



Undergraduate Research Symposium **May 17, 2019 Mary Gates Hall**

Online Proceedings

POSTER SESSION 2

Commons West, Easel 28

1:00 PM to 2:30 PM

The Consequence of Perceiving Sexual Harassment Victims as Prototypical Women

*Ananya Dontula, Senior, Psychology, Communication
UW Honors Program*

Mentor: Jin Xun Goh, Psychology

Sexual harassment is pervasive yet many people underestimate its prevalence or often do not believe victims when they come forward. The current research examines a potential source of this bias. Specifically, we theorize that people assume and misperceive victims of sexual harassment as prototypical women (i.e., those who fit the stereotypical, idealized image of women), and those who deviate from this prototypicality are less likely to be believed as victims. In this study, participants read a vignette describing a woman named Anna who was either sexually harassed by a male boss or not (control group). Importantly, we manipulated her prototypicality using photographs obtained from previous research. After reading the vignette, participants rate how likely they think Anna experienced sexual harassment. This is a 2 (prototypical vs non-prototypical images) x 2 (harassment vs control) between-subject design. We are primarily interested in the interaction between the two conditions. If the interaction is significant, then we will examine the non-prototypical vs prototypical within the harassment condition as well as in the control condition. We are trying to see how the interaction effect works for women who are prototypical or not when they have been harassed because we believe that prototypical women will be more likely to be believed than non-prototypical women. We do not expect this pattern to repeat in the control condition because prototypicality should not influence women who are not harassed. This research will allow us to understand how perception of harassment can be influenced by women's resemblance to the prototypical image of womanhood.

POSTER SESSION 2

Commons West, Easel 27

1:00 PM to 2:30 PM

Ideological Differences between Asians and Asian Americans

Linh Bui, Recent Graduate, Psychology, Seattle University

Mentor: Jin Xun Goh, Psychology

Although Asians and Asian Americans are often classified as belonging in the same social category, these two groups may perceive and think about the world differently. This project examined whether UW students who are Asians and Asian Americans hold different viewpoints regarding social identities and social statuses. Primarily, we examined group differences in Status Legitimizing Belief, Perceived Racial Discrimination, and Racial Identification. Status legitimizing belief is a set of beliefs (measuring protestant work ethic, perceived system permeability, and system legitimacy) asserting that if individuals work hard, are motivated, and are talented, they can improve their social statuses. Perceived racial discrimination measures the extent to which racial minorities believe that they are targets of discriminations. Racial identification measures individuals' beliefs and perceptions that their racial group matters and is central to how they perceive themselves. Through meta-analyses of self-report surveys across 13 academic quarters, we found significant differences between Asian Americans and Asians across all measured variables. First, we found that Asians have higher status legitimizing belief than Asian Americans. Asians also perceive lower racial discrimination than their Asian American counterparts. And finally, Asians are less likely to identify with their racial in-group than Asian Americans. This research demonstrates that while both groups are often classified or perceived as the same social group, they, in fact, hold different perspectives regarding their identities as well as their statuses. Understanding how these two groups rationalize and perceive legitimacy and discrimination offers insight into intergroup relations.

POSTER SESSION 2

Balcony, Easel 109

1:00 PM to 2:30 PM

Do Not Ignore the Role of Astrocytic Inwardly Rectifying K⁺ Channel (Kir4.1) In Targeting Alzheimer's Disease and Parkinson's Disease

Eric Shaban Thorland, Junior, Pre-Sciences

Mentor: Jing Zhang, Pathology

Mentor: Lifu Sheng, Department of Pathology

Astrocytes are a type of glial cells in the central nervous system, play a critical role in protecting neuronal signaling by regulating brain homeostasis, synaptic plasticity and transmission, and blood brain barrier functioning in central nervous system. Accumulating evidence has indicated that abnormal behaviors of astrocytic functions, including astrodegeneration and astrogliosis, are implicated as the primary factors contributing to a number of chronic neurodegenerative diseases such as Alzheimer's disease (AD) and Parkinson's disease (PD). Kir4.1 is an inwardly rectifying K⁺ channel expressed on the projections of astrocytes, which serve important roles in the neuroprotective function of astrocytes, such as maintaining K⁺ homeostasis and regulating extracellular glutamate. Abnormal expression of Kir4.1 has been reported in certain neurodegenerative diseases, including Amyotrophic lateral sclerosis (ALS) and Huntington's disease (HD), suggesting a vital role in the development of pathophysiology. However, the association between the molecular mechanism and expression of Kir4.1 and the underlying pathogenesis of AD and PD has been largely uninvestigated. In this study, we have had the critical opportunity to access human post-mortem brain tissue, provided by the University of Washington Alzheimer's Disease Research Center, and conducted confocal microscopy studies. Through a quantitative immunofluorescence staining approach, we expect to demonstrate a distinct expression pattern of Kir4.1 in various brain regions of AD and PD post-mortem tissues when compared to control subjects. Determining the role this protein has in neurodegeneration may provide new insight into the development of therapeutic targets to ameliorate the progression of AD and PD.

