Poster Session # 1 — Washburn Room A
2:30 p.m.— 3:30 p.m.

2 ***Sociality in Captive Orangutans and the Effects of Increasing Habitat Space***

Beverly Fox
Mentor: Joanne Altman, Psychology

This study examined the effects of changes in habitat space for a group of five captive orangutans at the Topeka zoo. In the wild orangutans are not social animals but are housed in social groups in captivity. These orangutans were given access to a larger outdoor exhibit. The orangutans were observed in both the smaller indoor enclosure and the larger outdoor exhibit. Sixteen behaviors were observed and recorded using a scan sampling technique. The data show no decrease in the social behaviors with the change to the outdoor exhibit. Three of the five animals showed an increase in social behaviors in the outdoor exhibit.

4 ***A comparison of the effects of higher carbon dioxide levels on photosynthetic processes within the cacti.***

Brian Holloway
Mentor: James Landrum, Biology

The cacti live in many climates, but most species are dry-adapted. One adaptation is the type of leaf present; primitive cacti still retain their leaves, whereas more modified cacti have reduced the overall size but increased the surface area to volume ratio of the leaves. Since carbon dioxide levels continue to increase, one question is how plants in general will adjust to these higher levels. This investigation explores how higher levels of carbon dioxide impacts the process of photosynthesis among three species of cacti, and discusses how to apply these results to other plant species.

6 ***Facial Fluorescence Patterns in Drosophila as Markers of Speciation Events and Mating Behavior.***

Dionne Jeroue
Mentor: Thomas Wolf, Biology

The Washburn University Drosophila research group has been investigating the autofluorescence facial patterns of Drosophila melanogaster. We have found these patterns are different in D. melanogaster, D. simulans, and D. virilis. We hypothesize that each species has a unique facial fluorescence pattern which is related to mating behavior and potential speciation events. Members of closely related species should have greater similarities in these patterns than more distantly related species. We hypothesize that if these patterns are important in speciation, then those species more distantly related should have greater differences in facial fluorecence patterns.

9 ***The Effect of Time of Test on Judgments of Learning for Paired-Associates***

Blaine D. Landis
Mentor: Michael McGuire, Psychology

The effect of perceived retention intervals (15 minutes, 1 day, or 1 week) on the magnitude and accuracy of judgments of learning (JOLs) was examined. Judgments of learning are a type of metacognitive judgment used to measure subjective confidence levels about future memory recall performance. Researchers hypothesized that JOLs would vary as a function of when the participants believed they would be tested, and also attempted to replicate the "Delayed JOL-Effect" under different circumstances.

12 ***Entrepreneurial Clinic Project: Campus Coffeehouse***

Ty Walrod, J. Paul Arterburn, Sara Wallace
Mentors: Gary Schmidt, Computer Information Sciences
Michael Stoica, School of Business

This is a learning experience detailing the steps necessary to bring a campus coffeehouse to Washburn's Campus. It will explore the phases from beginning ideas, through developing a strategy, setting goals, surveying students, studying product lines, forecasting financial statements, and developing a viable business plan from said research.

15 ***Literature Review of Factors Effecting Judgements of Learning***

Clinton D. Meyer
Mentor: Michael McGuire, Psychology

Metamemory is one's knowledge, awareness, and control of memory processes. A person's metamemory judgements are predictions concerning their memory performance, one type is referred to as Judgements of Learning (JOLs). Nelson and Dunlosky defined JOLs as predictions of memory performance of recently learned information (1991). This work reviews empirical studies investigating the influence of JOLs, which include the

history of research, approaches to analyzing, methodological factors, and applications. Early researchers investigated the relationship between predictions and recall. They established that accuracy is better than chance in JOLs from Arbuckle and Cuddy (1969); Zechmeister and Shaughnessy (1980); King, Zechmeister, and Schaughnessy (1980); and Vesonder and Voss (1985). Recently more specific factors have been verified from Mazzoni, Cornoldi, and Marchitelli (1990); Nelson and Dunlosky (1991); and Kimball and Metcalfe (2003). It appears that the nature of material being studied, analysis used, and procedure all influence JOLs.

17 ***Video presentation of Mercury, Venus, Mars, Saturn, and Jupiter as seen from Crane Observatory***

Chad Christopher Sparks
Mentor: Karen Camarda, Physics

My presentation is based on a thorough analysis of the five naked eye planets; Mercury, Venus, Mars, Saturn, and Jupiter. The presentation will cover various topics about the five planets, such as when they are visible during the year, why they are visible, their brightness, and why we can see them so well from Earth. I will use a television to display VHS footage of the planets that my associate and I shot recently. I also intend to have some information on the equipment I used to capture the planets in a VHS format along with the camera itself as a display. I would like to thank Brenda Culbertson for her help on this project.

18 ***Auditory Localization in Two Dimensional Space***

Amy L. Schneider
Mentor: Michael Russell, Psychology

Most auditory studies on the perception of sound location have involved a single dimension. The present study sought to investigate auditory localization in two dimensional space. In the present study, participants were randomly assigned to one of two conditions. The first condition required participants to walk to the sound source after the sound was played. The second condition required participants to simply verbally report sound source location using feet, inches, and degrees. An analysis of variance was performed on three dependent variables: condition (verbal or walking), dimension (X or Y), and source location (angle and position). The results showed a significant difference between verbal and walking conditions on all three dependent variables for both signed and absolute error data.

