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2003
URC



MINNESOTA STATE
UNIVERSITY
MANKATO

Welcome!

Welcome to Minnesota State University Mankato's Undergraduate Research Conference. Today, we recognize and celebrate the research and creative activities of our undergraduate students. These projects, representing five colleges, are the result of collaboration between talented and motivated undergraduate students and their dedicated faculty mentors. In its fifth year, the Conference provides a dynamic showcase for the wide range of on-going, outstanding scholarly and creative activity on our campus. Abstracts of oral, performance, or visual arts projects and posters accepted for presentation are contained in this formal publication. I encourage faculty, students, and staff to attend the formal presentations that will take place in the Centennial Student Union on April 14 and 15, 2003. The entire University community congratulates all participating students and their faculty mentors.



Richard Davenport
President
Minnesota State University, Mankato



URC PRESENTATION AWARDS

The purpose of judging and awarding is to recognize and promote high-quality research and creative activity. Within each oral or poster session, two judges independently rank each presentation, and the mean rank is the final rank. The best presentation in each session receives a "Best Presentation" certificate and a \$100 gift certificate. Judging of oral presentations is based on delivery and content. Judging of poster presentations is based on format and content. Posters are judged while presenters are attending and judges speak with presenters to identify the winner. Judges are graduate students, faculty, or graduate faculty. Judges for each session (one head judge and one assistant judge) are identified by the URC Steering Committee. There are no ties for mean rank; the head judge breaks a tie. The winner is announced at the end of each session. Winners are recognized in the URC online journal.

URC SPECIAL THANKS

Portions of this program are made possible through a Learning That Lasts program grant from MnSCU Center for Teaching and Learning, with generous funding from the Bush Foundation.

TABLE OF CONTENTS

Ethanol-Biodiesel Research	7
Development of a Two-Stroke Direct Fuel Injected Engine	8
Schwanke Engines E-85 Sealed Engine Project	9
Small Engine Attachment for Superflow Cycledyn	10
Rad Car: Restructuring of the Chassis	11
Cloning of ACC Oxidase from Cucumber and Muskmelon	12
Human Sexuality	13
Differences in Reported Attractive Features in Personal Advertisements from Rural and Urban Settings	14
Boredom Proneness and its Relation to Repetitive Behaviors	15
Should We Humanize Technology? A Question for Modern Society	16
Health Risks Caused by Wireless Technologies	17
Purification of Actin Capping Protein Alpha Subunit Specific Antibodies and Immunolocalization in Murine Tissues	18
Identification of Specific Phenol Hydroxylase Genes in Freshwater Bacterial Isolates	19
Food Habits of the Hoary Bat (<i>Lasiurus Cinereus</i>) in Southwestern Minnesota	20
Generation of Most-Probable-Number (MPN) Estimates of Indigenous Freshwater Bacteria Capable of Degrading Hydrocarbons	21
Prairie Potholes: How Isolated Wetlands Are Affected by Human Decisions	22
Chromosome Counts for <i>Packeria Paupercula</i> Variety <i>Gypsophila</i>	23
Southern Minnesota Writing	24
Dietary Change Among Hmong People and Cancer Risks	25
Illustrating Stone Projectile Points	26
The Effects of Solar Ultraviolet-B-Radiation on Growth and Photosynthesis of <i>Avena Sativa</i>	27
Expression of Rat Aortic Fibronectin mRNA Isoforms as a Function of Gender and Maternal Exercise	28
Purification of Action Capping Protein Alpha Subunit Fusion Proteins	29
Optimal Precipitation of Organotin Fluorides by Cation Exchange	30
A Paleocological Examination of Temporal Trophic Changes Through Diatom Trend Analysis at High Island Lake, Sibley County, Minnesota	31

TABLE OF CONTENTS (continued)

A Comparison Between Extroverts and Introverts and the Time Involved to Take Action in a Staged Delimma Involving a Timed Test	32
Customer Service in Response to Shopper's Attire	33
The Effect of Birth Order on Introversion and Extroversion	34
Positive Religious Coping:	
Chronic Stressors and Perceived Stress	35
The Effects of Negative and Positive Feedback on Confidence in Creative Task Performance	36
Nicotine Use Among College Athletes With a High Self-Report of Symptoms of Attention Deficit Hyperactivity Disorder	37
Identification of Personal Characteristics Important in Mate Selection	38
Effects of Popular Music on Memorization Tasks	39
The Influence of People's Anticipated Outcome on Their Information Seeking Behavior	40
An Initial Exploration of the Relationship Between Political Repression and Family Violence	41
Mythic Rhetoric and the Construction of Paul Wellstone as Sacred Symbol	42
Profanity and You: Exploring the Acceptability of Swearing in Today's Culture	43
The Formula	44
Comfort Through Humor: The 9/11 Issue of <i>The Onion</i>	45
Sueño, Realidad Y Destino	46
An Examination of Secret Legal Settlements and Their Obstruction of Justice	47
Say Anything: A Content Analysis of YM (Your Magazine) Removing Articles on Weight Loss	48
What's So Funny?: A Reader's Theatre Examining the Reasons Why We Laugh	49
A Humorous Examination of Current Brain Research and Its Applications	50
Perceptions of Programming Among Computer Science Students	51
Software Tools For Exploring a Potential Alternative Proof of the Four-Color Theorem	52
State System Elements and In-Group/Out-Group Conflict	53
XML as a Data Distribution Solution	54

TABLE OF CONTENTS (continued)

Effect of Seat Height on Aerobic and Anaerobic Power in Trained Male Cyclists	55
The Effects of Room Color on Stress Perception: Red Versus Green Environments	56
Physical Activity Awareness Training: Interactive vs. Automated	57
Intrepreting Goddesses of Mesoamerica	58
Identification of Proteins Interacting with Actin Capping Protein $\beta 1$ and $\beta 2$	59
The Influence of Solar Ultraviolet-B Radiation on Phenylpropanoid Concentrations and Ferric-Reducing Ability in <i>Avena Sativa</i>	60
Purification of DNA Polymerase	61
The Effects of Exercise in WKY Pregnant Female Rats on Fetus Health	62
Nisin Effects on <i>Bacillus Cereus</i> Endospore Germination	63
The Occurrence of Bound Morphems in the Speech of Children with Williams Syndrome Compared to Typically Developing Children	64
Bound Morpheme Usage of Children with Williams Syndrome and Typically Developing Children	65
Physiological and Psychological Effects of Vocal Warm-up in Performing Artists	66
Oxygen Abundances in the Rings of Polar-Ring Galaxies	67
Is There an Increase in Television Commercials That Contain Gender Stereotypes? A Content Analysis of MTV Commercials	68
The Effects of Multiple Thermal Environments on Mother-Infant Contact and Blood Pressure in Spontaneously Hypertensive Rats	69
Costume Preferences Related to Gender: Does a Child's Gender Reflect Their Choice in Costumes?	70
Using Social Cognitive Theory to Predict Behavior	71
Unheard Voices of the Abortion Movement	72
The Hair We Wear	73
Interpersonal Communication as an Online Course	74
An Application of Logistic Regression in Estimation and Prediction	75
Exploring the Spatial Dispersion of Sub-Terrain Liquids	76
A Regional Analysis of Radon Levels in Southern Minnesota	77

TABLE OF CONTENTS (continued)

Radon in Southern Minnesota	78
Patterns in Incidence of Tuberculosis in Midwest	
Prehistoric Populations	79
Standardized Estimation of Technology in Cultural Systems	80
Infanticide and Abortion: Different Responses to	
Similar Circumstances?	81
The 2002 World Cup and International	
Technical Communication	82
Genesis: The Problem With Oral Tradition	83
Claude Monet, Pioneer of Impressionism	84
Service-Learning Assessment	85
A Study on the Housing Experiences of	
Somali Immigrants in Mankato	86

ETHANOL-BIODIESEL RESEARCH

**Andrew Mickelson, Tyler Uilk, Veseuako Ndjarakana,
Alfred Samuel (Automotive Engineering Technology)**

*Bruce Jones, Faculty Mentor
(Automotive Engineering Technology)*

The Ethanol-BioDiesel project is funded by a research grant with the Minnesota Corn Research & Promotions Council and the Minnesota Soybean Association. Our research involves testing different Ethanol-BioDiesel blends with #2 Diesel fuel in a Deutz Diesel engine coupled to a generator. This configuration is a test tool for EPA standards. This is done through research and testing of mixtures that formulate with Ethanol-BioDiesel. Mixtures tested include varying levels of Ethanol (0-10%), BioDiesel (0-20%), and #2 Diesel (70-100%). Each sample is tested for performance and emissions characteristics at five different levels (10%, 25%, 50%, 75%, and 100% load). All tests are compared to the results using #2 Diesel with no Ethanol, BioDiesel, or additives. The project includes data collection along with analysis of the results. The project is completed with the yielding of a technical paper including the analysis, results, and recommendations.

DEVELOPMENT OF A TWO-STROKE DIRECT FUEL INJECTED ENGINE

Peter Kruchoski, Matt Sandlin, Nick Maki, Nick Bredemus
(Automotive Engineering Technology)

Bruce Jones, Faculty Mentor
(Automotive Engineering Technology)

The project concerns the Minnesota State University Mankato Automotive Engineering Technology Program's entry to the 2003 Clean Snowmobile Challenge. Included in this presentation is the snowmobile model chosen for modification, engine choice, modifications applied, methods used, modification results affecting performance, emission control, noise reduction, production cost, durability, fuel efficiency, safety, and rider comfort. The MSU Mavericks devoted their main focus for the 2003 Clean Snowmobile Challenge to the comparison of a two-stroke cycle carbureted engine versus a two-stroke direct fuel injected engine. A Polaris 500 cc was tested with stock carburetors and then retrofitted and tested with a Direct Injection System. Each engine was tested for emissions, noise, and performance; these test results were then compared and weighed for advantages and disadvantages.

SCHWANKE ENGINES E-85 SEALED ENGINE PROJECT

Chris Lidel, Guy Bernt, Don Kottschade, Pete Palm,
Mark Sanderson (Automotive Engineering Technology)
Bruce Jones, Faculty Mentor
(Automotive Engineering Technology)

The objective of our project is to test E-85 and observe its potential for racing use in a 5.3-liter spec. engine. We will be testing and researching E-85 using the Minnesota State University Mankato facilities. Our group will be collaborating with local race engine builder Tim Schwanke from Springfield, Minnesota. Mr. Schwanke is on the verge of starting a "sealed engine" race class at the local dirt tracks. He is trying to make an affordable race class with the use of a sealed, low cost, highly reliable engine. In addition to saving substantial amounts of money by having a sealed engine, Tim is also looking at lower cost fuel alternatives. One of the fuels that make financial sense is ethanol. The price of ethanol is usually comparable to normal pump gas, but has the higher octane benefits of racing fuel.

We will be researching and testing E-85 by comparison with race gasoline and methanol to discover if ethanol will be a feasible alternative to using normal race fuels.