SESSION 2M

MCNAIR SESSION - FROM CHAOS TO ORIGAMI: ADVANCES IN MATH, PHYSICS, CHEMISTRY AND ENGINEERING

*Session Moderator: Therese Mar, OMAD and Department of
Environmental and Occupational Health Sciences*

MGH 288

3:30 PM to 5:15 PM

* Note: Titles in order of presentation.

Multitransformable Leafout Origami

Kyle Johnson, Junior, Electrical Engineering

*Louis Stokes Alliance for Minority Participation, Mary
Gates Scholar, McNair Scholar*

Mentor: Jinkyu Yang, Aeronautics and Astronautics

Mentor: Koshiro Yamaguchi, Aeronautics and Astronautics

With the increased development of space programs globally,

more space probes are being funded for sample-return missions. Versatility and power limitations are some of the critical issues that these extraterrestrial sampling rovers are seeking to overcome in order to reliably deploy autonomously. Exploring the rough and unpredictable surfaces of other celestial bodies requires more adaptable and energy efficient robotics, which is what makes bio-inspired origami structures so appealing. Leaf-like origami is reconfigurable, which means that it can walk, jump, grasp, and actuate other useful motions all within the same device. Typical robots have redundant actuators and structural systems, but origami devices can build up potential energy before converting it into a mechanical motion. Due to this, rigid origami design approaches have the potential to be more compact, versatile, and energy efficient than conventional devices. Studying reconfigurable origami-based robotics can lead to devices that can be transformed into multiple configurations for various tasks. To design a versatile origami-based structure, I followed up on the research that Professor Jinkyu Yang and the members of his research group had on leaf-like origami, specifically leaf-out origami. This origami structure shows multi-transformable features. This means that the structure can be configured in a stable-stored or stable-deployed shape without having an external power supply maintaining its configuration. By finalizing the design, fabrication method, and discovering the optimized folding patterns for jumping and grasping motions, we will be able to start implementing the structure into more complex systems. Designing more structurally efficient systems may be the most practical solution we currently have to combat power and versatility limitations for autonomous space probes.

POSTER SESSION 3

Commons West, Easel 26

2:30 PM to 4:00 PM

The Need for Social Supports in Caregivers with Cancer Histories

Yi Le (Ino) Zhang, Senior, Psychology

Echo (Qianying) Peng, Senior, Psychology

*Ruitao Zhang, Senior, Psychology, English (Creative
Writing)*

Nuan Crystal (wen) Wen, Senior, Accounting, Psychology

*Mentor: Peter Vitaliano, Department of Psychiatry and
Behavioral Sciences*

*Mentor: Jin You, Department of psychiatry and behavioral
science, Washington University*

Many of the world's most important countries are experiencing large increases in their populations of older adults (e.g. Japan, China, Italy, Germany). Such longevity is requiring a greater need for long term care. However, societies can not afford to pay for formal care, so informal (unpaid family) caregivers (CGs) are becoming increasingly impor-

tant. Unfortunately, many CGs are at high-risk for psychosocial/health problems. Moreover, caregivers with pre-existing health problems are particular risk. Our goal is to examine factors that may make cancer caregivers vulnerable. We used a vulnerability (have a cancer history or not) by exposure (being a caregiver or not) model, and stratified our participants into four groups: Cancer Caregivers, Non-Cancer Caregivers, Cancer Non-Caregivers, and Non-Cancer Non-Caregivers. At baseline and 15-18 months later, we measured indicators of life quality and caregiver demands: satisfaction with support, well-being, perceived support, loneliness, and hours spent caregiving. Cancer Caregivers reported poorer social supports and more time caregiving. This is important because previous work has shown that Cancer Caregivers have more negative and fewer positive life experiences and that these are related to the ability to fight tumor growth. Despite innovations, this study only included white Americans. Also, to increase participation among persons with cancer, we only included those who were not treated for at least one year and who had not suffered from serious forms of cancer. Our results would probably have been stronger had we included persons with more serious cancers, but such individuals might not have participated or been able to be caregivers. Given the rapid rise of cancer in China, we suggest that research examine cancer and caregiving in China and that cross-cultural research be done in the U.S. and China. To understand the dynamics of caregiving, health and well-being, one needs to study these processes cross-culturally.