20 ***Autofluorescence Genitalia Variation In Different Drosophila Species***

Joy D. Spicer
Mentor: Thomas Wolf, Biology

Work in this laboratory has demonstrated the presence of naturally occurring ultra violet (UV) autofluorescent patterns in the head of Drosophila, as well as in the abdomen and reproductive tracts Strong phototactic responses such as abdomen curling and the opening of the genital apertures in both males and females has been observed under UV stimulation. These flies see in the near-UV range. Mating behavior in these Dipterans involves various stereospecific behaviors in the mating dance. Besides face-to-face meetings, the dance involves the male moving behind the female and engaging in genital licking prior to copulation. Previous investigations from this laboratory into genitalia fluorescence have shown a difference between D. melanogaster, D. simulans and D. virilis. This current investigation involves studying the genital fluorescence of multiple in- and outgroupings of Drosophila melanogaster. The hypothesis is that ingroups should have greater similarity in genital fluorescence than outgroups, if this fluorescence is important in the mating behavior of these flies. Such differences in genitalia fluorescence has been found in some species and is presented in this work.

21 ***Methodology for the N-Alkylation of Cyclic Urea***

Joy D. Spicer
Mentor: Shaun Schmidt, Chemistry

This model was undertaken to investigate the bis- -alkylation of cyclic urea. Cyclic urea was used as a form of protection of amines towards over alkylation in the formation of tetraazamacrocycles, cyclen and cyclam. Tethered dimers of cyclen and cyclam are entry inhibitors for human immunodeficiency virus type I (HIV) and have offered a powerful resource in anti-retroviral therapy. There is a need for the cost effective synthesis of these pre-cursor tetraazamacrocycles. Use of 1-bromobutane and 2-imidazolidone formed both N-butyl-2-imidazolidone and -dibutyl-2-imidazolidone, indicating a cyclic urea could be used as a form of protection of amines towards over alkylation in the formation of cyclen and cyclam, but continued increase in percent yield is needed for this methodology to be transferred over to the synthesis of tetraazamacrocycles.

22 ***Effects of stem and leaf extracts of the common hollyhock on brine shrimp, fungal, and bacterial cultures.***

Christina Teasley
Mentor: James Landrum, Biology

Studies have shown that flower extracts from the common hollyhock have an anti-estrogen effect, but extracts from stems and leaves have not yet been studied. Other studies have shown that compounds that kill brine shrimp are also effective on certain human cancer cell lines. In this investigation, stem and leaf extracts were isolated and tested for toxicity on brine shrimp first; if toxicity was present, further tests on E. coli (a bacterium) and Aspergillus nigra (a fungus) were performed. Results showed that compounds isolated from hollyhock stems and leaves were effective in killing brine shrimp, but limited in their toxicity against E.coli and Aspergillus.

24* ***As Math Goes On: Euclidean to Taxicab: An Evolution of Geometry***

Kenneth D. Beck
Mentor: Patricia Mower, Mathematics & Statistics

Seven students currently enrolled in a course titled “History of Mathematics” present creative and informative timelines of mathematical concepts or fields of mathematics. This project has been a course requirement; however, these seven students went beyond the original assignment by researching their chosen mathematical topic in depth, and in the process became an expert on the history of their chosen topic. Each student then created a unique and subject-related format for his or her timeline which depicts the invention or discovery, and all significant stages and events in the evolution of each topic. As most of these students will soon be teachers, several plan to use the timelines in future classrooms. (*Poster sessions 1 and 2.)

25* ***As Math Goes On: Tessellating through Time***
Stephanie M. Herbster
Mentor: Patricia Mower, Mathematics & Statistics

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27* ***As Math Goes On: History of Game Theory***
Melissa A. Fast
Mentor: Patricia Mower, Mathematics & Statistics

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28* ***As Math Goes On: Women in Mathematics***

Jenifer A. Meier
Mentor: Patricia Mower, Mathematics & Statistics

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29* ***As Math Goes On: Zero: The Alpha and Omega***

Chaid D. Schwarz
Mentor: Patricia Mower, Mathematics & Statistics

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30* ***As Math Goes On: Infinity: The Symbol and Beyond***

Dustin R. Watson
Mentor: Patricia Mower, Mathematics & Statistics

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31* ***As Math Goes On: History of Mathematical Symbols***

Branton K. Davis

Mentor: Patricia Mower, Mathematics & Statistics

Seven students currently enrolled in a course titled "History of Mathematics" present creative and informative timelines of mathematical concepts or fields of mathematics. This project has been a course requirement; however, these seven students went beyond the original assignment by researching their chosen mathematical topic in depth, and in the process became an expert on the history of their chosen topic. Each student then created a unique and subject-related format for his or her timeline which depicts the invention or discovery, and all significant stages and events in the evolution of each topic. As most of these students will soon be teachers, several plan to use the timelines in future classrooms. (*Poster sessions 1 and 2.)

33 ***The Washburn Writers Program***

Dennis Etzel Jr., Gary Jackson, Ustaine Talley, Kevin Wohler

Mentor: Margaret Stewart, English

An overview of the activities of the Washburn Writers Program, highlighting the work of freshmen mentored by Washburn Writers.

