BRADLEY
UNIVERSITY

EXPO 2008

Sixteenth Annual Student Scholarship Exposition

Student Scholarly Abstracts

Friday, April 4, 2008
Bradley Hall

Sponsored by the
Office for Teaching Excellence & Faculty Development

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WELCOME

2008 Student Scholarship Exposition

Schedule of Events

April 3rd: 8:00 a.m. – 5:00 p.m.	**Student Poster Set-Up**
April 4th: 8:00 a.m. – 12:00 p.m.	**Student Poster Set-Up**
April 4th: 3:00 p.m. – 5:00 p.m.	**Poster Presentations Public Viewing** **Oral Presentations (see schedule)**
April 5th: 9:00 a.m.—3:00 p.m.	**Poster Viewing**
April 7th: 8:00 a.m.—12:00 p.m.	**Poster Take-down**

Refreshments will be provided on April 4th (3:00 p.m.—5:00 p.m.) during oral and poster presentations on the 1st floor of Bradley Hall.

ACKNOWLEDGEMENTS

Dr. Robert Baer, Dean
Dr. Edward Sattler, Associate Dean
Foster College of Business Administration

Dr. Claire Etaugh, Dean
Dr. Jerome Hahn, Associate Dean
College of Liberal Arts and Sciences

Dr. Jeffrey Huberman, Dean
Mr. James Ludwig, Associate Dean
Slane College of Communications and Fine Arts

Dr. Richard Johnson, Dean
Dr. Robert Podlasek, Assistant Dean
College of Engineering and Technology

Dr. Joan Sattler, Dean
Dr. Lori Russell-Chapin, Associate Dean
College of Education and Health Sciences

Faculty Mentors

Multimedia Department

Duane Zehr
University Photographer

PERSONNEL

Dr. Robert Wolffe
Interim Director, OTEFD

Kim Willis
Assistant Director, OTEFD

David Needham
Technical Producer

Undergraduate Research Committee

Oral / Demonstrative Presentations Schedule

Bradley Hall, Room 100

3:00pm—3:10pm: Rebekah Aavang / *The Relation of Pitch and Timbre to the Perception of Intonation*

3:15pm—3:25pm: Matt Wettersten / *The Big Picture: Career Advice for the Video Generation*

3:30pm—3:40pm: Rachel Bridgewater, Sarah Wills, Erica Gibbs / *Grief and Loss Across the Lifespan: A Healing Journey*

3:45pm—3:55pm: Sanjoy Chowdhury, Archana Singareddy / *Network End-to-End Link Performance Analysis Using Internet2 Diagnostic Tester*

4:00pm—4:10pm: Melinda Cote / *Grief in the Native American Community: A Study of Indigenous Healing Practices from a Counseling and Anthropological Perspective*

4:15pm—4:25pm: Alexander Czubak, Gorav Raheja / *Guitar Effects Processor Using DSP*

4:30pm—4:40pm: Jennifer Guzman-Muelling / *Is Physical Attractin Really Only Skin Deep?*

4:45pm—4:55pm: Eileen Hillary, Amanda Gillett / *Epithelial Ovarian Carcinoma Cells Induce Chemotaxis in Human Bone Marrow-derived Mesenchymal Stem Cells In Vitro*

5:00pm—5:10pm: Autumn Huett / *The Association Between Student Stress and Academic Responsibilities*

Bradley Hall, Room 139

3:00pm—3:10pm: Bethany Jones, Hannah Giunta, Stefanie Hunt, Regina Howe, Amanda Harms / *The Effects Of Stress on Immune System Functioning*

3:15pm—3:25pm: Kara Deweese, Lauren Hollandsworth / *Utilization of 5-Aryl-3-oxo-d-lactones as Cyclooxygenase Inhibitors*

3:30pm—3:40pm: Lauren Jozefat, Sarah Kowalski, Jaclynn Avner, Jen Jensen / *Insulin Pump Pack De sign and Development*

3:45pm—3:55pm: Elizabeth Nguyen, Jessica Gehreg / *Optimization of the Reaction Conditions for the Synthesis of 5-Aryl-3-oxo-d-lactones*

4:00pm—4:10pm: Bart Kwasniewski / *Slovenia: A Developing Nation*

4:15pm—4:25pm: Lonnie Marvel, Jonathan West / *Axial Behavior of Reinforced Concrete Columns Confined with Two Spirals*

4:30pm—4:40pm: Shannon Pyrz / *Ever Changing Dreams*

4:45pm—4:55pm: Sujith Vadassery, Michel Macara-Chvili, Luke Dejarnatt / *Material and Process Selection for Bicycle Frame*

5:00pm—5:10pm Paul Zipfel, Jennifer Cantrell, Tyler Dickinson / *Chinese Cosmology: An Interpretive Study of the Temple of Heaven*

INTERDISCIPLINARY

Brian Biggs
Gains from Product Differentiation
Department of Economics
Areas of Knowledge: Humanities and Social Sciences / Business
Faculty Mentor: Dr. Robert Scott
Poster #: 11

This paper seeks to address value-added in duopolies that become monopolistically competitive markets due to product differentiation. The generally accepted analysis of this phenomenon derives from Joesph Chamberlin's *Theory of Monopolistic Competition* (1933) and Joan Robinson's *The Economics of Imperfect Competition* (1933). Both works critique monopolistically competitive markets on the basis that product differentiation leads to higher prices and is thus inefficient. Building on a seminal article by Avinash Dixit and Joesph Stiglitz (1977), my research rejects this latter assertion and shows that, though there may be higher prices associated with product differentiation, nevertheless profits, consumer surplus, and social surplus all possibly increase under product differentiation. The goal of this research is to detail the gains associated with product differentiation as well as provide a graphical representation that could be used in undergraduate Microeconomics textbooks.

Eric Chelmecki, Chris Smith
Tetrahymena Genome Wiki
Department of Computer Science and Information Systems
Areas of Knowledge: Biological Sciences / Mathematics and Computer Science
Faculty Mentor: Dr. Steven Dolins and Dr. Nicholas Stover
Poster #: 20

The purpose of this project is to construct a wiki-based interface and supporting database for *Tetrahymena thermophila* genome information (current interface at http://www.ciliate.org/). The current database, Tetrahymena Genome Database (TGD), which was developed at Stanford University, suffers from problems related to keeping information accurate and up-to-date. A wiki will enable members of the scientific community to create new gene entries and modify existing ones, hopefully resulting in a more accurate, informative, and current database.

We are currently implementing this project on a server at Bradley University. So far during the 2007-2008 academic year, we have completed the following database and software development tasks: we collected and wrote software requirements with a domain expert, modified the existing Tetrahymena database design, created the database on a server at Bradley University, loaded data and created sample wiki pages for eight sample genes. We changed the existing Tetrahymena database design by removing unnecessary columns and tables and also adding columns to support storing history, which is created when users make changes using the wiki-based interface.

Future goals include writing scripts to take updates made using the wiki-based interface and update the underlying Tetrahymena database. We will also work on making the scripts scalable and production quality. These scripts will be needed for data migration of all genes from the current, source Tetrahymena database to the target Bradley University database, and for data updates made to the wiki database that have to be reflected in the underlying Tetrahymena database.

Melinda Cote
Grief in the Native American Community: A Study of Indigenous Healing Practices from a Counseling and Anthropological Perspective
Department of Educational Leadership and Human Development
Areas of Knowledge: Education / Counseling
Graduate Project
Faculty Mentor: Dr. Chris Rybak
Poster #: 24
Oral Presentation: Bradley Hall, Room 100 / 4:00pm – 4:10pm

The goal of this project is to introduce some of the healing methods used by the Native American community in coping with grief. Individuals who are a part of the dominant culture in the United States have different mechanisms of working with grief than the Native American population. Western methods are often too brief and ineffectual for many individuals. Interviews conducted over the past seven months have documeted many ways in which Native Americans grieve. Personal narratives and videotaped interviews illustrate the possibility that the practices used by Native Americans in their grief journey may also be applicable to other cultures. Many of the interviews were conducted at Seven Circles Heritage Center in Edwards, IL. Photographs and videotaped interviews were gathered during public functions at the center.

The presentation at the Student Scholarship Exhibition will include a photo essay, artifacts used during some of the healing ceremonies and an audiovisual component featuring music and interviews with those involved with the healing process.

Jason Dave, Dan Klein
The Hanshan Temple of Suzhou: Chinese Buddhism and Architecture
Department of Philosophy and Religious Studies
Areas of Knowledge: Humanities and Social Sciences / Psychological Sciences
Faculty Mentor: Dr. Dan Getz
Poster #: 28

The purpose of this project is to report on the Hanshan Temple in Suzhou, China that members of our Chinese religions class visited during the spring break. Our project seeks to illuminate the character of Hanshan ("Cold Mountain"), a legendary Buddhist monk who allegedly lived during the seventh century CE. Although his existence has never been proven, Chinese Buddhists have revered him as an important historical figure, as the renowned author of a collection of poetry, and as the abbot of this famous monastery. We will also explore the ways in which this religious site is both unique as well as shares common structures and beliefs with other Buddhist institutions in China. We will examine this temple's architectural layout highlighting similarities between this monastery and other important architectural structures in China throughout history. We seek to provide an introductory tour into one corner of the fascinating world of Chinese Buddhism.

Lindsey Ford, Elise Ware, Moe Teslik, Kari Zache, Katie Patsche, Emily Steimel, Sarah Kief, Christine Cabrera

Society of Women Engineers Region H Conference 2008

Department of Civil Engineering and Construction

Areas of Knowledge: Mechanical Engineering / Electrical and Computer Engineering / Industrial and Manufacturing Engineering and Technology / Civil Engineering and Construction

Faculty Mentor: Dr. Julie Reyer

Poster #: 37

The Bradley University Society of Women Engineers (SWE) section hosted the 2008 Region H SWE Conference. After receiving the task in January of 2007 and planning for a year, this Midwest conference took place in downtown Peoria at the Hotel Père Marquette and the Civic Center from January 25-27, 2008. The purpose of the conference is to strengthen personal character, to advance professionalism in the field of engineering and to help women engineers achieve their highest potential. The conference supports diversity in engineering fields, provides networking and development opportunities, and promotes integrity and high standards within engineering. There were over 735 conference attendees from the eight state region, 130 corporate representatives, and 101 volunteers who participated in the event. Five tours of local corporate facilities and 47 workshops were offered to attendees. A career fair and a networking lunch took place with participation of just under 60 companies. The weekend conference included keynote speakers from Bradley University President, Joanne Glasser, and Caterpillar Chief Technology Officer and Vice President of the Technology and Solutions Division, Tana Utley. This conference was the largest one for Region H to date.

Frances Berner, Samantha Bush, Rebecca Sowa, Gabrielle Jackson
Ecological and Genetic Differentiation of G. puberulenta, G. flavida and their Hybrids
Department of Biology
Faculty Mentor: Dr. Janet Gehring
Poster #: 9

Chase Bolt
Expression of a Discoidin Domain Receptor Homolog in the Cnidarian Hydra magnapapillata
Department of Biology
Faculty Mentor: Dr. Nicholas Stover
Poster #: 15

Receptor Tyrosine Kinases (RTKs) play important roles in metazoan (animal) cell signaling and were essential to the evolution of multicellularity in this group. Homologs of RTK genes have been identified and studied in Phylum Cnidaria, one of the earliest diverging clades in the metazoan lineage. Due to their fundamental role in cell-cell interactions, many of the RTK gene families have been highly conserved since their emergence in the ancestral metazoan. We have discovered an RTK-like gene in the recently sequenced genome of the cnidarian *Hydra magnapapillata* that sequence analysis indicates belongs to the Discoidin Domain Receptor (DDR) family. Interestingly, there is no apparent extracellular or transmembrane domain encoded by this gene in *H. magnapapillata*, suggesting that it encodes a nonreceptor tyrosine kinase in this species. It is the purpose of this study to determine the length and sequence of the gene's entire coding sequence to confirm that it indeed encodes a nonreceptor tyrosine kinase, and to determine its *in situ* expression pattern in *H. magnapapillata* to provide an indication of its function.

Falabo Dare
To Mimic or Not to Mimic: The Effects of Nonylphenol on Human ERE Expression
Department of Biology
F.Y. Dare, N.M. Hinman, B.A. Frase, and S. Fan. Bradley University
Faculty Mentors: Dr. Barbara Frase and Dr. Samuel Fan
Poster #: 27

Endocrine disruptors are exogenous chemicals that either mimic or inhibit steroid hormones and upset the body's normal function. Nonylphenol (NP) is a hormone-mimicking chemical that was first introduced into water-ways as a surfactant in pesticide sprays, but now enters the environment primarily via industrial and sewage treatment effluents. According to the literature, it can produce large numbers of hermaphrodites, disrupt normal gamete formation, increase mortality, or affect behavior in aquatic animals. While the effects of 4-NP on aquatic animals is well documented, there is little information on its effects on humans. Our experiments focus on the effects of NP on the human ERE (Estrogen Response Element) on chromosome 6. A fluorescent reporter gene (GFP) and the ERE were inserted into a bacterial plasmid with the GFP located downstream from the ERE. The location of GFP allows visualization of the level of ERE expression. When the treatment data (estrogen only, NP only, NP and estrogen, and controls) are compared, they will allow the assessment (whether or not the gene is expressed) and the measurement of expression relative to other treatments. These results will give insight into the mechanisms of hormone mimicry.

