

**Abstracts by McNair Scholars
at the University of Oregon**

**Body Connectivity and Mobile Technology Use:
The Role of the Body in a Digital Age**

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Psychology

Faculty Mentor: Jenifer Craig
Dance

Despite the growing presence in our daily lives of mobile screen technologies, such as smartphones and tablets, there is a clear deficiency in research regarding the somatic effects of these devices. Using a correlational analysis, this research project examines the relationship between the levels of use of these technologies and both body awareness and body dissociation as measured by the Scale of Body Connection. Given the unprecedented influx of these technologies and the limited understanding of their impact on the body-mind connection, the results of this research may provide insight into the consequences of modern mobile technology use and help lay the groundwork for additional investigations, particularly in the field of somatic therapy.

Exotic Sexuality: Examining the Effect of Exotic Dancing on Women's Sexuality

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Women's and Gender Studies

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Anthropology

Exotic dancing has been studied widely in the fields of anthropology, sociology, psychology, and women's and gender studies. Scholars such as Bernadette Barton and Katherine Frank have argued that women become exotic dancers because they are suffering from repetition compulsion, which causes dancers to follow intimacy scripts both at work and outside of work. However, these arguments have not adequately addressed the issue of how the profession may affect the sexuality of the women working in the exotic dancing profession. My research has examined and compared the voluntary sexual encounters of women before becoming dancers to their voluntary sexual encounters after becoming dancers. Of particular interest for this study was the rarely acknowledged issue of whether working as an exotic dancer affects women's sexual interest in other women. Through ethnographic and empirical methodologies, my research has shown that working as exotic dancers may cause changes in women's sexual interest in other women and the level of sexual encounters in which the women are involved.

Personality Impressions on Twitter

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This study examined the extent to which participants agree on their impressions of Twitter users based only on information presented in the user's Twitter profile. Participants ($n = 220$) evaluated a random selection of Twitter users' profile pages. Multilevel modeling techniques were used to separate perceiver and target effects in order to estimate trait level agreement. On average, participants agreed most about the degree of each user's thoroughness, intelligence, social economic status, and arrogance. Participants agreed least about the degree of each user's assertiveness, artistic interest, nervousness, and sense of humor. The findings of this study support existing literature regarding the ability of third party observers to make consistent judgments of strangers based on the limited amounts of information present on social media websites. This study also extends previous literature to Twitter, a microblogging social media platform and one of the most popular social media websites in the world.

Accessing Long-Term Memory— What Pupil Dilation Can Tell Us About Search Processes: An Exploratory Study

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Our study used a delayed free-recall task to investigate the role of pupil dilation in long-term memory. Previous studies have shown the validity of pupil dilation as a proxy for attention and effort. For the first time, this study used pupillometry to investigate encoding and retrieval processes as well as the primacy effect. Participants learned seven lists of ten words each for later recall. Using eye tracking, we analyzed pupil size during both learning and retrieval. Results revealed a close relationship between pupil dilation and recall behavior. When pupils were large, participants recalled words rapidly and more accurately. Furthermore, attention during encoding, indicated by pupil size, peaked with the first item and then decreased during each successive trial. These findings are consistent with primacy-gradient models. Additionally, we provide new evidence on the primacy effect. Pupil dilation for the first item on each list was much larger and followed a different pattern than any other item during encoding. Our data suggest that, in addition to rehearsal, increased attention to the first item on the list may play a role in participants' superior recall of that item.

New Pt(II) Complexes for the Investigation of Copper-Mediated Degradation in Pt-Bound RNA Click Reactions

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Chemistry

Small-molecule binders, such as the platinum(II) anticancer drug cisplatin, can be used to probe cellular RNA structures and functions. We focus on the functionalization of Pt complexes with azide and alkyne moieties that may allow for the subsequent purification and high-throughput sequencing of Pt-RNA adducts in the copper-catalyzed Huisgen cycloaddition reaction. Because of the reactive nature of the necessary Cu catalyst, it is speculated that Cu is facilitating observed RNA degradation in model reactions, thus lowering the efficiency and usefulness of the post-treatment click modifications. Three new Pt(II) complexes that vary in linker length from the platinum center to the copper-catalyzed click reaction site are synthesized to probe the possible influence of click-mediated Cu recruitment on cleavage of the oligonucleotide. Results highlight the need for further investigation of additional and undesired copper-mediated reactivity as well as improved yield of Pt-bound RNA click reactions.