34 ***The Publication of "Inscape 2004"***

Daniel Newton, Dan Gillenwater, Dennis Etzel Jr., Jayme Adkins, Moriah Beagel, Janet Terhune, Tulora Roeckers, Monica Oxford, Genitha Clarke, Lynda Taylor

Mentor: Amy Fleury, English

The editors of "Inscape" magazine are proud to present a poster presentation of the publication process of "Inscape 2004." Inscape is a student edited literary magazine that features works by Washburn students and faculty as well as writers from the Topeka community and around the nation. The editors of "Inscape" are responsible for selecting the works and the cover art that make up the magazine as well as selected works of their own to add to the magazine. The poems and prose selected for the 2004 edition of the magazine were selected from over forty-five packets of submissions. The editors of "Inscape" feel that the 2004 edition will be an enjoyable issue to read and a great example of the strong literary scene in the Midwest.

38 ***Comparison of the effects of higher carbon dioxide levels on the photosynthetic process in three families of succulents within the Order Caryophyllales.***

Ashley Alderfer

Mentor: James Landrum, Biology

Many members of the Order Caryophyllales have adapted to dry climates. Representative species of three succulent families within this order, Aizoaceae, Cactaceae, and Portulacacea, will be exposed to high levels of carbon dioxide in order to determine the effects on the photosynthetic process. Since carbon dioxide levels continue to increase, one question is how plants in general will adjust to these higher levels. This investigation explores how higher levels of carbon dioxide impacts the process of photosynthesis among three succulent families.

40 ***Computer Information Sciences Data Mining and Knowledge Games***

Neal Fultz
Mentor: Cecil Schmidt, Computer Information Science

This paper investigates the use of data mining tools to solve knowledge games. In knowledge games, such as Clue(do), players work to deduce hidden information through deductive reasoning. Data mining tools are often used to discover a complete set of knowledge from an incomplete set, and so we can apply them to knowledge games. We logged common knowledge from games of Clue, and tested that data against a complete set using NaÔve Bayes, C4.5, OneR, 1-Nearest Neighbor, and customized classifier. In general, the stock classifiers over-fit the data while the custom one did not.

41 ***Characteristics of Enterococci Isolated from Public Places***

Cara C. Copp
Mentor: Ronald Ash, Biology

Enterococci, normal inhabitants of the gatrointestinal tract, have become recognized as important nosocomial pathogens. The present study was undertaken to determine the prevalence and properties of enterococci in public rest rooms. Swabs moistened in LB medium were used for sampling toilet seats. Samples were inoculated into an enrichment broth or directly on bile esculin azide agar. Both methods gave the same results: 17% of the 639 seats sampled yielded enterococci. PCR demonstrated that 76% of the isolates were E fecalis and 17.5% were E. faecium. Two virulence factors were identified: cytolysin and gelatinase (Gel). The cytolysin was determined by plating isolates on Todd Hewitt (TH) agar containing 5% horse blood. Only 2% of the organisms were beta hemolytic. Gel activity was determined by inoculation of TH broth + 3% gelatin. Many of the isolates (47%) possessed Gel activity. Isolates resistant to vancomycin or ampicillin were not found. The results suggest that enterococci in public places probably do not pose a significant public heath threat.

44 ***Effects of Goal Setting on Types of Goals and Level of Experience in the Athlete***

Nicole (Niki) L. Zerr,

Mentors: Park Lockwood, Health, Physical Education, Exercise Science
Dave Provorse, Psychology

The experiment divided students into four categories including: experienced athlete with a short term goal, experienced athlete with a long term goal, inexperienced athlete with a short term goal, and inexperienced athlete with a long term goal. The experiment was conducted fall of 2003 in a lifetime wellness volleyball/basketball course. The results were recorded, analyzed, and reported to test the hypothesis that experienced athletes with short term goals would improve the most in successful overhand volleyball serves throughout the semester.

46 ***Effects of Losing Loved Ones on the College Students' Perspective of Death***

Susan C. Jobe
Mentor: Laura Stephenson, Psychology

Losing a loved one to death is a common experience. Encountering the demise of someone close may clarify a person's ideas about death. The present study examined the relationship between the experience of death of a loved one and thoughts on death in a sample of college students. It was hypothesized that students who had experienced the death of a loved one would score lower on measure of death anxiety and death depression. It was also hypothesized that the death of a loved one would be associated with higher scores on a measure of symbolic immortality. Although there were no differences between groups on death anxiety and symbolic immortality, contrary to the hypothesis, students who had experienced the death of a loved one reported greater death depression. Aspects of death depression contributing to this difference were explored and discussed.

47 ***Development of a RAPD-based Genetic Profile of the Brown Water Snake, Nerodia taxispilota***

Jay Reed
Mentor: John Mullican, Biology

In an effort to better understand the biology of the brown water snake, Nerodia taxispilota, 129 blood and 147 tissue samples were collected from wild and captive-born snakes for molecular analysis. Gravid females were captured in or near the Savannah River Ecology Laboratory in Aiken, South Carolina and taken to the laboratory to give birth. Samples were collected from the mother and all living offspring. Genomic DNA from these samples was extracted, purified and analyzed for quality and relative quantity by agarose gel electrophoresis. DNA samples were then subjected to random amplified polymorphic DNA (RAPD) PCR using short (10 bases or 10-mers) random

oligonucleotides to produce genetic profiles. The data presented here represent an initial characterization of several samples using a number of these 10-mers. We are continuing to characterize up to 40 different oligos, either individually or in combination with others, until we produce reliable DNA profiles that are easy to assign genotype. These genetic profiles will be useful in a variety of studies. Profiles from the mothers and their offspring will permit the inference of a paternal genetic profile and could be used to determine if multiple paternity occurs in this species. Furthermore, profiles of individuals known to be related will be compared to the profiles of unrelated individuals to identify kin-specific markers unique to each clutch. This will permit the development of a quick and sensitive test that can easily and reliably assign genotypes of individuals in wild populations. In addition, the procedures developed in this study would not be limited to snakes but could be applied to many other organisms as well.