Eileen Hillary, Amanda Gillett

Epithelial Ovarian Carcinoma Cells Induce Chemotaxis in Human Bone Marrow-derived Mesenchymal Stem Cells In Vitro

Department of Biology
Eileen Hillary[1,] Amanda Gillett[1] Holly Hoefgen BS[2], Miao Li BS[2], Kelly Hall BS[2], Mary E. McAsey PhD[2] , Craig Cady PhD[1]
[1]Department of Biology, Bradley University, Peoria, IL [2]Department of Obstetrics and Gynecology, Medical Microbiology, Immunology and Cell Biology, Southern Illinois University School of Medicine, Springfield, IL
Faculty Mentor: Dr. Craig Cady
Poster #: 42
Oral Presentation: Bradley Hall, Room 100 / 4:45pm – 4:55pm

Objective: Epithelial ovarian cancer is the most lethal of the gynecologic cancers and one of the leading causes of cancer death in women. Bone marrow-derived mesenchymal stem cells (BMSCs) are recruited from the circulation into hypoxic malignant tissues. We hypothesize that BMSCs will migrate to ovarian cancer cells in vitro. If migration occurs, we may be able to design cell-based therapies to treat ovarian cancer.

Study Design: For migration assays, fluorescently labeled BMSCs were plated in cloning cylinders with/without cells from the above cell lines plated outside. Migrated BMSCs were counted after 24 and 48 h. Human BMSCs were placed in invasion chambers, exposed to serum-free conditioned media (0-100%) from five ovarian cancer cell lines (HEY, SKOV3, SKOV3ip1, OVCAR, OCCI-C10), an immortalized, non-tumorigenic ovarian surface epithelial cell line and a normal fibroblast cell line. After 24 h, invading BMSCs were counted. To assess stem cell interaction in a three-dimensional tumor model, HEY or OCCI-C10 spheroids were co-cultured with fluorescently-labeled BMSCs or fibroblast cells for 24 h and evaluated for attachment.

Results: In migration assay experiments, co-culture with all ovarian cancer cell lines stimulated significant migration of BMSCs compared to controls without ovarian cancer cells ($p<0.001$). BMSCs exhibited dose-dependent significant invasion following exposure to > 20% conditioned media ($p <0.005$) from all ovarian cancer cell lines examined. No invasion was observed with exposure to increasing concentrations of fibroblast-conditioned media. Neither fibroblasts nor IOSE cells stimulated BMSC migration. BMSCs associated with HEY and OCCI-C10 spheroids but fibroblast cells did not.

Conclusions: In three models of invasion/migration, BMSCs migrated toward ovarian cancer cells. We are engineering BMSCs with factors that may induce cell death in ovarian cancer cells in vitro and in an orthotopic ovarian tumor model in mice.

Casey Littlefield

Reduced Regeneration in Aspen as Result of Elk Browsing

Department of Biology
Graduate Project
Faculty Mentor: Dr. Barbara Frase
Poster #: 58

Phillip Myer, Timmy-tai Ho
Expansion of the chitin synthase gene family in the ciliatte Tetrahymena thermophila
Department of Biology
Faculty Mentor: Dr. Nicholas Stover
Poster #: 67

When subjected to environmental stress, ciliated protozoans will adopt one of two different survival strategies: conjugation, the ciliate version of sexual recombination, or encystment, the process by which the cell develops into a dormant temperature and dessication resistant form. *Tetrahymena thermophila* does not form cysts when subjected to conditions such as starvation that are known to induce encystment in other ciliate species (e.g. *Oxytricha fallax*). Instead, this species appears to undergo conjugation exclusively. Given this observation, it was a surprise to find 12 genes encoding chitin synthase homologs in the *T. thermophila* genome, since chitin has only been described in ciliates as a component of the protective resting cyst wall. Chitin appears in the walls of resting cysts of many ciliates, often associating with proteins, other polysaccharides, and silica. To determine the pattern of duplications that led to the expansion of this gene family, we constructed a phylogenetic tree based on a protein sequence alignment containing the *T. thermophila* genes and the three chitin synthase genes found in the genomes of both *Paramecium tetraurelia* and *Saccharomyces cerevisiae*. Reverse transcriptase PCR of RNA extracted from *T. thermophila* during various adverse environmental conditions will be used to determine the triggers that affect expression of these genes. HPLC analysis of *T. thermophila* cells will also be used to determine the concentration of the chitin component N-acetylglucosamine. These studies will ultimately provide further insight to the role of chitin synthase genes in *T. thermophila*.

Oana Popescu, Phillip Myer, Timmy-tai Ho
Role of the Fusion Protein FSF1 in Formaldehyde Detoxification in ciliated protozoans
Department of Biology
Graduate Project
Faculty Mentor: Dr. Nicholas Stover
Poster #: 73

The newly discovered *FSF1* gene of the ciliate *Tetrahymena thermophila* encodes a fusion of the two proteins formaldehyde dehydrogenase (FALDH) and S-formylglutathione hydrolase (SFGH). These two enzymes have been shown to catalyze sequential steps of the formaldehyde detoxification pathway in other organisms, including the yeast *Saccharomyces cerevisiae*. Genomic analyses have revealed that *FSF1* has been lost in the lineage of the ciliate *Paramecium tetraurelia*, a close relative of *T. thermophila*, and that the constituent genes FALDH and SFGH are often absent in the medically and agriculturally important relatives of the ciliates, the apicomplexan parasites (etiologic agents for malaria and toxoplasmosis, among others). Both a formaldehyde time course and concentration series were performed in *T. thermophila* to determine its sensitivity to this agent, and a Northern blot analysis showed that transcription of the *FSF1* gene increased in response to formaldehyde treatment. Understanding of the scope and utility of the FALDH/SFGH detoxification circuit in model protists such as *T. thermophila* and *P. tetraurelia* may one day lead to development of novel therapeutic agents to combat apicomplexan infections.

Jessica Sampias, Lauren Hughes

Mesenchymal Bone Marrow Stem Cell Proliteration Rate: Comparing Conditions of Low Oxygen

Department of Biology
Faculty Mentor: Dr. Craig Cady
Poster #: 80

Much cell research is conducted at 20% oxygen (atmospheric levels). However, cells within the tissue are exposed to lower oxygen levels. We believe cells cultured at atmospheric oxygen are oxidatively stressed and unhealthy, which may lead to inaccurate conclusions. We hypothesize that cells grown in lower concentrations of oxygen will proliferate at a higher rate than those grown in 20% Oxygen. We have incubated cells at 2%, 5%, 9%, and 20% oxygen and used two methods (total cell numbers and an MTT assay) to assess cell proliferation. Through our experiments, we have determined that rat bone marrow mesenchymal stem cells grow at an increased rate in lower oxygen concentrations.

Danielle Steker, Emily Havensek

Involvement of Epithelial Ovarian Carcinoma Extracellular Matrix in Human Bone Marrow-Derived Mesenchymal Stem Cell Invasion

Department of Biology
Faculty Mentor: Dr. Craig Cady
Poster #: 88

In the year 2007, approximately 22,430 US women will be diagnosed with ovarian cancer. Although considerable advances in chemotherapy have improved the 5-year survival rates for all stages of ovarian cancer, the survival rate beyond this has not changed significantly over the last 20 to 30 years. Clearly novel therapies must be developed to treat this devastating disease. Bone marrow-derived mesenchymal stem cells (BMSCs) are effectively recruited from the circulation into malignant tissues following hypoxic stress or injury and therefore have the potential to become an effective tool in treating ovarian cancer. Our previous experiments have shown BMSCs migrate toward and adhere to ovarian cancer cells. **We hypothesize that soluble factor(s) expressed by ovarian cancer cells mediate stem cell migration. We further hypothesize that cell surface protein(s) on ovarian cancer cells facilitate stem cell adhesion and invasion into ovarian tumors.** We have developed in vitro migration and adhesion assays to identify factors important in these processes. These data support our developing model of stem cells interacting with the tumor environment and may lead to the development of cell based gene therapies for the treatment of ovarian cancer and other solid tumors.

BUSINESS

Diane Cronin
Photo Ethnography of American Students Traveling to Slovenia
Department of Marketing
Faculty Mentor: Dr. Matthew O'Brien
Poster #: 25

The purpose of this study is to learn the foreign consumer. This will be done in several stages. Stage one will consist of an orientation with the students' pre-departure, clarifying and providing the respondents with as much information as can be disclosed. Stage two consists of the fieldwork in and on the way to and from Slovenia. Respondents will use digital cameras and asked to have photos returned at the end of nine days upon entering the United States. Respondents will become very involved with the project, becoming their own ethnographers and observing their private lives without the bias of an outside observer. This yields insights, which are simply not achievable with traditional focus group research or with classic ethnography. The stages here on out will be conducted at Bradley University. Stage three consists of storytelling with the photos. The individual's cameras will be developed and the respondents will be asked to share their stories about the pictures in a discussion lasting approximately one hour each. The point of the study is to gather information that may help people understand the foreign consumer in the future.

The reason for using photo ethnography for researching and understanding the foreign consumers is because often they are uncomfortable and often uncommunicative in new situations. They prefer visual expression and find it easier to express themselves with pictures, stories, rather than verbally. This is because the respondent's generation is prone to having a relatively short-attention span and needs stimulation to keep them focused.

CIVIL ENGINEERING AND CONSTRUCTION

Lonnie A. Marvel, Jonathan West
Axial Behavior of Reinforced Concrete Columns Confined with Two Spirals
Department of Civil Engineering and Construction
Graduate Project
Faculty Mentor: Dr. Riyadh Hindi
Poster #: 61
Oral Presentation: Bradley Hall, Room 139 / 4:15pm – 4:25pm

This paper investigates the behavior of high strength concrete bridge columns under monotonic axial loading. The columns are confined with a single conventional spiral or two cross spirals. The two opposing spirals (cross spirals) were developed to confine circular columns in order to enhance their strength and ductility. This new technique facilitates the passage of concrete while effectively increasing the volume of the confining reinforcement without violating the minimum spacing as specified by ACI. Twenty one 1000 mm long circular high strength columns with a diameter of 350 mm with four different steel ratios, 0.016, 0.020, 0.024 and 0.028, and various spiral spacing's were built. The columns were tested under monotonic axial loading in order to study the influence of the new confinement technique on the axial behavior, force-displacement, of bridge columns compared to columns confined with the conventional single spiral. Nine columns had various longitudinal steel ratios while maintaining the lateral confinement steel ratio to study the effect the longitudinal steel ratio has on strength and ductility. The other twelve columns had a longitudinal steel ratio of 0.02 with various spiral spacing's to study the effect of different lateral confinement steel ratios.

COMMUNICATION

Jeff Bolson
Cures are discovered everyday, but for a cure to be found we need to raise money?
Department of Communication
Faculty Mentor: Dr. Margaret Young
Poster #: 13

Jingle Bell Run/Walk for Arthritis brings people together for an exciting and spirited way to support the Arthritis Foundations mission while participating in a healthy activity. Across the country bells will be ringing as people like you tie jingle bells to their shoelaces. This walk is to help raise money to prevent, control and cure Arthritis and related diseases.

The target audience for this brochure is for the surrounding area of Peoria and extending from North and South ends of Illinois. People with Arthritis or knows someone who has it wants to raise money for the cause. The way I designed the brochure was to draw attention at the title of the event. The photographic and graphic elements demonstrate a number of people who attend this event from one year to another. Impact of this brochure dealt with the background pictured with several runners in black and white and having a runner in color breakthrough the page to show people are not a prisoner of their Arthritis. By breaking through the brochure shows there is always a way to take control no matter what the problem is. Graphic footprints show the runners walking or running as if you were the runner, running in the Arthritis walk/run for the cure.

Jeff Bolson
Zoofrican
Department of Communication
Faculty Mentor: Dr. Margaret Young
Poster #: 14

The Peoria Zoo has been supported by a wonderful group of people. The wonderful group is the Peoria Zoological Society Board. Years ago a decision had o be made about what to do with the zoo. The newsletter needed to be enhanced to show their image to the community and its relationships with current and future customers. Show impact with aesthetics of design, giraffe colors used throughout the newsletter for the readers to know it is about the existing zoo and the progress of the new zoo.

