

“The Effect of Fires on Red-Tailed Leafhoppers”

Presenter: Jasmine Alexander-Floyd

Major: Biology

Co-Author(s): Matthew Wilhelm

Mentor: Maya Chhetri

Department: Mathematics & Statistics

Experiment (Panzer, 2003) showed that the post-fire recovery of the endangered red-tailed leafhopper (*Aflexia rubranura*) depends on the number, quality, and proximity of neighboring unburned patches. We use a mathematical model to describe the local colonization-extinction dynamics of this species before and after the fire. We test our model’s validity using the data from the experiment as well as using simulations.

“Oxidation of Aromatic Aldimines by Rabbit Liver Aldehyde Oxidase: Substituent Effects”

Presenter: Nickolas Anderson

Major: Chemistry

Mentor: Robert Banks

Department: Chemistry & Biochemistry

Aldehyde oxidase is a widely distributed enzyme that catalyzes the oxidation of both endogenous substrates (e.g., retinal) and foreign compounds (drugs, pollutants and dietary compounds). Although the enzyme oxidizes aldehydes to carboxylic acids, many of its reactions involve oxidation of the carbon-nitrogen bonds of heterocyclic aromatic amines, such as purines, pyrimidines and pyridines. Previous research in our lab has established that aldehyde oxidase also catalyzes oxidation of the carbon-nitrogen bond in acyclic aromatic aldimines, such as benzalaniline. In this project we have examined the influence of electron-withdrawing and electron-donating substituents on the ability of aromatic aldimines to serve as substrates for oxidation by rabbit liver aldehyde oxidase. Several test compounds were prepared by the condensation of substituted aldehydes with aniline, purified and tested as substrates using conventional enzyme assay procedures. Our experimental results indicate that substrate activity is favored in aromatic aldimines bearing electron-withdrawing substituents such as chloro and cyano.

ABSTRACTS

Andrews — Bardarik

“Gateway Plaza Pilot Project”

Presenter: Ashley Andrews

Major: Interior Architecture

Co-Author(s): Suzanne Lineberry

Mentor: Patrick Lucas

Department: Interior Architecture

Other Mentor(s): Suzanne Cabrera

The importance of studying the aging and their relationship to their environment is of critical importance as the aging population continues to grow. The primary research goal is to understand how the built environment, in terms of architectural and interior design, impacts resident health and social behavior in one of Greensboro Housing Authority’s elderly housing sites, Gateway Plaza. The project is intended to be innovative in its approach as a participatory research project that treats community partners as the primary stakeholders. The research focuses on the programming phase of the design process. Programming is the problem-seeking, the searching for sufficient information to clarify, to understand, and to state the problem, while design is the problem solving. Taking a rigorous, methodological approach to the programming phase of the project prevents trial-and-error design alternatives in the future. After initial quantitative and qualitative data is collected, analyzed, and synthesized into concrete concepts for design, those concepts are tested in peer, stakeholder, and user working groups. This process leads to a more sophisticated statement and revealing of underlying themes, challenges and potential directions for future environmental, architectural or interior design.

“Euripides Explored: An Experiment in the Process of Creating Tragedy”

Presenter: Samantha Bardarik

Major: Classical Studies

Mentor: Robert Simmons

Department: Classical Studies

In the process of staging the school’s biennial classical Greek play, Randolph College students discovered the practical use of stage masks in amplifying sound. They did not intend to make such a discovery; it simply occurred in the course of producing classical drama as authentically as they could. The project that I have undertaken is to compose a tragedy as authentically as possible and to be attentive to discoveries that arise in the process of composition. After careful research I have mimicked the process through which the Greek playwright Euripides went to write a tragedy and kept a journal of what I have learned, both about tragedy and my own process as a writer. In doing so I have gained a more authoritative perspective on a number of topics valuable to modern students and scholars: the myths and contemporary issues Euripides used and chose not to use; how and why he tweaked myths from their standard versions; how and why he incorporated contemporary issues into the framework of myth; the extent to which the content of a play is under an author's control; and the factors by which authors are unwittingly influenced while constructing their plays.

ABSTRACTS

Bartlett — Bellis

“The Effects of Maternal Depression Symptoms on Children’s Social and Behavioral Development”

Presenter: Morgan Bartlett

Major: Psychology

Mentor: Susan Calkins

Department: Human Development & Family Studies

Maternal depression has been associated with negative child behavior outcomes. It has been shown to affect children’s developing social skills and predict outcomes of internalizing and externalizing behaviors in general and differentially by gender. The current study will examine the direct and indirect role of maternal depression and its effects on children’s peer acceptance as well as internalizing and externalizing outcomes. Data from an ongoing longitudinal study of child socioemotional development will be used. Participants include 447 children and their mothers assessed in the laboratory when children were 2, 5 and 7 years of age. Kindergarten and second grade data has also been obtained. Maternal self-report of depression, maternal report of child internalizing and externalizing behaviors, and schoolmate nominations of children’s social status have been collected. It is hypothesized that maternal depression directly predicts children’s social failure with schoolmates as indexed by low peer acceptance. Furthermore, it is expected that children’s social failure will mediate the relation between maternal depression and child outcomes of internalizing and externalizing behaviors over time. Lastly, we hypothesize that males of mothers with high levels of depressive symptomatology will have high scores on externalizing behavior whereas females will have high scores on internalizing behavior.

“Ecomusicology and Zotero: New Sources for Scholars”

Presenter: Corey Bellis

Major: Music (General)

Mentor: Aaron Allen

Department: Music

The interdisciplinary field of ecomusicology has been gaining recognition since the establishment in 2008 of the American Musicological Society’s Ecocriticism Study Group (ESG). To aid ecomusicologists, Dr. Aaron Allen, chair of the ESG, commissioned and began an extensive bibliography of print, web, and multimedia sources pertaining to ecomusicology. During AY08-09, URA Corey Bellis sought such resources and compiled them with Zotero, an open-source research and bibliography tool. The bibliography was then made available on the ESG’s website, and interested scholars have already put it to good use. In her current assistantship, Corey continues to enhance the bibliography with new sources. Additionally she applies her knowledge and familiarity with the sources by creating sample ecomusicological concert programs based on themes such as trees or birds. These programs and the accompanying explanatory program notes are presented on the ESG webpage as a model for users who want to make their own concert of nature-related musical works. Overall, this project makes use of a cutting-edge research tool to make available hard-to-find materials, which allow scholars, as well as audiences, to understand better humanity’s manifold connections with music and the natural world.

ABSTRACTS

Burke — Cagle

“Social Stratifications in Emergency Situations: Ecuador”

Presenter: Brittany Burke

Major: Anthropology

Mentor: Eric Jones

Department: Anthropology

Other Mentor(s): Arthur Murphy

The primary focus of this study relates to the various types of informal support received by people who have been relocated due to a disaster, in this case in a town near Mt. Tungurahua, Ecuador, as a result of its eruptions in 2006. More specifically, since it is well-known that family plays the strongest role in providing informal types of support, I chose to focus on the settings in which non-familial informal support was provided in this time of need, while controlling for other factors such as distance. The types of support studied were grouped into four categories: material, informational, moral, and job-opportunities. In conducting interviews designed to highlight these instances of non-familial support, it was then possible to make note of patterns the respondents shared. The results indicate that acquaintances classified as ‘friends’ or ‘neighbors’ are most likely to give support, and that moral support was the most common form of informal support received, followed by informational.

