitative methodological approaches because I believe combined they provide the context and the perspective needed to understand the mechanisms health disparities and inequities work through.  

Notes:
Abstract
Application of theoretical and empirical research from Embodied Cognition (Conceptual Metaphor and Schema theories, Ecological approaches, Mirror Neuron System, and Grounded Cognition), complemented with musico-analytical methodologies, to the film music repertoire. This interface crystalizes in a deeper understanding of music's function within the cinematic experience. Current research draws attention to kinesthetic correlations between visual and aural domains, brings to focus the role of bodily affordances in our perception of music, highlights commonly established correlations between music and meaning through conceptual metaphor and schema theories, and suggests the potential a human mirror neuron system may have for a deeper understanding of film music and embodiment.

Direction
1) Continue the existing line of research. 2) Expand onto the neuropsychology domain (neuroimaging), and explore how studies that intersect music (and possibly film) can shed light on the cognitive process underpinning Irony.

Notes:
Abstract:
I draw on the vast resources of Embodied Cognition, Semiotics, Psychology, and Neuropsychology to: . bring to focus the role of bodily ‘affordances’ (Gibson) in our perception of music . highlight commonly established correlations between music and meaning through Conceptual Metaphor and Schema theories (Lakoff and Johnson) . suggest the potential a human Mirror Neuron System (Gallese) may have for a deeper understanding of film music and embodiment . draw attention to kinesthetic correlations between visual and aural domains (various NMRI studies) . speculate about interpretation and categorization (Barsalou) of ‘irony’ within film

Direction
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Notes:
Kaufui Vincent Wong  
Professor  
Mechanical Engineering  
Engineering  

Abstract  
I am in the energy and environment area. Sustainability would probably be a good fit. I have published about a dozen journal papers as review/expert view papers in 2014. However, I personally would like to collaborate on a health related field.

Direction  
I have recently (in last 3 years) written and published 5 papers related to health, nutrition, medical practices. These were all perspective papers, and unfunded research. I would like to collaborate with colleagues who are interested in doing research regarding an interesting topic. Minority & Health Disparity studies is one possibility; the other is psychology/neuroscience.

Notes:
Joseph Uscinski  
Associate Professor  
Political Science  
Arts & Sciences  

Abstract  
Why do people believe in conspiracy theories? I use survey data, data from scraping the web, and content analysis to answer this question.

Direction  
I am interested in teaming with researchers working on experiments, doing automated analysis of text, and surveys.

Notes

Lucina Uddin  
Assistant Professor  
Psychology  
Arts & Sciences  

Abstract:  
Brain structural and functional development underlies the maturation of increasingly sophisticated cognitive abilities. High-level attentional and cognitive control processes rely on the integrity of, and dynamic interactions between, several core neurocognitive networks. How these systems reconfigure with development is a critical question for cognitive neuroscience, with implications for neurodevelopmental pathologies affecting brain connectivity. Our lab examines the typical and atypical development of brain networks to better understand how they mature to support complex, flexible cognitive processes in adulthood.

Direction:  
We are currently applying advanced data analytic techniques to examine brain networks in individuals with autism spectrum disorder and other neurodevelopmental pathologies. We are particularly interested in collaborating with computer scientists, engineers, and statisticians with expertise in network analyses and machine learning.

Notes:
Zoey Chen
Assistant Professor
Marketing
Business

Abstract:
I am interested understanding the psychological underpinnings of online word of mouth (e.g., reviews, general conversations about specific topics). For example, why do people choose to spread word of mouth about certain topics and not others? Why do people pay more attention to some word of mouth than others? Furthermore, I focus on understanding how our social goals (e.g., relationships formation) may influence word of mouth behavior. My research draws on data from large-scale field studies as well as laboratory experiments. In particular, I have used experimental data and Yelp reviews to look at the proliferation of negativity bias in online reviews; I have also used readers’ comments from a news website in combination with lab experiments to understand people’s propensity to talk about controversial topics.

Directions:
My goal is to continue my current line of work (understanding the psychological processes behind word of mouth - especially how social goals may play a role in people's word of mouth behavior) while incorporating new sources of data and/or techniques (e.g., social network analysis, etc.).