In an age where time is short, the information has to be present to the public eye. In this newsletter there is a kids korner with animal facts and logic to educate the young about the life at a zoo. The zoo endeavors to reach out to members and non-members of the local community by distributing informational flyers at zoo events and businesses.

The Peoria Zoo is dedicated to Conservation, Education & Recreation. I have volunteered for the Peoria Park District and the Peoria Zoo for 16 years as a photographer and videographer and through all the years the zoo has become part of my life. With this newsletter I hope to draw attention to the new Peoria Zoo by educating the public about conservation.

Bart Kwasniewski
Slovenia: A Developing Nation
Department of Electronic Media
Faculty Mentor: Dr. Margaret Young
Poster #: 56
Oral Presentation: Bradley Hall, Room 139 / 4:00pm – 4:10pm

Slovenia: A Developing Nation is a documentary video and website produced by Bartosz Kwasniewski. The video follows the experience of a study abroad class during Spring Break from Bradley University while settling a very significant issue: How do you think Slovenia is developing after the breakup of the Yugoslavia? Why? Consider the following statistics: Slovenia has a population of 1.8 million people, joined the European Union in May 1, 2004 after only being recognized as a country since 1992, is the only post-communistic country: to adopt the Euro, have the highest gross domestic product per capita, second to Bosnia and Herzegovina when concerning life expectancy and a democracy that is considered the most functional.

Both the video and website will offer interviews with credible sources such as the editor of *Serbia Since 1989* - Dr. Vjeran Pavlakovic, the Media Consultant in media management and sales in Albania, Serbia and Montenegro - Dr. Greg Pitts, and many more.

I realize that many post-socialist countries such as Poland, Serbia, Lithuania and many more have a very difficult goal to transition as a free-market, capitalistic, and democratic country. Slovenia, from much research, indicates a transition that has adapted with a lot of economic, financial, and social success. If the question of, "why and how has Slovenia been capable of such a transition?" can be answered, maybe this can be used to improve the status, attention, and hope of other post-socialist countries.

Julie Mierzwa
Press Freedom and Media Control in Zambia: A Survey of Parliament
Department of Communication
Faculty Mentor: Dr. Greg Pitts
Poster #: 62

The media systems of many African countries are reminiscent of those during colonial occupation. Press freedom was almost non-existent during colonial occupations; the media was used to control the state. Zambia was one of the first countries to receive colonial independence and in the 1990s launch the wave of African democratization that swept across Sub-Saharan Africa. As a transitioning democratic nation, Zambia must work to establish a freer press.

This paper examines how members of Parliament view press freedom in Zambia. Data from a 2005 survey of members of Zambian Parliament was used to determine support for press freedom based on Parliamentarians' ages. There was no statistical significance to be found in the results, which suggests that members of Parliament hold similar opinions about the state of press freedom in Zambia. Members of Parliament reported listening to government-owned/controlled radio stations and reading government-owned/controlled newspapers.

People who are not connected with the government or Parliament, and those who subscribe to other media sources, would likely have different opinions about press freedom in Zambia.

Shannon Pyrz
Ever Changing Dreams
Department of Communication
Faculty Mentor: Dr. Bob Jacobs
Poster #: 74
Oral Presentation: Bradley Hall, Room 139 / 4:30pm – 4:40pm

"Ever Changing Dreams" is a music video montage of figure skaters who have influenced me in my life both on and off the ice and it is set to Gloria Estefan's "Reach." I have also included footage of myself skating in the video as I once held similar dreams as these National, World, and Olympic competitors. The piece is designed to show how we all have been given dreams, yet as we live our lives those dreams change to fit the paths that our lives have taken; yet we are all united in our love of the sport. The montage is a visual and auditory piece that closes out a half hour documentary that I am working on about how the sport has influenced my life. It shows that my dreams have changed from becoming an Olympic champion figure skater to working for the United States Figure Skating Association in their media department. I still have the dream of having skating be a center of my life but it has changed from being the one at center ice, to being the one who helps out behind the scenes where my talents are more useful to the sport. My dream has changed, but my love of the sport has not and this music video shows that it happens to everyone, as only one can be Olympic Champion. It shows that we have all adapted our dreams to our capabilities and have worked hard to make them come true.

Emily Rosen, Adam Sharples, Lisa Park, Mallory Rusch
Out of the Book: A Campaign to Raise Awareness & Honor Veterans
Department of Communication
Faculty Mentor: Dr. Michael Thurwanger
Poster #: 76

Matt Wettersten
The Big Picture: Career Advice for the Video Generation
Department of Communication
Faculty Mentor: Dr. Gregory Pitts
Oral Presentation: Bradley Hall, Room 100 / 3:15pm—3:25pm

Uncertainties about education and career decisions for many college students can be at least partly diminished through career advising. A simple yet effective step is to bring students into direct contact with professionals in their field. For students entering a media career, I have created a 45 minute career video featuring highlights of a 3.5 hour career seminar produced by the National Association of Television Program Executives. This production will be accessible directly by students and faculty through NATPE, the Broadcast Education Association and even YouTube. This video is ideal for someone who is beginning planning their career. Featured topics include advice on interviewing, resumes, cover letters and networking. In addition to the full length video, the video is broken into 5 segments that will be available on You Tube.

EDUCATION

Rachel Bridgewater, Sarah Wills, Erica Gibbs
Grief and Loss Across the Lifespan: A Healing Journey
Department of Educational Leadership and Human Development
Graduate Project
Faculty Mentor: Dr. Lori Russell-Chapin
Poster #: 16
Oral Presentation: Bradley Hall, Room 100 / 3:30pm – 3:40pm

During the fall of 2007 twenty-five Bradley University graduate counseling students in ELH 620, Introduction to Human Development Counseling, developed age appropriate grief and loss curricula. Dr. Lori Russell-Chapin was the leading professor of this project. In collaboration with Barbara Galik of Cullom-Davis Library, the curricula were placed on Second Life, an educational virtual world that is accessible to a large international community of professionals. All materials on Second Life can also be downloaded and used to help people in their grief journey. Part of our presentation at the exposition will include a computer demonstration of what the curricula looks like in the virtual Westlake Hall within Second Life. There are additional electronic materials available for display, including an elaborate Grief Journal for adolescents, and various power point presentations that were created by the students. There are also interactive materials that will be displayed on the poster board. Five different curricula were tailored for various ages across the lifespan. Each age group focused on basic beliefs about grief and loss, blockers to grief and healthy interventions.

Kevin Emmons
Using GPS & EcoCaches in the K-12 Classroom
Department of Teacher Education
Graduate Project
Faculty Mentors: Dr. Kevin Finson and Dr. Heljä Antola Crowe
Poster #: 36

The purpose of this project is to research ecological, geological and cultural sites in Illinois and design workshops for pre-service and in-service for teachers in Illinois, which provide enrichment information and activities to use in their curriculum. The creation of EcoCaches published on the Illinois Educational Geocaching Association site http://www.ilega.org/ecocaches/illinoismap/Illinoismap.htm allows for teachers to learn to incorporate technology into their own classroom lessons and to create EcoCache activities of their own.

Saif Anwar, Sarah Kief
Ultra Wideband Amplifier
Department of Electrical Engineering
Faculty Mentor: Dr. Prasad Shastry
Poster #: 8

Ultra Wideband (UWB) communication system is used for large bandwidth, low power signal transmission and reception over a short distance. It is fundamentally different from other communication techniques because it uses extremely narrow radio frequency pulses to communicate between transmitters and receivers using the UWB spectrum that ranges from 3.1 to 10.6 GHz.

In this project a microwave integrated circuit wideband low noise amplifier (LNA) for a UWB system will be designed, manufactured and tested. The LNA will be in the front-end of a UWB receiver thereby enhancing the sensitivity of the receiver.

Christine Cabrera
Using Haptics to Simulate Medical Diagnoses
Department of Electrical Engineering
Faculty Mentor: Dr. Thomas Stewart
Poster #: 19

The market for medical simulators is growing dramatically as an increase in technology is allowing these devices to come to life. Creating virtual environments for the medical industry can provide cost-effective training and the opportunity for repetitive learning. This project moves beyond surgical tools and instruments, and utilizes a haptic device to research the meaning of "touch" as a diagnosis. What lies under the skin is visually unknown, and applying pressure to the area results in the initial diagnosis. Providing proper and realistic feedback from the system can teach an inexperienced doctor to become sensitive to the significance of various levels of pressure. Future applications of this device can include training individuals in all levels of medical professions, as well as replicating the texture of biological systems such as tissues and organs.

Anthony J. Corbin
Implementation of Software GPS Receiver
Department of Electrical Engineering
Faculty Mentor: Dr. In Soo Ahn
Poster #: 23

At present, most commercial GPS receivers utilize hardware designs to perform signal processing due to both the complexity of the signal processing as well as the limitations of present-day microprocessors. The goal of this project is to explore possible ways to overcome these limitations and develop a real-time software GPS receiver. The implementation utilizes a device developed by the University of Colorado-Boulder which eliminates virtually all the specialized signal processing hardware and replaces it with an RF front-end to simply sample the signal. The sampled signal is then processed completely in software. The signal processing software is written in C++, designed to be platform independent, and has a parallel architecture.

Alexander Czubak, Gorav Raheja
Guitar Effects Processor Using DSP
Department of Electrical Engineering
Faculty Mentor: Dr. Thomas Stewart
Poster #: 26
Oral Presentation: Bradley Hall, Room 100 / 4:15pm – 4:25pm

This project deals with the creation of sound effects through manipulation of an audio signal from a guitar. The signal is processed through a digital signal processor that contains a number of digital filters to modify the signal to include the desired effects. These effects are controlled by a graphical user interface, or GUI, allowing the user to select which effects are active and to what degree. The altered signal is then sent to a guitar amplifier as audio. The filters and the GUI are designed in MATLAB, software that breaks data down into arrays and matrices. Once the filters and GUI are designed, the filters are uploaded to the digital signal processor, and the GUI interfaces with the processor on a computer. There are a total of eight guitar effects that can be processed: Distortion, Reverberation, Delay/Echo, Octaver, Volume Envelope, Chorus, Flanger, and Phase Shifter.

Divya Gamini
Wireless Blood Pressure Monitoring
Department of Electrical Engineering
Graduate Project
Faculty Mentor: Dr. Prasad Shastry
Poster #: 38

Wireless telemetry based implantable sensing systems are useful in monitoring physiological parameters of human beings in a medical diagnostic situation. This project involves designing, fabricating, and demonstrating the ability of a high inductance and quality-factor chip antenna, small enough to be implanted in a human artery to monitor the blood pressure, and an external receptor to transmit and receive RF signals in the range from 170 to 220 MHz and 30 to 70 MHz with signal penetration through phantom tissue.

In a wireless telemetry system, a bio-sensor and an external hand-held unit are used. The chip capacitor configured in series or parallel with the chip inductor, emulates the electrical properties of a wireless MEMS (Micro Electro Mechanical Systems) capacitive pressure sensor. An external loop antenna, along with the impedance matching network and a low noise amplifier, form the external receptor for a hand-held measurement unit. The external loop antenna inductively powers the chip inductor in the sensor and acquires the RF telemetry signals from the sensor for determining the blood pressure.

This project is supported by a grant from Endotronix, Inc., Peoria, Illinois.

Raghu Kancharla
Measuring Antenna Radiation Characteristics Using Network Analyzer
Department of Electrical Engineering
Graduate Project
Faculty Mentor: Dr. Prasad Shastry
Poster #: 49

An antenna radiation pattern describes the far field directional properties of an antenna. This project involves measurements of the antenna radiation characteristics using a network analyzer. The antenna data acquisition system enables one to plot the radiation patterns of an antenna and determine its

parameters. In this project an anechoic chamber, a microwave network analyzer, a motion controller and Agilent Vee Pro® are used. The anechoic chamber is used to avoid reflection of electromagnetic waves and also satisfy the far field measurement range criteria. The motion controller is used to control the direction of rotation of the antenna. Agilent Vee Pro® is a graphical programming language and is used for data acquisition, instrument control and analysis.

Steve Koopman, Jerrod Peterson, Kevin Hurley, Ryan Leman
Autonomous Front-Loader
Department of Electrical Engineering
Faculty Mentor: Dr. Don Schertz
Poster #: 2

When operating heavy equipment doing repetitive tasks, the strain on a person can eventually cause medical problems, and also increases strain on the equipment. For vehicles like front loaders, operator experience can drastically affect the quality of the resulting work as well. Being able to automate some processes of heavy equipment operation, like digging a ditch or loading a bucket, could be a large benefit in construction and maintenance fields. Eventually entire business operations could be done autonomously, saving a substantial amount of money for labor and increasing consistency and quality of results.