“Seal Stones, Plaques and Beads; Oh My!”

Presenter: Tamara Cagle

Major: Anthropology

Mentor: Joanne Murphy

Department: Classical Studies

Using Mycenaean seal stones, plaques and beads this project will elucidate the life-ways and trade patterns of Late Bronze Age peoples. Contextual analysis of the seal stones, plaques and beads from the site of the Palace of Nestor near Pylos, Greece may provide a more globalized view of this culture. By studying the morphology, manufacture and distribution of these items from the tombs surrounding the Palace of Nestor, it is apparent that Mycenaean culture was more complex and prosperous than once assumed. The data collected from these objects may clarify the extent of their trade network and district of manufacture.

“Characterization of a Male Chromosome Loss Mutation in *Drosophila Melanogaster*”

Presenter: Jeffrey Chmielewski

Major: Biology

Mentor: John Tomkiel

Department: Biology

We have genetically and cytologically characterized a male meiotic mutant, male chromosome loss Z3 2566, in the fruit fly *Drosophila melanogaster*. This mutation causes chromosome loss of the sex and fourth chromosomes during meiosis. The major autosomal chromosomes are not affected. While gametes are produced that lack one or more chromosomes, we have not found evidence for nondisjunction of homologous chromosomes (at meiosis I) or sister chromatids (at meiosis II). We used recombination and deletion mapping to localize the mutation to salivary chromosome bands 79-85 of the right arm of chromosome 3. We are using P-element mediated male recombination to further refine our mapping. To date, no other mutations with this phenotype have been described. Identifying this gene and its role in chromosome transmission could provide insight into the similar processes in humans.

“Investigation of Phenotype in Families of Student Musicians with Music-Related Hearing Loss”

Presenter: Alexandra Cornejo

Major: Speech Pathology & Audiology

Mentor: Susan Phillips

Department: Communication Sciences & Disorders

The purpose of this study was to determine if similar patterns of hearing loss were present in family members of music students with a bilateral, music-related noise notch. Family members of student musicians in three groups were recruited for this study: students with bilateral notches, unilateral notches, and a control group with no noise notch. Tympanometry was conducted on participants to determine good middle ear health. Hearing thresholds were tested in a sound booth with an audiometer at frequencies of 500, 1000, 2000, 3000, 4000, 6000 and 8000 Hz. A questionnaire was administered to determine contributing factors to any hearing loss. For all students with a bilateral noise notch, at least one parent exhibited a similar bilateral notch pattern, even when no history of noise exposure was reported. In the unilateral and control groups, most parents exhibited a hearing loss unrelated to noise exposure. Only one parent, who had a history of significant noise exposure, had a bilateral notch at 4000 Hz. These data support a hypothesis that individuals with a genetic predisposition to noise induced hearing loss may not need significant exposure levels to sustain a bilateral notch. Unilateral losses appear to be more environmentally induced.

“Culture and Race in Nursing Education”

Presenter: Pamela - “Nego” Crosson

Major: Nursing

Mentor: Mona Shattell

Department: Nursing

This presentation reports the preliminary findings from a mixed-method case study that explored and described how one Bachelors of Science in Nursing program at a public university in the Southeastern United States integrated concepts and issues of culture and cultural competency into its curriculum. Researchers collected quantitative data via student surveys (n=111) and qualitative data via student focus groups (n=9), faculty interviews (n=12), and relevant School of Nursing documents. Initial analysis of the student focus groups and faculty interviews revealed three major themes: Ways/places where culture is explicitly addressed, barriers to addressing culture more fully, and suggestions and recommendations. Preliminary findings are consistent with those of the only other case study of a School of Nursing found in the literature review. Ongoing analysis takes place in the context of the broader debate about how nursing as a profession can best contribute to efforts to eliminate health disparities. Implications will be addressed in final manuscript.

“Long-Term Retention of 15N in an Arctic Beaded Stream”

Presenter: Rachel Cuellar

Major: Biology

Co-Author(s): Anne E. Hershey, Lindsey D. Pollard

Mentor: Anne Hershey

Department: Biology

Many arctic streams are characterized by a pattern of large pools (beads), formed by freeze-thaw activity, separated by narrow channels, resembling beads on a string. Beads may be significant sites of N retention in arctic streams, but their role is not well studied. During the summer of 2009, we studied a beaded stream downstream of an arctic lake that had been experimentally enriched with 15N during the previous four summers, but received no new 15N in 2009. There was a general pattern of decreasing $\delta^{15}N$ in beads with increasing distance from the lake outlet, which suggests that significant N retention occurred over the previous 4 seasons. $\delta^{15}N$ of seston was correlated with that of FBOM in beads and with FBOM at bead inlets and outlets. Furthermore, over a 17-day period, there was no significant change in $\delta^{15}N$ with downstream distance. These data suggest that beaded streams are highly retentive of N, and that retention occurs over relatively long time scales.

“We Can Make IT’: Towards Broadening the Role of Women in IT”

Presenter: Brittany Davis

Major: Information Systems & Operations Management

Mentor: Lakshmi Iyer

Department: Information Systems & Operations Management

Other Mentor(s): Xia Zhao

Recent studies have shown that while women constitute 46.6 percent of the US workforce, only 20 percent of women hold Information Technology (IT) related jobs. Given that we live in a technologically driven world and that IT related job prospects are growing significantly according to Bureau of Labor Statistics, it is astounding to discover that fewer women are participating in this opportunity. In addition, the number of women who majored in IT related areas declined by 80% in the last decade, which ultimately represents a 93% decrease since its peak in 1982. The purpose of this research is to explore factors that affect the disparity of women in IT so that appropriate intervention mechanisms can be put in place to alleviate the problem. We used an online survey to collect data from undergraduate and graduate students in IT and non-IT areas. The data collected include demographics, perceptions about IT education and career, factors that influence their education and career choice, and how they use technology in their daily lives. A preliminary analysis of the data shows misconceptions among students about IT education and career paths and the need for women IT role models in the University setting.

“Healthcare Seeking Among Tribal African Women”

Presenter: Komal Desai

Major: Biochemistry

Co-Author(s): Amina Tahirou

Mentor: Sharon Morrison

Department: Public Health Education

One of the largest growing populations in the North Carolina is the African immigrant and refugee population. Only recently has the healthcare system realized the need for a more nuanced approach toward providing services for this population. The cultural and societal differences are many within this foreign-born group. Many conceptualize health and illness very differently and health seeking behaviors may vary among tribal groups within the same country, one such difference is based on their tribal affiliation. Through the use of the participatory action research (PAR) model, African immigrant and refugee women living in Guilford County, North Carolina were interviewed about their tribal affiliation and how they conceptualized health, illness, healthcare seeking practices, and disease prevention. All interviews were transcribed. The transcripts were coded and analyzed using domain and thematic analysis procedures. Women were involved in verifying concepts and themes that emerged. This presentation will highlight the findings with special attention to tribal women’s voices in the process of defining health service needs. This is critical and important information for culturally sensitive healthcare delivery.