Maintaining Compassion and Harmony: An Analysis of Three Interreligious Communities in Bali

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Faculty mentor: Lamia Karim
Anthropology

Compassion triggers an emotional response to suffering and a desire to help. Theories of religion and compassion suggest that social barriers may perpetuate a strained relationship between Hindus and Muslims in Bali; that strained relationship may suggest a lack of compassion (Geertz, 1973 and Nussbaum, 2001). However, by examining three interreligious villages in Bali, this research explores how compassion and harmony are conceptualized and maintained differently. I conclude that the conceptualization of compassion may correlate to the existing harmonious state in each village and its related social and economic development. This research adds to the general effort to understand how interreligious societies conceptualize, foster, and maintain harmony and therefore compassion.

A Modern Migration: The Consequences of Senegalese Migration to the West

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The migration of Senegalese men to the West has numerous consequences for Senegalese society. Important problems arise for families that experience financial hardships in a culture that expects men to be breadwinners. Also, families face problems arising from extended parent-child separations. Moreover, as males look for more opportunities abroad, their migration creates a brain drain from Senegal. The Senegalese government has created cooperative efforts with the European Union to reduce immigration to Europe for the benefit of all countries concerned. This research explores how Senegalese migration is expressed in pop culture, particularly songs and soap operas (most translated from their original Wolof), and analyzes how the Senegalese government and the West are dealing with the mass emigration.

The Perception of Parents' Participation in Therapy for Children with Communication Disorders

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The broad purpose of this study is to learn more about parents' perceptions and their experiences while having their children receive services and treatment therapy for communication disorders. The data for this study were obtained through direct interviews with five families with children who have received speech or language interventions from Early Childhood CARES. Our goal for this study is to help the parents find support and resources within the community to enhance their children's success both at home and in school. The implications of our findings may suggest ways to improve our understanding of how to provide interventions for children with early speech impairments or language delays while providing information to improve the awareness of parents about the specific needs of their children.

Beyond Depression: Mothers with Comorbidity Differ in Neural Response to Infants' Cry

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Psychology

Previous research has demonstrated that mothers with major depressive disorders show blunted striatal and prefrontal activation in response to the distress cues of their own infants. However, little research has explored these effects in mothers with comorbid anxiety disorders, which may further explain mood-disorder related parenting deficits. We hypothesized that mothers with comorbid depression/anxiety would have different neural responses to their infants' cries when compared to mothers with depression alone and to mothers with no psychiatric diagnosis. During functional neuroimaging, a group of 22 high-risk mothers listened to blocks of their own infants' cries and a control sound. Comorbid mothers showed more activation in Heschl's gyrus and insula than mothers with depression alone and less activation in the anterior cingulate gyrus and prefrontal cortex than the control group. These results support the need to identify appropriate interventions for mothers whose children are at risk for intergenerational depression and anxiety.

aPKC Induces Polarization of Numb by Disrupting Cortical Targeting Mechanisms

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The polarization of cellular components is important for the organization and maintenance of tissues during the development of multicellular organisms. A cell can asymmetrically divide along an axis of polarity to generate daughter cells with different developmental fates. *Drosophila* neuroblasts, the neural stem cells of the developing fruit fly, establish an apicalbasal polarity during the onset of mitosis and asymmetrically divide to segregate cell fate determinants into specific daughter cells. However, much is unknown about the processes the neuroblast undergoes to establish the polarity of these cell fate determinants. Polarity is established by the kinase activity of one of the apically polarized components: atypical protein kinase C (aPKC). Numb is a substrate of aPKC, and sitespecific phosphorylation of Numb is necessary for its basal polarization. We have shown that aPKC phosphorylation disrupts cortical targeting for Numb in cultured cells. Using phosphor-dead and phosphomimetic mutants of Numb, we investigate the mechanisms for specific aPKC phosphosites in regulating Numb localization. We predict that our findings will have implications for the mechanisms behind kinasedependent cell polarity.

Using Mice as Models to Investigate Neuronal Response in the Thalamic Lateral Geniculate Nucleus

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My research investigates response properties of neurons in the thalamic Lateral Geniculate Nucleus (LGN), a midbrain structure that relays visual information from the retina to visual cortex. Measurements rely on extracellular recordings in awake mice that are head-fixed but free to run on a floating ball. That technique permits simultaneous cellular recording and monitoring of each animal's running speed as it views visual stimuli designed to probe cellular response properties such as preference for a bar of light at a specific orientation (orientation), or movement in a particular direction (selectivity). Data suggest that orientation- and direction-selective cells are present in the retina and project to LGN, thus leading to the hypothesis that these features will also be conserved in LGN neurons. By allowing animals to run freely during recording, we can test the effect of a switch in behavioral state (locomotion) on visual processing in LGN. Previous research shows that this switch in behavioral state can cause cells to increase their activity in the visual cortex. We test this hypothesis in mouse LGN neurons while exploring the repertoire of visual features and how behavioral state can modulate those features.