49 ***Cibachrome Photographic Printing***

Joshua C. Mishler
Mentor: Mary Wanless, Art

I have been experimenting with the color photographic process of paper developing known as Cibachrome. The source for the image is a color transparency positive (or color slide). In the Cibachrome process, three silver halide layers are sensitized to react to blue, green and red light respectively. The blue layer contains yellow dye, the green layer magenta dye, and the red layer cyan dye. Unlike conventional color photographic processes in which dyes are formed from color couplers during processing, Cibachrome papers utilize pure stable azo dyes which are incorporated into the layers during manufacture. These azo dyes provide excellent color saturation, superior image stability, and maximum sharpness, all of which enhance and complement my subject matter of antique automobiles."

51 ***Offender Criminology: A Student Reflects Upon His Former Acts of Deviance***

John Otti
Mentor: John Paul, Sociology – Anthropology

The American social landscape is dominated by crime. Specifically we are consumed by a talk of it, a fear of it, and a desire to control it. But said discussions and prevention applications are often dominated by academics or government consultants. Rarely do we engage the offender's voice in issues of crime causation and crime control. This work takes the opposite stance. The author argues that the field of criminology can be strengthened by seeking an "inside perspective" on crime. In this fashion, the author advocates an 'Offender Criminology' — the empirical work of convicts or ex-convicts in order to foster a broader understanding of crime creation as well as its containment.

53 ***The Effects of Attitude Similarity and Physical Attractiveness on Desire for Relationships***

Jessica Bergmann, Laura Hilberg, Katie Witham
Mentor: Joanne Altman, Psychology

People have long been interested in the factors underlying attraction to others. This study examined the effects of physical attractiveness and attitude similarity on desirability for relationships. An attitude survey was administered to 170 college students. Based on the surveys, researchers created a "bogus stranger's scale" for each participant, with either similar or dissimilar answers. Attached to each scale was an attractive or less attractive photograph of a person of the opposite sex. Participants rated the bogus stranger on liking, working, dating, and marrying. Main effects were found for similarity and attractiveness for all dependent variables. Both main effects and interactions were found regarding gender. An understanding of the factors underlying attraction helps one make wiser future relationship choices.

Poster Session # 2 — Washburn Room A 3:45 p.m.— 4:45 p.m.

1 ***Data Analysis: Predict Performance of Masters Class Athletes***

Jared P. Dyche
Mentor: Cecil Schmidt, Computer Information Sciences

Every year more lifelong athletes reach the master's level (over 50). These are individuals who have dedicated a large portion of their time to preparing for events such as the 5k, 10k, and marathon races. In theory at least, these men and women are in the peak of physical condition for their age group, and they are capable of accomplishing feats of physical endurance that many who are younger and therefore supposedly "more fit" individuals would find nearly impossible. These master's level athletes have the drive to test their limits against others, to push their bodies to the limits in order to find out just how good they are. This performance information should generally be predictable given enough history or examples. Moreover, a system should only need a few variables to make such a decision. In this research we endeavor to develop such a system.

3 ***Differences in D. melanogaster facial fluorecence intensities in flies from Evolution Canyon***

Ashley Elizabeth Hisel
Mentor: Thomas Wolf, Biology

Evolution Canyon in Mount Carmel, Israel may be a site of sympatric evolution. Opposite slopes of the canyon, which at its widest is only 400 meters across, display different environments. The south-facing slope is warmer and drier, with little

vegetation, while the north-facing slope is cooler and wetter, relative to the south-facing slope, with more vegetative growth. Previous research in our lab has shown female mating preference for males from the same slope. This mating preference may be attributed to many factors, including behavioral cues, olfactory prompts, as well as auditory and visual signals. Research of this lab has focused on fluorescent patterning in D. melanogaster and other species. Fluorescence has been found in the face, abdomen, and genitalia. This research as focused on the differences in facial fluorescence intensities among groups of D. melanogaster from each slope and subgroups within the same slope. Photographs of the facial region have been taken and the intensity of the fluorecence analyzed. Initial data indicates groups and subgroups differ from each other in facial fluorescent intensities. Mating studies on hybrid canyon subgroups of D. melanogaster are being done. This research explores the role of facial fluorescent intensity in the development of potential speciation of groups from different sides of the canyon.

5 ***Synthesis of Alkenes by the Wittig Reaction Using Cesium Fluoride as Base***

Vilayphone Luangraj, Deena Carmona
Mentor: Sam Leung, Chemistry

The Wittig reaction is an important chemical reaction that converts ketones and aldehydes into alkenes. In this research project, experimentation with different phosphonium salts was conducted using various amounts of the salts and cesium fluoride to determine the minimal amount of each needed to convert aldehydes into alkenes.

7 ***-Alkylation of 2-Imidazolidone and Tetrahydro-2-Pyrimidone: A Problem of Solubility***

Kevin Patrick Kent
Mentor: Shaun Schmidt, Chemistry

Cyclam and cyclen are used in AIDS and coordination chemistry research. The synthesis of cyclam and cyclen using a base to deprotonate tetrahydro-2-pyrimidone or 2-imidazolidone, and -alkylating the molecules with 1 2-dibromoethane is being investigated. Another tetrahydro-2-pyrimidone or 2-imidazolidone was then attached and the carbonyl groups were removed. In order to find optimum conditions for this reaction a model study with 1-bromobutane was attempted. Attempts were made to alkylate both tetrahydro-2-pyrimidone and 2-imidazolidone using 1-bromobutane. Sodium hydride, carbonates, and hydroxides were used as bases and tetrahydrofuran, acetonitrile, or water as the solvent. Some solid-state reactions were also attempted.