ABSTRACTS

Dixon — Eng-Goetz

“Effect of Queen Presence or Absence on Honey Bee Worker Mortality”

Presenter: Luke Dixon

Major: Biology

Co-Author(s): Ryan Kuster

Mentor: Olav Rueppell

Department: Biology

Other Mentor(s): Scott Richter

Aging is inherent to all organisms. One common finding in different species is a negative correlation between reproduction and lifespan. However, in social insects, the inverse is true: Individuals that specialize in reproduction far outlive their non-reproductive workers. This is particularly true for the honey bees (*Apis mellifera*), in which summer workers live 5-7 weeks but queens can live over several years. In this study, we expanded on these findings and focused on the effects of reproductive suppression on the longevity of honey bee workers. We hypothesized that there is a connection between reproductive social structure, behavior, and mortality. Three observational hives were set up: a control hive containing a queen and two treatment hives without queens, one including brood. Equal sized cohorts of newly-emerged workers were marked with distinctive numbered tags and introduced to the hives. Mortality and different social behaviors were compared between treatments to investigate the life history of reproductive workers, as an intermediate between non-reproductive workers and queens. Workers in a queenless hive with brood had higher hazard rates than bees in a queenright hive; workers in a queenless hive without brood had lower hazard rates than bees in a queenright hive. Analyses also indicated that the demonstration of brood caring and ovipositioning are associated with lower hazard rates of workers. We conclude that reproductive structure and behavior have an effect on mortality, and that brood rearing interacts with the effect of reproductive activity.

“Action Through Artifacts: The Building of Community Values in Pleasant Garden, NC”

Presenter: Mira Eng-Goetz

Major: Interior Architecture

Mentor: Patrick Lucas

Department: Interior Architecture

This typological study of built environments and artifacts in the mid-twentieth century context examines the physical and psychological impact of two major industries established in the community of Pleasant Garden. Two centuries after its founding in 1757, this 15 square-mile crossroads community in southeast Guilford County became home to the Boren Brick Company and Founders Furniture. These modern businesses shifted the physical landscape of Pleasant Garden and offered its people opportunity, models of ingenuity and a new sense of identity. Integrating a critical analysis of objects, design, culture, people and places, my research aims to generate a holistic understanding of the connections between visual features and community values. I explore the ways in which modern design and industrial concerns can simultaneously spark progressive stewardship and traditionalism in a community both exposed and isolated.

“Liquid Salvation: An Ethnographic Journey in Second Life”

Presenter: Sabrina Epps

Major: Psychology

Co-Author(s): Jayme Mallindine

Co-Presenter(s): Jayme Mallindine

Mentor: Gregory Grieve

Department: Religious Studies

This project, Liquid Salvation, adopts ethnography to investigate religious community in Second Life, an online virtual reality created by Linden Lab and its residents. Researchers explored sites whose residents adopted various religious beliefs, such as the “Skeptical Buddhist Sangha”, “Eternal Creations”, “Artemis Taverns”, among others. This research aimed to uncover reasons why people participate in the Second Life religious community. Researchers examined identity, gender, interpersonal relationships and communities in various religious hot spots in Second Life. This investigation found that communities, families and interpersonal relationships served as a secure base by which navigation of the online community occurred, while religious groups and religious practice also stemmed from the resident’s lack of community in their “real life”.

“Should I Stay or Should I Go? A Simulation of Host Web Damage by Kleptoparasitic Spiders”

Presenter: Meghan Fitzgerald

Major: Biology

Mentor: Jan Rychtar

Department: Mathematics & Statistics

Argyrodes spiders are life-long kleptoparasites. Rather than building a web of their own, they live on the web of a larger host spider, stealing small food items and small quantities of web silk for nutrition. The host in our model system is *Nephila clavipes*, the golden web spider. *Nephila* build large orb webs with smaller barrier webs in front of the sticky surface. These barrier webs provide an ideal habitat for *Argyrodes* spiders, which congregate there until a food item is available to be stolen. In order to further understand the behavior of the host spider we have built a model to study costs to the host; specifically we focus on the point at which *Nephila* would abandon a web and rebuild in a new location to reduce kleptoparasite theft. Surprisingly, the model did not predict abandonment was due to the loss of food items, rather the model indicates abandonment is related to damage that the web sustains with kleptoparasite use.

“A Novel Method for Structure Elucidation via NMR Spectroscopy”

Presenter: *Jennifer Flynn*

Major: Chemistry

Mentor: Terry Nile

Department: Chemistry & Biochemistry

Other Mentor(s): Craig Butts (University of Bristol, UK)

Even though the magnetic moment of a nucleus is only weakly affected by an applied magnetic field, such weak interactions can convey much information about the electron distribution within a molecule. Nuclear magnetic resonance (NMR), an analytical technique, exploits this property to obtain information that can then be used to determine molecular structure, examine chemical transformations, or even to render macroscopic images as with magnetic resonance imaging (MRI). Over the past 60 years, NMR techniques have become more sophisticated and, together with mass spectrometry, they have become indispensable tools for structure elucidation. The purpose of this study was to demonstrate that de novo three-dimensional molecular structure determinations can be achieved using distance-geometry solutions based solely on experimental data obtained from several types of two-dimensional correlation spectra and the nuclear Overhauser effect (NOE). Internuclear distances were calculated and placed into a matrix before being subjected to a mathematical algorithm designed to converge to error-minimized three-dimensional structures. Chemical shift information was considered to determine the identity of quaternary carbons and NMR-invisible atoms. Although minor difficulties were encountered with interpretation of H2BC spectra, several structures have been successfully solved using this method and compared to high-quality structures calculated using the B3LYP-6311G** basis set.

“Transnationalism and Social Support Among Female Migrants”

Presenter: *Leah Garrard*

Major: Sociology

Mentor: Stephen Sills

Department: Sociology

While the concept of immigration is a highly politicized one in the United States, it is the social facets (social networks and social support systems) of migration which provide a keen insight into the ways female immigrants are able to adjust to life in the United States. This study aims to advance the understanding of the role of the receiving community in promoting or limiting integration of female immigrants, in Greensboro, NC, with an immigrant population of almost 10% of the total population (U.S. Census Bureau, 2005-2007). To better understand the female immigrant community in Greensboro, the ability to provide more applicable social services can be determined and evaluated. Through using the methods of group and individual interviews, this study will: 1) describe the women in the local immigrant community and their lives; 2) explain their reasons for migration; 3) examine their incorporation (assimilation and integration) into the local community; and finally 4) observe the ways in which they overcome obstacles such as racism, alienation, and exclusion. In particular, this study will have an overarching focus on the function and formation of social networks and social support systems (both formal and informal) among migrant women in Greensboro.

“Factors Related to Mother-Daughter Sexual Communication Prior to Sexual Debut”

Presenter: Christie Haugh

Major: Public Health

Co-Author(s): Tracy Nichols, Virginia Brown, Kassandra Miller, Wanda Thompson, Amelia Mattocks

Mentor: Tracy Nichols

Department: Public Health Education

Mother-daughter sexual communication has been shown to have protective effects in preventing high-risk sexual behavior. The purpose of this study is to examine factors associated with frequency of sexual communication between mothers and their adolescent daughters prior to girls' sexual debut. Adolescent girls (N=28) completed self-report surveys as part of a larger mother-daughter intervention study. Three participants were dropped from analysis due to previous sexual activity. The remaining sample (N=25) had a mean age of 13, with 82.6% (n=19) of girls self-identifying as African American. Pearson product moment correlations were run between frequency of girls' sex-related communication with their mothers and the following constructs: communication comfort, communication quality, relationship satisfaction, time spent together and girls' early sexual behaviors. Findings show communication quality and comfort discussing sexual topics to be significantly correlated with frequency of sexual communication ($r = .536, p < .01$ and $r = .543, p < .01$, respectively). Relationship satisfaction and time spent together were also significant ($r = .417, p < .05$ and $r = .430, p < .05$). No significant relationship was found between frequency of sexual communication and frequency of early sexual behavior. Findings suggest that improving mother-daughter communication and overall relationship, in addition to improving comfort levels when discussing sex may lead to more sexual dialogue between dyads and have protective factors once daughters become sexually active.