SMALL ENGINE ATTACHMENT FOR SUPERFLOW CYCLEDYN

Lorin Beecher, Adam Flowers, Jason Holicky
(Automotive Engineering Technology)

Bruce Jones, Faculty Mentor

(Automotive Engineering Technology)

This project is to research, design, manufacture, and test a small engine attachment for a SuperFlow CycleDyn. The attachment will allow for the testing of engine emissions, power, and clutch configurations in a controlled and stable environment. This decreases the variations seen while testing small engines in the vehicles. Currently, the design is set up for 2 and 4 stroke snowmobile engines that utilize dual clutches. Although this is the current configuration, most small engines that use dual clutches can be tested with the attachment. Power from the engine is transferred through a series of shafts, pulleys, and belts directly to the input shaft of the eddy current module on the CycleDyn. This allows for the use of the current SuperFlow software to calculate the torque and horsepower being produced by the engine. The pulley system also reduces the rotational speeds by almost 1/4 the RPM of the engine. This is required to keep the shaft speed of the CycleDyn within manufacturer specifications. With this attachment many of the MSU's SAE (Society of Automotive Engineers) competition teams can become more effective at testing and setting up their engines for competitions.

RAD CAR: RESTRUCTURING OF THE CHASSIS

Chris Hadfield, Dale LaRue, Jason Wilkie

(Automotive Engineering Technology)

Bruce Jones, Faculty Mentor

(Automotive Engineering Technology)

This project covers the redesign and construction of the RAD (Recycled Automotive Design) Car that was originally produced in 1991 by nine Minnesota State University Mankato Automotive Engineering Technology students. In 2002, three new students took on the role of producing an updated version of that vehicle's chassis. This project discusses methods of redesigning and constructing a new chassis. The problems of the old design include the length of the wheelbase and the inability of the suspension to handle typical driving patterns. These problems are solved by researching different components and designs, and benchmarking different companies that are currently producing vehicles similar to the RAD Car. Increasing the wheelbase was accomplished by lengthening chassis members and elongating the wheel wells to accommodate the new length. The suspension was redesigned and stabilized by designing and introducing a strong frame rail structure and new front and rear suspension designs. The team evaluated all of the options and researched their performance and feasibility in a manufacturing setting.

CLONING OF ACC OXIDASE FROM CUCUMBER AND MUSKMELON

Renee L. Chapman (Biochemistry)

James E. Rife, Faculty Mentor

(Chemistry)

The conversion of 1-aminocyclopropane carboxylic acid (ACC) into ethylene is catalyzed by an enzyme known as ACC oxidase. Ethylene is a plant hormone that regulates many processes in plants, including ripening of the fruit. In this research, two different fruits with similar gene sequences, cucumber and muskmelon, were studied. The ACC oxidase gene in the muskmelon pulp, the cucumber pulp, and the cucumber leaves was extracted as mRNA, converted into cDNA, and amplified by RT-PCR. It was then cloned into an expression vector and transformed. This provided a readily available source of ACC oxidase so that the enzyme could be physically and kinetically characterized.

HUMAN SEXUALITY

Karri McKee (Women's Studies)

*Lisa Coons, Faculty Mentor
(Women's Studies)*

Human sexuality is defined in terms of "gender" and "sex," the former being socially constructed and the latter having a biological basis. Currently, humans are characterized in terms of a female/male dichotomy, although this model of classification of sex and gender is not congruent with the diversity that exists among humans. This research focused on the limitations of societal and biological definitions of sexuality. Content analysis of existing documentation within the biological and social sciences served as the method of inquiry. Strong emphasis was placed on variations in phenotypic manifestations and sexual morphologies within the animal kingdom. Consequently, the results of our research challenge the validity and application of the societal model of the "two sexes." Based upon our inquiry, the researchers argue that the meanings of both sex and gender must be made more inclusive of sexual minorities to represent the realities of human sexuality.

DIFFERENCES IN REPORTED ATTRACTIVE FEATURES IN PERSONAL ADVERTISEMENTS FROM RURAL AND URBAN SETTINGS

Paul Merlini (Psychology)

Edison Perdomo, Faculty Mentor

(Psychology)

The purpose of the present research was to determine if there was a difference in what males and females in urban and rural settings perceive as attractive in potential dating partners. This research analyzed personal advertisements in which individuals indicate 'sought after' characteristics. The hypothesis is that males and females in rural settings will more likely offer and seek instrumental and expressive aspects in the opposite sex, and males and females in urban settings are more likely to offer and seek professional status and attractiveness in the opposite sex. Research in this area has focused on the reported sex roles/body aspects/role expectations used in personal advertisements. Evolutionary psychologists maintain that females seek partners of high status while males are more focused on physical attractiveness. An expectation of this study is that factors other than gender alone, such as living situation, influence which traits are looked for in a partner. Two location-based papers were used for gathering 200 personal ads. Specific words were coded into categories to decipher the advertisements. Reliability testing was conducted with a separate researcher 'coding' the same ads at a separate time and location.

BOREDOM PRONENESS AND ITS RELATION TO REPETITIVE BEHAVIORS

Jessica Wurdak (Psychology)

*Edison Perdomo, Faculty Mentor
(Psychology)*

This study looked at the relationship between boredom proneness and repetitive behaviors. Subjects consisted of Psychology 101 students attending Minnesota State University Mankato. Subjects were given a Likert scale version of the Boredom Proneness Scale, developed by Farmer and Sundberg (1986), and then waited for a period of 20 minutes for the results of their scale. While subjects waited, they were video taped to record any repetitive behaviors. Past research by Steven Kass and Stephen Vodanovich (1990) has shown relationships between boredom proneness and repetitive behaviors; both are involved in a person reacting impatiently to situations in which behavior is constrained. Results from this study may be helpful in better understanding how individuals are affected by low to non-stimulating situations.

SHOULD WE HUMANIZE TECHNOLOGY? A QUESTION FOR MODERN SOCIETY

Wu Hang (Psychology)

Lee S. Tesdell, Faculty Mentor

(English)

A case study examining the relationship between technology and the people who interact with that technology was conducted. The study concerned the use of ultrasound for medical purposes, specifically ultrasound use for pregnant women and those who, for other medical reasons, were asked to do so by their doctors. Some psychological repercussions that might result from such uses of ultrasound were discussed. A small sample consisting of local respondents, as well as three women who had been checked while pregnant with ultrasound, was used to collect data. The questionnaire, which was administered to local people in the Mankato community, yielded opinions about using ultrasound in a people-friendly way. The data was analyzed and findings will be reported at the undergraduate research conference at MSU.

HEALTH RISKS CAUSED BY WIRELESS TECHNOLOGIES

Durre Shahwar Aliya Zafer Ahmed (Management),
Qurrat ul Ain Zafer Ahmed (Management), Hadas Khasay
(Management)

*Rakesh Kawatra, Faculty Mentor
(Management)*

There are many health issues related to the use of cellular phones, wireless local area networks, and other devices that emit electromagnetic waves. Some of these systems have become a part of our daily lives and many of us are in direct or indirect contact for extended periods of time with these devices. However, the general public is not aware of health risks associated with the use of these devices. Our research covers studies done by independent research groups and other interested organizations on the harmful health effects caused by wireless devices. We also present information about research studies that refute that there are health risks associated with these devices.

PURIFICATION OF ACTIN CAPPING PROTEIN ALPHA SUBUNIT SPECIFIC ANTIBODIES AND IMMUNOLocalIZATION IN MURINE TISSUES

Benjamin Jilek (Biological Sciences)

Marilyn Hart, Faculty Mentor

(Biological Sciences)

Actin is a protein that is vital to cell shape, cell motility, and muscle contraction. Actin is a polymer that possesses two very distinct ends: the pointed end and the barbed end. Capping protein (CP) binds the barbed end. Actin assembly is regulated by a variety of proteins including CP. CP is a heterodimer, composed of an alpha (α) and beta (β) subunit. In vertebrates, there are three isoforms of the α subunit ($\alpha 1$, $\alpha 2$, and $\alpha 3$ and three beta isoforms ($\beta 1$, $\beta 2$ and $\beta 3$). The α and β isoforms have conserved sequences across vertebrates, suggesting conserved specific functions. Previously, $\alpha 1$ and $\alpha 2$ isoform specific antibodies were purified from polyclonal antisera using a specialized matrix, an affinity column. We ensured that the antibodies were isoform specific using Western Blot analysis. The $\alpha 1$ antibody reacted specifically with the $\alpha 1$ protein, and the $\alpha 2$ antibody reacted specifically with the $\alpha 2$ protein. We are currently using the purified isoform specific antibodies to determine the localization of the α isoforms in murine tissues using immunofluorescence. Cryosections were prepared from heart, kidney, skeletal muscle, spleen, liver, and lung, probed with the antibodies, and tagged with a fluorescent marker.

IDENTIFICATION OF SPECIFIC PHENOL HYDROXYLASE GENES IN FRESHWATER BACTERIAL ISOLATES

Masae Takezaki (Biological Sciences)

*Elaine O. Hardwick, Faculty Mentor
(Biological Sciences)*

The purpose of this experiment is to detect the presence of phenol hydroxylase (LmPH) genes in phenol-degrading bacteria in Ox Bow Lake (Mankato, MN) and to examine whether one or more of three specific LmPH gene sequences are present. Detection and identification of the LmPH genes can be accomplished using Polymerase Chain Reaction (PCR) with known primers of LmPH genes. Phenol is used as a precursor of many organic compounds and is one of the common pollutants in the aquatic environment. Some aquatic bacteria can utilize phenol-containing compounds found in decaying plant materials as a carbon and energy source. These bacteria could be used in bioremediation of phenol-polluted environments. LmPH is suggested to be the most common bacterial phenol-degrading enzyme system. The LmPH genes can be separated into three groups (I, II, and III) based on the PCR analysis of bacterial DNA. Twelve freshwater bacteria, previously isolated from Ox Bow Lake, were identified as phenol-degraders since they could use phenol as a sole carbon and energy source.



FOOD HABITS OF THE HOARY BAT (*LASIURUS CINEREUS*) IN SOUTHWESTERN MINNESOTA

Michelle A. LaRue (Biological Sciences)

Brock R. McMillan, Faculty Mentor

(Biological Sciences)

The hoary bat is one of the most widespread bats in North America and is the largest bat found in the state of Minnesota. However, little of the natural history is known for this species due to its solitary, tree-roosting, and low-density lifestyle. As part of a larger project, more than 100 hoary bat carcasses were collected during the summers of 2000-2002 at the Buffalo Ridge Wind Resource Area in southwestern Minnesota. This collection was very large and provided a unique and important opportunity to examine the food habits of the hoary bat. Gastrointestinal tracts were dissected from all bats that were not in late stages of decomposition. Contents of the stomach and fecal pellets were sorted and identified to Family by comparing the fragments in the samples to insects that were sampled and collected in the study area. There were 25 bats that were in suitable condition for examination. Preliminary data suggests that hoary bats in southwestern Minnesota feed on members of Class Insecta, primarily from Order Lepidoptera (butterflies and moths), Order Coleoptera (beetles), and Order Hemiptera (true bugs). These results are consistent with the limited reports for this species from other geographic regions.

GENERATION OF MOST-PROBABLE- NUMBER (MPN) ESTIMATES OF INDIGENOUS FRESHWATER BACTERIA CAPABLE OF DEGRADING HYDROCARBONS

Sidik Sokwalla (Computer and Information Sciences)
Elaine O. Hardwick, Faculty Mentor
(Biological Sciences)

Many industrial and municipal wastes such as motor oil and phenol contain hydrocarbons that enter lakes and streams. Some aquatic bacteria exposed to these wastes can degrade the pollutants. The purpose of this project is to estimate the abundance of freshwater bacteria that degrade phenol and/or motor oil as a source of nutrients for growth. Sediment samples, taken from Ox Bow Lake (Mankato, MN), will be amended with motor oil and phenol and then incubated for eight weeks. Samples will be removed to estimate bacterial abundance. In addition, an MPN technique will select for freshwater bacteria that can degrade these two types of hydrocarbons. Estimates of the abundance of hydrocarbon-degrading bacteria will be accomplished by three different procedures: (i) a published MPN procedure, which uses Microsoft Excel program Solver; (ii) viable plate counts and (iii) total counts.



