Charcoal’s Effects on Nitrifying Archaea and Bacteria in Northwest Soils

Alvin Christopher (Alvin) Lieu, Senior, Philosophy, Biochemistry
Mentor: Melissa Pingree, School of Environmental and Forest Sciences
Mentor: Thomas DeLuca, FCFC, University of Montana

Ammonia-oxidizing archaea and bacteria (AOA, AOB) are important contributors to soil ecosystem function, as they convert nitrogen (N) as ammonium (NH4+) into nitrate (NO3-), a more readily available form for plant uptake. This study examines the abundance of AOA and AOB in forest soils of the Pacific Northwest that have experienced wildfire 31, 7, and 5 years previously. Charcoal, a common residue of wildfire, may play a significant role in stimulating nitrification in soils, possibly by adsorbing monoterpenes that may inhibit mono-oxygenase activity in nitrifying organisms. The goal of this study was twofold. We first hypothesized that charcoal would increase the quantity and quality of AOB and/or AOA in wildfire-affected soils. To test this hypothesis, we extracted and compared DNA between burned and unburned sites using real-time quantitative polymerase chain reaction (RT-qPCR). We expect to find a greater abundance of AOA and AOB nucleotides in the burned sites indicated by qPCR, and a larger array of species indicated by DGGE analysis. Secondly, we will introduce monoterpenes (α-pinene) into soils with charcoal present, and soils void of charcoal to assess the interaction between the terpenes and charcoal surfaces. We hypothesize that the addition of terpene will readily adsorb onto charcoal surfaces. Therefore, burned soils will show reduced nitrification inhibition compared to soils without charcoal present and result in higher nitrification rates. These data will be matched with an assessment of the AOA and AOB from the burned and unburned soils, with and without the addition of charcoal in order to reach a better understanding of wildfire effects on forest soils.

The Effect of Social Media on Risky Sexual Behaviors

Judith Chou, Senior, Psychology, Interdisciplinary Visual Arts
Mentor: Dana Litt, Psychiatry & Behavioral Sciences
Mentor: Melissa Lewis, Psychiatry & Behavioral Sciences

Previous research has established a link between social media and risky drinking behavior, indicating that social networking sites provide exposure to drinking norms that predict attitudes and willingness towards alcohol use. However, despite the growing usage of social media, there is little research on the effects of social networks (other than Facebook) on risky sexual behaviors. Risky sexual behaviors have been previously defined as behaviors that increase the risk of negative outcomes associated with sexual contact such as unwanted pregnancies or sexually transmitted infections. The purpose of the current study is to describe the relationship between having an account with various social networking platforms and risky sexual behavior among young adults. For the present study, risky sexual behavior was defined as having sex with casual partners, having multiple sexual partners, and the lack of condom usage. We hypothesize that being a member of currently popular social media platforms will be positively associated with the aforementioned risky behaviors, while this relationship will be mediated by positive attitudes held towards risky sex. To test our hypotheses, a national sample of 1002 young adults aged 18-20 (53.6% female) were asked to complete a one-time online survey on social media use, health behaviors and risk behaviors, including sexual behavior. Participants reported which social media platforms (Facebook, Twitter, Instagram, or Snapchat) they have accounts with and their attitudes regarding casual sexual behavior, multiple sexual partners, and condom use. Additionally, participants reported on their sexual behaviors within the past 3 months, including: number of casual sexual partners, number of total sexual partners, and the frequency of condom use during sexual encounters. Results of this study may provide a better understanding of the nature and dangers of social media usage, and can help shape protective actions or interventions for reducing sexual behavioral risk.
Does Prototype Favorability Moderate the Relationship between Prior Alcohol Consumption and Condom Use during Sex?

Katja Anne Waldron, Senior, Psychology
Mentor: Dana Litt, Psychiatry & Behavioral Sciences
Mentor: Melissa Lewis, Psychiatry & Behavioral Sciences

Previous research has found that risky sexual behavior, including not using a condom, is associated with alcohol use prior to the sexual experience. However, little is known about whether these relations differ by prototype favorability (defined as the perceived favorability of the typical person who engages in a risk behavior) of individuals who do not use condoms. The present study investigated whether prototype favorability moderates the relationship between prior alcohol consumption and condom use during sex. We hypothesized that prior alcohol consumption is positively associated with not using a condom. Additionally, we hypothesized that this association is stronger for those who have higher prototype favorability for individuals who do not use condoms during sex. To test these hypotheses, the current study (n=1002) used data from a national sample of young adults, ages 18-20, who completed a one-time online survey about health and risk behaviors, including sexual behavior and alcohol use. Participants were asked to report the frequency that they engaged in any type of sex after or while drinking alcohol during the past 3 months and the number of times they used a condom when having sex after or while drinking. Participants were also asked to report on a scale from 1 (not at all) to 7 (extremely) how much the following words: "smart", "popular", "mature", "careless", "attractive", and "risky", describe their image of a typical male or female their age who has sex without a condom with a casual partner after having 4/5 or more drinks (prototype favorability). Regression analyses were conducted to determine the association between alcohol use and condom use, and if prototype favorability moderates the association. Results from this study will help interventions focus on specific beliefs, such as prototype favorability, and how they relate to alcohol-related risk behaviors.