“2010 State of the City: Greensboro, NC and Select Cities”

Presenter: Carla Hughes

Major: Geography

Co-Author(s): John Rainey

Co-Presenter(s): John Rainey

Mentor: Keith Debbage

Department: Geography

Benchmarking exercises – including knowledge metrics, innovation indices, and state of the city reports – have become increasingly popular within the sphere of urban policy-making in recent years. The overall purpose of the 2010 Greensboro State of the City Report was to stimulate discussion and educate the general public about the overall performance of Greensboro relative to nine other peer cities. Data for nearly 40 different metrics were collected from government sources including population growth rates, median earnings, total tax base, employment, poverty rate and infant mortality rates. We helped with data collection, analysis and editing, and also presented the Report to the UNCG Geography Club. The overall conclusion of the Report was that the “State of the City” remained less than robust. Press coverage of the report included features in the Greensboro News and Record and the Triad Business Journal. The project was sponsored by the Greensboro Partnership.

“Physical v. Biological Controls on Invertebrate Distribution in Arctic Lakes and Ponds”

Presenter: Robert Isdell

Major: Biology

Mentor: Anne Hershey

Department: Biology

Lentic freshwater habitats exist along a gradient from small temporary ponds to large permanent lakes, and animal communities differ along this gradient. Habitat gradients have provided an effective way to study the effects of biotic and abiotic factors on invertebrate community structure. Abiotic factors affect the presence or absence of large predators, which, in turn, affect the composition of the other biota. In this study, we tested the hypothesis that the size and location of the system as well as the presence or absence of large predators, such as fish, directly influence species composition. Three freshwater habitats along the size gradient in arctic Alaska were found to support this hypothesis. Species richness was found to be highest in ponds and lowest in fishless lakes. Furthermore, large invertebrate predators like *Cybister* sp. appeared to have a negative effect on snail populations. Additionally, large invertebrates were not found within lakes that had fish.

“Individual Differences in Working Memory and Mind Wandering”

Presenter: DeLaura Jansen

Major: Psychology

Mentor: Michael Kane

Department: Psychology

Working memory (WM) is the ability to keep information in mind while also processing additional information. WM capacity is measured by WM span tasks and is related to higher order cognitive abilities, such as SAT scores and general intelligence. Attention theories of WM argue that this relationship is largely due to the attention-control processes of WM (e.g., Kane & Engle, 2003). McVay & Kane (2009) found that low WMC is related to the inability to maintain task-related thoughts (i.e., mind wandering). For the current study, we investigated whether external cues or reminders would help individuals keep their thoughts on task and whether these reminders would help low WM subjects to a greater degree than high WM subjects. We provided one group of subjects with tones as reminders to attend to task goals during one half of a sustained-attention task and no tones during the other half; another group of subjects received tones not connected to task goals during one half of the task; and a third group received no tones. We predict that tones connected with task goals (i.e., reminders to pay attention) will reduce mind wandering and increase accuracy, particularly in subject with low WM.

“The Effect of an Open Nurses’ Station on Nurse-Patient Interactions and Nurse and Patient Perceptions of the Psychiatric Inpatient Treatment Environment”

Presenter: Ashley Jarrell

Major: Nursing

Co-Author(s): Mona Shattell

Mentor: Mona Shattell

Department: Nursing

Hospital accreditation organizations such as The Joint Commission focus their efforts toward greater patient-centered care. Specific efforts encourage renovation of nursing stations, so that nurses can better see, attend, and care for their patients. The purpose of this study is to examine the effect nursing station design on nurse-patient interactions. We hypothesize that nurse-patient interactions will increase and that both patients and nurses will rate the open nursing station design as a more therapeutic milieu. Methods: Data was collected via two methods: nurse-patient interactions were counted via direct observation, unit environment was measured using the Ward Atmosphere Scale (WAS). Setting/Sample: The setting is a public not-for-profit acute care psychiatric hospital in a medium sized city in southeastern United States. In the psychiatric inpatient setting in this study, a Plexiglass wall encloses the nursing station. Renovation of the nursing station design is planned. The pre-test sample (pre-renovation) was comprised of 41 patients, 10 nurses, and 2 mental health technicians. Findings: This study is not yet complete. Pre-test data has been collected and analyzed, and once the renovations to the nursing station are complete, post-test data will be collected, analyzed, and then interpreted. We will determine if there is an association between the nursing station design, and number of nurse-patient interactions and perceptions of unit environment.

“Evolution of the Refugee”

Presenter: Victoria Johnson

Major: Anthropology

Mentor: Joan Paluzzi

Department: Anthropology

The image of the refugee in modern society has been largely crafted by the popular media with graphic images and stories of violence. However, in this stereotypical anonymity, the personal histories of the refugees are frequently lost. The quintessential representation of a refugee as wounded and starving reinforces society’s perceptions, which in turn has implications for how refugees are legally and politically classified. These classifications have enormous implications for the future security of hundreds of thousands of people. The focus of this research is on the evolution of the societal concept of the refugee beginning with the first mention of refugees in the seventeenth century and continuing through history to today’s victims of both natural and man-made disasters. The archival sources utilized will include literary texts, scholarly journals, ethnographies, and historic and contemporary newspapers. Overall, the goal is to demonstrate the manner in which the concept of refugee status has been manipulated by the various parties involved in the formulation and enforcement of national policies and international law. It also seeks to integrate the voices of the people who are best positioned to convey the clearest understanding of the implications of being classified as a refugee: the refugees themselves.

“Pregnant and Parenting Students at UNCG: Assessing Barriers to Academic Success”

Presenter: Anne Keyworth

Major: Public Health

Co-Author(s): Tracy Nichols, Virginia Brown, Kelly Mauceri, Christie Haugh

Mentor: Tracy Nichols

Department: Public Health Education

Undergraduate pregnant and parenting students (P&P) are in a unique situation at UNCG, an institution with predominantly “traditional” students, where they face a wide range of needs and challenges that receive little attention from other students, faculty, and staff members. Resources and programs currently available at UNCG may not be serving some of the unique needs of P&P students. For these reasons, we are conducting a study to identify barriers to academic achievement and campus inclusion among P&P students at UNCG. Study methods include conducting semi-structured interviews with P&P students, non-P&P students, faculty and staff, as well as key informants from other universities that have addressed this issue. To date we have conducted 14 interviews with undergraduate P&P students. Preliminary findings show students report a feeling of isolation from the campus community, difficulties balancing their schedules between their home and academic lives, and little knowledge of resources to address these concerns. However, they also report feeling very focused and have strong motivations to complete high quality work and to follow through on their goals of completing their undergraduate degree. This study supports the need for providing additional outreach services and resources to undergraduate pregnant and parenting students at UNCG.