PRAIRIE POTHoles: HOW ISOLATED WETLANDS ARE AFFECTED BY HUMAN DECISIONS

Emma Volz (Biological Sciences: Ecology and Environmental Sciences)

*Bertha Proctor, Faculty Mentor
(Environmental Sciences)*

The Supreme Court, in June of 2001, allowed for the use of an isolated wetland, which was formed from an abandoned sand and gravel pit, to be used for a landfill by SWANCC. This was an overturning of a previous decision of a lower court for the lawsuit SWANCC vs. Army Corps of Engineers (ACE) because ACE would not give a permit to allow the landfill. The wetlands were considered protected, under the definition of wetland at the time; areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The fact that it was breeding grounds for heron protected it under the Migratory Bird Rule. Because of this decision for the landfill to proceed, many isolated wetlands are not covered under the Clean Water Act, Section 404. Prairie potholes are a type of isolated wetland that account for less than ten percent of the total number of wetlands. The loss of these may have far reaching impacts. To possibly show these impacts, I am studying a watershed of the Minnesota River. Using GIS, I will show how wetland losses, especially prairie potholes, can affect ecological, economical, and environmental health in that area.

CHROMOSOME COUNTS FOR *PACKERA PAUPERCU* VARIETY *GYPSOPHILA*

Chad Larson (Biology)

Alison Mahoney, Faculty Mentor

(Biological Sciences)

Plants can spontaneously double their chromosomes, an event that is relatively common and permanent. If chromosome doubling occurs in diploid plants, the resulting tetraploids can no longer back-cross to diploid members of the population, thus creating new species.

Packera paupercula (balsam-leafed ragwort) is the most widespread and morphologically diverse species in this North American plant genus. It is unclear whether it should be recognized as one species containing many races and/or varieties, or whether it should be recognized as many distinct species. An isolated group of populations from the chalky soils of west-central Alabama was recently named *Packera paupercula* variety *gypsophila* (the chalk-loving balsam ragwort). The large diameter of this variety's pollen grains suggests it may be tetraploid. This project attempts the first chromosome count for the variety by examining cells undergoing meiosis in the anthers (male sex organs) of flower buds. A "squash" is performed by dissecting out, staining, and pressing the anthers between a slide and cover slip, then viewing the result with a microscope. If variety *gypsophila* is tetraploid, it may merit recognition as a new species.




SOUTHERN MINNESOTA WRITING

Nikki Daver, Allison Vroman, Philip MacKenzie, Brady Dahl, Kris Listine, Esther Hoffman (English)

*Cassandra Labairon, Faculty Mentor
(English)*

The purpose of this project was for English majors to research the landscape and culture of southern Minnesota and present the findings at the Undergraduate Research Conference through creative writing. This project was important to expand our experience and comfort zone by investigating the areas of southern Minnesota outside of the MSU campus. Normally a student does not explore the area beyond their college town. It also gave us an opportunity to approach our writing in a new way. We attained goals by observation, discussion, information gathering, writing, and revision of creative work. The group benefited because our understanding of southern Minnesota increased. Our ability to express this new knowledge helped inform our writing. Because being writers we interpret the world around us, it was of benefit to discover new places. We will present our writing to an audience. Thereby others will increase their awareness of the world through our writing. At the conference we will present our information by taking turns reading our creative work to the audience.



DIETARY CHANGE AMONG HMONG PEOPLE AND CANCER RISKS

Eri Ito (Anthropology)

*Winifred L. Mitchell, Faculty Mentor
(Anthropology)*

The purpose of this research project is to investigate dietary changes among Hmong people in the United States. By this project, I compared dietary patterns of Hmong students at Minnesota State University Mankato and the typical American diet. This was to find out if this local population is engaging in the dietary changes that are associated with the accelerating breast cancer rate among general Hmong population in the United States. I interviewed some of the subjects about their dietary patterns in the United States and their home countries to observe if there were any dietary changes in an individual's life span. I acquired general medical dietary data through library materials for comparison. This was to compare this population with other Hmong immigrants to the United States. Results suggest that this population may have increased risk of breast cancer due to their dietary change.




ILLUSTRATING STONE PROJECTILE POINTS

Damian Woelfel (Anthropology)

*Michael Scullin, Faculty Mentor
(Anthropology)*

Illustrating archaeological artifacts and stone projectile points requires in-depth study, extreme attention to detail, and competence in the form and function of the subject matter. Through careful analysis, projectile points can provide information about archaeological sites, and can prove valuable for interpreting the pre-historic past. Since stone projectile points are so important, it is crucial that their illustration is done with great care to insure that even the most minor, yet significant details, are observable. My research focuses on a number of Minnesota projectile points from different time periods. For each point, I will describe the differing attributes that are valuable to archaeologists, and most importantly, how I chose to represent each point considering different techniques and shortcomings of illustration. The results of my research will produce an assembly of illustrated projectile points, suitable for use in archaeological publications.



THE EFFECTS OF SOLAR ULTRAVIOLET-B-RADIATION ON GROWTH AND PHOTOSYNTHESIS OF *AVENA SATIVA*

Mitchell J. Fogal (Biological Sciences)
Christopher T. Ruhland, Faculty Mentor
(Biological Sciences)

We examined the influence of solar ultraviolet-B-radiation on *Avena sativa* (oat), an agronomical crop species native to Minnesota. Response of crop species to UV-B has raised concern among scientists due to the future uncertainty of stratospheric ozone depletion. We grew 20 *A. sativa* plants under wire frames covered in either a clear filters, which transmit most UV-B, or mylar filters, which absorbs most UV-B. Plants were grown from early spring to late summer while obtaining quantum yield of photosynthesis measurements with a modulated fluorometer at 14-day intervals. Plants were harvested at the end of summer and aboveground biomass was recorded. *A. sativa* plants grown under near-ambient UV-B had 17% less aboveground biomass and leaves were 8% shorter than plants grown under reduced UV-B. Quantum yield measurements of photosynthesis were 16% lower in plants grown under near-ambient UV-B, which may partially explain reductions in growth. While this data has shown the adverse effects of solar UV-B on photosynthesis and growth of *A. sativa*, more research is needed to elucidate underlying mechanisms responsible for these observed reductions.

EXPRESSION OF RAT AORTIC FIBRONECTIN mRNA ISOFORMS AS A FUNCTION OF GENDER AND MATERNAL EXERCISE

Danielle Kirkpatrick (Biochemistry)

Theresa Salerno, Faculty Mentor

(Biochemistry)

This study evaluates fibronectin levels in individual rats and examines any significant differences in total fibronectin and individual isoforms, A and B, in male versus female offspring of exercised versus non-exercised mothers. Fibronectin is a large glycoprotein that plays an important role in cellular processes, including cell adhesion, differentiation and migration, and wound healing. Several isoforms of fibronectin are produced from a single gene through alternative mRNA splicing at different positions. Protein domains EIIIA and EIIIB are each encoded by single exons, referred to as A and B. Levels of mRNA for A+ and A- and B+ and B- isoforms were measured in rat aorta using semi-quantitative RT-PCR (reverse transcriptase-polymerase chain reaction) analysis. Rat aorta tissue was dissected, cleaned in a buffered solution, and frozen immediately in liquid nitrogen. RNA was isolated and amplified by RT-PCR, and analyzed by gel electrophoresis and densitometry.

PURIFICATION OF ACTIN CAPPING PROTEIN ALPHA SUBUNIT FUSION PROTEINS

Ryan Peck, Justin Peltola (Biological Sciences)

*Marilyn Hart, Faculty Mentor
(Biological Sciences)*

Actin is a cytoskeletal component that contributes to cell motility and shape. Actin is regulated by a variety of proteins including capping protein (CP). CP, composed of alpha (α) and beta (β) subunits, regulates the length and stability of actin filaments. There are two forms of the alpha subunit, $\alpha 1$ and $\alpha 2$, which show 90% sequence homology across vertebrates. The regions of divergence distinguish $\alpha 1$ and $\alpha 2$, and are also highly conserved. This suggests that $\alpha 1$ and $\alpha 2$ have unique cellular functions. We are using a bacterial system to over-express $\alpha 2$ fusion protein, composed of $\alpha 2$ protein and maltose binding protein. The fusion protein was separated from the bacterial background using affinity chromatography, and the purity was assessed by using Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis. A Bradford Protein Assay was used to quantify the concentration of the purified protein. The purified protein was used as an immunogen to generate a polyclonal antibody in chicken. In future studies, the chicken antibody, along with previously made rabbit antibody, will be used to perform double immunolocalization studies to ascertain $\alpha 1$ and $\alpha 2$ specific localization in murine tissues.

OPTIMAL PRECIPITATION OF ORGANOTIN FLUORIDES BY CATION EXCHANGE

Karri McKee, Justin Stewart (Chemistry)

Brian Groh, Faculty Mentor

(Chemistry)

Organotin halides account for 10% of tin consumption worldwide. Known for their biocidal activity, trialkyltin compounds are the active components of agricultural fungicides and paint preservatives. Halogenated organotins and their derivatives have wide application and use in research and industry, and their use continues to grow. However, organotins are highly toxic compounds, often formed as by-products in reactions. Consequently, the removal and recycling of organotin halides from the waste stream is imperative. The focus of our research is the development of a cyclic reaction sequence to remove and recycle organotin halides. Treatment of soluble tributyltin chloride with fluoride ion causes the precipitation of tributyltin fluoride. We have examined the effects of substrate, solvent, time, and cation exchange to optimize removal of the precipitated compound from solution. In our process, it is then possible to convert tributyltin fluoride back to tributyltin chloride, the precursor of many organotin compounds used in industry.

A PALEOECOLOGICAL EXAMINATION OF TEMPORAL TROPHIC CHANGES THROUGH DIATOM TREND ANALYSIS AT HIGH ISLAND LAKE, SIBLEY COUNTY, MINNESOTA

Thomas Higgins (Biology)
Bryce Hoppie, Faculty Mentor
(*Chemistry and Geology*)

Lake restoration is a popular method of reclaiming and restoring eutrophic waters to a clearer, ecologically, and economically viable state. Establishing reasonable restoration goals relies upon accurately depicting a lake's past trophic evolution. With the current understanding of fossilized diatom ecology, it is possible to reconstruct a temporal trophic timeline, which can be correlated with phosphorus, chloride, and other indicators of water quality. These data can denote how a lake's natural and induced nutrient cycles influenced its trophic status prior to and after human development. Preliminary diatom fossil data compiled from High Island Lake, Sibley County, Minnesota identifies significant natural shifts in trophic status, as well as shifts from human disturbances to the lake and surrounding watershed.

A COMPARISON BETWEEN EXTROVERTS AND INTROVERTS AND THE TIME INVOLVED TO TAKE ACTION IN A STAGED DILEMMA INVOLVING A TIMED TEST

Laura Johnson (Psychology)

Rosemary Krawczyk, Faculty Mentor

(Psychology)

This experiment involves studying introversion and extroversion and how these two personality types differ in one-on-one interactions when an individual is in an ambiguous situation. By looking at Jung's viewpoint of introversion and extroversion, we can see that there are notable differences in how introverts and extroverts act in social situations. Participants in this study entered a room and were given a personality test that was used to determine whether they show more introversion or extroversion tendencies. A second timed test was then given, which the participant was told relates personality types to test taking. In actuality, this study looked at how the participant reacted to not receiving a portion of the test. The experimenter leaves the room and the participant is left alone with a stranger, who is a confederate of the experiment. This study measured how long it took the participants to ask the stranger about the test and related this to measured introversion/extroversion.