10 ***Evaluation of a sexual assault prevention program targeting male youth***

Mirna Loya, Amie Idol
Mentor: David Provorse, Psychology

Several decades of research have yet to consistently identify aspects of childhood environment and experience, personality patterns or social demographics linked to eventual adult perpetration of sexual assault. Yet, researchers and service providers maintain that the "roots" of sexual assault lie in learned attitudinal mores related to gender roles, the tolerance of violence, and deficits in self-control skills. Therefore, agreement persists that society's best hope of reducing sexual assault lies in the provision of programs targeting pre-adolescent males. The project reported here is an outcome evaluation of a school-based sexual assault prevention program that included these emphases.

11 ***Response Choices and Perception of a Moving Sound Source***

Mirna Felicia Loya
Michael Russell, Psychology

Trajectory perception using sound was investigated. The position of sound source varies and its effect on perceptual accuracy was determined. Forty individuals participated in the study. On each trial, a steel wheel was rolled down an aluminum track. The interaction between the wheel and the ramp served as the auditory stimulus for the present study. A change in the trajectory of the sound was found to affect observer perception. Interestingly, it was revealed that a slight change in the instructions provided to participants resulted in a dramatic change in the reports of observers. The importance of response task and the ability of sighted but blindfolded observers to judge the direction of a moving sound source are discussed. Different forms of feedback were also provided to the participants.

13 ***Which Feature is More Significant to Children for Facial Recognition: the Mouth or Eyes?***

Kristin E. Willis
Mentor: Pamelyn MacDonald, Psychology

Facial recognition in young children is crucial because it distinguishes familiar faces from foreign faces, which could mean the difference between friend and foe. Thirty-six children from a child care center looked at three sets of pictures, one set with no alterations, one with the eyes altered, and one with the mouths altered, of their peers. The recognition times were collected to determine which feature, the mouth or eyes, is more significant for recognition. The data analyses are in progress and will be presented at the conference.

14 ***Secretary's Messaging System***

Justin Watts
Mentor: Gary Schmidt, Computer Information Sciences

This project developed an on-line messaging system for the WU Secretarial Staff's potential usage. The system helps handle phone messages in such a way that the message can be emailed to the appropriate user. Embedded in the system is an encryption technique. The encryption technique uses binary code to manipulate values from a string to produce formulated alphabetic code that only the decoder can decipher.

16 ***Sociality In a Group of Captive Orangutans***

Jessica P. Reichle
Mentor: Joanne Altman, Psychology

Orangutans generally are a very solitary species. In the wild, they usually spend most of their time alone with the exception of a mother and her offspring. In captivity, however, the animals seem to be more social; they have been observed doing many social activities that are not common among these animals in the wild. A group of four orangutans, consisting of three females and one male, were observed at the Topeka Zoo. In this pilot study the animals were observed in both indoor and outdoor exhibits at randomized times throughout the day. A non-intrusive instantaneous focal animal scanning technique was used to observe the amount of activity and time engaged socially among the orangutans. These data will be compared to published norms for wild orangutans.

19 ***A Question of War: Psychological Characteristics and War Opinions***

Jason M. Slattery
Mentor: Barbara Bowman, Psychology

Popular theories of why we wage war include cultural, biological, philosophical, and sociobiological. However, little is known about the psychological factors that are correlated with war. In this study, psychological instruments were correlated with war opinions to find out if there was a relationship between the participants' scores on the Orientation to Life Questionnaire, the Family Environment Scale, the Glover Vulnerability Scale, the Standard Issue Moral Judgment Interview: (Form C) Dilemma V, and the participants' level of support for Operation Iraqi Freedom. Eighty-one individuals were given these questionnaires to assess their demographic backgrounds; war opinions; their sense that life is meaningful, manageable, and coherent; social-environmental characteristics emphasized in families; level of vulnerability; and degree of moral development. Initial findings suggest that only the participants' scores on the Family Environment Scale subscale Cohesion had a significant positive correlation with a high level of support for the war. Incidental data is still being analyzed.

23 ***Relativistic Jets from Accretion Flows onto a Black Hole***

Brian J. van Doren
Mentor: Karen Camarda, Physics

It is widely agreed that most galaxies contain supermassive black holes at their centers. Through observation, scientists have noted that some of these black holes actively emit high amounts of electromagnetic radiation, as well as jets of matter moving at relativistic speeds. The central process that causes these phenomena may be the accretion of matter as it falls into the black hole. To test this model, we investigate accretion flows onto a black hole using numerical simulations. Previous treatments of this problem have been done using non-relativistic physics. Our simulations use general relativistic hydrodynamics code developed by scientists at Lawrence Livermore National Laboratory. We are particularly interested in cases where a barrier of high pressure gas is created. This barrier serves to prevent other matter from falling in, which causes the matter to expand out along the polar axis to form a jet.