“A Two-Stage Optional RRT Model for Binary Response”

Presenter: Soo Kim

Major: Mathematics

Mentor: Sat Gupta

Department: Mathematics & Statistics

Randomized response technique (RRT) was introduced by Warner (1965) to circumvent social desirability response bias in personal interview surveys. Gupta (2001) generalized this model to introduce an optional RRT model for binary responses where one can estimate not only the prevalence of a sensitive characteristic but also the sensitivity level of the survey question. The sensitivity level of a question is defined to be the proportion of respondents in the target population who consider the question sensitive. The basic premise of the Gupta (2001) model was that a question may be very sensitive for one respondent but may not be as sensitive for another person depending on cultural background and personal beliefs. So the choice to randomize or not to randomize the response should be left to the respondent with the researcher not knowing which type of response has been provided by the respondent. In this paper, we generalize the Gupta (2001) model and introduce a two-stage optional RRT model for binary response on the lines of Mangat and Singh (1990) and present an improved estimator of the prevalence of the sensitive characteristic. The estimator is unbiased and asymptotically normal. Simulation results validate this theoretical result.

“Effect of Mother's Depressive Symptoms on Mother Child Interactions”

Presenter: Rani Laha

Major: Nutrition

Co-Author(s): Eduardo German, Yudan Chen Wang, Richard Faldowski

Mentor: Richard Faldowski

Department: Human Development & Family Studies

Existing research shows that mother-child interactions are adversely affected by maternal depression and its symptoms. Few studies, however, have assessed this association in teen and young mothers of low socioeconomic status. This study examines how mother-child interactions in this population are affected by maternal depressive symptoms using data collected from mothers participating in the randomized Early Head Start evaluation study in Sumter, SC. Specifically, CES-D questionnaire responses to assess maternal depressive symptoms and an observational measure to assess mothers' behavior in a videotaped mother-child interaction task when her child was about 14 months old. Results of preliminary analyses indicate that (a) mothers of the program group versus the comparison group demonstrated similar levels of depressive symptoms as well as positive and negative behaviors during mother-child interaction, and (b) maternal depression did not predict maternal behavior in the mother-child interaction task. Mother age, however, was found to predict patterns of interaction with their babies in that older mothers were more likely to be supportive and less likely to demonstrate detachment, intrusiveness, and negative regard. Results suggest intervention programs such as Early Head Start need to emphasize detection and treatment of depression among teen mothers.

“Fluoride as an Inhibitor in Oxygen Evolution by Photosystem II”

Presenter: Ia Lee

Major: Biochemistry

Co-Author(s): Alice Haddy

Mentor: Alice Haddy

Department: Chemistry & Biochemistry

Plants, algae, and cyanobacteria all contain an enzyme complex, called Photosystem II (PSII), which carries out one of the fundamental bioenergetic processes by its energy demanding reaction of splitting water into molecular oxygen through light absorption. Chloride (Cl⁻) and calcium (Ca²⁺) are known to be important cofactors required for oxygen evolution. Though fluoride (F⁻) was found to be an inhibitor of oxygen evolution that is competitive with cofactor Cl⁻ in previous studies, the question of whether F⁻ further damages the oxygen formation site still remained elusive. In this experiment we have tested three possible effects of F⁻: whether it competes with Cl⁻, removes Ca²⁺, and/or causes permanent damage to the oxygen formation site. The recovery of oxygen evolution activity by addition of Cl⁻ and Ca²⁺ showed that the presence of anion F⁻ did inhibit by competing with cofactor Cl⁻ and also removed Ca²⁺ probably as insoluble CaF₂. In addition, a portion of PSII treated in NaF showed no recovery in the oxygen activation rate; hence, the notion of permanent damage is consistent with the result. Overall, F⁻ damaged the oxygen evolving complex mainly by removing Ca²⁺ and by its competition with cofactor Cl⁻.

ABSTRACTS

Livesay – Long

“Bringing Us Bus Shelters: A University-High School Civic Action Program”

Presenter: Ashlee Livesay

Major: Business Administration

Mentor: Spoma Jovanovic

Department: Communication Studies

The focus of this study is to explore, research, and record effective routes to civic action with two youth populations-minority high school students and university students at UNCG. Students from UNCG attend Dudley High School every Friday morning. Half of the UNCG students go to 9th grade and the other half go to 11th grade. The program for the 9th graders is designed to teach civic literacy surrounding local, state, and national issues through the newspaper. There is a weekly discussion on these issues between the Dudley students and the UNCG students. By doing this, we hope to show the importance of being informed about what is going on in the community and how it effects them. The program for the 11th grade class is geared toward teaching change. We begin by teaching the students the process and skills to making change. Once the students have learned the processes they apply these skills towards either adding bus shelters, benches, or changing policy.

“Reengaging the American Public in a Participatory Democracy:”

Presenter: Jack Long

Major: Political Science

Mentor: Darlene Rodriguez

Department: Political Science

The 2008 U.S. Presidential election saw the highest voter turnout in over fifty years. While participation in the electoral process enjoyed resurgence in 2008, concerns continue regarding the disengagement of Americans, namely college youth and how this will have significant ramifications for future generations. The National Issues Forum (NIF), in conjunction with the Kettering Foundation, seeks to engage members of a community in deliberate discussions to explore methods through which to ameliorate the epidemic of disengagement. Under the auspices of PSC 300: Civic Engagement and Political Participation, students learned conceptual frameworks and theoretical models regarding civic participation. To bridge theory with practice, students planned, implemented, and evaluated the first NIF on the UNCG Campus (November 2009). The aim was to inform, equip, and inspire the campus community to become more civically involved. Students as part of the course used their academic learning on community organizing, canvassing, interviewing, moderating, fundraising, media relations, as well as academic and practitioner research, to host the event. The discussions, evaluations, questionnaires, student reflection exercises as well as a recorded debriefing session were used to document and articulate the learning outcomes from the event to the NIF. These documents are currently being compiled by the NIF to publish a report that is distributed by the NIF for elected and appointed officials at the state and federal levels to inform them about youth concerns regarding civic engagement and political participation.

“Physics Education Research, Demonstrations, and Technology as a Tool to Increase Student Involvement and Contextual Understanding.”

Presenter: Justin Long

Major: Physics and Astronomy

Mentor: Bill Leonard

Department: Physics & Astronomy

The Physics Education Research Group in the Physics and Astronomy department of the University of North Carolina at Greensboro has developed a number of demonstrations that help to promote their unique pedagogy. These demonstrations are designed to create in students a desire to ask “how” and “why” as the instructor guides them through the lesson. In their research and college courses they use demonstrations and “clicker” technology to encourage a conceptual understanding, encourages discussion, critical thinking, and offers multiple methods to solve problems. They use “clicker” technology to aid with agile teaching and to ensure class direction through the process, and this allows the instructor to adjust accordingly. This is in contrast to a purely lecture based method of conveying information. We will demonstrate this teaching method through a unique demonstration that both informs and entertains. Further work on this topic, and related areas, will continue in the future.