CUSTOMER SERVICE IN RESPONSE TO SHOPPER'S ATTIRE

Allison Jones (Psychology)

*Edison Perdomo, Faculty Mentor
(Psychology)*

Previous studies have suggested that clothing affects the way we perceive people and that people respond to those perceptions. The purpose of this study, therefore, was to investigate if the time before being approached by a sales clerk differs as a function of what the shopper is wearing. Two conditions were used. One outfit was composed of new professional clothing (blouse, black pants, with glasses) and the other outfit was casual clothing (torn hooded sweatshirt, torn pair of jeans, without glasses). The subjects in the project were employees working at 30 different stores in the Mall of America. Findings from the study suggest that clothing has an effect on the amount of time before a sales clerk approaches a person, and that a person's clothing creates a difference in the response they elicit when coming into contact with a new individual.

THE EFFECT OF BIRTH ORDER ON INTROVERSION AND EXTROVERSION

Macy Kissling (Psychology)

*Edison Perdomo, Faculty Mentor
(Psychology)*

This study was conducted to determine if an individual's birth order (first or later-born) has an effect on the individual being classified as an introvert or extrovert. An introverted person tends to be reflective and shy, while an extroverted person tends to be outgoing and sociable. A brief 27-question survey, designed by the researcher, was given to college students enrolled in a Psychology 101 class in exchange for extra credit. The survey was used to determine birth order and to classify the subjects as an introvert or extrovert. The survey included 27 true-false items assessing introversion and extroversion. The results of this study indicate that the relationship between birth order and the personality trait of introversion and extroversion is not as clear-cut as earlier presumed.

POSITIVE RELIGIOUS COPING: CHRONIC STRESSORS AND PERCEIVED STRESS

Bethany Kunkel (Psychology)

*Edison Perdomo, Faculty Mentor
(Psychology)*

This study examined the relationship between positive religious coping methods and chronic stress levels. Subjects were college students who completed a survey which included three scales: the Inventory of College Student's Recent Life Experiences (ICSRLE), a religious coping measurement called the RCOPE, and the Perceived Stress Scale. These scales measured the extent to which religious coping methods are used and how this relates to a number of stressors present, as well as how much stress is perceived. The first hypothesis was that there wouldn't be a relationship between religious coping methods and the number of daily stressors reported. The second hypothesis was that positive religious coping is inversely related to perceived stress. Past research has shown a link between positive religious coping and stress. This study is important because it provides implications for the management of stress and related health problems.

THE EFFECTS OF NEGATIVE AND POSITIVE FEEDBACK ON CONFIDENCE IN CREATIVE TASK PERFORMANCE

Elizabeth Nelson (Psychology)

Edison Perdomo, Faculty Mentor

(Psychology)

Previous research has found that a correlation exists between confidence in performance and actual performance (Sherman, 1980). The aim of this research was to determine the effect of feedback on confidence in creative task performance. To investigate this effect, 60 subjects participated in the experiment. Subjects were asked to rate their level of agreement with a number of statements on a Likert-type scale. These statements concerned the subject's confidence in his or her ability to perform a creative task. Subjects then performed a creative task (used geometric shapes to create a collage) and received feedback concerning the task in the form of verbal evaluation from the experimenter. Subjects received either positive feedback, negative feedback, or no feedback. After receiving feedback, subjects rated their level of agreement with each of the statements. The results of the experiment indicated that subjects' confidence increased in response to positive feedback and decreased in response to negative feedback. The results of this study are most beneficial in determining how to increase students' confidence and improve their performance.

NICOTINE USE AMONG COLLEGE ATHLETES WITH A HIGH SELF-REPORT OF SYMPTOMS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER

Jamie Whitcomb (Psychology)

*Edison Perdomo, Faculty Mentor
(Psychology)*

The purpose of this study was to examine the differences of nicotine use among contact and non-contact athletes in collegiate sports and individual and team sports. This study also examined those athletes who self-reported high symptoms of Attention Deficit Hyperactivity Disorder (ADHD). Two hundred and fifty student-athletes of a midwestern university were surveyed using two separate questionnaires. The first questionnaire measured nicotine use, and the second measure was Barkley's Behavior Checklist for ADHD Adults. About one-fourth of the student athletes self-reported high symptoms of ADHD. Student-athletes self-reported more nicotine use than that of the college population. There was more nicotine use from the athletes who were in non-contact sports than those in contact sports. ADHD athletes self-reported greater nicotine use in team sports rather than in individual sports. The few females who used nicotine preferred cigarettes to smokeless tobacco. Overall, the usage of nicotine was more closely related to whether or not the student-athletes self-reported high symptoms of ADHD and the particular sport they were involved in, rather than the fact that they were simply college athletes.

IDENTIFICATION OF PERSONAL CHARACTERISTICS IMPORTANT IN MATE SELECTION

Kristin Sandberg (Psychology)

Edison Perdomo, Faculty Mentor

(Psychology)

The purpose of this study is to investigate the ways in which men and women choose their mates and the characteristics that are important in this process. The sociobiological theory of human mating preferences suggests that men will generally choose attractive young women as mates, while women generally choose mates with wealth and status. The subjects were comprised of 60 introductory psychology students. Subjects were given a survey consisting of four personal ads, each one describing a different aspect of personality (i.e. beauty, wealth/status, good personality, and intelligence). They were then asked to rank the ads in order of interest. It was found that subjects responded contrary to sociobiological theory in their choices. Subjects were also given a test to measure self-esteem. Both men and women chose intelligence and good personality as being more important than beauty or wealth. These findings are important because they suggest that men and women are more alike in mating preferences than previously believed.

EFFECTS OF POPULAR MUSIC ON MEMORIZATION TASKS

Sarah Harmon, Kristin Sandberg (Psychology Department)

Edison Perdomo, Faculty Mentor

(Psychology Department)

Rosemary Krawczyk, Faculty Mentor

(Psychology Department)

This study investigates the effects of popular music on memory performance. Studying and memory recall are adversely affected by the presence or absence of popular music. One hundred twenty introductory psychology students participated in the study. Subjects were given a list of fifty words to study in 61/2 minutes, with music either being present or absent. This was termed the learning stage. In this study, there were four conditions that were tested. In all four conditions, subjects were assigned to either a "music" pre-period or a "non-music" pre-period, and a "music" post-period or a "non-music" post-period. After they studied the words, they were again given 61/2 minutes to recall the words either with music or without. This period was called the recall stage. Findings from this study suggest that students who study while listening to popular music, as many students do, will do poorly on memory performance tasks.

THE INFLUENCE OF PEOPLE'S ANTICIPATED OUTCOME ON THEIR INFORMATION SEEKING BEHAVIOR

Steve Sullivan (Psychology)

Edison Perdomo, Faculty Mentor

(Psychology)

The attempt of this study is to experimentally clarify whether or not people avoid potentially abrasive information about themselves and/or seek ego boosting information regarding themselves. Subjects consisted of Minnesota State University Mankato students, most of whom were freshmen. Surveys, purportedly testing subjects' levels of morality, were given to determine if there was any correlation between subjects' estimated score on a morality test and their desire to know their score (information seeking). Past studies have investigated the influence of individual's levels of uncertainty, tolerance for uncertainty, and their importance placed on knowledge, all relative to their desire to obtain the specific information. However, very little investigation has been made into the relevance of a subject's anticipated outcome on their desire to seek the information. The results of this study could be applied to tackle a much larger analogous issue; why patients who really need to seek medical attention are often less likely to visit the doctors than healthy patients.

AN INITIAL EXPLORATION OF THE RELATIONSHIP BETWEEN POLITICAL REPRESSION AND FAMILY VIOLENCE

Tom Stutsman (Psychology)

*Barbara Keating, Faculty Mentor
(Psychology)*

Many countries were controlled by politically repressive regimes at some point in the 20th century, resulting in millions of innocent citizens dying at the hands of their own government. In addition to the harm done by the government to its people, living in a violent, repressive society causes drastic changes in individuals' relationships with their family, friends, and acquaintances. This report focuses on husbands' violence against their wives. Brief backgrounds and relevant conceptualizations are provided for political repression and family violence, and several prominent theories in the study of family violence are used to analyze how violent political repression could affect the prevalence of domestic violence. This study does not utilize political repression data from a particular country, but rather analyzes the fundamental aspects of political repression in order to provide an introduction to the relationship between violent political repression and family violence, and to serve as a guide for future research. All of the relevant theories reviewed for this paper indicated that violent political repression increases the level of domestic violence in society.

MYTHIC RHETORIC AND THE CONSTRUCTION OF PAUL WELLSTONE AS SACRED SYMBOL

Cynthia Saba (Speech Communication)

Lisa Perry, Faculty Mentor

(Speech Communication)

On October 25, 2002 Minnesota Senator Paul Wellstone died in a plane crash alongside his wife, daughter, three campaign workers, and two pilots. A week later, a nationally televised memorial was held to remember the late Senator. The passionate given by Wellstone friends and family caused some to question whether the event was truly a memorial. In fact, the Associated Press on October 30, 2002 reported the memorial transformed from "tears to foot stomping, cheers, and even booing people from other parties." Senator Tom Harkin (D-IA) exemplifies the tone of the memorial service when he states "Paul Wellstone's voice is tragically silenced, but his courage, energy, and daring carries on, compelling us to stand strong for what is right, good, decent, and humane, regardless of consequences." The construction of Paul Wellstone as a mythic figure began in full-force at the Memorial; thus this event bears closer examination.

This paper will use Fulmer's article "Southern Clerics and the Passing of Lee: Mythic Rhetoric and the Construction of a Sacred Symbol" published in the Summer 1990 *Southern Communication Journal* to analyze the impact of the Wellstone Memorial service and answer the question, "How was mythic rhetoric used to construct Paul Wellstone as a sacred symbol for the Democratic party?"

PROFANITY AND YOU: EXPLORING THE ACCEPTABILITY OF SWEARING IN TODAY'S CULTURE

Rebecca Rick (Speech Communication)

Lisa Perry, Faculty Mentor

(Speech Communication)

In 1972, a list was created; George Carlin's list of "Seven Dirty Words You Can't Say on Television". Part of the humor in Carlin's performance arose from the nature of censorship and the shock of obscenity in a public venue. The overall shock value of swearing has depleted as most swear words have become acceptable and commonplace. The *Toronto Sun* of March 20, 2002 reported: "During four weeks of viewing one prime time hour in 1989, the Parents Television Council counted 108 uses of hell and damn. By 1999 there were 518." This is a minor example of the rise of profanity in one form of communication—the media. Through the use of humor, this research project will look at why swearing has become so acceptable in American society and the repercussions this poses.

THE FORMULA

Heather Kaiser, Chad Kuyper (Speech Communication)

Daniel Cronn-Mills, Faculty Mentor

(Speech Communication)

Throughout the history of story telling, the formula for a successful love story has remained the same. The constancy of this formula has spanned chronology and crossed genre boundaries as well. Since so many of these love stories mirror woe, it merits our examination. Through an assortment of plays and movies from old to new, we present the dramatic program, The Formula.

