

## Undergraduate Research Symposium May 16, 2014 Mary Gates Hall

### Online Proceedings

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#### SESSION 1C

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##### **EXAMINING EDUCATION: NEW DATA, IDEAS, AND INSIGHTS**

*Session Moderator: Christopher Campbell, Urban Design  
And Planning Group*

**228 MGH**

*12:30 PM to 2:15 PM*

\* Note: Titles in order of presentation.

##### **Social Emotional Outcomes for English Language Learners in Kindergarten, First and Second Grade Classroom Settings**

*Shijia (Lucy) Chen, Senior, Communication, Early  
Childhood & Family Studies*

*UW Honors Program*

*Mentor: Joanne Buntain-Ricklefs, College of Education*

*Mentor: Mary Clevenger-Bright, Early Childhood & Family  
Studies*

*Mentor: Clayton Cook, College of Education*

In cultures where children have regular contact with same aged peers during the first years of life, peer sociability plays a fundamental role at early stages. Currently, the only social emotional skills children are exposed to are those that they learn alongside academic learning. Additional social emotional skills are often not taught. These skills include social awareness, self-awareness, dealing with ambiguous situations, adapting to social situations, managing stress, and learning how to learn (Lindsay, 2013). It is especially challenging for English language learners (ELL), who have the additional task of learning multiple ways of communication, including both language and cultural rules. Research on social emotional learning has shown that when children are able to deal with, manage, and maneuver the social and emotional landscapes of their lives, their capacities to learn and function socially on all levels improve (Lindsay, 2013). This study seeks to compare the social emotional outcomes for ELL students with their native English-speaking peers in classroom settings. The study includes literature review and data analysis on data collected by Second Step Study researchers at the College of Education from approximately 5,000 children across 40 schools in 5 districts. One of the teacher-reported measurements used in the study is the Devereux Student Strengths Assessment (DESSA), a behavioral rating scale that

measures skills associated with social-emotional competence, resilience, and academic success. The other teacher-reported measurement is the Strengths and Difficulties Questionnaire (SDQ), a behavioral screening questionnaire which measures children's strengths and difficulties related to behavioral characteristics. Results from the measures will be compared between native English speakers and ELL students. The aim of this study is to increase teachers' awareness of the importance of social emotional development of English language learners.

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#### SESSION 1G

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##### **GENDER, SOCIETAL EXPECTATIONS, AND HEALTH**

*Session Moderator: Judith A Howard, Sociology*

**242 MGH**

*12:30 PM to 2:15 PM*

\* Note: Titles in order of presentation.

##### **Emotional Perception of Neutral Images: The Facial Feedback Hypothesis**

*Katarina (KJ) Juarez, Junior, Psychology, Seattle University*

*Kimi Kogachi, Junior, Psychology, Seattle University*

*Mentor: Kathleen Cook, Psychology, Seattle University*

Our objective was to further explore the facial feedback hypothesis. This theory, that facial movements (efference) can influence one's emotional experience, has historically been studied using either positive or negative stimuli. We used neutral stimuli to see if facial efference is affective in influencing emotion in the absence of stimuli that prompt an emotional response. Participants were randomly assigned to one of three conditions created by holding a chopstick – forced smile (chopstick between teeth), forced frown (chopstick between lips), or neutral (chopstick in nondominant hand). Participants were then shown 5 neutral images, each for 6 seconds, via PowerPoint. They then rated the images on 11-point Likert scales, from 0 (extreme sadness) to 10 (extreme happiness), indicating what emotion the image was expressing. Results showed no statistically significant difference between those whose facial expressions were manipulated into smiles and those who had neutral or frowning facial expressions. A deeper understanding of the relationship between facial expressions and emotions could alter the way in which we ex-

plore treatments for both mental and physical health conditions.

### POSTER SESSION 3

**Balcony, Easel 114**

*2:30 PM to 4:00 PM*

#### **Academic Motivation and Student Engagement**

*Victoria Richey, Senior, Psychology, Seattle University*

*Madeline Waters, Junior, Psychology, Seattle University*

*Mentor: Kathleen Cook, Psychology, Seattle University*

Understanding the relationship between student engagement and academic motivation is important when considering the experience of undergraduate students. We hypothesized that the more students engaged with the university, the more motivated they would be. Participants were invited via class appeals and Facebook posts to complete an online survey on SurveyMonkey. Eighty-three participants fully completed the National Survey for Student Engagement (NSSE), the Academic Motivation Scale (Wabash University, 2009), and demographic questions (major, gender, cumulative GPA, year in school, and graduation date). Regression analyses showed four subfactors of engagement to be significantly related to motivation. The first three subfactors fall under the NSSE's theme "Academic Challenge," while student-faculty interaction falls under the theme "Experiences with Faculty." Thus, those who were engaged academically and with professors were more academically motivated. The findings may have implications for how universities engage and retain students, and the effectiveness of programs used to motivate students academically.