“Assessing Pre-Migration Expectations and Post-Migration Coping Strategies in Recently Resettled Refugee Communities”

Presenter: Kelly Mauceri

Major: Public Health

Mentor: Daniel Bibeau

Department: Public Health Education

Many cultural groups around the world have a pervasive misconception about life in the United States. Refugees travel with high expectations about how life in the US is supposed to be and once they resettle they are left with dissatisfaction. As a result, this population is at amplified risk of mental health issues. The purpose of the community-based participatory research is to assess pre-migration expectations and post-migration coping strategies in recently resettled refugee communities. We will be conducting open-ended interviews utilizing purposive sampling for this study. Our plan is to interview approximately 20 refugees in the Greensboro area originating from Central Africa. A French-speaking interpreter will be present for all interviews along with a member of the research team. The first goal of this research study is to retrospectively chronicle the pre-migration expectations held by recently resettled refugees about life in the US prior to arrival and to find where these expectations came from. Next, assess the current living situation of recently resettled refugees and how it compares to their pre-migratory expectations. Our final goal is to document how recently resettled refugees are coping with their current living situation and assess what could be done to facilitate healthy coping strategies and minimize unhealthy coping strategies. Once interviews are completed, the research team will distribute our findings to our community partners and refugee resettlement agencies around the state.

“Predicting ODD/CD: Moderating and Mediating Effects of Maternal AD/HD, Emotion Regulation, and Peer Rejection”

Presenter: Audrey Mendes

Major: Psychology

Co-Author(s): Rachael Reavis

Mentor: Susan Keane

Department: Psychology

Other Mentor(s): Susan Calkins

Parents are important in promoting and maintaining positive behavior and adjustment in children. When parents are unable to provide the stability needed to guide the child’s behavior, that child may be prone to developing a behavioral disorder, such as Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD). Likewise, children’s inability to adequately regulate emotions can increase their susceptibility to develop these disorders. This study aims to test whether maternal psychopathology—in this case, Attention Deficit/Hyperactivity Disorder (AD/HD)—interacts with the child’s observed emotion regulation to predict children’s ODD/CD symptoms. Self-report maternal AD/HD and laboratory observations of childrens’ emotional regulation during a Lock Box task were collected on a sample of 325 children and their mothers participating in an ongoing longitudinal study. Specifically, we expect that children with poor regulation whose mothers display high levels of AD/HD symptoms will be at a particularly high risk for displaying ODD/CD symptoms. Moreover, we propose that maternal AD/HD and child emotion regulation influence children’s social adjustment, which in turn predicts children’s symptomatology.

“Supporting Families of Acute Care Patients: A Review of the Evidence”

Presenter: Sarah Mitchell

Major: Nursing

Mentor: Elizabeth Van Horn

Department: Nursing

Introduction The experience of having a family member in the intensive care unit (ICU) can be a stressful event and may negatively affect emotional and physical health. Nurses use many interventions to provide family care, but evidence-based interventions have yet to be well documented. The purposes of this literature review are to examine the intervention research to support family members of adult patients in an ICU and to make evidence-based recommendations for nursing practice. **Methods** Health related databases were searched to identify family intervention studies in an ICU published 1999-2009. Ten studies meeting criteria were placed in a database and analyzed to identify patterns and themes using the Matrix Method (Gerard, 2007). **Results** Three categories of interventions were identified: end of life care, preparing for patient transfer from the ICU, and meeting family needs. Major outcome variables were depression, anxiety, and family needs satisfaction. Intervention strategies included patient care team conferences, family education, and improving communication with family members. **Conclusion** Interventions provided by a direct care nurse or physician resulted in better family outcomes than a liaison or volunteer. More research is needed on the effectiveness of independent nursing interventions and should include cultural considerations when working with families.

"An Analysis of the Consequences of Dual Victimization"

Presenter: *Tania Moon*

Major: Psychology

Co-Author(s): Ashlyn Swartout, & Kevin Swartout, Jacquelyn W. White

Mentor: Jackie White

Department: Psychology

The present study argues that the co-occurrence of sexual and physical victimization in intimate relationships represents a unique form of intimate partner violence that warrants further theoretical and empirical examination. The study provides empirical evidence demonstrating that young women who experience both sexual and physical victimization represent a distinct group and show elevated alcohol-related problems as a result of dual victimization. In a sample of 998 women prior to entering college, 8.75% experienced a physical assault by a romantic partner; 11.8% experienced a sexual assault; and 6.8% experienced both a sexual and physical assault. Furthermore, across six time points during the first year of college a significant relation existed between sexual and physical assault; that is, if a young woman experienced one type of assault she was more likely to experience the other as well. Results also reveal that across the first year of college, significantly different patterns of alcohol use (quantity x frequency) were found as a function of dual victimization. Even stronger patterns were found for negative alcohol consequences. Women who were dually victimized experienced significantly more alcohol-related consequences than those women who were victimized in only one way. The consequences included impairment of school functioning, behaving in socially inappropriate ways, and impaired social relationships. Results will be discussed in terms of the unique dangers of dual victimization in those women who are first entering college.

"Organometallic Synthesis of Novel Substituted Terpyridines and Their Platinum Complexes with Potential Anticarcinogenic Properties"

Presenter: *Pallie Nardali*

Major: Chemistry

Mentor: Terence Nile

Department: Chemistry & Biochemistry

Synthetic organometallic chemistry involves taking an organic molecule that has been shown to have some beneficial activity, modifying the molecule using a selection of tested reactions or synthetic routes and then attaching it, or complexing it, with a metal center. Each step in the path chosen leads to new molecules that are carefully separated from impurities and analyzed to confirm that the expected modification has taken place successfully before they are subjected to the next reaction. The modifications targeted are those that are expected based on prior work to have the best chance of enhancing the chosen activity. Our research focuses on modification of the [2,2';6',2''] terpyridine core as well as the terpyridine core and its attachment to metals such as platinum. We believe that these complexes will be useful drugs as platinum complexes of other similar nitrogen ligands such as Cisplatin and Carboplatin.

“Is Rule-Use Flexibility a Domain-General Skill? Implications for Social and Cognitive Processing”

Presenter: Allison O'Leary

Major: Psychology

Mentor: Janet Boseovski

Department: Psychology

Other Mentor(s): Stuart Marcovitch

Previous research suggests that executive functioning abilities such as working memory and attentional flexibility are domain-general in that they underlie both social and cognitive processing. Because the preschool period is a time in which executive function is thought to undergo rapid development, we examined the role of flexible rule-use in 3- and 4-year olds' decision making by measuring performance on two card sorts (one emphasizing cognitive flexibility and the other emphasizing flexibility in a social scenario) to determine the extent to which this aspect of executive function is similar across domains. Rule-use flexibility in a cognitive domain was assessed using the Dimensional Change Card Sort. Performance on a social card sort matched for complexity measured flexible rule-use in a social domain. In this latter sort, participants were required to interpret an action in different ways. If rule use flexibility is a domain-general skill, is it expected that children's performance will be similar for both sets of tasks. However, it is possible that domain differences will emerge due to prepotent biases (e.g., positivity bias). Implications regarding the role of general information processing mechanisms in social and cognitive development are discussed.