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Kenneth D. Beck
Mentor: Patricia Mower, Mathematics & Statistics

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Jenifer A. Meier
Mentor: Patricia Mower, Mathematics & Statistics

Seven students currently enrolled in a course titled "History of Mathematics" present creative and informative timelines of mathematical concepts or fields of mathematics. This project has been a course requirement; however, these seven students went beyond the original assignment by researching their chosen mathematical topic in depth, and in the process became an expert on the history of their chosen topic. Each student then created a unique and subject-related format for his or her timeline which depicts the invention or discovery, and all significant stages and events in the evolution of each topic. As most of these students will soon be teachers, several plan to use the timelines in future classrooms. (*Poster sessions 1 and 2.)

29* ***As Math Goes On: Zero: The Alpha and Omega***
Chaid D. Schwarz
Mentor: Patricia Mower, Mathematics & Statistics

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invention or discovery, and all significant stages and events in the evolution of each topic. As most of these students will soon be teachers, several plan to use the timelines in future classrooms. (*Poster sessions 1 and 2.)

30* ***As Math Goes On: Infinity: The Symbol and Beyond***
Dustin R. Watson
Mentor: Patricia Mower, Mathematics & Statistics

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31* ***As Math Goes On: History of Mathematical Symbols***
Branton K. Davis
Mentor: Patricia Mower, Mathematics & Statistics

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32 ***Pediatric Post-operative Pain Management***
Robert C. Fenton
Mentor: Debra Isaacson, School of Nursing

Pediatric pain management following surgical procedures is difficult for nurses to treat. The purpose of this honors project was to provide information regarding pediatric pain management to Post-Anesthesia Care Unit (PACU) nurses and Pediatric nurses. The procedure for this project consisted of doing a literature review of the problem of pain management in children, ways to help assess and treat pain, and about common

medications used to treat pain. A need for additional education was concluded from the literature review. An educational compact disk was created regarding the common myths of pediatric pain, different developmental signs of pain, ways to help accurately assess pain, and information regarding common pain medications used. The information was then presented to the PACU and Pediatric nurses by way of presentation and a computer self-study module. The results from the surveys showed that, overall, the Pediatric staff found the information useful, while the PACU staff found the information neutral.

35 ***The Effect of Environment on Activity of Captive Cotton-top Tamarins (Saguinus oedipus)***

Angela M. Burrell
Mentor: Joanne Altman, Psychology

Conservation of endangered primates, such as the cotton-top tamarin (Saguinus oedipus) has focused almost exclusively on reintroduction of captive animals to their native environments. Reintroduction of tamarin monkeys has met with low levels of success. The captive environment may play an important role in whether tamarins learn behaviors needed to survive in the wild. The captive environment has been largely understudied as to its effect on primate behavior, and thus cotton-top tamarin behavior was investigated across three different exhibits (the rainforest, the outdoor exhibit, and the indoor/outdoor exhibit). The exhibits differed in size, ability to range, access outdoors, and accessibility to the public. The tamarins were related pairs of twins housed in a family group at the Topeka Zoo. It was hypothesized that the least restrictive environment would allow for the greatest range of natural behaviors. Reintroduction efforts may need to be adapted to improve survivability of tamarin monkeys in the wild.

3**6** ***Year in School's Affect on Metacognitive Accuracy***

Angela M. Burrell
Michael McGuire, Psychology

We examined whether students' year, or grade level, in college affected their ability to accurately predict future recall performance, or judgments of learning (JOL's). Participants were randomly assigned to one of three conditions, which determined the instructions they received in the first phase of the experiment. Participants were informed they would be tested over studied material in fifteen minutes, one day, or one week. However, all participants were tested for recall in the final phase of the experiment, about fifteen minutes from the study time. This was to investigate if perceived retention intervals affected the accuracy or magnitude of participants JOL's. We hypothesized that the condition participants were assigned to would influence their JOL ratings. More specifically, we predicted that students who had a higher level of education would be more accurate in their JOL ratings.

37 ***Diagnosis Brain Tumor***

Alan Lee Ashinhurst
Mentor: Linda Croucher, Allied Health

Patients newly diagnosed with a brain tumor have a lot to think about. What is a brain tumor? Do I have cancer? What do I do next? My poster gives basic information to the newly diagnosed patient and explains many of the available treatment methods.

39 ***Influence of the perceiver-environment relation on auditory perception.***

Kathy Bullard
Michael Russell, Psychology

Previous investigations into the perception of auditory motion typically involve a sound source and perceiver who are fixed in space. Obviously, this is not what the real world is like. In the present study, the observer-sound source spatial relationship was varied and the effects of that manipulation on motion judgments were determined. The results reveal that changes in the positioning of observer and sound resulted in noteworthy changes in qualitative judgments of participants. The findings of the present study suggest that it may be useful to consider the organism and environment as a single unit. The findings also call into question the manner in which auditory motion experiments are traditionally performed.

42 ***Equine-Facilitated Learning For Youths With Severe Emotional Disorders: A Quantitative and Qualitative Study***

Carrie A. Ewing
Mentor: Pamelyn MacDonald, Psychology

The study quantitatively and qualitatively evaluated the effects of an alternative therapeutic learning method on youths with severe emotional disorders (SED). Youths from a special purpose day school participated in a nine-week equine-facilitated learning program. Research on the effectiveness of utilizing horses in the therapeutic learning process is almost nonexistent. This study encompassed three years of research on a unique program hypothesized to enhance traditional therapy and facilitate the learning process for youths with special needs.