Cetacean Hunting at the Par-Tee Site (35CLT20): Ethnographic, Artifact, and Blood Residue Analysis Investigation

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Anthropologists have long believed that Native Americans on the Northern Oregon Coast did not actively hunt cetaceans, but archaeological evidence suggests otherwise. My project utilizes ethnographic data, comparative artifact analysis, radiocarbon dating, and blood residue analysis to investigate whether whales may have been hunted during prehistoric times along the Northern Oregon Coast. An artifact from the Par-Tee site (35CLT20), a humpback whale (*Megaptera novaeangliae*) phalange with an embedded bone harpoon point, provides evidence of whale hunting. The dimensions of the embedded harpoon point were determined using computed tomography (CT) scanning to complete the comparative analysis. Based on comparative analysis, three harpoon typologies were selected for blood residue analysis. Blood residue analysis confirmed the use of the leister harpoon for trout, salmon, and steelhead fishing. In addition, this project will provide a time marker for active or opportunistic whale hunting within Oregon using C14 dating.

Exploring the Basis for Sequence-specific RNA Binding by Pentatricopeptide Repeat Proteins

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Pentatricopeptide repeat (PPR) proteins are sequence-specific, RNA-binding proteins that help regulate the gene expression in both mitochondria and chloroplasts. These proteins are often defined by their tandem arrays of degenerate 35-amino-acids, repeating units that bind and mediate organelle transcript processing and stability. Despite our current understanding of PPR proteins, much remains to be learned about the mechanism by which these proteins function and bind to their targets. This paper describes PPR102, a pentatricopeptide protein in maize, with the hope of shedding more light on binding mechanisms. Using a ribosomal profiling assay, it is possible to quantify the abundance of ribosomes at every position on every chloroplast open reading frame (ORF). Because the hypothesis is that each PPR protein aids in the translation of several chloroplast RNAs, any differences between the ribosome footprint of the mutant containing a null-ppr102 allele and the footprint of a wild-type allele will provide information about possible binding sites for PPR102. An in vivo PPR-footprint assay may also help to determine potential PPR102 targets.

Characterizing the Neuromuscular Effects of Tribendimidine in the Nematode Worm *Caenorhabditis elegans*

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Parasitic nematode (roundworm) infections cause a major disease burden globally. The increase in resistance to the existing anthelmintic (anti-nematode) drugs reveals a need for new, more effective drugs. In the past 30 years, only tribendimidine, developed by the Chinese Center for Disease Control and Prevention, has entered human clinical trials, but little is known about its mechanism of action and potential resistance pathways. Studying tribendimidine by examining its effect on the pumping of the pharynx of the nematode *Caenorhabditis elegans* (*C. elegans*) may provide insights into the drug's targets and mode of action. Microfluidic devices, developed by the Lockery and Weeks laboratories at the UO, allow measurement of pharyngeal pumping frequency in electropharyngeogram (EPG) recordings. Those recordings reveal the electrical activity of both muscles and neurons of the pharynx and give distinct readouts of compounds from different drug classes. My hypothesis is that tribendimidine will show effects on EPG recordings similar to levamisole, a compound in the same drug class. Characterizing the effects of tribendimidine on EPG activity in *C. elegans* is important for validating the EPG method as a tool for developing more effective anthelmintic drugs for animal and human health.

Post-Traumatic Sexuality: Reclamation of Sexuality and Eroticism After Colonization

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English

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English

Faculty Mentor: Gordon Sayre

English

This paper investigates the intersectionality of queer studies and Native studies by examining how historical and cultural trauma have affected Native relationships to land and time as well as how those relationships contribute to the expression and understanding of indigenous sexuality. Through a study of the poetry and quilts of Cheryl Savageau, this paper examines how Native people are able to reclaim their sexuality and empower themselves after a history of violence and colonization. By exploring the repurposing of colonial language, history, and borders characteristic of Savageau's work, this essay examines some of the literary methods Native people, particularly Native women, use to reclaim their sexuality and autonomous bodies.