“Effects of High Salt and Low pH on Photosystem II”

Presenter: Brandon Ore

Major: Biology

Co-Author(s): Alice Haddy

Mentor: Alice Haddy

Department: Chemistry & Biochemistry

Within plants and cyanobacteria, the enzyme complex responsible for the photosynthetic oxidation of water to molecular oxygen is photosystem II (PSII). In vitro, the optimal conditions for PSII have been established to be a pH of around 6.3 and a NaCl concentration of 15-25 mM. We have recently been testing the effects of varying the NaCl concentration at a mildly decreased pH on PSII. When the pH was decreased to 5.5 and the NaCl increased incrementally to 250 mM, a significant drop in the oxygen evolution activity was observed. Analysis by protein gel electrophoresis of PSII treated with high NaCl at pH 5.5, it was found that two extrinsic subunits known as the 17 kDa and 23 kDa subunits were released. This is significant because removal of these two subunits facilitates the removal of calcium, which is known to be a key cofactor in the oxidation of water to molecular oxygen. Under these conditions, we have observed electron paramagnetic resonance signals from the active site that suggest the loss of calcium. These results suggest that at low pH and high NaCl concentrations, there is a loss of calcium and thus a loss in activity.

“Field Conditions that Affect Brood Ball Production in the Dung Beetle *Onthophagus Taurus*”

Presenter: Shunda Rushing

Major: Biology

Co-Author(s): Erin Raspet

Mentor: Mary Crowe

Department: Biology

Other Mentor(s): Jan Rychtar

We are interested in looking at the conditions that affect brood ball production in the field by the dung beetle *Onthophagus taurus*. Some conditions that could influence brood ball production include competition, both inter- and intra-specific, temperature, and/or the age of the dung. In the first experiment we randomly selected pats of varying age to document the presence of our beetles, buried dung, and brood balls at three depths below the surface: 0-5 cm, 5-10 cm, and 10-15 cm. In the second experiment, every 12 hrs after cow pat creation, we sampled the pat and substrate to document when *O. taurus* entered the dung pat, buried dung, and produced brood balls. The results suggest that *O. taurus* enter the cow pat sooner than expected (within 12 hrs of initial creation), and that the burying of dung began immediately at the surface and then continued throughout the 72 hr period. Brood balls and the majority of dung was found within 10 cm of the surface, shallower than expected. The overall sex ratio of our beetle is 3:2, there are about the same number of major and minor males and beetles are most likely found within the first 5 cm of the surface.

“Conceptual Differences and Lexical Choice in Novel Object Naming”

Presenter: Kelsey Sapp

Major: Speech Pathology & Audiology

Mentor: Eva Nwokah

Department: Communication Sciences & Disorders

Previous studies of elicited naming of novel and unfamiliar objects have focused on object shape or function. This research examines age differences in conceptual and lexical choices of names given to six toy monsters that were the same shape but had different appearances. Participants were 30 children age 3-5, 30 children age 6-8, and 30 adults (university students). There were 20 females and 10 males in each group and all participants were Caucasian. Each participant was presented with one toy monster at a time in random order, asked to make up a funny name for the monster, and then asked why they chose that name. Each child was also given the Peabody Picture Vocabulary Test (PPVT) to determine a minimal receptive vocabulary level. Results revealed significant differences between age groups in the use of concrete names and the use of multiple perceptual features in a name. There also were significant age differences in the use of single words rather than phrases. The findings are discussed in relation to perceptual, cognitive, and linguistic developmental stages in creative naming especially differences in concrete versus abstract and single versus multiple features.

“Antimicrobial Activity of Yerba Mansa (*Anemopsis Californica*)”

Presenter: *Adama Secka*

Major: Chemistry

Co-Author(s): Nadja B. Cech, Jessica R. Bame, Tyler N. Graf, Joseph O. Falkinham, Nicholas H. Oberlies,

Mentor: Nadja Cech

Department: Chemistry & Biochemistry

Natural products such as plants represent a promising source of new treatments that could contribute to the battle against drug resistant bacterial infections. One plant with promise as a source for antibacterial compounds is *Anemopsis californica*, which grows in southwestern North America and Mexico. *Anemopsis californica*, also known as yerba mansa, is an important medicinal plant used by Native Americans. It had been used to treat inflammation of the mucous membranes, swollen gums, and sore throat. The purpose of this research is to investigate the efficacy of yerba mansa for killing various types of bacteria, and to determine whether its antibacterial activity is due to compounds already known to be present in the plant. An extract was prepared from yerba mansa and was screened for activity against a panel of microorganisms including yeast, fungi and bacteria. This extract was then fractionated with flash chromatography, and fractions were pooled based on their TLC profiles. These fractions were then tested again for antimicrobial activity, and their composition was profiled with mass spectrometry. Several fractions from the extract appeared to contain known components of yerba mansa, including elemicin, anethole, ethyleugenol and (E) - caryophyllene. Two fractions were active against the bacterium *Mycobacterium smegmatis* and the yeast *Saccharomyces cerevisiae*. These fractions were not the same ones that contained known constituents of yerba mansa, suggesting that the activity may be due to compounds previously not known as constituents of this plant.

“Antiobesity Mechanism of Conjugated Linoleic Acid in Human Adipocytes”

Presenter: *Shruthi Shyamasundar*

Major: Biology

Mentor: Michael McIntosh

Department: Nutrition

Conjugated linoleic acid (CLA) is a popular weight loss supplement used worldwide. The objective of this application is to identify isomer –specific mechanisms by which CLA, fatty acid (FA)s found in beef, dairy foods, and dietary supplements that decrease adiposity in certain animals and humans, reduces the triglyceride (TG) content of human adipocytes. The central hypothesis for this research project is that trans-10, cis-12 CLA activates lipid borne signals that suppress peroxisome proliferator activated receptor (PPAR)- γ activity, thereby reducing the uptake of glucose and FAs for TG synthesis (suppression of adipogenic genes) and inducing the expression of inflammatory genes. The use of the inhibitor R59022 to block the activity of diacylglycerol (DAG) kinase, an enzyme that converts DAG to phosphatidic acid (PA), prevents CLA’s induction of inflammatory genes and impairment of insulin-stimulated glucose uptake (i.e., insulin resistance), and also significantly restores the expression of

ABSTRACTS

Shyamasundar — Summerville

adipogenic genes. Because PA triggers calcium release from the endoplasmic reticulum, and CLA increases intracellular calcium levels, we speculate that CLA causes inflammation and insulin resistance via upregulating this pathway. Studies are underway to investigate this hypothesis further.

“Musical Preferences in Adolescent Families and the Impact of a Summer Camp Music Class”

Presenter: *Jasmine Stevens*

Major: Speech Pathology & Audiology

Co-Author(s): Katrinna Anthony

Co-Presenter(s): Katrinna Anthony

Mentor: Eva Nwokah

Department: Communication Sciences & Disorders

Music plays an important role in cognitive and language development and shared musical experiences can enhance relationships between mother and child. An exploratory study of 22 teen mothers and their children addressed the following questions: How important is music in their daily lives? What are the musical preferences of teen mothers? and What were the changes in individual children in their responses to different songs in a Musikgarten summer camp for teen mothers and children? Each child received a hearing test prior to the classes and was assessed on vocal and language skills. Mothers completed a pre camp questionnaire on music experiences and practices. There were two two-week classes, an infant and a toddler class. Repeated evaluation of children’s responses was conducted by each teen mother and her trained student mentor using a checklist of the frequency and quality of behaviors observed. Classes were also videotaped. A follow-up questionnaire was completed at the end of the summer classes and 4-6 months post camp to examine satisfaction outcomes and any change in musical practices.