COMFORT THROUGH HUMOR: THE 9/11 ISSUE OF *THE ONION*

Suzanne V. Loen (Speech Communication)

Daniel Cronn-Mills, Faculty Mentor
(Speech Communication)

In September of last year, the satirical newspaper *The Onion* covered the tragedy of 9/11. According to the *Daily Northwestern* of May 14, 2002, this issue of *The Onion* was the first major media outlet to take a humorous look at 9/11. In this study, I shall analyze the September 26, 2001 edition of *The Onion*, which covered the attacks of 9/11. To analyze *The Onion's* discourse, I shall utilize a frame of humor analysis established by Kathleen Hurley in her 1996 doctoral dissertation *Humor and Technical Communication: The Culture, the Text, and Implications*. Hurley's theory is appropriate as the method provides for a comparative reflection of 9/11. To understand *The Onion's* rhetoric I must ask the following critical question: What rhetorical and social purpose did *The Onion's* humor serve in framing our understanding of 9/11? To answer the question we must first, detail a rhetorical framework for analyzing the use of humor in a serious situation and second, apply this framework to *The Onion*. Finally, I will draw implications concerning the rhetorical dimensions of humor.

SUEÑO, REALIDAD Y DESTINO

Shirley Nieto Flores (Spanish)

Kimberly Contag, Faculty Mentor

(Modern Languages)

This research project addresses the problem of “sueño, realidad y destino” (dream, reality and fate) in Calderón de la Barca’s play: *La vida es sueño*. Sueños, or dreams, are a result of the unconscious stage in which one’s mind plays and creates different things that aren’t under one’s control. It is where the conflicts, happiness, depression, and/or victories will meet in one place and show us the ‘other us’. Also, we can describe dreams as a messenger between our ‘inner self’ and ‘outer self’. Dreams reflect who we really are and how we are most likely to act in different scenarios; however, dreams are distanced from reality because they only live in our minds. In this play, we will see that the idea of dreams and reality will be confused by the main character, whose family has hidden him so that their fate doesn’t come true.

This research is about dreams, reality, and fate, and how they relate to this period of time and the characters in the play. It shows the dream’s applications for psychology, philosophy, and history, and it also compares the different ideas of critics that explain how the “dream” works in this play as well.

AN EXAMINATION OF SECRET LEGAL SETTLEMENTS AND THEIR OBSTRUCTION OF JUSTICE

Heather Kaiser (Speech Communication, Political Science)
Daniel Cronn-Mills, Faculty Mentor
(Speech Communication)

In the summer of 2000, Steve Tierrez's vehicle overturned due to defective tires. Steve survived, but his 3-year-old son did not. At the time, Steve had no idea there was a problem, despite dozens of similar accidents around the country. According to NPR's *All Things Considered* of Oct. 11, 2002, the earlier accidents were not widely published. A series of secret legal settlements kept the dangers hidden, and led to Nick's death. The Aug. 26, 2002 *Gannett News Service* stated more than 100 lawsuits were filed against Ford and Firestone for more than 10 years. In almost every case, the suits were settled with secrecy, trying to make sure we would never find out. This poses the question, "if the cases had not been settled secretly, how much money and damage, and how many lives could have been spared?" Secret settlements prevent justice from being served. We should still allow settlements, just not in secret. We must first expose the flaws within the current legal system that allows for secret settlements, and secondly reveal the repercussions of secret settlements. Finally, we need to implement solutions for public safety.

SAY ANYTHING: A CONTENT ANALYSIS OF YM (YOUR MAGAZINE) REMOVING ARTICLES ON WEIGHT LOSS

Suzanne V. Loen (Speech Communication)

*Lisa Perry, Faculty Mentor
(Speech Communication)*

With millions of women under the age of 20 suffering from eating disorders, YM (Your Magazine) has adopted a new editorial policy eliminating all articles on weight loss and including images of plus-size models. Weight loss journalism is a staple of the fashion magazine genre, thus removing weight loss articles requires the focus of the magazine to shift. With this editorial change, the magazine is attempting to create a positive influence on all young women who have body image disorders. Using content analysis, this paper examines the contents of YM before and after this editorial change to answer two questions. First, has the ideal body image promoted by YM changed? Second, has the removal of weight loss articles from YM had an affect on the body image of the reader?

WHAT'S SO FUNNY?: A READER'S THEATRE EXAMINING THE REASONS WHY WE LAUGH

Heather Kaiser, Chad Kuyper, Mitch Batty, Rebecca Rick,
Cynthia Saba

Brian Klosa, Faculty Mentor
(Speech Communication)

Laughter is an integral part of our lives. We laugh every day. Everybody has an individualistic sense of humor. We know what we find humorous, but why do we laugh at those things? The following reader's theatre will examine theories and research conducted on comedy. The performance will discuss the structural elements contained in comedy. Finally, this performance will utilize various examples from popular culture to illustrate various comedic forms and formulas.

A HUMOROUS EXAMINATION OF CURRENT BRAIN RESEARCH AND ITS APPLICATIONS

Chad Kuyper (French)

Daniel Cronn-Mills, Faculty Mentor

(Speech Communication)

Research into the inner workings of the mind, into how we construct and control our thoughts and emotions, has skyrocketed. According to Wolfe and Brandt in a 1998 issue of the journal *Educational Leadership*, we have learned more about the brain in the past ten years than in the past one hundred years put together. Examination of this new research is warranted because it yields benefits in many areas, such as the alleviation of performance anxiety and a better understanding of the people we interact with each day. Educators can also benefit from this new research by applying it in their teaching methods. In this humorous examination of this research, I explore the theories of Howard Gardner and Daniel Goleman, analyze new findings that modify our view of their well-known theories, and then show how we can take this information and apply it in our day-to-day lives.

PERCEPTIONS OF PROGRAMMING AMONG COMPUTER SCIENCE STUDENTS

Durre Shahwar Aliya Zafar Ahmed, Qurrat ul ain Zafar
Ahmed (Computer and Information Science)

*Sarah Klammer, Faculty Mentor
(Computer and Information Science)*

Computer Science faculty members have stated their surprise at the number of students planning to major in Computer Science who have said they do not like programming, and hope to find a job where they do not have to program. The majority of students seeking careers in a Computer Science field will program in their entry-level positions. Have students chosen the wrong major, or do their perceptions change as they continue through their educational program? The purpose of this research project was to explore the perceptions and opinions of students toward programming in the Computer Science program at Minnesota State University Mankato, changes in the perceptions about programming among students majoring in a Computer Science program, and the factors that influence students during this transition. The population for this study consisted of qualified students in the Computer and Information Sciences Department at Minnesota State University Mankato. Instructors were asked for permission to pass the surveys to the students in class, and a representative from the research team was responsible for distributing and collecting the surveys.

SOFTWARE TOOLS FOR EXPLORING A POTENTIAL ALTERNATIVE PROOF OF THE FOUR-COLOR THEOREM

Shawn Berry (Computer Science)

David Haglin, Faculty Mentor

(Computer and Information Sciences)

The Four Color Theorem is often cited in mathematical texts as an example of a problem which is easy to state and understand, but immensely difficult to prove. The theorem states that the most colors required to color *any* planar map, such that no two adjacent regions are the same color, is four. Posed in 1852 by graduate student Francis Guthrie, it was finally solved in 1976 by Kenneth Appel and Wolfgang Haken through the extensive use of a computer verifying hundreds of possible subcases. Is there a shorter, more elegant way to prove this theorem? It is the purpose of this project to explore that tantalizing possibility. A proposed algorithm for four-coloring a planar mapping can be shown to work for relatively small graphs that can be processed by hand. Designing a software implementation of this algorithm would help expand the size and variety of maps the algorithm has worked on, provide insight for improving the algorithm, and potentially lead to the publication of a far shorter proof for the Four Color Theorem.

STATE SYSTEM ELEMENTS AND IN-GROUP/OUT-GROUP CONFLICT

Luai Bashir (Ethnic Studies)

*Wayne Ebert Allen, Faculty Mentor
(Ethnic Studies)*

The foundation of the State System ultimately and inevitably leads to in-group/out-group conflict and ethnic cleansing. There are four elements of State Systems; greed, supremacy, indoctrination, and terrorism. Greed is the core of every State in the world. It functions as the driving engine that steers the State, and constantly grows with time. Every State System advocated a form of supremacy that it considers moral and ethical. For instance, Papal Catholicism considered theological/religious supremacy a moral way of feeling superior to others. Indoctrination is the element that serves the function of implanting the supremacy core mentioned above. State agencies preach that their form of supremacy is the one and only moral way of feeling superior to others. Terrorism is what we know as war. Ethically and objectively speaking there is no difference between terrorist operations and wars waged by State Systems. The way all four elements function together is that greed drives the State System to harvest the resources of other people through war. Humans can kill other humans without having any remorse if they feel superior to them. The four layers work together to fulfill the ultimate goal of the state system, which is harvesting resources from out-groups by ethnically cleansing them or enslaving them. For as long as there are State Systems, there will be ethnic cleansing.

XML AS A DATA DISTRIBUTION SOLUTION

Jeffrey S. Case (Computer & Information Sciences)

David J. Haglin, Faculty Mentor

(Computer & Information Sciences)

The Gamma Ray Burst ToolSHED is a collection of data mining utilities for analyzing gamma ray burst (GRB) data. However, because of the many different data mining methods and their differing data structure, a general and flexible solution was needed. This solution has been found in XML, or the Extensible Markup Language; a means of representing data in a simple, flexible, and intuitive manner. Using XML, we now have a reliable means of representing and manipulating GRB data for use in data mining, as well as an elegant way to transmit GRB data over the Internet. We take advantage of this flexibility by creating a central repository of GRB data, such as the data generated from NASA's Burst and Transient Source Experiment, from which users can download the parts of the data they desire and combine it with their own data for use in their own data mining. To show this, a simple client and server prototype has been developed to allow users to download data from the central repository across the Internet, combine that data with other data, and perform basic data mining operations on that data.

EFFECT OF SEAT HEIGHT ON AEROBIC AND ANAEROBIC POWER IN TRAINED MALE CYCLISTS

Brian Holmgren (Exercise Science)

Mary Visser, Faculty Mentor

(Human Performance)

Early season cyclists tend to use a lower seat height; by mid racing season they will raise their seat to a slightly higher position. Reasons could be poor flexibility during early season training, or improved efficiency towards the latter part of the season. Competitive cyclists are always looking for the optimal seat height, which will give them the greatest power output by expending the least amount of energy. The purpose of this study is to determine the effect of various seat heights on oxygen consumption during submaximal exercise and anaerobic power at or near maximal exercise. Four trained competitive male cyclists were tested at five different seat heights; 95%, 97%, 100%, 103%, and 106% of leg length. For the aerobic protocol, subjects started at 50W and the workload was increased 25W every three minutes to a maximum of 200W. Ventilation, oxygen consumption, carbon dioxide production, and heart rate were obtained at regular intervals. For the anaerobic protocol, a Wingate test was performed with indices of power and anaerobic capacity overall. It is speculated that significant mean differences exist in measures among seat heights for the group. These results will show that an optimal seat height exists for maximizing anaerobic and aerobic performance in trained cyclists, and these heights may be independent of one another.