### POSTER SESSION 4

**Commons East, Easel 78**

*4:00 PM to 6:00 PM*

#### **Manganese Affects Glutamate Metabolism in Synuclein Knockout Astrocytes**

*Allion Abraham (Allion) Salvador, Senior, Applied Music (String Instruments), Neurobiology*

*Initiative for Maximizing Student Development Scholar,*

*UW Honors Program*

*Mentor: Jing Zhang, Pathology*

*Mentor: Travis Cook, DEOHS*

*Mentor: Jake Hoekstra, Pathology*

Some symptoms of Parkinson's disease, a movement disorder characterized by neuronal death in the basal ganglia, may result from or be exacerbated by low-level long-term exposure to manganese. Manganese-mediated impairment of normal glutamate uptake and metabolism may also contribute to abnormalities in the neuroprotective functioning of astrocytes, including manganese and other toxicant storage. Misfold-

ing and aggregation of the protein  $\alpha$ -synuclein, a product of the SNCA gene, has been implicated in neuronal degeneration in Parkinson's disease, and various studies have proposed links between manganese exposure or defects in manganese metabolic systems and synuclein toxicity. Preliminary data from our laboratory suggest that knockout (KO) of SNCA in astrocytes attenuates some physiological effects of manganese exposure. The present study seeks to compare toxicant attenuation in SNCA KO and wild type (WT) astrocytes after increasing low-concentration 24-hour manganese pre-treatments. Imaging with fluo-4 dye will be used to observe glutamate-induced calcium waves in astrocyte cultures exposed to 1, 5 and 10  $\mu$ M Mn<sup>2+</sup>. We predict significant deviations from a control waveform profile in both SNCA KO and WT cultures treated with higher concentrations of manganese. We further predict WT cultures to demonstrate significantly altered waveform profiles compared to SNCA KO cultures treated with equal concentrations of manganese.

### POSTER SESSION 4

**Commons West, Easel 38**

*4:00 PM to 6:00 PM*

#### **The Effect of Eating before Bed on Morning Patterns of Circulating Cortisol and Testosterone**

*Kevin Magnaye, Senior, Biology (Molecular, Cellular & Developmental), Anthropology: Medical Anth & Global Hlth*

*Mary Gates Scholar*

*Mentor: Kathleen O'Connor, Anthropology*

Cortisol, the main glucocorticoid hormone in humans, and testosterone, an androgenic hormone, are secreted from the adrenal cortex and gonads respectively in response to physiological and social stimuli. Cortisol and testosterone both display diurnal patterns with peaks in the early morning and gradual declines throughout the day. These morning peaks have been suggested to play a role in preparing the body for the day. The hypothalamic-pituitary-adrenal and hypothalamic-pituitary-gonadal axes regulate stochastic, homeostatic processes, which respond to short and long-term caloric changes. Although studies have determined the effect of fasting on cortisol and testosterone, the effect of the time of feeding is currently unknown, particularly the effect of eating close to bedtime on subsequent morning hormone levels. We hypothesized that the morning awakening response of cortisol will be resistant to changes in the timing of feeding before bed and testosterone will be more responsive to these changes. To test for the effect of timing of eating the night before, twenty male and female participants, aged 20 – 35, followed a four-day regimen. This protocol included three cycles of controlled time of evening feeding and next day saliva collections upon waking up and 30 minutes after waking up. The first cycle required consumption of dinner four hours before sleeping, the second cycle required consump-

tion of dinner one hour before sleeping, and the third cycle was a repeat of the first. Salivary cortisol and testosterone were measured with enzyme immunoassays. Morning cortisol levels following late night feeding are expected to display no difference from those following normal dinner times, while morning specimens following late night feeding specimens may show increased testosterone awakening responses. This research may provide insights into the timing of eating and homeostatic regulation in humans.

## **POSTER SESSION 4**

**Commons West, Easel 37**

*4:00 PM to 6:00 PM*

### **Commuting Effects on Cortisol and Testosterone**

*Gioia Skeltis, Junior, Anthropology: Medical Anth & Global Hlth*

*Mentor: Kathleen O'Connor, Anthropology*

Although previous studies have found that commuting increases our salivary cortisol (stress) levels, little is known about how it affects salivary testosterone, the sex hormone associated with aggression. Even less is known about the impacts that different modes of transportation may have on these hormone levels. My project therefore aims to 1) identify how commuting influences both salivary cortisol and testosterone patterns and 2) compare the salivary cortisol and testosterone levels of commuters when they drive to when they take the bus to determine how different modes of transportation affect these hormone levels. I hypothesized that 1) commuting (in general) would have a noticeable impact on salivary testosterone and cortisol levels, 2) that testosterone levels would be highest shortly after commuting for both busing and driving, and 3) that salivary cortisol and testosterone levels would be higher when study participants drove than when they took the bus. Ten male and female participants selected two days to commute home via bus and two days to commute home via driving their own car or vehicle. Shortly before and after all four of these commutes, each participant completed mood surveys and stress scales and collected 2 mL of saliva specimen. Cortisol and testosterone were assayed in the specimens using enzyme immunoassays. Bus commute day hormone levels were compared to car commute day hormone levels. Findings from this research project could have implications for future research on stress and transportation which could encourage commuters to use one mode of transportation instead of another since long-term exposure to elevated stress levels has been shown to be bad for one's health.