POSTER SESSION 4
Commons East, Easel 61
4:00 PM to 6:00 PM

The Effect of Counseling Interventions on the Partner-Caregiver’s Well-Being in Ovarian Cancer
Hilary Vonckx, Fifth Year, Nursing
UW Honors Program
Mentor: Fran Lewis, Family & Child Nursing

Ovarian cancer is the 2nd most frequent female cancer in the U.S. Among couples in which women have been diagnosed with stage III or IV ovarian cancer, the partner is often the caregiver, and his or her social support can greatly impact the diagnosed woman’s disease process. Despite advances in the study of the partner-caregiver’s role, there have been few nursing interventions specifically created to provide emotional healing and recovery for him or her during the disease process. Our study involves a 5-session nurse-delivered counseling intervention designed to address the partner-caregiver’s emotional care. The purpose of my research is to examine the data from before and after the intervention to determine the effect it had on the partner-caregiver’s depressed mood. Each participating partner-caregiver completed a CES-D (Center for Epidemiologic Studies – Depression) scale before and after the intervention. The target sample was 10 partners of women diagnosed with stage III and IV ovarian cancer who were enrolled in the Taking Care of Her Program. The data analysis entailed comparing the partner-caregiver’s CES-D scale results before and after the intervention to evaluate the intervention’s impact on the respondent’s wellbeing. Due to the swift and terminal effects of ovarian cancer, and the time period needed to complete the sessions, only five partner-caregivers’ results have been collected to date. Of the five, four scored lower on the CES-D when their baseline scores were compared to their post-intervention scores. Although we are optimistic over these early results, caution is also in order, given the single group design (pre-posttest). There could be plausible other causes of these results. This early suggestive evidence argues the potential importance of this intervention but future research is needed within a more rigorous experimental design with a larger sample.

POSTER SESSION 4
Commons East, Easel 62
4:00 PM to 6:00 PM

Spouse Support to Women Newly Diagnosed with Stage IV Ovarian Cancer: A Descriptive Study
Kendra Raquel (Kendra) Fitz Patrick, Senior, Nursing
UW Honors Program
Mentor: Fran Lewis, Family & Child Nursing

Despite the importance of social support for patients with diverse cancers, there has been no study to date that examines the differences and similarities between partner caregivers’ report of communication support given to the patient and the patients’ perception and appraisal of that support. The purpose of this paper is to analyze partner caregiver communication support to wives’ diagnosed with Stage IV ovarian cancer and compare it to the wives’ view of the support they receive from their partner caregiver. One of the most important measures of social support in the research literature is the form and type of communication the partner caregiver offers the wife regarding her feelings and emotions with the cancer. This paper will be a secondary analysis using data drawn from an ongoing clinical trial of women initially diagnosed with Stage IV ovarian cancer and their partner care-
givers [both genders]. Analyses will include patient-reported appraisal of received supportive communication using a standardized quantitative measure “What He/She Does for Me”, and the comparable measure of partner caregivers report on a standardized measure, “What I Do for Her.” Data will be compared to assess the concordance or discordance between the enacted versus the perceived support. Results will have implications for nurses’ teaching partner caregivers types of communication that in the data are commonly misperceived by the diagnosed patient, including methods spouses can more effectively use to offer support that will be interpreted as support.

**Poster Session 4**
Commons West, Easel 28
4:00 PM to 6:00 PM

**Student Evaluations of College Instructors: A Case Study on the Determinants of Course Evaluation Scores at University of Washington**
Yu Ma, Senior, Economics
**UW Honors Program**
**Mentor: Melissa Knox, Economics**

Student Evaluations of Teaching (SET) is seriously considered when departments make decisions of promotion, tenure extensions, and salaries. University of Washington uses course evaluation as a form of SET. Previous research has shown that SET ratings vary in different situations: characteristics of teachers and of courses may have an impact on the SET ratings. However, some results of different literature are contradictory, and some directional effects of characteristics of instructors and of classes on SET ratings are not clear. This thesis aims to contribute to previous literature and tests if there is evidence that the characteristics of teachers and of classes would have an impact on course evaluation scores at University of Washington. By collecting data from University of Washington Seattle Time Schedule and Course Evaluation Catalogue, and running Ordinary Least Squares regression, I wish to reject the null hypothesis that there is no effect of characteristics of teachers and of classes on course evaluation scores. I have collected data from four different departments: Economics, Sociology, Psychology and Political Science; however, I was only able to reject the null hypothesis in data from Psychology. By collecting more data from different departments in my future work, I wish to find more departments that can prove that there are some effects of characteristics of teachers and of classes on course evaluation scores. If there exists other departments, it means students do have preferences on some specific instructors or classes, and departments can use the results to improve course evaluation scores and consider the results when making decisions on promotion, tenure extensions, and salaries.