THE EFFECTS OF ROOM COLOR ON STRESS PERCEPTION: RED VERSUS GREEN ENVIRONMENTS

Teresa M. Kutchma (Behavioral Sciences)

Edison Perdomo, Faculty Mentor

(Behavioral Sciences)

The purpose of the study was to investigate the effects of red versus green room color on individuals' perception of stress. Room color has been found through previous studies to have specific effects on psychomotor activity and emotional states. Correlations have been found between red room color and emotional and physical stimulation, while green was associated with inhibitory effects. Research based on Goldstein's theory of color perception also proposed that red has stimulating effects on human behavior. Such theories led to the hypothesis that red room color will have greater affects on stress perception than green or white room conditions. Subjects included 15 male and 15 female Psychology 101 students at Minnesota State University Mankato. Red, green, and white fabric was hung in an experimental booth to create colored room conditions. Subjects were asked to enter the booth and wait five minutes before completing a copy of the stress inventory from the DASS (Depression, Anxiety, and Stress Scale) for each of the three conditions. It was found that subjects reported higher ratings of stress in the red-room condition compared to green or white. The findings suggest that environment color plays a significant role in stress perception.

PHYSICAL ACTIVITY AWARENESS TRAINING: INTERACTIVE VS. AUTOMATED

Sarah Ebensteiner (Family and Consumer Sciences)

*Sarah Klammer, Faculty Mentor
(Computer and Information Sciences)*

*Martha Lindberg, Faculty Mentor
(Computer and Information Sciences)*

Our nation is experiencing a critical rise in obesity, a result of leading sedentary lifestyles, which is increasing the incidence of health related issues. Fitness and nutrition training has been implemented in classrooms on the campus of Minnesota State University Mankato in order to educate individuals about the proper amounts of physical activity that are proven to decrease or eliminate health risks. The purpose of this research project was to compare educational techniques used to instruct students about the proper fitness guidelines. The students were given a pre-test used to determine their knowledge about physical activity. Following the pre-test, a slide presentation was taught via interactive instruction or automated instruction. The post-test was then used to compare which method of education was more beneficial in presenting students with the materials they need to make healthier decisions about physical activity.

INTERPRETING GODDESSES OF MESOAMERICA

Lisa Loree' Jensen (Anthropology)

*Winifred Mitchell, Faculty Mentor
(Anthropology)*

I will be discussing two diverse interpretations of the goddesses and themes of Mesoamerican cultures. My focus is primarily the goddesses from the Aztec culture, but does include some from other Mesoamerican societies as well. I have explored the pre-feminist interpretation of these goddesses, including that of the Early European explorers, and then compared this with the contemporary feminist interpretations of these goddesses. Some of the deities include Coyolhauqui Monolith, which is the dismembered goddess of the Moon. One theme that is very common in this piece, along with many others, is the presence of serpents. There have been many different interpretations of these serpents and their significance in Mesoamerican artwork in these societies. Another figure of particular interest, and one that many people are familiar with, is "Our Lady of Guadalupe." She has a strong influence in shaping Mexico's identity and spirituality, and is recognized around the world. As archeologists continue to learn about these societies, we gain more of an understanding of these people and their spirituality.

IDENTIFICATION OF PROTEINS INTERACTING WITH ACTIN CAPPING PROTEIN $\beta 1$ and $\beta 2$

Aja Bjerke (Biological Sciences)

*Marilyn Hart, Faculty Mentor
(Biological Sciences)*

Actin, a component of all eukaryotic cells, contributes to cell motility and shape. Actin capping protein (CP), associated with the actin cytoskeleton, is a heterodimer composed of alpha and beta subunits. The beta subunit has three isoforms: beta1 ($\beta 1$), beta2 ($\beta 2$), and beta3 ($\beta 3$). These isoforms are produced from alternative splicing of one gene with 90% sequence identity. The region of divergence defines membership to each subfamily. Previous work in cardiac myocytes has shown that $\beta 1$ cannot functionally replace $\beta 2$, nor can $\beta 2$ functionally replace $\beta 1$. Furthermore, data suggests that the isoform specific functions are due to novel protein interactions. We are attempting to identify the proteins that interact with each isoform via a yeast two-hybrid genetic screen. This screen utilizes two specific components: a bait plasmid and a prey plasmid. We have generated a bait plasmid and confirmed its orientation. The screen is underway and preliminary results will be presented.

THE INFLUENCE OF SOLAR ULTRAVIOLET-B RADIATION ON PHENYLPROPANOID CONCENTRATIONS AND FERRIC-REDUCING ABILITY IN *AVENA SATIVA*

Sonja Christensen (Biological Sciences)
Christopher Ruhland, Faculty Mentor
(Biological Sciences)

The result of high levels of ultraviolet -B radiation on plants provides evidence for an increase in plant production of non-enzymatic antioxidant phenylpropanoids in plant tissue. This UV-B radiation enables the production of damaging oxygen radicals which may lead to loss of membrane integrity and reductions in photosynthesis. The hypothesis of this research is that increased phenylpropanoid concentrations may lead to higher levels of oxygen scavenging in methanol extracts of plant foliage as assessed with the Ferric Reducing/Antioxidant Power (FRAP) assay. Twenty *Avena sativa* plants were grown under treatments that either transmitted near-ambient levels of UV-B or reduced levels of UV-B during the summer of 2002. Plants were harvested after 49 days and assessed spectrophotometrically. These samples were then assessed using the FRAP assay to determine the reducing ability between the two treatments. There was no significant difference between the treatments. More research is necessary to assess the relative importance of plant phenylpropanoids as possible antioxidant compounds, and their relative role in reducing UV-B-induced damage in

PURIFICATION OF DNA POLYMERASE

Janice Haala (Biological Sciences)

Marilyn Hart, Faculty Mentor
(Biological Sciences)

DNA polymerase is an enzyme that catalyzes the synthesis of deoxyribonucleic acid (DNA) from deoxyribonucleotides. We are attempting to purify a modified DNA polymerase from the bacterium *Thermus aquaticus*. *Thermus aquaticus* resides in an environment where the temperature ranges from 70-80°C, requiring that its DNA polymerase have the ability to remain stable through repeated high-heat conditions. Because of this feature, DNA polymerase from *Thermus aquaticus* is a useful molecular biology reagent. To purify the enzyme, *Escherichia coli* containing an inducible plasmid form of the DNA polymerase gene were grown to early log phase. The promoter of the vector was induced to express the polymerase protein, and the cells were harvested and lysed. The DNA polymerase was then recovered from this lysate by precipitation with polyethyleneimine and purified from the bacterial protein background using anion exchange chromatography. Throughout the purification, the presence of the enzyme in the lysate was monitored by two techniques: Polymerase Chain Reaction (PCR) and Sodium Dodecyl Sulfate Polyacrylamide Gel Electrophoresis (SDS-PAGE). Finally, the purified protein was pooled and dialyzed with storage buffer.

THE EFFECTS OF EXERCISE IN WKY PREGNANT FEMALE RATS ON FETUS HEALTH

Laura Madsen (Biological Sciences)

Penny Knoblich, Faculty Mentor

(Biological Sciences)

The effects of exercise during pregnancy on the fetus are relatively unknown, but there is research supporting that pregnancy elevates physical stress in women. However, women are not prevented from continuing to exercise during pregnancy. In this study, fetal effects of voluntary exercise in pregnant rats were recorded. The rats were divided into three groups: a sedentary group, a pretrained group (a group that was exercised both before and during pregnancy), and an exercised group (a group that was exercised only during pregnancy). The rats were sacrificed on day 20 of a 21 day gestation. The fetal weights, placental weights, fetal kidney weights, litter size, number of reabsorption sites, and maternal weights were measured. The pretrained group of mothers (without fetal tissue) were heavier than the other two groups at day 20 of gestation, had the largest fetal size, and the largest kidney weight/g fetal body weight. The pretrained mothers had the most reabsorption sites followed by the exercise. The exercised mothers had the highest mean placenta weight, followed by the pretrained mothers. Conclusions are exercise caused some fetal stress, but appeared to increase fetal size at term. This increase in fetal size is not explained by a smaller number of fetuses, because final litter sizes were not significantly different between the groups.

NISIN EFFECTS ON *BACILLUS CEREUS* ENDOSPORE GERMINATION

Meshack Sambu (Food Science)

*Dorothy Wrigley, Faculty Mentor
(Biological Sciences)*

The control of bacterial endospore formers in foods is essential for providing a safe product for consumers. Endospores are resistant structures formed by certain kinds of bacilli. The purpose of this study was to first examine the influence of two germinants, L-alanine and inosine, on the *Bacillus cereus* endospores, and then the impact of nisin on the induction of germination. Nisin is a biopreservative that affects the germination of these spores. The spores were mixed with different concentrations of germinants in the presence or absence of nisin and the germination assessed by changes in absorbance, which occurs as the spore begins germination. The data indicates that both germinants are necessary for good germination. At low concentrations of alanine and high concentrations of inosine, fewer spores germinated in the presence of nisin than without nisin. However, there was more germination of spores at lower concentrations of both germinants when nisin was present than when it was not.

THE OCCURRENCE OF BOUND MORPHEMES IN THE SPEECH OF CHILDREN WITH WILLIAMS SYNDROME COMPARED TO TYPICALLY DEVELOPING CHILDREN

Shannon Leppi, Sara Doelger, Christina Carson, Catherine Armendariz (Communication Disorders)

*Patricia Hargrove, Faculty Mentor
(Communication Disorders)*

One of the characteristics of language that has been the frequent topic of research is children's production of word endings such as "ing," "ed," and the possessive (s). These are called bound morphemes. Interestingly, the production of bound morphemes in the speech of children with Williams Syndrome (WS) has received little attention. WS is a rare chromosomal disorder that occurs in approximately 1 in 25,000 births. Common features include mouth and facial abnormalities, early feeding and sleeping problems, and developmental disabilities. Of special interest to speech-language pathologists is that their language is often reported to be superior to their overall cognitive (intellectual) development. In this study, we compared incidences of bound morphemes in the speech of children with WS to those of typically developing children by using a story retelling task. A companion paper explores bound morphemes in spontaneous speech. Our findings revealed that the use of bound morphemes in this group was similar, which was not congruent with our hypothesis.

BOUND MORPHEME USAGE OF CHILDREN WITH WILLIAMS SYNDROME AND TYPICALLY DEVELOPING CHILDREN

Hilary Penner, Samantha Schindle, Emi Karino, Miranda Davis, Christen Conrad (Communication Disorders)

*Patricia Hargrove, Faculty Mentor
(Communication Disorders)*

Williams Syndrome (WS) is a rare genetic disorder resulting in facial abnormalities, small stature, mental impairment, and heart disease. Children with WS are believed to have stronger communication skills than expected based on their I.Q. The purpose of our research was to explore one aspect of communication that has not been investigated previously in children with WS. We examined the use of word endings such as "ing," "ed," "s," and "'s" (bound morphemes) in the spontaneous speech of children with WS and typically developing children. The results indicated that there was not a significant difference in the number of bound morphemes in the two groups of children. This was contrary to our original hypothesis.

PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF VOCAL WARM-UP IN PERFORMING ARTISTS

Shannon Leppi, Sam Schindle, Christina Carson

(Communication Disorders)

Bruce Poburka, Faculty Mentor

(Communication Disorders)

Physiological and psychological effects of vocal warm-up were studied in a group of 25 college-aged theatre arts students. Physiological variables relating to voice production included phonation threshold pressure, noise-to-harmonics ratio, and fundamental frequency range. These physiologic measures relate to ease of voicing, vocal quality, and pitch range respectively. Psychological variables included self-assessments of confidence before performing a voice task and a self-evaluation of vocal performance after the task. Mean values for each variable in each condition will be statistically compared using a paired samples t-test. It is predicted that vocal warm-up positively affects both the physiological and psychological variables.