43 ***Difference of Activity Levels Between Age and Litter Mates in the Domestic Cat***

Jessica Ann Brunton
Mentor: Joanne Altman, Psychology

This study examined the difference in activity levels between age-mates versus litter-mates of the domestic cat species (Felis catus) using an instantaneous focal animal scan sampling technique. All cats were in captivity in open rooms (not cages) and had minimal social interaction with humans. Social interactions of two pairs of litter mates were compared using a Chi Square analysis. The cats played significantly more with litter mates in the room than with other cats. In addition, behavior of all the cats were observed for activity levels. The findings indicated far more inactive versus active behavior.

45 ***Women at Washburn in Computer Information Science***

Jennifer L. Kahle
Mentor: Gary Schmidt, Computer Information Sciences

There is not a substantial number of women in the computer science field. Even though computer science offers a great deal of professional opportunity, statistics show women have not been taking advantage of its many benefits. The purpose of this paper is to determine why women are entering the computer science field and to suggest ways to increase enrollment of female computer science majors in a specific category of learning institution. Questionnaires were given out asking open-ended questions about educational background, interest in the computer science field, and encouragement in pursuing a computer science career. The questionnaires were given out to women who are in various stages of their computer science career. Responses were quantified into no more than four categories. Inferences were made based upon the information gathered from the responses.

48 ***Scale Validation for a Measure of Domestic Violence***

Jennifer Ewbank, Lindsey Olson, Kim Funk, Nikki Boydston
Mentor: David Provorse, Psychology

A five-member research team developed and constructed a 237-item scale measuring attitudes toward domestic violence based on the Minnesota Power and Control Wheel. The researchers administered the survey to over 100 students at Washburn University. Five supplemental scales were administered with the survey to determine convergent and divergent validity. These scales consisted of the Psychological Maltreatment of Women Inventory, Male Role Norms Inventory, Propensity for Abusiveness Scale, Rape Myth Acceptance Scale, and the Attitudes Toward Women Scale. The data was analyzed in aggregate form and was subjected to a factor analysis consistent with scale validation procedures. The purpose of this research is to design a measure that evaluates outcomes of treatment programs serving adult batterers.

5**0** ***A Social Enigma: Investigating the Pervasiveness of Urban Legends***

Heather Sovern
Mentor: Joanne Altman, Psychology

Every individual possesses sets of beliefs and values regarding culture, a sense of right and wrong, scientific phenomena, and oneself. These beliefs appear to be powerful and persistent despite whether they are supported or not. Research has demonstrated that we are quick to adopt certain beliefs. Research has also shown that certain factors exist that encourage us to pass statements on to others. Once we hear and believe a statement, we may use techniques as the confirmation bias to strengthen those beliefs. The results of this experiment determined that people are more familiar with, and believe more strongly, statements that they hear frequently. However, if disconfirming evidence is presented to participants, their belief in myths familiar to them will significantly decrease. However, those results do not extend to unfamiliar myths as well.

52 *Assessment of Hypertension Knowledge Among Native Americans in a Midwest Community Center*

Marley Baum
Mentor: Shirley Dinkel, School of Nursing

Hypertension (HTN) is a major risk factor for many diseases and poses a large burden on public health. Mortality from cardiovascular disease in the United States is decreasing; however, recent reports suggest that both mortality rates and prevalence of risk factors of cardiovascular disease are rising among Native Americans. The purpose of this study was to assess the knowledge of hypertension among employees of a small community center which serves Native Americans. Seven employees participated in a pre-test, post test descriptive study. Results indicated that pretest and post-test scores were similar across races and all subjects had a higher than normal blood pressure. The knowledge of hypertension among Native Americans and employees serving Native Americans was sufficient and did not seem to be a factor contributing to increasing rates of abnormal blood pressure in this sample. The study was limited by the small sample size. Further research is necessary to explore contributing factors to HTN in Native Americans.

54 *Culture Conditions and the Yeast Proteome*

Megan R. Swink
Mentor: Janice Barton, Chemistry

The proteome, reflecting the organism's genome, should display protein profiles characteristic of the existing environment. Thus, it is expected that transcription factors, enhancing and suppressing, should operate in response to a variety of chemical substances, such as drugs and toxins, and nutritional status. Yeast, with short generation and maturation periods, represents an excellent model for exploring the eukaryotic response to environmental perturbations. We begin our analyses of the yeast proteome by studying the effects of nutrition on the protein profile. Saccharomyces cerevisiae was grown under three culture conditions: broths of sabouraud dextrose, tripticase soy, and

peptone plus dextrose. Cells precipitated by centrifugation were extracted with CelLyticY supplemented with protease inhibitor, PMSF. Protein profiles were determined by two-dimensional gel electrophoresis, with preliminary results suggesting that variances in growth media are a factor in the proteins expressed, as well as their relative abundances. With proteomics in its infancy, this research on yeast may have significant implications for evaluating the genomic response of human cells to drugs, health, and disease.

Oral Presentation Session # 1 — Vogel Room

2:30 p.m.— 2:50 p.m.

Is it right to legislate morality? St. Thomas Aquinas' views in modern day context.

Megan J. Ford
Mentor: David Freeman, Political Science

Throughout history theologians and philosophers have given a great deal of thought into where religion and morality should be placed in a governmental system. St. Thomas Aquinas utilized the logic of Aristotle and brought in Christian theology and applied it to a governmental form. Known as the "Angelic Doctor" he intertwined divine law with natural law to make a comprehensive standard of government. His background sheds great light on his influences and motivation of thinking. His writing, which has been analyzed for centuries, gives his insight into where morality should stand in legislation. Current issues, such as President Bush's appeal for "Faith Based Initiatives" and the Washburn University statue crisis "Holier Than Thou" can easily be related to Aquinas theories. A look into St. Thomas Aquinas background, writings, and modern day dilemmas can shed light on morality and legislation.