Notes:

Abhishek Prasad
Assistant Professor
Biomedical Engineering
Engineering

Abstract
neural signal processing, brain machine interfaces, neural electrodes, EEG, neural control of movement

Directions
neural signal processing, brain machine interfaces, neural electrodes, EEG, neural control of movement

Notes:
Yui Matsuda  
Assistant Professor  
SONHS

Abstract:
The purpose of this study is to examine associations between maternal depressive symptoms and number of children with DD/disability accounting for maternal diathesis factors (predisposing conditions that may lead to negative maternal/family outcome) and family stress factors. This study is a secondary analysis of the pooled baseline data from three intervention studies conducted by Beeber et al.; The “Wings” Depressive Symptom Intervention for Latina Mothers, Reducing Depressive Symptoms in Low-Income Mothers, EHS Latina Mothers: Reducing Depressive Symptoms and Improving Infant/Toddler Mental Health (n=376). Maternal depressive symptoms were assessed with CES-D (Center for Epidemiologic Studies Depression Scale) 20 items. Multiple regression analyses were conducted to examine associations between maternal depressive symptoms and number of children with DD/disability, categorized as zero vs. one vs. two or more; first, adjusting for family stress factors and then further adjusting for maternal diathesis factors. In addition, a post hoc Tukey-Kramer comparison of the least square means were examined among the number of children with DD/disability. In the model including family stress factors, we found a significant test for linear trend in the mean for maternal depressive symptoms across the number of children with DD/disability (F[1]=5.14, p=0.024). Lower family conflict (F[1]=18.28 p<0.001) and the presence of child’s medical condition (F[1]=8.85, p=0.0031) were significant correlates of higher mean maternal depressive symptoms. In the model adjusting for both family stress factors and maternal diathesis factors, the trend in depressive symptoms across the number of children with DD/disabilities was attenuated. Maternal depressive symptoms tend to be higher for households with two or more children with DD/disabilities compared to households with zero to one child with DD/disabilities. Mothers who have multiple children with DD/disabilities require extra support for their mental health so that they can best attend to their children’s developmental needs. Other potential intervention targets would be conflict management at the family level, reduction in maternal depressive symptoms as well as mothers’ empowerment and self-support, and managing the children’s medical needs.

Direction:  
Parenting intervention for fathers/mothers of pre-teen/teenagers; Parental intervention to promote safe sex communication for pre-teen/teenagers

Notes:
Soyoon Kim  
Assistant Professor  
Communication Studies  
Communication

Abstract  
My research interest centers on health communication, including the study of health message features that induce processing mechanisms that motivates intended attitudinal and behavioral changes. Before joining the UM faculty last fall, as part of a NIH-National Institute on Drug Abuse-funded project, I examined the features of antidrug media messages that affect adolescents’ perceptions of message effectiveness, by utilizing both self-reported measures and functional magnetic resonance imaging (fMRI) methodology. This multidisciplinary project, conducted at the University of Minnesota, integrated insights from communication, biomedical, and neuropsychological research to understand adolescents’ message processing and to help health communication researchers/practitioners develop effective health intervention strategies. I would like to find researchers whom I can build a collaborative relationship and can continue this line of research with at UM!

Direction  
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Notes
Mary Shaw  
Associate Professor  
Health Promotion & Disease Prevention  
Robert Stempel College of Public Health & Social Work

Abstract  
Current research efforts are focused on interventions that aim to use existing family, faith, school, and/or community celebrations to improve adoption of health promoting behaviors and attitudes. I am currently analyzing data from two small funded studies: 1) sought to understand the family support concerns of African-American breast cancer survivors; 2) use the Black family reunion as a venue for health promotion (Type 2 diabetes prevention; cancer control and prevention; heart disease risk reduction; obesity prevention).

Direction  
Interventions aimed at improving family supports for accessing, utilizing, applying, and managing available prevention and health care services (focused on underserved populations)

Notes
Abstract
Smart learning and evaluation has revolutionized traditional medical data computing paradigm by converging machine learning, computer vision, big-data strategy and data mining into the conventional medical and clinical world. It has opened up tremendous opportunities in patient-centric medical imaging, robust neural computing, personal health tracking, and large-scale health informatics, etc. The medical informatics ranges over image, video, audio, text and various modalities such as CT, MRI, PET/CT, EEG and so on. My Smart Medical Informatics Learning and Evaluation (SMILE) Group focuses on scientific approaches to bridge data and medicine. Our effort spans from safety-aware medical imaging, robust hemodynamics estimation, to innovation of the computing and analysis algorithms. In our medical informatics learning and evaluation research, we explore and leverage the large amount of medical data in various forms and modalities, to generate scientific enlightening or clinically useful information. With these words, we aim to push the fundamental limits of the medical analysis and to revolutionize the functional imaging and data interpretation.

Direction
Educational neuroscience  Smart health informatics  Medical Imaging and image analysis

Notes