This project aims to create a small-scale autonomous front loader that would operate at a place like a gravel pit or rock yard. An RC vehicle utilized to model a full scale front loader will locate a bin filled with material, drive to the bin and load the bucket, and then locate and drive to a truck and load the truck with the material. This process will repeat until the truck is deemed full, and wait until more material is desired to load. Some parts of this project could be utilized elsewhere like for an automated bucket loading process or for a starting point to make another autonomous vehicle.

Michael J. Lenisa, Daniel Wentzel, Breanna Heidenburg
Gaze Tracking System
Department of Electrical Engineering
Faculty Mentor: Dr. Aleksander Malinowski
Poster #: 3

As our senior capstone project, we will be creating an eye tracking system which will control a computer cursor by following the user's gaze. This tracking will be achieved via a small form factor camera mounted near the user's eye, which communicates image data to a computer system. The computer system processes the image and determines the direction of the user's gaze. The computer will use this position data to move a cursor on a display. Using this as an input method, the system will allow full hands-free use of the computer. Additionally, an Augmented Reality system may be created using a head mounted micro display. This will create a Heads-Up Display for the user, wherein a virtual image will be overlaid on the user's vision.

Tim Pieper
Wireless Data Acquisition System
Department of Electrical Engineering
Faculty Mentor: Prof. Steven Gutschlag
Poster #: 71

The Wireless Data Acquisition System (WiDAS) is intended to be used with the Bradley University SAE Formula Car. The Bradley University Formula SAE car is a yearly project task for mechanical engineering seniors. WiDAS will gather data from the SAE car and display important information to the driver through an LCD screen mounted in the car. Data will also be wirelessly transmitted to an off-track laptop where the data can be displayed and recorded. Transmitted data will include information such as car velocity, engine speed, acceleration, engine coolant and air temperatures, oil pressure, and suspension travel. The in-car display used will be an Amulet Technologies LCD touch screen, and a pair of Aerocomm transceivers will be used for wireless transmission.

Justin Saboury, Greg Marsh
Software Defined Radio as it Relates to Emergency Situations
Department of Electrical Engineering
Faculty Mentor: Dr. Thomas Stewart
Poster #: 78

Public safety has always faced interoperability issues when dealing with radio communication. Radio systems typically operate on various frequency bands and with technologies that are incompatible. On these multiple systems, a centralized user interface can be beneficial, especially in emergency situations. According to the November 2007 issue of IEEE Communications Magazine, "software radio provides an ideal platform for the realization of cognitive radio."

Software defined radio (SDR), which uses a digital signal processor (DSP) to modulate and demodulate data, allows implementation of multiband, multimode radios to close this gap in communication among safety radio systems. This project will focus on using the TMS32013 DSP development board to interface and build a SDR system which can both interpret and transmit modified signals. It will be able to tune to specified frequency bands and receive/transmit the signal in AM and FM modulation schemes. This radio will allow different groups of rescue teams to cooperate with each other during an emergency, even though they are utilizing various communication methods.

David Sharpe, Jamin Williams, Kraig Kamp
Low Carbon Footprint Electric Lawn Mower
Department of Electrical Engineering
Faculty Mentors: Dr. Brian Huggins and Prof. Steven Gutschlag
Poster #: 82

Environmental air pollution and carbon emissions are becoming significant problems. A contributor to this pollution is the use of gasoline-powered lawn mowers. Our overall project goal will be to design a battery powered lawn mower and charging system that will diminish emissions and it will minimize the use of the national electric grid. Staying off the power grid will further decrease the lawn mower's carbon foot print because the majority of our nation's power comes from fossil fuel burning power plants. The project will consist of two separate systems: a battery-powered lawn mower and a photovoltaic system to charge the battery. Both systems will be microcontroller based. The mower will use a microcontroller to control the speed of the cutting blade and display the charge status of the battery. The charger will use a microcontroller to control the charging algorithm for the battery. In

addition to this, the charger will include an AC backup to plug into a standard wall power outlet in case of an extended period of cloudy weather.

Ross Stange
Ultra Wideband Antenna
Department of Electrical Engineering
Faculty Mentor: Dr. Prasad Shastry
Poster #: 87

Ultra Wideband (UWB) communication system is used for large bandwidth, low power, and signal transmission and reception over a short distance. In an UWB system, digital signals are transmitted in air by using extremely narrow radio frequency pulses. In order to transmit and receive UWB signals in air an ultra wideband antenna is needed. An Ultra Wideband (UWB) antenna operates over the UWB band, which ranges from 3.1 to 10.6 GHz. In this project several versions of a printed wideband monopole antenna will be designed, manufactured, and tested. An optimum design will be identified for use in an UWB system.

FAMILY AND CONSUMER SCIENCES

Brooke Cloyd
Portion Size Among College Students
Department of Family and Consumer Sciences
Faculty Mentors: Dr. Nina Collins and Dr. Kevin Randall
Poster #: 22

Rising rates of obesity in the United States correlate with increasing portion size (Critser, 2003). One study (Bryant, 2005) examined college students' (N=42) ability to accurately estimate cereal serving size relative to the USDA standard; one-third of the students were within 10% of the standard serving size. The purpose of this study was to compare the estimated portion sizes of fruits, vegetables, and French fries consumed by college students with the USDA suggested serving size. "Serving Size Screener" (Nieman, 2007) was administered to a volunteer sample consisting of 67 college students (45 females) in general education classes during Spring semester 2008. Participants were given a portion guide to use as they completed the personal food frequency questionnaire. Single sample *t*-tests were performed comparing the study sample's perceived average portion size consumed relative to the USDA suggested size for the three categories. Results indicated that students consumed significantly larger servings of each item than the USDA recommendations. For vegetables, our sample average serving size was 1.2 cups compared to the suggested 1 cup; $t\,(65) = 2.49$, $p = .015$, $d = .31$; for fruits, our sample average serving size was a little larger than one medium fruit (1.10) compared to the suggested 1 medium fruit; $t\,(64) = 2.37$, $p = .02$, $d = .29$; and for fries, our sample average serving size was almost three times the suggested serving size (almost 1.5 cups for our sample); $t\,(50) = 11.17$, $p < .001$, $d = 1.02$. The effect size (Cohen's *d*) was small for vegetables and fruits but large for fries.

Shannon Duffy
Nutrition Education Activities in a Children's Museum
Department of Family and Consumer Sciences
Faculty Mentor: Dr. Nina Collins
Poster #: 33

Rationale: Children's museums are a great way for families to have fun, yet learn at the same time. According to results from a recent survey in *Childhood Obesity* (2005), 35 percent of parents rated their children's school programs very low for teaching good nutrition. Museums may be another outlet to teach our youth to live healthy lifestyles. If museums can begin implanting interactive learning exhibits that will promote good health and nutrition, while maintaining a high degree of excitement and interest, nutrition education will have an additional venue.

Purpose: The purpose of this study is to determine the effectiveness of a fun and interactive nutrition exhibits to children 6-8 years of age at a children's museum. Knowledge of nutrition will be assessed based on participation in an interactive learning activity.

Study Design, Methods: The activity consisted of a "Go Fish" type activity centered on the new food pyramid. Children, who decided to participate, completed a pre and post quiz based on the food pyramid in December 2007 and January 2008. The pre quizzes were assigned one color, and the post quizzes were assigned a separate color to distinguish pre and post knowledge while still keeping the identities of the participants anonymous. Once the child completed both quizzes, they turned them in to the museum volunteer and received a granola bar.

Major Findings: Preliminary findings show that children who participated in the food pyramid learning activity increased their learning or retained nutrition knowledge post activity. Most of the children who completed the pre quiz, played the activity, and then completed the post quiz showed an overall improvement in their quiz scores.

Implications: Dietitians should view children's museums as an additional platform for nutrition education.

Ashleigh Johnson, Abby Hillis
Consumer Education in Second Life
Department of Family and Consumer Sciences
Faculty Mentor: Dr. Nina Collins
Poster #: 46

Purpose: The purpose of this project was to determine the potential for consumer education applications for Family and Consumer Sciences Educators within the virtual world of Second Life. In addition, this project sought to determine the user-friendliness of a consumer education strategy within the virtual world of Second Life (SL).

Procedures: The mission of Second Life, founded in 1999 by Philip Rosedale and created by Linden Lab, is "…to connect us all to an online world that advances the human condition." In Second Life individuals jointly inhabit a 3D landscape and build the world around them," (Linden Research, Inc., 2007) Entering in to second Life (SL) one must create an avatar or virtual person. In this research, once avatars were developed, the possibility of creating a nutrition education project within an existing virtual supermarket was explored. Upon making visits to a variety of SL sites further applications of money management (buyers and sellers use linden dollars for exchange within SL), interior design, visual merchandising, virtual college visits, time-travel and costume design were examined. Users need to be tech savvy to be able to effectively take advantage of visits to SL. It may be a challenge for some consumers to determine how to "walk" or "fly" in SL in order to visit. In addition, some areas of SL contain mature content (although Teen Second Life, which is rated PG, is available for 13-to-17-year-olds) (Linden Research, Inc., 2007).

Lauren Jozefat, Jaclynn Avner, Jen Jensen, Sarah Kowalski
Insulin Pump Pack Design and Development
Department of Family and Consumer Sciences
Faculty Mentor: Dr. Kendra Brandes
Poster #: 48
Oral Presentation: Bradley Hall, Room 139 / 3:30pm – 3:40pm

In fall 2006, Nicole Herron, a Bradley University graduate, diabetes educator, and sales specialist for Smiths Medical, approached the Family and Consumer Sciences Department with the idea to develop and construct diabetes packs for children. A pilot program was undertaken in the spring 2007, in which a group of students designed pump packs and supply cases for children with diabetes. After the projects were completed and presented to the children, a survey was completed to determine the degree of satisfaction with design and functional aspects of the packs. The biggest need for improvement was the functional design of the packs. Four students are working very closely with a pediatric diabetes group to gain insight on the actual needs for packs and supply bags. As well as sitting in on a diabetes meeting and receiving surveys from the children, the students are working with Cynthia Fedor, a social worker at the OSF Pediatric Diabetes Resource Center. While working with Cynthia, the students truly gained insight and hands-on experience working with the actual supplies that will go into the packs.

The focus of this year's project was to gain a better understanding of the unique sizes and shapes of diabetic pumps and related supplies. The 2008 project will combine greater attention to function with the concept of customization developed in the 2007 project.

Alaina Knaak, Rachael Lynch, Maria Kanella-Zannis, Michelle Coyle, Michelle Fontana
An Evaluation of Using Waterless Cookware on an Induction Cooktop
Department of Family and Consumer Sciences
Faculty Mentor: Dr. Nina Collins
Poster #: 52

Induction cooking uses electromagnetic coils to heat organic products. "Induction cooking heats food efficiently and safely: it can operate only when a pot is on the surface. It's claimed that induction uses up to 60 percent less energy than a electric stove." This student-faculty collaborative study was conducted to compare the effects of different cookware using induction and electric cook tops on overall qualities of chicken breasts including shrinkage, palatability and consumer acceptability. The main objective was to compare the use of Healthy Gourmet cookware on an induction cook top compared to other methods of cooking. Several trials of cooking boneless, skinless chicken breast on various cook tops were conducted to get an average weight, length, tenderness, and cook time for each cooking method. After perfecting each method, a taste panel of 10 Peoria residents over the age of 18 participated to determine consumer acceptability of the finished product. As a result of the taste panel, the cook method with the highest rankings in each category was cooking with the Healthy Gourmet cookware on the induction cook top. The least preferred method of was cooking on an electric stove top with a regular cookware. The Healthy Gourmet pan on the electric stove top and the waterless cookware on the induction cook top received similar markings, except the only difference being a more tender chicken breast on with the Healthy Gourmet cookware. Objective tests resulted in least shrink loss and highest tenderness score for the Healthy Gourmet cookware on induction cook top.

Jami Sheehan, Brooke Cloyd
Comparison of Nutrition Counseling and Traditional Education in Food Selection in College Students
Department of Family and Consumer Sciences
Faculty Mentor: Dr. Jeannette Davidson
Poster #: 83

Purpose: The purpose of this study is to compare the effectiveness of two methods (nutrition counseling, versus traditional nutrition education) of delivering nutrition information to college students in making healthy eating choices. Eating habits of young adults are reported to be less than optimal. Resources available to college students regarding healthy food choices on campus are limited.
Methods: We will be comparing two different ways of providing students with nutritional information. At the informational meeting, 20 participants will be randomly assigned to one of two methods: a nutrition counseling (NC) group or a traditional nutrition education (TNE) group. Students will fill out a food frequency questionnaire before the study begins. They will either receive an informational packet that contains information on healthy eating; or receive one-on-one counseling with the information packet and a trained student counselor to help explore the student's eating habits and find ways to make better food choices. The counseling sessions will incorporate motivational counseling, which will aid the student in the development of a nutrition plan in order to improve nutritional behaviors, provide empowerment, and cultivate self-reliance over time. These individual sessions will be conducted in private and videotaped to assess counseling techniques used. The face of the student will be obstructed and only the student counselors and the faculty mentor will review these tapes. Both groups will be asked to come back in 6 weeks to complete another food frequency questionnaire to help us establish change in eating habits and effectiveness of the delivery of nutrition information.