2:50 p.m. — 3:10 p.m.

Textbook Exchange on the Web

Ahsan Kamran, John May, Nihal Javeed, Micah Mwanzi, Leroy Beals
Mentors: Jack Decker, Computer Information Sciences
Nan Sun, Computer Information Sciences

As part of the Capstone experience for Computer Information Sciences, a website is being built to allow Washburn Students to buy, sell and trade textbooks among themselves. The project is a web based database application that maintains and allows access to information on offered books, buyers and sellers. The goal is to efficiently

match buyers and sellers and provide the necessary procedures to allow students to safely complete transactions. The project requirements will be discussed along with the analysis and design procedures being used to develop the project.

Oral Presentation Session # 1 — Kansas Room

2:30 p.m.— 2:50 p.m.

Spies Born from Communication Breakdown
Rachel Marie Will
Mentor: Patricia Kosinar, Communication

This project consists of a case study in communication and the teaching notes for it. The case situation is that of two students assigned to follow a democratic presidential candidate on the campaign trail. The students contact the campaign of Dick Gephardt by telephone and are welcomed by campaign workers to observe the candidate. When the students actually follow the campaign they are deemed to be spies and are barred from campaign events. The teaching notes identify the various communication theories and concepts involved in the miscommunication and illustrate these with incidents from the case.

2:50 p.m. — 3:10 p.m.

Youth Volunteerism: Giving Their Gifts Back Through Music
Alexandra E. Blasi
Mentor: Ann Snook, Music

This presentation will focus on the importance of encouraging children to identify their talents and strengths and continuing to nurture those gifts through a lifetime by volunteering within their communities. Today's youth are faced with many challenges and where there are countless organizations devoted to youth, a surprising theme arises: volunteerism. When children who are active in the fine arts incorporate service work into their artistic activities not only do they reap the benefits of giving back to their communities, but, statistically, they are happier and more successful individuals. Certainly, there are countless opportunities for involvement which desperately need to be pursued within the academic and social worlds.

3:10 p.m. — 3:30 p.m.

She's a Black Magic Woman (And She's Trying to Make a Feminist Out of Me)

Kevin Wohler

Mentor: Thomas Prasch, History

In an age when Wicca is often linked with the feminist movement, it was inevitable that some would look to the past and find the witch-hunts of the Renaissance to be both a form of religious and female discrimination. Scholars have written on this subject, claiming that the persecution of witches was a misogynistic control mechanism designed to keep women from possessing power. Others point to the women of pre-medicine, herbalists and midwives, and suggest that they were the focus of the witch-hunts because of their intricate (and sometimes miraculous) knowledge. Nevertheless, speculations such as these collapse when compared to the data, however sketchy, that exist in records of the time. If anything, written accounts, court records, and other primary texts suggest that there are too many variables regarding the persecution of witches and no one cause or conspiracy can account for all of them. Witches were merely victims (if victims at all) of a highly superstitious era in which the natural and supernatural world were as close as the line between a country lane and a dark wood.

Oral Presentation Session # 2 — Vogel Room

3:45 p.m.— 4:05 p.m.

Night Poems: How Verbs Can Fuel Creativity

Dennis Etzel Jr.

Mentor: Robert Stein, English

This special project, involving poetry, explores the use of verbs (transitive, intransitive, and linking) in four poems. Building a strategy around these types of verbs can serve as a vehicle to writing, fueling creativity. The type of verb affects the subject, the sentence, the stanza, and the piece itself. Readings of the poems will accompany a discussion of the strategies for each piece. The poems are "Meditations on the Simple Night," "Tequila," "The Deep Song of Midnight (with a nod to Lorca)," and "We become the last lovers, the last dreamers."

4:05 p.m. — 4:45 p.m.

THE GIRLS: A Play

Marianne T. Kearns

Mentor: Penelope Weiner, Theatre

This is a play about three sisters, Marie, Martha and Suzanne, who are now in their eighties. They are still dealing with the same, on-going, trivial issues that have plagued them throughout their personal lives....and which...are still unresolved. Their inability to move on, however, seems to give them a peculiar credibility, while, at the same time, evoking a familial recognition and subsequent compassion that the audience might have encountered, also, in their own lives.

Oral Presentation Session # 2 — Kansas Room

3:45 p.m.— 4:05 p.m.

Investigation of Spiral Length
Fred Hollingshead
Mentor: Allan Riveland, Mathematics & Statistics

The purpose of this research project was, in response to a request made by a publishing company, to develop a formula to determine the remaining length of some polymer spooled on an inner core by simply measuring the radius of the remaining roll. The radius of the core spool, the radius of a full roll of polymer and the length of a full roll of polymer are all known. Several methods are used to develop such a formula including discrete methods as well as a continuous approach using Calculus. The resulting formulas have real-world applications and are compared for accuracy to supplied estimates made by the publishing company.

4:05 p.m. — 4:25 p.m.

Programmatically Testing Concurrency in Web Applications
Brian Wise Mulanda
Mentor: Bruce Mechtly, Computer Information Sciences

In this presentation, we demonstrate an improved version of a Java GUI program that enables you, as a single user, to test practically any kind of web application for possible concurrency flaws. The program attempts to simulate any specified number of multiple users trying to access a single web application simultaneously.