OXYGEN ABUNDANCES IN THE RINGS OF POLAR-RING GALAXIES

Ian R. Radtke (Physics & Astronomy)

Paul B. Eskridge, Faculty Mentor
(Physics & Astronomy)

Optical spectroscopy of regions of ionized gas (HII regions) surrounding young, hot stars tells us the density, temperature, and mixture of chemical elements in HII regions. As HII regions are relatively bright and their flux is concentrated, they offer us probes of the chemical abundances in the interstellar medium (ISM) of external galaxies. Polar-ring galaxies (PRGs) are systems in which the host galaxy possesses a ring of material (gas, dust, and stars), orbiting with a symmetry plane nearly perpendicular to that of the host galaxy disk. PRGs have two separate, perpendicular axes of rotation. From this, it is clear that PRGs are the products of merger events between two initial galaxies, but are observed in a state where two distinct kinematic and morphological structures are still apparent. PRGs offer the possibility of unique insights to the problems of galaxy interactions and evolution by giving us examples of clear post-merger systems in the nearby Universe, in which the components of the original galaxies are still physically separated. A crucial factor for understanding the formation and evolution of PRGs is information regarding the heavy element abundances of the ring material. We have obtained optical spectroscopy for HII regions in several PRGs. We present the results of our abundance analysis for some of these HII regions, and show spectra for objects still under analysis.

IS THERE AN INCREASE IN TELEVISION COMMERCIALS THAT CONTAIN GENDER STEREOTYPES? A CONTENT ANALYSIS OF MTV COMMERCIALS

Nicole Mundahl (Psychology)

Rosemary Krawczyk, Faculty Mentor

(Psychology)

This study is being conducted to examine whether or not gender stereotypes are present in commercials on MTV. This study is a follow-up on research that was conducted previously by Signorielli, McLeod, Healy (1994), and uses the same coding schemes to analyze the content of the commercials. Commercials were taped for 8 hours on a weekday from 3 P.M.-11 P.M., and for 12 hours on a weekend day from 11 A.M.-11 P.M. The commercials were then analyzed using the coding schemes provided by Signorielli et al. (1994), using two coders working independently. The results will be analyzed and compared to the results compiled by Signorielli et al. (1994), and findings are anticipated to show that gender stereotypes will be more prevalent in the commercials analyzed from 2003 as compared to 1994.

THE EFFECTS OF MULTIPLE THERMAL ENVIRONMENTS ON MOTHER-INFANT CONTACT AND BLOOD PRESSURE IN SPONTANEOUSLY HYPERTENSIVE RATS

Corey Perez, Teresa Kutchma (Behavioral Sciences)

Edison Perdomo, Faculty Mentor

(Behavioral Sciences)

Hypertension in rats may be reduced by altering neonatal environment. Thermoregulatory controls along with mother-infant reactions are factors responsible for development of adult hypertension. Warmer environmental temperatures were hypothesized to be the most efficient condition for reduced blood pressure measurements. SHR's reared in warmer environments showed lower levels of hypertension than those raised in cool environments. The behavior of the mother is the second factor which can cause hypertension. It was hypothesized that adult pups of SHR mothers would show higher blood pressure measurements. Litters were randomly assigned to either a colony-temperature condition or one of two thermal-controlled environments. Litters were assessed for mother-infant contact and individual maternal and infant behaviors. As predicted, SHR mothers spent less time with their litter compared to the WKY strain. These findings conclude that altering the mother's behavior affects her ability to maintain normothermia and impacts the thermal environment of the pup.

COSTUME PREFERENCE RELATED TO GENDER: DOES A CHILD'S GENDER REFLECT THEIR CHOICE IN COSTUMES?

Tracy Traetow (Psychology)

Rosemary Krawczyk, Faculty Mentor

(Psychology)

This study examined the extent of gender stereotyping in children's Halloween costumes. Four classrooms; kindergarten, first grade, second grade, and third grade, were observed by two trained observers. A child's gender and costume were observed and recorded. Costumes were classified as female dominate, male dominate, or neutral. Results indicated that children's costumes tend to be somewhat gender stereotyped. Female children tended to wear female dominate costumes and male children tended to wear male dominate costumes. Results did show a relatively high number of children wearing gender neutral costumes. A few females wore costumes typical of the gender opposite their own, but no males wore female dominate costumes. This reflects the greater pressure placed on males to conform to gender stereotypes.

USING SOCIAL COGNITIVE THEORY TO PREDICT BEHAVIOR

Amy Posner, Gretchen Walker
(Recreation, Parks and Leisure Services)

James Wise, Faculty Mentor
(Recreation, Parks and Leisure Services)

The purpose of this study was to test a theoretical model where self-efficacy is hypothesized to influence people's behavioral intentions directly and indirectly through its effects on outcome expectancy. Data on self-efficacy, outcome expectancy, and intention, all related to jogging two consecutive miles, were collected from 115 college students enrolled in RPLS general education classes. As anticipated, path analyses indicated that efficacy had both a direct impact on intention and an indirect impact through its effects on outcome expectancy. The more efficacious people were, the more positive the outcomes they associated with jogging, and the surer they were they would jog. The model tested in this study holds potentially important implications for therapeutic recreation specialists (TRS). Based upon the model, TRS can increase the likelihood people will perform healthy leisure activities by developing interventions that lead to stronger self-efficacy and greater awareness of positive outcomes associated with the activities.

UNHEARD VOICES OF THE ABORTION MOVEMENT

Jaimee Bohning (Speech Communication)

*Nanette Johnson-Curiskis, Faculty Mentor
(Speech Communication)*

In the thirty years since *Roe v. Wade* (410 U.S. 113), the pro-life and pro-choice movements have developed very distinct platforms. This project examines the women who have not been spoken to or have not been heard in this heated debate. Often times, proponents of either argument ignore the influence issues of class and culture have on women making the abortion choice. Access to information, or lack thereof, is a common factor in making women feel as though they are choosing the pro-life or pro-choice argument against their will. Capitalizing on this factor, the two extreme arguments have ignored a large segment of women. By researching the rhetoric in print ads, media, and public addresses of both the pro-choice and the pro-life movement, I will show how many women have been forced to identify as pro-choice or pro-life for lack of more appropriate options.

THE HAIR WE WEAR

Jenny Ellsworth, Jessica Fuhrer (Speech Communication)
Nanette Johnson-Curiskis, Faculty Mentor
(Speech Communication)

Several aspects of physical appearance can impact the nonverbal messages people send to others, including hair. This study examined how much a person's hair color and hair style affect impressions and perceptions that are formed. Surveys were administered asking people to match personality characteristics with pictures of different hair colors and styles, and the data was analyzed. The main purpose of the study was to determine if people share the same perceptions and impressions based on hair, or if different people form differing perceptions and impressions.

INTERPERSONAL COMMUNICATION AS AN ONLINE COURSE

Darrell Niemeic (Speech Communication)

*Nanette Johnson-Curiskis, Faculty Mentor
(Speech Communication)*

Currently, Interpersonal Communication is taught as a traditional course in the Speech Communication Department of Minnesota State University Mankato. In light of heavy student demand, enrollment, and diminishing resources, it is reasonable to assume an online delivery system would be beneficial to the Speech Communication Department and to the University. This study examined the effectiveness of teaching a course which involves interpersonal skills and theories as an online experience. The methodology included a literature review reflecting research and practice related to online IPC courses. Interviews with and surveys of students and faculty who were involved with online courses at other institutions were included. This presentation will highlight a course proposal including a course syllabus, course outcomes and objectives, course materials and resources, assessment procedures, weekly lesson plans, questions for online discussions, and proposals for term projects and papers.

AN APPLICATION OF LOGISTIC REGRESSION IN ESTIMATION AND PREDICTION

William Baumann, Herbert Heien

(Mathematics & Statistics)

Mezbahur Rahman, Faculty Mentor

(Mathematics & Statistics)

Logistic regression is used in categorical response variable models. The explanatory variables could be categorical or in a continuous scale. Often, parameters are estimated and goodness-of-fit are studied in logistic models, but the ultimate usefulness of a logistic model depends on the prediction rule of the categorical response. Here we revisit all four aspects of the logistic regression using a data set. The four aspects are parameter estimation, goodness-of-fit of the model, prediction rule, and marginal effect of the factors.



EXPLORING THE SPATIAL DISPERSION OF SUB-TERRAIN LIQUIDS

Elizabeth Sedgwick (Geography)

Cecil Keen, Faculty Mentor

(Geography)

The monitoring and prevention of subterranean pollution is becoming increasingly important, as ground water is a resource of limited potential. This study integrates multiple data sets into a visualization program for a three-dimensional depiction of the behavior of pollutant plumes through time and space. The data, which is comprised of the porosity of the underlying geologic structure, the chemical composition of the pollutant, water table height and location, and the flow direction of the groundwater, has been assembled to simulate a spill using a hypothetical location and pollution event. The visual model that resulted showed a variety of interactions, and greatly enhances the understanding of the complex reactions that occur in underground dispersion. It is anticipated that this project would be useful and usable by emergency management officials.

A REGIONAL ANALYSIS OF RADON LEVELS IN SOUTHERN MINNESOTA

Michael Shores (Aviation/Geography)

*Cecil Keen, Faculty Mentor
(Geography)*

This study designed and developed a database containing radon test data collected by the Brown-Nicollet Community Health Service in St. Peter, Minnesota. This database was then used to create maps enabling a spatial analysis of radon levels in the tested areas. Database values were exported into a GIS (Geographic Information System) application where addresses were geocoded. These geocoded points will be used to assess geographic patterns in radon levels. These points also contain critical building construction information that may reveal other patterns leading to elevated levels of indoor radon levels. MSURP (Minnesota State University Radon Project) has collected data and begun a spatial and temporal analysis of their findings. The database created by this study augments the existing MSURP database by the addition of a five-county area. This greatly enhances the authenticity of MSURP's findings and will be presented to the Minnesota Department of Health for inclusion in state-level radon level analysis.

RADON IN SOUTHERN MINNESOTA

Shawn Wahnoutka (Geography)

Cecil Keen, Faculty Mentor

(Geography)

Concentrations of radon vary widely across Southern Minnesota due to the thickness and variations of glacial deposits. Thus, depending on where houses are located, radon levels can be found to vary greatly in relatively short distances. The Minnesota State University Radon Project (MSURP) has been monitoring radon levels throughout Southern Minnesota since the start of 2001. Professionally trained students have sampled over 300 residences and collected not only radon levels, but also information about the house, its structure, and its geological location. The location information is collected with a GPS receiver so that it can be entered into a GIS database. This presentation will focus upon the various correlations that were found between radon levels, locations, and house structures.

PATTERNS IN INCIDENCE OF TUBERCULOSIS IN MIDWEST PREHISTORIC POPULATIONS

Jamie Johnson (Anthropology)

*Kathleen Blue, Faculty Mentor
(Anthropology)*

Tuberculosis is an infectious disease that if not treated early, attacks the organs of the human body, including that of the skeletal system. The objective was to document the incidence of tuberculosis in Midwest prehistoric populations and ascertain factors impacting incidence. Data regarding incidence was obtained from previously described populations. My research determined that three factors: geographic location, subsistence strategy, and population density impact the incidence of tuberculosis. Comparison of the data from the populations suggested tuberculosis incidence varies with increases in population densities, intensification of agricultural practices, and distance from large ceremonial and urban centers.