Rebekah Aavang
The Relation of Pitch and Timbre to the Perception of Intonation
Department of Music
Faculty Mentor: Dr. Stephen Heinemann
Poster #: 5
Oral Presentation: Bradley Hall, Room 100 / 3:00pm – 3:10pm

Intonation, the accuracy of pitch, is a fundamental aspect of musical performance. Without a high degree of precision in this regard, an otherwise aesthetically pleasing musical performance can become a mediocre or even an unpleasant one. Conversely, musicians with keen pitch perception can improve an otherwise competent effort when they play completely in tune with one another.

Instrumentalists use a variety of techniques to develop their sense of intonation. Some learn to adjust pitch by ear to a note given by another instrument or electronic source, while others may check their intonation by the interpretation of acoustic phenomena or by electronic measurement.

This study is designed to measure the accuracy of different methods of tuning used by instrumentalists. Results may indicate that one method tends to be more precise than the others. It is also possible that using differing techniques will adversely effect the instrumentalists' intonation.

Devin C. Kelly
Male Homosexual Representation in American Drama since 1991
Department of Theatre Arts
Faculty Mentor: Dr. Doug Rosson
Poster #: 51

Homosexual, male characters have been present in theater for hundreds of years, yet the manner in which these men are represented has changed over the decades. Early in the century, the most common technique of representing a gay man on stage was by giving him certain personality characteristics that the audience would understand as being "homosexual", without the playwright ever having the character officially referred to as gay. These characters where also two-dimensional and rarely fully developed individuals. The objective of my research is to examine American plays written since 1991, ten years after AIDS was "discovered" in America, and determine the new ways gay men are represented on the stage in order to keep homosexual theater history as up-to-date as possible.

Rich Lupo
Rediscovering the Piccolo Solo in the Stars and Stripes Forever March
Department of Music
Faculty Mentor: Dr. Kyle Dzapo
Poster #: 60

With the increasing interest in reenactment performances of the John Philip Sousa Band, a renewed awareness of authentic performance practices is emerging for the sake of authenticity. "The Stars and Stripes Forever March," perhaps Sousa's greatest work, is in need of such research to determine authentic performance practices for accurate reenactments. For a piccolo player, this march holds a special endearment, for it contains perhaps the most famous piccolo solo of all time. However, due to a century of popularity, dozens of editions, transcriptions, and arrangements, the authenticity of the solo

itself can now be called into question. How did Sousa really intend the solo to be played? Research is now rediscovering the traditions behind this most famous of solos.

By comparing the numerous editions of the solo to antique recordings of the Sousa Band performing the march, a basis of fact can be established on how the solo was performed by the Sousa Band from 1897 to 1932. Photographs, antique instruments, and musicians' written accounts will be analyzed in order to piece together the story of this unique solo. Sousa's own holograph score will be analyzed.

When complete, the research will be able to give definitive answers on how the Sousa Band performed the famous piccolo solo in the march. This will provide future generations of piccolo players and conductors a resource of knowledge when tasked with the authentic performance of "The Stars and Stripes Forever March."

Ben Scarbrough
Breaking the Bank in Norwegian Wood
Department of Theatre Arts
Faculty Mentor: Dr. Steve Snyder
Poster #: 81

In trying to figure out who they are, many college students spend a lot of time reflecting on the nature of their relationships with others. The issue most often explored by these people is love, an abstract concept that has changed very much over the years. *Breaking the Bank in Norwegian Wood* is an exploration of love through the medium of theatre. The main purpose of this play is to look at the interplay between four different types of love and to see how they specifically change each other. In this character exploration, each person represents a specific type of love. The four types explored in *Breaking the Bank in Norwegian Wood* are obsession, unrequited, idealized, and intellectual. The medium of theatre provides a unique way to present the question to the audience. This work was produced by the Bradley University Ministry of Experimental Theatre in the Lab Theatre earlier this year, and from the feedback I have received by people who saw the show, I have learned that the ideas presented in this play are generally well-received by the student populace.

HEALTH SCIENCES

Kelly Anderson
Functional and Neurological Improvements Related to Motor Imagery in Physical Therapy as Applied to Stroke Patients
Department of Physical Therapy and Health Science
Faculty Mentor: Dr. Craig Cady
Poster #: 7

Carey Bertram, Lisa Stampnick, Samantha Cikesh, Jennifer Greenawalt, Sierra Babineau
Management Strategies of Childhood Type 1 Diabetes: A Review of Literature
Department of Nursing
Faculty Mentor: Dr. Peggy Flannigan
Poster #: 10

Various strategies, which directly affect daily life, are used in the management of type I diabetes in children and adolescents. Management is not restricted to metabolic control, but includes family involvement, socialization, and emotional coping. Often children feel like outcasts after being diagnosed with diabetes. A review of exploratory and descriptive research articles was conducted. The literature focused on a target population primarily of children and adolescents with type I diabetes and their parents. The stresses of managing childhood type I diabetes can cause conflict between child and parent. However, when parents successfully cope with the disease, the child in turn handles the disease better. School personnel also play a vital role, and the social aspects of focus groups have been found to help socialize the child and family with other families experiencing the same daily needs of childhood type I diabetes. Through these diverse methods, children strive to lead normal lives. The effective use of management strategies influences childrens' self-esteem and their success in efficiently managing their diabetes regimen.

Krista Davis, Sarah Follmer
The General Public's Knowledge and Awareness of Direct Access to Physical Therapy in Illinois
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Dawn Hall
Poster #: 29

The purpose of this study was to determine the general public's knowledge of physical therapy in the state of Illinois, their awareness of direct access to physical therapy, and whether or not they would utilize direct access if it were made available to them. Surveys which asked for demographic information, questions regarding knowledge of physical therapy (i.e. conditions that physical therapists see and do not see), exposure to physical therapy, knowledge of direct access to physical therapy, and utilization of physical therapy were administered to 105 subjects from the general population at various public venues within central Illinois. Overall 67% of the general public seems to have a broad knowledge of the conditions that physical therapists see and/or do not see patients for; however, approximately 33 % of the subjects were uncertain about the scope of physical therapy practice. Only 10.5% of subjects were aware that restricted direct access was available to them within the state of Illinois and 59% of the subjects surveyed indicated that they would use unrestricted direct access if made available to them. From this study, it is apparent that the general public is not only unaware of the scope of physical therapy practice within the healthcare arena but also uninformed about the current access to physical therapy; both of which are options to seeking increased medical attention as well as

decreasing the time needed for treatment.

Lisa Denning, Marissa Weaver, Kevin Thornberry
Knowledge Affect on Intent to Change Practice
Department of Nursing
Graduate Project
Faculty Mentor: Dr. Jackie Ruthman
Poster #: 30

Direct cuff pressure measurement using a manometer is suggested as the best practice in preventing overinflation or underinflation of endotracheal tube (ETT) cuffs. However, there is currently no standard. The purpose of this study was to determine what effects, if any, knowledge has on Certified Registered Nurse Anesthetists' (CRNAs') intent to change practice related to ETT cuff inflation practices. Knowles Learning Theory and Prochaska's Stages of Change were used to conceptually frame this quasi-experimental pre-test/post-test design. Results revealed that CRNAs' ETT knowledge regarding efficacy of estimation techniques and appropriate pressure values was low on pre-test and improved on post-test. Increased knowledge moved participants from pre-contemplation to contemplation regarding the use of manometers in their practice. Findings support a brief educational intervention is effective and may contribute to evidence based practice.

Jonathan Hamm, Seth Langevin, Kory Begy
The effects of an 8-week variable resistance training program on lower extremity power in the elite athlete: A case study
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Kurt Neelly
Poster #: 41

Strength and power are important factors to any athlete as these can affect other athletic abilities such as speed, agility, and flexibility. Traditional free weight resistance training remains the preferred method for athletes to increase strength and power, but the addition of heavy chains has enabled many exercises to be completed with variable resistance. The use of chains allows resistance to increase, as the lifter becomes biomechanically stronger towards the top of the lifting motion. Previous research has failed to examine the effects of this lifting technique in regards to functional measures of lower extremity power. This study investigated the effectiveness of incorporating variable chain resistance with the back squat exercise into a sport specific 8-week periodized training program for an elite athlete. In order to appropriately measure any changes in lower extremity power, the following functional tests, vertical jump, two-legged standing long jump, and 10-yard dash, were used. Post-test results show an 8.57% increase in vertical jump height, a 4.41% increase in standing long jump distance, and a 2.30% improvement in 10-yard dash time from baseline. In conclusion, heavy chain variable resistance, when applied to the back squat exercise, appears to increase lower extremity power. However, additional research is needed in this area.

Becky Hornbrook, Aubrey Musser
The Relationship Between the Maximal Step Length Test and Leg Length, Activity Level, and Common Measures of Balance in Older Adults
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Andrew Strubhar
Poster #: 43

Background and Purpose: The Maximal Step Length Test (MSLT) is a recently developed balance test that measures a person's ability to take a large step. The purpose of this study was to (1) determine whether the MSLT can distinguish fallers from non-fallers, and (2) determine whether a relationship exists between the MSLT and other measures of balance. **Subjects and Methods:** Thirty-seven healthy subjects age 65 or older completed the Physical Activity Scale for the Elderly (PASE) questionnaire, the Activity-Specific Balance Confidence (ABC) scale questionnaire, and performed four common balance measures (Functional Reach (FR), One Leg Stance Test (OLST), Timed Up and Go (TUG), and Four Square Step Test (FSST)), and the MSLT. **Results:** Subjects stepped forward an average of 55% of their height. No significant difference was found between the mean MSLT (percent of height stepped) forward for fallers (54.6%) and non-fallers (55.9%). However, a significant difference in the mean MSLT forward was found between assistive device (AD) users (43.8%) and non-AD users (58.15%); $t = -3.678$, $p = 0.001$. A significant correlation ($p < .05$) was found for MSLT forward and age (r_s=0.58), PASE (r_s=0.41), ABC (r_s=0.58), Dominant OLST (r_s=0.46), Non-dominant OLST (r_s=0.53) FSST (r_s=0.76), FRT (r_s=0.35), and TUG (r_s=0.70). **Discussion and Conclusion:** MSLT did not distinguish between fallers and non-fallers but did distinguish between AD users and non-AD users. MSLT did correlate well with other common balance measures, especially FSST and TUG. Age and activity may be a factor in using MSLT to measure balance.

Christine Lane, Christine, Christie Gaston, Randy Goodman, Michael Hutchinson
The Validity of Cost Reduction Technologies ET 2000 Isokinetic Dynamometer and its Relationship with the Work Well Functional Capacity Evaluation in Healthy, Employment Aged Individuals
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Steven Tippett
Poster #: 57

OBJECTIVES: This is a correlation study to determine the relationship between the strength levels obtained through the Work Well Functional Capacity Evaluation (FCE) and the Cost Reduction Technology (CRT) ET 2000 isokinetic dynamometer. BACKGROUND: Work-related musculoskeletal injuries are a costly problem for many employees and businesses. FCEs are commonly performed as a pre-employment screen to best match workers to jobs. However, FCEs involve lengthy procedures and can be subjective. The utilization of an isokinetic dynamometer is a relatively new technique to perform employment screening. It is believed to be able to accurately and objectively measure strength in a much shorter time period than the FCE. However, there has been little research on the use of isokinetic machines and their relationship to functional activities. METHODS: Twenty-three healthy, employment age subjects were recruited to compare the work-capacity levels obtained from the Work Well FCE and the CRT ET 2000 dynamometer. The Pearson Correlation was used to correlate the results from the two tests, the subsets of the FCE, and the correlation between the subject's height and work-capacity level. RESULTS: Overall scores of the FCE compared to the CRT had a high correlation of 0.805 which was significant at the 0.01 level. The CRT showed the strongest correlation with the waist to floor FCE subtest with a 0.817 correlation. CONCLUSION: Our study concluded that there was a strong correlation between the FCE and the CRT results. Future studies may be needed to

examine inter-rater reliability and the relationship between the FCE and CRT and limb length.