“Women, Chastity, and Gesture in Ancient Rome”

Presenter: *Lauren Summerville*

Major: Classical Studies

Mentor: Maura Heyn

Department: Classical Studies

Pudicitia, as a Latin term, is known in the Classical world to refer to a Roman woman’s chastity and virtue, and when applied to archaeology, it is known to describe a specific gesture made by a Roman female sculpture, most often funerary. The actual gesture is recognized as the woman having a raised hand to either her veil or her face. In addition, variations on this gesture are often included, and are referred to as the pudicitia-type. This research entails analyzing images of some of the sculptures portraying the pudicitia gesture to see if there was actually a connection between the virtue and the gesture. It also includes the analysis of literary references, both when pudicitia is actually stated and when virtuous women (such as Lucretia, Verginia, and Calpurnia) are being described. The conclusion reached from this research is that there is a connection between pudicitia the virtue and pudicitia the gesture, though it is subtle and is sometimes seen more as part of a social ritual.

ABSTRACTS

Todd — Tyler

“The Effect of Group vs Individual Teacher Rhetoric on Individual Music Reading Success of High School Choral Students”

Presenter: Natasha Todd

Major: Music Education

Mentor: Brett Nolker

Department: Music

The teachers of choral music express strong support for the teaching of individual music literacy skills; however, the music education profession has yet to identify methods or materials that promote consistent individual success. The teaching of music reading most often occurs during large ensemble rehearsals. While this is an efficient venue for the preparation of ensemble music, the large social setting may be inconsistent with the individual skill development intended as the outcome of music literacy instruction. One potential tool music teachers could use to overcome the inconsistency of the social context to the individual outcomes intended is the use of language that clearly indicates the individual nature of the skills needed during the rehearsal process. For example, the rhetoric chosen by the teacher should consistently match the outcome--group language and group identifiers for group outcomes, or individual language and individual identifiers for individual outcomes. The present study is investigating the rhetorical choices made by music ensemble directors in relation to the social context of the lesson, and the effect of this discourse on the music reading success of the student musicians.

“GIS Data Representation, Visualization and Tool Integration”

Presenter: Samuel Tyler

Major: Computer Science

Mentor: Eric Jones

Department: Anthropology

GISpatialNet is a cross-platform open source tool for manipulating, visualizing, and integrating geographic relational data with other tools. There are many software which are used in the field of geographic information systems (GIS), with no widely used standard format for storing associated data. GISpatialNet solves this problem not by creating a standard format, but by implementing translation of common file formats. The most common and widely used format is the one used by the program ArcGIS, called a "shapefile." There are also other formats for representing data, simply as a plain text file, such as a comma-separated values (CSV) file, DL/UCINet, and pajek. GISpatialNet reads these formats, internalizes subsets of these data, and then stores them internally as a series of matrices. By doing this, it can abstract large numbers of files, display this data, perform calculations and metrics on it, and output the relevant portions into any of the supported file formats. Data is presented to the user using readily-available packages for the Java programming language, as well as temporary exporting of files for use in other data representation software, such as Google Earth, ArcGIS and GraphViz.

ABSTRACTS

Ugochukwu – Wallrichs

“A New Method for Visualizing Peristalsis in the Larval Midgut of *Drosophila*”

Presenter: Zimuzor Ugochukwu

Major: Biology

Mentor: Dennis LaJeunesse

Department: Biology

In order to study the cellular basis of digestion using the *Drosophila* Model System, we have identified a novel region in the anterior midgut of *Drosophila* that we call the Superior Cupric Autonomic Nervous System. The SCANS region is a cluster of 7-9 neuron-like cells called lettuce head cells. The SCANS region is located at the juncture of the innervated anterior midgut and the copper cell/acid secreting region of the larval. This valve-like region regulates the flow of food through the anterior midgut. Using the Olympus BX51 Compound Microscope we have discovered a technique to view peristalsis and digestion in vivo in the midgut of the fly. I will discuss the methods and review the results.

“Gaining Valuable Experience in the Field for Future Endeavors in Scientific Research”

Presenter: Megan Wallrichs

Major: Biology

Mentor: Matina Kalcounis-Rueppell

Department: Biology

There are many components to conducting scientific research ranging from, but not limited to, tedious hours spent in a laboratory, scouring through scientific literature, & carrying out physically demanding field work. In the fall of 2009 I was a field assistant in the coastal plains of North Carolina and aided in all aspects of a project examining the influence of integrated biofuel production on rodent diversity and behavior in a managed pine plantation. I attained proficiency in trapping, identification and handling of small mammals as well as the ability to use home-range mapping software to establish resident rodents. I also assisted with side-projects involving bat research, broadening my scope of interests and abilities as a scientist. Besides acquiring a useful skill set in field work, I also discovered the non-quantitative traits that are necessary for conducting successful field work; the three most prevalent in my experience being dedication, consistency, and flexibility. From these experiences I gained fundamental skills that will prove invaluable as I continue my track to become a successful field biologist.

ABSTRACTS

Wingfield – Zawistowski

“Temporal Interactions in the Vocalizations of Bonobo Apes”

Presenter: Philip Wingfield

Major: Music Education

Mentor: Patricia Gray

Department: Music

This research examines whether Bonobo apes are capable of entraining their vocalizations with the conversational rhythm of human English speakers. Using recordings of Bonobos from the Great Ape Trust of Iowa interacting with caretakers and other English speakers, I have developed an analysis program that measures the Inter Onset Intervals (IOI) of conversational English with Bonobo vocalizations often signified as ‘peeps’. My methodology breaks down English speech into its smallest unit – phonemes or syllables - and weighs it against the average intensity and length of all other units within the spoken contextual environment, and assigns a value within that context . By measuring the unit's intensity and length, values of prominence or ‘accent’ are assigned. The IOI’s between the ‘accent’ units are measured in milliseconds to determine ratios of the accent units. This research suggests that the IOI relationships between Bonobo vocalizations and English accent units have robust correlation and may provide preliminary evidence of bonobo entrainment to conversational rhythms of spoken English. This suggests a high level of attention and social interaction within the communication patterns between species.

“Mercy Otis Warren: A Revolutionary Voice”

Presenter: Lauren Zawistowski

Major: Drama

Mentor: Christine Woodworth

Department: Theatre

American History students know the names of presidents George Washington and John Adams, they can retell the tale of the Boston Tea Party, and they have heard the horrors of the conflicts between Loyalists and Patriots. But most would not recognize the name of Mercy Otis Warren. Close personal friend to Washington and Adams, Warren was America’s first female playwright and wrote at least 5 plays in her lifetime. It was in these highly propagandist plays that Warren utilized female characters as a means to integrate women's voices into the Revolutionary War’s historical record and to proclaim her views on the proper place for women in the political sphere. This paper demonstrates the ways in which Warren used dramatic literature to advocate her idealized notion of American womanhood specifically in regards to gendered approaches to patriotism, to critique materialism, to give prescriptions for family relations, and to offer strategies of resistance to governmental opposition. Although these plays themselves are seldom performed, they demand the attention of not only scholars of American history, but also theatre scholars for the unique stories they tell and as an example of the impact dramatic literature had on the American Revolution.