STANDARDIZED ESTIMATION OF TECHNOLOGY IN CULTURAL SYSTEMS

Gary Kaunonen (Anthropology)

Kathleen Blue, Faculty Mentor

(Anthropology)

In order to assess the technologic viability of a cultural system, a cultural system's analysis is predicated on treating the cultural system as a specific behavioral organism. In treating a specific cultural system as a behavioral organism, the analysis of the overt behavior of the cultural organism is possible according to the principles of behavioral analysis. In order to analyze the level of technology present in a cultural system, a standardized estimation of technology (SET) equation analyzes the overt variables of a cultural system's population, spatial population density, and environmental surroundings to ascertain the technologic level needed to sustain a specific cultural system in a given spatial area. The technologic adaptation of a cultural system to sustain or raise their carrying capacity ultimately decides the successful transmission or failure of any cultural system. The research objective of creating an SET for a cultural system will be to plot the cultural system's SET on a scatter plot and analyze the data.

INFANTICIDE AND ABORTION: DIFFERENT RESPONSES TO SIMILAR CIRCUMSTANCES?

Kristina Lillie (Anthropology)

*Winifred L. Mitchell, Faculty Mentor
(Anthropology)*

Anthropologists report that infanticide is a culturally accepted practice in many societies. However, societies that practice infanticide have strict rules about the circumstances under which it is acceptable. Infanticide is most often a culturally accepted practice among non-industrialized societies. Industrialized societies frown on infanticide; for most industrialized societies induced abortion is culturally accepted under certain circumstances. I will guide you through the similarities and differences in the circumstances that lead to the acceptance of infanticide in non-industrialized societies or the acceptance of abortion in an industrialized society.

THE 2002 WORLD CUP AND INTERNATIONAL TECHNICAL COMMUNICATION

Tim Kirk (Management Information Systems)

Lee S. Tesdell, Faculty Mentor

(English)

In this research project we explore the following research question: Does soccer play a unifying role in the world or does it serve to emphasize nationalism? It is common wisdom that soccer, the world's most popular sport, brings the people of the world together. In our research we analyze the authentic discourse gathered through multiple interviews at the 2002 World Cup in Daegu, Korea, and attempt to explain the international technical communication tensions behind these competing ideas: soccer as a unifying force or as a force for nationalism. Our sources consist of three types of documents: the audio tape of interviews with people who attended the 2002 World Cup in Daegu, Korea, a number of photographs from the 2002 World Cup, and published articles, reviews, and news stories about the 2002 World Cup. In our data analysis we will carefully examine our sources and then reach conclusions about our research question based on the evidence that we find in our data sources.

GENESIS: THE PROBLEM WITH ORAL TRADITION

Kathryn Sween, Jennifer Owen, Melissa Stauffer,
Josephine Belina (English)

*Mary Susan Johnston, Faculty Mentor
(English)*

This presentation examines the many misconceptions about the first book of the Bible. Few people realize that there are two different Creation accounts as well as two accounts of the Great Flood. Even fewer people are aware that the flood tradition is not original to Genesis. The purpose of this presentation is to demonstrate and acknowledge the differences between accounts and to look at reasons why the separate accounts are rarely recognized. The possibility of plagiarism within the Book of Genesis will also be discussed using examples of Mesopotamian literature.



CLAUDE MONET, PIONEER OF IMPRESSIONISM

Jeannie Campe (English)

*Mary Susan Johnston, Faculty Mentor
(English)*

This project examines Claude Monet and his impact of Impressionism. Monet, more than any other artist, is responsible for the public image of Impressionism that we see today. He founded the art form and even inspired the very term itself. Monet's numerous studies of changing light and atmosphere show how he stayed true to Impressionism throughout his entire career, even though many painters moved on to new styles. He once said that, "he wished he had been born blind and then had suddenly gained his sight so that he could have begun to paint...without knowing what the objects were that he saw before him." His dedication to his work and his style helped to eventually develop Modern art.

SERVICE-LEARNING ASSESSMENT

Julie Sergot, Jeanne Zwart

(Urban and Regional Studies Institute)

William Bernhagen, Faculty Mentor

(Urban and Regional Studies Institute)

The purpose of this research project is to determine student response to Service-Learning and the effectiveness of Service-Learning at Minnesota State University Mankato. Service-Learning is a combination of classroom learning, volunteering, and reflection on what you have learned. This project will discover if Service-Learning programs at MSU are: creating a productive learning experience, creating a preferred learning experience for students, promoting civic engagement and leadership, building student civic awareness, promoting greater involvement, and affecting men and women differently. The data will be attained through a survey process involving a random student sampling from all of the Service-Learning courses offered at MSU. The results will either reveal that Service-Learning is an effective tool or, if not, will provide insights to improve the program.

A STUDY ON THE HOUSING EXPERIENCES OF SOMALI IMMIGRANTS IN MANKATO

Sharifun Syed (Urban and Regional Studies Institute)

Janet Cherrington-Cucore, Faculty Mentor

(Urban and Regional Studies Institute)

This research focuses on the difficulties faced by Mankato's Somalia people during the process of settling and assimilating in a new society, as well as their housing and employment preferences. Most of the Somali population does not own a home; nor do they feel confident about buying a home. Institutional personnel in Blue Earth County offices were interviewed. Some stated that the Somali people prefer to live in apartments rather than independently-owned housing; the primary reason was Somali's prefer not to do lawn mowing, snow shoveling, and other kinds of residential maintenance work. Language is a great assimilation barrier, and most of the adults attend ESL courses. The majority of Mankato's Somali immigrants live on welfare benefits. Those who are getting housing assistance are content with their present domiciles. However, those who are on housing waiting lists find it difficult to pay rent. Most of the Somalia people interviewed indicated that they prefer to live in the urban areas, and none were willing to purchase a home. Because of religious beliefs, Somali's are unwilling to pay the interest on a loan. Finally, they reported that only when they secured a permanent job would they consider purchasing a house or an apartment-type unit.

INDEX OF STUDENT AUTHORS

Ahmed, Durre	17, 51
Ahmed, Qurrat	17, 51
Armendariz, Catherine	64
Bashir, Luai	53
Batty, Mitch	49
Baumann, William	75
Beecher, Lorrin	10
Belina, Josephine	83
Bernt, Guy	9
Berry, Shawn	52
Bjerke, Aja	59
Bohning, Jaimee	72
Bredemus, Nick	8
Campe, Jeannie	84
Carson, Christina	64, 66
Case, Jeff S.	54
Chapman, Renee	12
Christensen, Sonja	60
Conrad, Christen	65
Dahl, Brady	24
Dauer, Nikki	24
Davis, Miranda	65
Doelger, Sara	64
Ebensteiner, Sarah	57
Ellsworth, Jenny	73
Flores, Shirley Nieto	46
Flowers, Adam	10
Fogal, Mitchell J.	27
Fuhrer, Jessica	73
Haala, Janice	61
Hadfield, Chris	11
Hang, Wu	16
Harmon, Sarah	39
Heien, Herbert	75
Higgins, Thomas	31
Hoffman, Esther	24
Holicky, Jason	10
Holmgren, Brian	55

INDEX OF STUDENT AUTHORS (continued)

Ito, Eri	25
Jensen, Lisa Loree'	58
Jilek, Benjamin	18
Johnson, Jamie	79
Johnson, Laura	32
Jones, Allison	33
Kaiser, Heather	44, 47, 49
Karino, Emi	65
Kaunonen, Gary	80
Khasay, Hadas	17
Kirk, Tim	82
Kirkpatrick, Danielle	28
Kissling, Macy	34
Kottschande, Don	9
Kruchoski, Peter	8
Kunkel, Bethany	35
Kutchma, Teresa	56, 69
Kuyper, Chad	44, 49, 50
Larson, Chad	23
LaRue, Dale	11
LaRue, Michelle A.	20
Leppi, Shannon	64, 66
Lidel, Chris	9
Lillie, Kristina	81
Listine, Kris	24
Loen, Suzanne V.	45, 48
MacKenzie, Philip	24
Madsen, Laura	62
Maki, Nick	8
McKee, Karri	13, 30
Merlini, Paul	14
Mickelson, Andrew	7
Mundahl, Nicole	68
Ndjarakana, Veseuako	7
Nelson, Elizabeth	36
Niemeic, Darrell	74
Owen, Jennifer	83
Palm, Pete	9

INDEX OF STUDENT AUTHORS (continued)

Peck, Ryan	29
Peltola, Justin	29
Penner, Hilary	65
Perez, Corey	69
Posner, Amy	71
Radtke, Ian R.	67
Rick, Rebecca	43, 49
Saba, Cynthia	42, 49
Sambu, Meshack	63
Samuel, Alfred	7
Sandberg, Kristin	38, 39
Sanderson, Mark	9
Sandlin, Matt	8
Schindle, Samantha	65, 66
Sedgwick, Elizabeth	76
Sergot, Julie	85
Shores, Michael	77
Sokwalla, Sidik	21
Stauffer, Melissa	83
Stewart, Justin	30
Stutsman, Tom	41
Sullivan, Steve	40
Sween, Kathryn	83
Syed, Sharifun	86
Takezaki, Masae	19
Traetow, Tracy	70
Uilk, Tyler	7
Volz, Emma	22
Vroman, Allison	24
Walker, Gretchen	71
Whitcomb, Jamie	37
Wilkie, Jason	11
Woelfel, Damian	26
Wohnoutka, Shawn	78
Wurdak, Jessica	15
Zwart, Jeanne	85

INDEX OF MENTORS

Allen, Wayne	53
Bernhagen, William	85
Blue, Kathleen	79, 80
Cherrington-Cucore, Janet	86
Contag, Kimberly	46
Coons, Lisa	13
Cronn-Mills, Daniel	44, 45, 47, 50
Eskridge, Paul	67
Groh, Brian	30
Haglin, David J.	52, 54
Hardwick, Elaine O.	19, 21
Hargrove, Patricia	64, 65
Hart, Marilyn	18, 29, 59, 61
Hoppie, Bryce	31
Johnson-Curiskis, Nanette	72, 73, 74
Johnston, Mary Susan	83, 84
Jones, Bruce	7, 8, 9, 10, 11
Kawatra, Rakesh	17
Keating, Barbara	41
Keen, Cecil	76, 77, 78
Klammer, Sarah	51, 57
Klosa, Brian	49
Knoblich, Penny	62
Krawczyk, Rosemary	32, 39, 68, 70
Labairon, Cassandra	24
Lindberg, Martha	57
Mahoney, Alison	23
McMillan, Brock R.	20
Mitchell, Winifred L.	25, 58, 81

INDEX OF MENTORS (continued)

Perdomo, Edison	14, 15, 33, 34, 35, 36 37, 38, 39, 40, 56, 69
Perry, Lisa	42, 43, 48
Poburka, Bruce	66
Proctor, Bertha	22
Rahman, Mezbahur	75
Rife, James E.	12
Ruhland, Christopher T.	27, 60
Salerno, Theresa	28
Scullin, Michael	26
Tesdell, Lee S.	16, 82
Visser, Mary	55
Wise, James	71
Wrigley, Dorothy	63

Key to Information Provided:

Title of Presentation

Name of Student (Student's Major)

Name of Faculty Mentor (Mentor's Department)

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