Genny Mueller, Christina Agee, Karen Jones
Undergraduate Perceptions of Physical Therapy and the DPT Degree
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Robert Bertram
Poster #: 66

In response to increasing scope, responsibility and growth of physical therapy (PT) practice, education is evolving to better prepare students to lead an autonomous and professional practice. There is a need to attract an increasing quality as well as quantity of students into PT programs. In order to better understand preparation necessary for entry into and successful completion of the Doctorate of Physical Therapy (DPT) degree 124 health science undergraduates attending a private Midwestern university were surveyed in order to determine gaps in overall comprehension of the DPT program and scope of PT practice. Independent t-tests, ANOVA and descriptive data were analyzed. Freshman participants were found to have significantly less knowledge of PT practice than sophomore, junior and senior students. Scores on the ACT, previous personal experience with PT services, working in a healthcare setting and number of PT observational hours were associated with higher PT knowledge. Perceptions of PT as a career choice are overall positive. Greater than 90% of those surveyed thought that PT is an exciting, well paid and challenging career. Less thought it was a difficult degree to obtain (76%) and physically demanding (82%). DPT programs can do more to promote the understanding of the program and PT practice and thereby promote increased student enrollment and success. Implementing placement programs and educational resources could assist these students further.

Michelle Pickering, Heather Ferrero, Kimberly Whalen
The Relationship Between Body Mass Index, Body Composition, Motor Performance and Balance in Children Ages 4-9
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentors: Dr. Stacie Bertram and Dr. Melissa Peterson
Poster #: 70

Background and Purpose: The increased prevalence of childhood obesity has raised concerns in the medical community regarding potential adverse physiologic effects on development and function. Few studies have investigated the relationship between motor development and balance in the obese child versus the non-obese child. The purpose of this study was to compare motor performance and balance in normal weight and overweight children aged 4-9.

Participants: Sixty-five children from a diverse parochial school aged 4-9 participated in this study.

Methods: Age-Adjusted Body Mass Index (BMI) was calculated and percent body fat was recorded for each participant. Each participant then completed Test of Gross Motor Development (TGMD-2), and the Pediatric Clinical Test of Sensory Interaction and Balance (P-CTSIB) with AMTI force plate over a two-day testing period.

Results: Significant differences were found in the gross motor component of the TGMD-2 with normal weight subjects outperforming subjects at risk for overweight or overweight. When matching subjects by age and gender, significant differences between the normal and overweight subjects were found in postural stability, specifically in conditions where visual input was distorted or absent.

Discussion and Conclusion: Results suggest a relationship between obesity and poorer gross motor skills and balance in young children. More research is needed on the effects of obesity on motor performance and balance in young children.

Emily Saathoff, Shyla McCarthy
A Survey of Physical Therapists' Screening and Practice Patterns Used for Osteoporotic Patients
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentors: Dr. Melissa Peterson and Dr. Stacie Betram
Poster #: 77

Background and Purpose: Physical therapists come in contact with all types of patients including those at risk and those who have been diagnosed with osteoporosis. Currently, little information exists about what physical therapists know about osteoporosis, how they screen for it, and how they treat these patients. **Participants and Methods:** A survey was administered to 250 Illinois Physical Therapy Association members, and a second mailing was sent to those members who had not replied after three months. The survey focused on osteoporosis and the physical therapists' knowledge and confidence with screening and treating the disorder. Forty-one percent responded, with a final total of 83 participants meeting the inclusion criterion of treating women age 40-90. **Results:** The majority of participants correctly identified that they would often or always screen females for osteoporosis (68%) and identified patient's change in height as a red flag to screen for osteoporosis (85.6%). In contrast only 34.9% would often or always identify Asian individuals as appropriate for screening for osteoporosis. In regards to treatment, participants appropriately prescribed rest in a supine position (44.6%) and "hip hinge" as a method for sit to stand (48.2%). However, one-third would prescribe high risk exercises including rest in a sitting position (37.3%) and a "nose over toes" method of sit-stand (36.1%). **Discussion and Conclusion:** It appears physical therapists correctly screen and identify some risk factors for osteoporosis; yet, more education is needed in certain areas of screening and treating these patients.

Matt Smetana
The Ability to Maintain Balance During the Proprio-Test Under Differing Sensory Conditions as Measured by the Proprio 5000
Department of Physical Therapy and Health Science
Faculty Mentor: Dr. Andrew Strubhar
Poster #: 86

Purpose: To determine the ability to maintain dynamic balance under different sensory conditions while on the Proprio 5000 (Perry Dynamics, Decator, IL). The Proprio 5000 is a dynamic platform designed to challenge the somatosensory (or proprioceptive) system. **Methods:** 20 Subjects performed the standard Proprio test under the following conditions: Warm-up (SW), normal or standard condition (SC), on dense foam (FC) and eyes closed (EC). The foam was intended to give inaccurate somatosensory feedback. The Proprio test consists of the subject standing on a platform that progressively and randomly pitches and rolls in order to measure the subject's reaction in multiple dimensions. Dynamic Motion Analysis (DMA) is a score calculated by the Proprio 5000 that considers time and total motion of the subject during the test. The time that the subject remained within the limits of the device's safe operational standards was also measured. **Results:** A significant difference was found between the mean DMA scores of the SC (574.2000),) and the EC (961.7000), and the FC (619.8500) and the SC (574.2000), $p < .05$. Similar differences were found for the amount time the subject remained on the device. No other significant differences were observed. **Conclusion:** This study indicates that vision is an important component of this dynamic balance test. The role of the

somatosensory system is unclear because the SC and FC were not significantly different. The foam at low speeds may have acted to absorb energy and lessen the movement of the subject, resulting in better DMA score.

Becky Zehr, Kristin Zeurcher, Brooke Fessler, Jamie Fifarek
The Impact of Assistive Device Prescription on Gait Following Total Knee Replacement
Department of Physical Therapy and Health Science
Graduate Project
Faculty Mentor: Dr. Melissa Peterson
Poster #: 96

Background and Purpose: Traditionally, a standard walker has been the preferred choice of assistive device following a total knee replacement; however, there is currently no research to support this. The purpose of this study was to investigate the potential differences in gait observed in individuals following a total knee replacement based on the prescription of a standard walker versus a wheeled walker in order to develop a protocol for assistive device prescription.

Participants: Participants were 42 volunteers (66% female; 34% male) from a convenience sample undergoing total knee replacement performed by one of two orthopedic surgeons at St. Francis Hospital.

Methods: Data were collected from subjects during a pre-operative visit, day of discharge, and six weeks post-operation. A GAITRite™ computerized walkway was used to analyze cadence, velocity, base of support, step length, step length differential (ratio of difference in step length between operative and non-operative leg) and time spent in single support on the operated leg.

Results: For day of discharge data, independent groups t-tests revealed that individuals using a wheeled walker ambulated with greater cadence ($p = 0.02$) and smaller step length differential ($p = 0.03$). They also spent a greater portion of the gait cycle in single support on the operated leg, although this was not statistically significant ($p = 0.08$). Step length, base of support, and velocity showed no significance.

Discussion and Conclusion: The significant data may indicate a more normalized gait pattern with those participants using a wheeled walker. The acute nature of a total knee replacement may account for the lack of significance in the other variables.

Julia Dunkelberger, Kathryn Baker, Kerrie Armstrong
The Body Project: A Campus-Wide Survey of Body Attitudes and Practices
Department of Sociology
Faculty Mentor: Dr. Jackie Hogan
Poster #: 34

National surveys suggest that one in five college-age women suffers from an eating disorder and countless more women and men feel so dissatisfied with their body shape and size that they experience negative effects in their health and their social, academic and professional lives. This project seeks to measure body attitudes and practices on Bradley's campus. In Spring 2007, we conducted a campus-wide survey, and 1381 currently enrolled students responded. They ranged from freshmen through graduate students, of which 67% were female and 32% were male. The survey found a high level of body dissatisfaction among Bradley students, with women reporting a much higher level of body dissatisfaction and body anxiety than men. A significant number of students also reported skipping classes, avoiding group activities and having trouble concentrating on academic work because of body concerns. And, according to the survey results, the greater a student's body anxiety, the more likely they are to drink to the point of intoxication, engage in risky sexual practices and use illegal drugs to control their weight. The survey is part of a larger student-faculty collaborative research project known as The Body Project. Details on Project's activities are available at http://thebodyproject.bradley.edu.

Patrick Ellis
A Lost Identity: Shakespeare
Department of English
Faculty Mentor: Dr. Martha Craig
Poster #: 1

For the Student Scholarship Exposition I will be exhibiting the abilities of Computer Analysis. Shakespearian studies have always been synonymous with the concept of authorship. Innumerable methods have been tried to prove his authorship one way or another, but not one has provided enough evidence to be considered irrefutable.

A relatively new method of providing authentication is called Computer analysis, which has the ability to provide the proof needed for validation. Computer analysis delves heavily into computer science and statistics, but mostly lies in probability. I have acquired a program, *Signature,* which gives the textual analysis that provided the basis for this project. It compiles bodies of texts and looks at such things as word frequencies, word usage, punctuation, masculine or feminine endings, sentence length, paragraph length, and more. It rests on the basis that when enough data is collected, a pattern in the categories arises, which is defined so specifically, it is impossible to duplicate. The found algorithm for a particular text can then be applied to others – and the probability results will do the rest.

The problem in identifying whether or not Shakespeare wrote the plays and sonnets is that there are no solid frames of references - every supposition needs firm ground to jump off from. However, my project has set up a hypothetical situation - combining both a research and creative aspect – and displays the wide capabilities of Computer Analysis and its superiority to other means of proving authorship.

Stephen Kaufmann
Georges Bataille's Spiritual Exercise
Department of Philosophy and Religious Studies
Faculty Mentor: Dr. Michael Greene
Poster #: 50

Pierre Hadot famously distinguishes between philosophy as theoretical discourse and philosophy as spiritual "way of life". The latter, he claims, is the more genuine of the two as well as the foundation out of which the former arises. Georges Bataille strongly illustrates such philosophy practiced as a way of life in Inner Experience. In the heart of this work, the passage "The Torment", Bataille both writes and reads as a journey of spiritual transformation. He faces a horrific existential crisis and despairs to find a way to deal with it. His wrenching experience repeatedly renders theory empty and inadequate. The reader cannot help but to engage in spiritual empathy with Bataille and struggle with the same problematic which wholly consumes him.

Maggie Koehler, Jessica Rickenbaugh, Justine Drozd
Traditional Chinese Medicine in Modern Chinese Society
Department of Philosophy and Religious Studies
Faculty Mentor: Dr. Dan Getz
Poster #: 53

Traditional Chinese Medicine (TCM) is the foundation for understanding all healing and wellness in China. In contrast, the Western view of healing is bifurcated into medicine for the body and religion or spirituality for the mind, a view that has only slowly gained acceptance in modern Chinese society. TCM sees the body as a small universe that has many interrelated systems, and seeks to find a harmonious balance of all parts of this complex structure. Our project will present the foundations of TCM, including the concepts of yin-yang, and the five phases of Chinese cosmology. We will further examine different methods of treatment and prevention to restore or maintain a harmonious balance. Our presentation will combine the foundations and techniques of TCM with observations from our recent trip to China, including our visits to a traditional hospital, to herbal medicine shops, and to public parks. We will also discuss conversations with contemporary Chinese who integrate TCM and Western medicine into their lives.

Doug Valentine, Aaron Frei, Charles Brands
Religion and Ecology: the Relationship between Chinese Religious Traditions and Nature Made Manifest Through Garden Design
Department of Philosophy and Religious Studies
Faculty Mentor: Dr. Dan Getz
Poster #: 93

How one's religion dictates mankind's relationship with nature will greatly affect that person's outlook on ecology. In this study we will examine the three major religious traditions of China: Buddhism, Daoism, and Confucianism. Through the philosophical approaches of these three traditions, an understanding of humans' relationship with nature is achieved. Moreover, these traditions further affected the design and personification of the perfect Chinese garden. Through research revealing the various beliefs ascribed to the aforementioned traditions, and through a history of the development and influences of Chinese gardens, we hope to provide a better understanding of how these religious traditions lead to both an understanding of the Chinese people's relationship with nature and the significance of the Chinese garden to historical and modern China. Actual pictures will be provided from our visit to the site.

Melissa Wahl
Hamlet Sees a Shrink
Department of English
Faculty Mentor: Dr. Martha Craig
Poster #: 4

This project, done as a creative project for ENG 347, is a case study character analysis on Shakespeare's character Hamlet from the view of Hamlet's therapist, whom he goes to visit shortly after his father's death, and continues to see as the play progresses. In creating this project, I was looked with great care on the theme of whether or not Hamlet is actually mad throughout the work, or if he is simply faking it, and in doing so gained an understanding of the play's most important character's inner workings and standpoint.

During my research, there were a great number of books from which I drew information that gave me a wonderful assortment of viewpoints to explain Hamlet's actions. They highlighted different illnesses that could have ailed Hamlet, the psychological repercussions of his father's death as a means of explaining Hamlet's actions, his possible motives, and even his suicidal mindset.

With the help of these texts I looked at Hamlet's inner workings, and fashioned the project as a medical file. I created from the information parental and patient screening evaluations, medical records, and the forms his mother would fill out expressing her concern for Hamlet's well being. I also included a series of interview sessions with Hamlet, as well as his guardians, King Claudius and Queen Gertrude in which I wove pieces of the text. Furthermore, I created an evaluation of the interviews, as well as a prognosis for success to follow up the sessions and showcase the findings.

Alana Yanagida
Cross-cultural Perspective on the Body
Department of Sociology
Faculty Mentor: Dr. Jackie Hogan
Poster #: 95

Approximately 24 million people in America are suffering from an eating disorder. Among college women, eating disorders affect 1 in 5, according to the National Eating Disorder Association in 2006. America's culture is driven by a desire to be thin. But when exploring body images and body shapes cross-culturally, there are some societies that glorify larger bodies, and actually try to fatten those who are believed to be too thin. This research project takes into account previous studies completed on the different body sizes and perceptions of attractiveness cross-culturally, but with an emphasis on bodies in Fiji and Samoa. Fijians and Samoans associate larger bodies with wealth, power, and fertility. But the recent shift in these societies towards a preference for thinner bodies is cause for concern. The shift is caused in part by increased access to Western television. This study also investigates the usefulness of the Body Mass Index (BMI) as a health measure for diverse ethnic groups. Studies find that various ethnic groups in America correlate different body shapes with body satisfaction and dissatisfaction. Japanese Americans have one of the lowest average BMI, but suffer from the highest rates of body dissatisfaction. It is imperative to evaluate the effectiveness of the BMI, which is used globally. Research indicates that the BMI is not an accurate indicator of health in different ethnic groups, and it is unable to report where body fat is located, a predictor for several diseases.

Paul Zipfel, Jennifer Cantrell, Tyler Dickenson
Chinese Cosmology: An Interpretive Study of the Temple of Heaven
Department of Philosophy and Religious Studies
Faculty Mentor: Dr. Dan Getz
Poster #: 97
Oral Presentation: Bradley Hall, Room 139 / 5:00pm – 5:10pm

China has a rich, cosmology that influences both the order of sacred space and daily life. The Temple of Heaven, built in 1420 by the Yongle Emperor of the Ming dynasty represents Chinese cosmology, architecture, and ritual. Every building of the site is laid out with precise correlation to the Chinese universe. Further, the rituals performed at the site were the means for the Emperors of the Ming and Qing dynasties to commune with Heaven. These rituals were performed at precise times according to the ordained cosmic order. These three areas of Chinese cosmology – sacred space, sacred ritual, and sacred time – form the underlying ultimate orientation of Chinese Imperial religion.

Our presentation will walk through these three pillars of Chinese cosmology as they were utilized in the construction of the temple and the rituals held within. The sacred space delineated from the city is formed as a representation of Heaven itself. The altars are round and consist of many attributes proportioned according to the number nine (and multiples of nine), as the circle is the shape of Heaven and nine is the most heavenly number that humans can access. There are also square walls and platforms representing earth where the sacrifices to the gods of grain and the harvest were performed. The rituals themselves were carried out in accordance with the Heavenly order. Precise ordering of sacred relics and sacred rites was crucial for Heaven to be properly influenced; and as properly influenced, Heaven itself was required to respond with reciprocal good will. These rituals precisely followed the Chinese religious calendar and the movement of the heavens. Chinese cosmology, viewed through the specific lenses of time, space, and ritual, reveals a highly ordered and symbolic world view that is unique in human history.

Sujith Vadassery, Michel Macara-Chvili, Luke Dejarnatt
Material and Process Selection for Bicycle Frame
Department of Industrial and Manufacturing Engineering and Technology
Graduate Project
Faculty Mentor: Dr. Alexey Sverdlin
Poster #: 92
Oral Presentation: Bradley Hall, Room 139 / 4:45pm – 4:55pm

This paper is concerned about the material and process selection of a bicycle frame. The material is selected according to amount of stiffness and toughness needed in the frame. First material performance indices will be derived and a methodology will be developed to minimize distortion in the frame, second the material selection to minimize the cost of manufacturing. Using these material indices a chart will be made and appropriate material will be selected. According to the material selected the appropriate process will be selected for manufacturing the part at relatively low cost. Section shape can be included, allowing the optimum selection of both material and shape.

Sanjoy Chowdhury, Archana Singareddy
Network End-to-End Link Performance Analysis Using Internet2 Diagnostic Tester
Department of Computer Science and Information Systems
Graduate Project
Faculty Mentor: Dr. Jiang-Bo Liu
Poster #: 21
Oral Presentation: Bradley Hall, Room 100 / 3:45pm – 3:55pm

In this research, we have analyzed the network performance of end-to-end connections and diagnosed the network problems using Internet2 Network Diagnostic tool (NDT). The Internet2 NDT can positively state if sender, receiver, or network is operating properly, identify configuration problem, provide accurate application tuning info, and suggest changes to improve performance of internet2 network. We have tested connections from Bradley University to several remote NDT servers on the Internet2 as well as local servers to analyze the network performance. In our analysis NDT detected several configuration problems which impacted interter2 network speed.

Internet Transport Protocol TCP uses congestion window to determine how many packets can be sent at one time. Congestion window depends on operating system's TCP buffer size which is very low by default. We can dynamically reset the required buffer size when connected on the Internet2 using NDT.

NDT can also detect the slowest link in the network transmission. We conducted several tests in Bradley Hall and Haussler Hall to identify such links. The results can be used to remove the transmission bottlenecks in the network communications.

Duplex mismatch is a condition whereby the host network interface card and building switch port fail to agree on basic network operating parameter which causes poor network speed at receiving end. We tested and found a few duplex mismatches in our test cases where host set to half duplex and switch set to full duplex. This problem has to be solved in order to get high speed on Internet2 applications.

Ben Blomberg
Design and Fabrication of Evaporators for Molecular Beam Epitaxy
Department of Physics
Faculty Mentor: Dr. Kelly Roos
Poster #: 12

We are interested in studying the atomic-scale effects of depositing atoms of various elements onto silicon surfaces. One way of depositing atoms onto a surface is by Molecular Beam Epitaxy (MBE). Via MBE, atoms are evaporated from a source in an ultra high vacuum environment, and subsequently condense onto the silicon surface where the resulting nanostructures can be studied analytically. We have designed and built two types of evaporators which are used for MBE in our lab. The first uses resistive heating to heat the material to be deposited. The second uses an electron beam (e-beam) to heat the material to be deposited. The e-beam method can reach a much higher temperature and therefore works better with vaporizing heaver elements than the resistive heating technique. Since evaporation must be done in an ultra high vacuum chamber, the evaporators require a sophisticated design, and the materials that can be used are limited to those with relatively low vapor pressures. With these evaporators we have the capability of producing a wide array of metallic nanostructures, and films of organic semiconductors.

Brenton Bush, Okenna Egwu
UPS of Multilayer Nitrogen-bearing Compounds on the Si(100) Surface
Department of Physics
Graduate Project
Faculty Mentor: Dr. James Craig
Poster #: 18

Ultraviolet photoemission spectra (UPS) are presented for condensed layers of three ethylated amines; mono-, di-, and triethylamine (TEA) on the Si(100) surface at 100K. The photoemission peaks associated with the nitrogen lone pair electrons are identified in the amines and compared with the corresponding spectra for condensed ammonia. Shifts in the lone pair biding energy for the ethyl-substituted are shown to be consistent with conventional chemical paradigms. Also, for comparison purposes spectra for two nonethylated amines, trimethylamine (TMA), and its silicon analog, trisilylamine (TSA), are presented and discussed.

Kara Deweese, Lauren Hollandsworth
Utilization of 5-Aryl-3-oxo-δ-lactones as Cyclooxygenase Inhibitors
Department of Chemistry and Biochemistry
Faculty Mentor: Dr. Brad Andersh
Oral Presentation: Bradley Hall, Room 139 / 3:15pm – 3:25pm

Recently we discovered a new method for preparing 5-aryl-3-oxo-δ-lactones. This development is significant because it provides a simple method for preparing the fundamental ring system (3-oxo-δ-lactone) for a class of compounds that have a wide variety of biological activities. For example, 5-aryl-3-oxo-δ-lactones have been shown to have antioxidant activity, and they have been converted into antiviral agents. In addition, Eifler-Lima has reported that 3-oxo-5-phenyl-δ-lactone and 3-oxo-5-(4-fluorophenyl)-δ-lactone have antinociceptive (pain relieving) activity in mice. We have shown that

these compounds inhibit cyclooxygenase enzymes, which may explain why these compounds exhibit antinociceptive activity.

Okenna Egwu, Brenton Bush, Andrew Marquis
Adsorption of Trisilylamine on the Si(100) Surface
Department of Physics
Faculty Mentor: Dr. James Craig
Poster #: 35

Adsorption of trisilylamine (TSA) on the Si(100) surface has been studied using temperature programmed desorption (TPD) and time-of-flight electron stimulated desorption (TOFESD). TPD spectra exhibit presence of three desorption states denoted by β_1, β_2, and β_3 associated with presence of a mono-, di- ,and tri-hydride state respectively. This behavior is identical with previously observed desorption studies resulting from atomic hydrogen adsorption, indicating that the nitrogen species in the adsorbate has no impact on the surface structure of the hydride. Preliminary electron irradiation studies are reported indicating that formation of a thin silicon nitride layer is induced as a result of the irradiation.

Geoff Girsch
Conformations and infrared spectra of ethylene glycol: a comparison of zero-temperature calculations and molecular dynamics simulations
Department of Chemistry and Biochemistry
Faculty Mentor: Dr. Wayne Bosma
Poster #: 39

Theoretical and infrared studies of carbohydrates have been helpful in understanding the hydrogen bonding network in these molecules. Ethylene glycol is a good model for small carbohydrates, as it has intramolecular hydrogen bonding, but is still small enough to be quickly modeled. Infrared (IR) spectra of gas-phase ethylene glycol were calculated in two different ways: normal mode analysis (NM) and Molecular Dynamics (MD) simulations. For the normal mode analysis, data from the optimized structures of the 10 low energy conformers of ethylene glycol were used and the IR spectra from those conformations were averaged. For the molecular dynamics simulations, the Fourier transform of the time dependent dipole moment was used to generate the IR spectra at three different temperatures. Both methods were based on calculations with the same density functional theory (DFT) method, B3LYP/6-31+G*, and used the same software, Parallel Quantum Solutions (PQS). Molecular dynamics has the advantage that it takes into account anharmonicities in the vibrations, while normal mode analysis allows access to all available conformations of a molecule. The MD spectra were similar to the NM spectra at higher temperatures; at lower temperatures, the MD spectral bands were shifted to a lower wavenumber than the corresponding bands in the NM spectra.

Nicholas A. Ingrisano, Ryan T. Funk
Nitrogen Tricholoride Chlorinations
Department of Chemistry
Faculty Mentor: Dr. Kurt Field
Poster #: 45

Previous studies regarding the chlorination of alkenes by nitrogen trichloride have focused on the synthetic utility of the reaction. The results of these studies indicate that nitrogen trichloride does serve as an effective reagent in the production of *vic*-dichlorides. Our current research objectives are to provide insight into whether the mechanism of this reaction is free radical, ionic, or a combination of the two processes and to use an alkenes (*cis- and trans*-2-butenes) in which the C-C bond rotation in the intermediate(s) is not restricted by a ring to elucidate the stereochemistry of the addition. Also, in order to afford further mechanistic insights, we have attempted to intercept any transient intermediates. Multiple reaction trials in the presence and absence of acetic acid, a trap for ionic intermediates, suggests that the reaction may proceed by a radical route.

Kylee Korte
Amino Acid Influences on Noble Metal Particle Formation
Department of Chemistry
Faculty Mentor: Dr. Dean Campbell
Poster #: 54
The objectives of these experiments were to use the amino acids such as threonine to reduce tetrachloroaurate(III) ions and silver(I) ions in aqueous solutions to produce colloidal gold and silver particles. The physical morphologies of the particles (assessed by scanning electron microscopy) and their plasmon characteristics (assessed by their visible light absorption) appear to be affected by such factors as amino acid concentration, metal precursor concentration, pH, time, temperature, and the presence or absence of light. Of particular interest are gold particles that have relatively sharp features, such as those having a “multipod” morphology.

Terese A. Kreifels
Mechanism of the Nitrosoamide Decomposition
Department of Chemistry
Faculty Mentor: Dr. Kurt Field
Poster #: 55

The thermal rearrangement and subsequent decomposition of *N*-nitrosoamides in alcohol solvents is under investigation. (-)-(*R*)-*N*-(1-phenylethyl)-2-naphthalenecarboxamide was prepared using a 2-fold excess of optically active 1-phenylethylamine and 2-naphthoyl chloride. Also prepared was the anticipated nitrosoamide decomposition product, 1-phenylethyl-2-naphthoate, via the reaction of 2-naphthoyl chloride with 1-phenylethyl alcohol. The amide and the ester were identified by FTIR, ^{13}C-NMR, ^{1}H-NMR, and high resolution MS. Currently, several 1-phenylethyl alkyl ethers are being prepared via the Williamson synthesis utilizing 1-phenylethyl alcohol, sodium hydride, and alkyl iodides. Once these syntheses are completed, the amide will be nitrosated with N_2O_4/NaOAc and decomposed in alcohol solvents. The enantiomeric purity of the ester and ethers produced should provide insight into the mechanism of the thermal decomposition.

Josiah Miller, Nathan Applegren
Silane Influences on Noble Metal Particle Formation
Department of Chemistry
Faculty Mentor: Dr. Dean Campbell
Poster #: 63
Compounds containing silicon-hydrogen bonds (silanes) can be used to produce colloids of noble metals (e.g. Au, Ag, Pd) by reduction of their precursors. Unreacted silicon-hydrogen bonds contained within some forms of polydimethylsiloxane (PDMS) can also react to produce noble colloids within their polymer structure. These colloids form as the precursor diffuses into the cross-linked polymer, so they are confined near the surface of the PDMS. Surface-confined palladium colloids produced by reduction of tetrachloropalladate(II) ions can be used to catalyze the hydrogenation of the azo bonds in methyl red. Various surface geometries of PDMS are being sought to optimize the efficiency of catalytic degradation of methyl red in solution.

Andrew Monteith
STM Analysis of Different Absorbates on Silicon Substrates
Department of Physics
Faculty Mentor: Dr. Kelly Roos
Poster #: 64

We are using STM imaging, electron diffraction, and UPS to analyze nanostructures and thin films on a silicon substrate. We will be studying the affects of different absorbates on Si (111) 7x7, Si (001) 2x1, and Si (113) 3x2. We heated each of the samples to approximately 1,200 ˚C and allowed them to cool slowly through the transition phase. STM will allow us to obtain a real space image of the population of certain electron states, electron diffraction will allow us to analyze the crystalline morphology, and UPS will allow us to measure the overall structure of the surface. We will display some of our results from different nanostructures and thin films.

P J Morrison, Justin Good, Kelly Eads
2-D Hexagonal Coordination Polymers
Department of Chemistry and Biochemistry
Faculty Mentor: Dr. Edward Flint
Poster #: 65

Two different types of coordination polymers that have a 2-dimensional hexagonal structure have been synthesized. These polymers are similar in that they form hexagonal sheets, but they differ in that in the first case the triangular hubs are formed by the organic ligands, and in the second case the triangular hubs are formed by the inorganic complex. In the first type the organic connecting molecule is tris-(4-pyridyl)-*s*-triazine (tpt), made by condensing 4-cyanopyridine in refluxing decalin in the presence of KOH and 18-crown-6. Reaction of tpt with bis(hexafluoroacetylacetonato)copper(II) ($Cu(hfa)_2$) results in pale green crystals. Infrared spectroscopy indicates that the pyridine groups are coordinated to Cu $(hfa)_2$. The second type of coordination polymer has triangular hubs made of Co^{3+} ions linked by the new ligand bis-1,4-(3-acetylactatonato)-benzene (BAB). Reaction of BAB with $[Co(CH_3CN)_6]Cl_3$ in dimethylformamide. The solid that results has the infrared peaks indicative of complexed β-diketonate.

Elizabeth Nguyen, Jessica Gereg
Optimization of the Reaction Conditions for the Synthesis of 5-Aryl-3-oxo-δ-lactones
Department of Chemistry and Biochemistry
Faculty Mentor: Dr. Brad Andersh
Oral Presentation: Bradley Hall, Room 139 / 3:45pm – 3:55pm

5-Aryl-3-oxo-δ-lactones exhibit a wide variety of biological activities including antioxidant, antifungal, antiviral, and antinociceptive properties. Our method for synthesizing these biologically significant compounds is quite simple. The first step of the procedure is a potassium carbonate promoted condensation reaction between a substituted benzaldehyde and an acetoacetate ester in absolute ethanol or methanol. The second step of the procedure involves adding dilute HCl *(aq)*. The objectives of my research were to determine whether the δ-lactone ring forms before or after HCl *(aq)* work up and to gain an understanding of the mechanism in order to optimize the reaction conditions for preparing these compounds. Results for the NMR mechanistic study indicates that the addition product does not cyclize until after the reaction mixture is acidified. Although attempts to isolate the initially formed aldol addition product have proven unsuccessful, it has led us to a new procedure which eliminates the need to do flash chromatography or crystallization to purify the 5-aryl-3-oxo-δ-lactones.

Joshua N. Pitzen, Johnathon D. Stephens
Reactions of N,N- Dicholorocycloalkylamines
Department of Chemistry
Faculty Mentor: Dr. Kurt Field
Poster #: 72

A series of *N,N*-dichlorocycloalkylamines were prepared by one of two methods, 1) the reaction of the cycloalkylamine with trichloroisocyanuric, or 2) the reaction of the cycloalkylamine with an acidified calcium hypochlorite solution. The resulting *N,N*-dichloroamines were characterized by FTIR, ^{13}C-NMR, ^{1}H-NMR, and high resolution MS. Treatment of the dichloroamines, in dichloromethane solution, with a Lewis Acid resulted in the formation of N-chloroimines, presumably via an ionic pathway. The N-chloroimines were characterized by the same methods as used for the dichloroamines.

Michael Skirtich, Brian Forster
Initial Stages of Room Temperature Growth of Ultra Thin Zinc Films on Si(111)
Department of Physics
Faculty Mentor: Dr. Kevin Kimberlin, Dr. Paul Wang, Dr. Jose Lozano
Poster #: 85

Recently, zinc oxide has been shown to have many interesting properties which may prove useful in modern nanoelectronic and nanostructural devices. Zinc Oxide is a blue lasing material and forms many interesting nanoelectronic and nanostructural properties. However, little is understood about the initial stages of growth of ZnO) or ZnO itself on semiconductor surfaces. To advance the knowledge of these materials, a study of the initial stages of growth of Zinc on Silicon has been performed. Zinc was deposited on a Si(111) surface by molecular beam Epitaxy (MBE) at room temperature and studied with scanning tunneling microscopy (STM). A strong dependence of growth on the incident angle of deposition was found. In normal incidence, compact islands grow on the surface, while in oblique incidence, zinc adatoms migrate to the inside step edge. This is similar to step flow in homogeneous epitaxy on stepped surfaces. The structure of the resulting films will be discussed.

PSYCHOLOGICAL SCIENCES

Lisa Abbey, Eitan Barbalat, Ishmael Bew, Kathleen Bowen, Patricia Blank
The Effects of Environmental Influences on Working Out
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 6

Many people report engaging in physical exercise to stay fit. However, regular exercise has been shown to reduce incidence of chronic disease and promote self- esteem in adults. The surrounding environmental influences (for example, presence of others) in a public work out facility may impact the workout potential of an individual.

Methods: This research uses a pre/post design in a naturalistic environment to assess the impact of certain environmental influences (specifically, the presence of others) on working out. Individuals who are affiliated with Bradley University and use exercise facilities at Haussler Hall will be surveyed before and after working out. Non-obtrusive observations of participants will also be made during workouts. It is hypothesized that the surrounding influences present in a public exercise environment have psychological effects which impact the degree of productivity experienced by the individuals who are working out. Variables to be measured are duration and intensity of workout, the presence of others, evaluations of the attractiveness of others who also are working out, and personal use of music.

Participants will be a convenience sample drawn from Haussler Hall exercise facility. All participants who enter the facility will be given the option of participating in this project. Participants will be interviewed through the use of anonymous surveys. Data will be collected by team members during an agreed upon time at Haussler Hall exercise facility. Each participant will be surveyed twice: before exercising and after exercising.

Devin Burns
The Capture of Awareness in Static and Dynamic Displays
Department of Mathematics
Faculty Mentor: Dr. DeMaris Montgomery
Poster #: 17

This study focused on the phenomenon of inattentional blindness. Participants were told to focus on one set of shapes (squares or circles) and ignore the other under either static or dynamic conditions. An unexpected target object of one of the two sets appeared briefly for some trials, and we studied when participants detected and identified it. As predicted, the target was significantly more likely to be detected when consistent with the attended set.

Sabrina Diaz, Kristina Brown, Paul Conley, Tyler Fryer, Melissa Dunne
The Influence of High School Physical Education Participation on Current Exercise Habits
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 32

It is well documented that exercise is an important factor that allows people to maintain health throughout their lives. It is often through school physical education classes that students are first introduced to concepts related to exercise, physical fitness and health. These classes are often enforced.

The question under study for this research is the influence that these classes have on continued participation in regular physical activity and exercise after graduating from high school.

Methods: This research uses a correlational research strategy and cross-sectional survey design to assess the association between participation and enjoyment of gym classes in high school with continued physical activity in college. Undergraduate students at Bradley University will be surveyed using an anonymous questionnaire distributed during Psychology 104, 314, 345-02, and 410 classes. It is hypothesized that students who enjoyed high school gym classes will report higher incidence of participation in physical activities at college. Other variables to be measured include: age, class year at Bradley, gender and self-perception of motivations for exercise.

Participants will be a convenience sample drawn from several psychology classes (approximate n=450 students). All students will be surveyed in the classroom. A cover sheet, that will be removed, will explain the project and collect student names to be turned in to course instructors for extra credit. These sheets will not be available to any of the student researchers.

Jennifer Guzman-Muelling
Is Physical Attraction Really Only Skin Deep?
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 40
Oral Presentation: Bradley Hall, Room 100 / 4:30pm – 4:40pm

Whatever happened to the philosophy that is summed up in the saying, "It doesn't matter what you look like on the outside, it's what's on the inside that truly counts?" Research supports the conclusion that men are more attracted to women who are perceived to be more physically appealing. Some studies further conclude that men do not always take into account other personal aspects such as personality characteristics or other demographic attributes that women possess. Although this may be true for women to some extent, research suggests that women are more attracted to materialistic characteristics of a potential partner than men. Although people want to believe that the above saying really does hold true, they are stymied because there are many other factors that are considered before "inside" characteristics are even considered.

This research used a descriptive research strategy and cross-sectional survey design to assess characteristics sought in a potential dating partner by undergraduate students. Undergraduate students at Bradley University were surveyed using an anonymous questionnaire distributed during Psychology 104, 314, 345-02, and 410 classes. Participants were convenience samples drawn from the designated classes. All students were surveyed in the classroom. A cover sheet, that will be removed, will explain the project. Results showed that men did indeed endorse attractiveness as the salient characteristic for a female partner and women were more likely to state a preference for a man with higher job prospects.

Autumn Huett
The Association Between Student Stress and Academic Responsibilities
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 44
Oral Presentation: Bradley Hall, Room 100 / 5:00pm – 5:10pm

The Stress Management Society defines stress as "what happens when the demands on a person exceeds ones ability to cope" The study of stress has become increasingly critical in ministering to the mental,

emotional, and physical needs of college students and has been studied in relation to illness for nearly 100 years This research looks at perceived stress and perceived control of the stressor in 120 Bradley University students.

Methods: This study uses a correlational research strategy and cross-sectional survey design to assess stress during midterms in undergraduate students. Undergraduate students at Bradley University were surveyed using an anonymous questionnaire. Surveys were distributed in October and early November, 2007 to students working in the library. A cover sheet provided informed consent information.

Results showed that increased stress levels were associated with reported illnesses each year, feelings of exhaustion even after sufficient sleep, and negatively correlated with number of hours of sleep per night.

Bethany Jones, Hannah Giunta, Stefanie Hunt, Regina Howe, Amanda Harms
The Effects of Stress on Immune System Functioning
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 47
Oral Presentation: Bradley Hall, Room 139 / 3:00pm – 3:10pm

Stress has been linked to adverse health outcomes. In the last decade, persons working in the new discipline of psychoneuroimmunology have advanced research in this area by studying the interaction between psychological processes (for example, perception and emotions) and reactions of the nervous and immune systems. This present study assesses the relationship between reported stress levels and occurrence of infectious diseases. By counting acute illnesses experienced by participants and their perceived stress levels over a similar time period, this study will show an association between increased stress levels and increased incidence of acute illness. Collecting data from healthy individuals and a population of individuals suffering from a chronic autoimmune disease (HIV/AIDS) of similar ages will help more fully explore the relationship between stress and the immune system. Social support also will be assessed. It is hypothesized that individuals who are immuno-compromised will experience more infections than the normal controls. For both groups, the presence of a strong social network will be protective against the effects of stress.

Methods: This research uses a case-control survey design to assess the association between illness and perceived level of stress over the same time period. Undergraduate students at Bradley University (controls) will be surveyed using an anonymous questionnaire distributed during Psychology 104, Psychology 314, Psychology 345 (Section 02) and Psychology 410 classes (approximately 450 students). The HIV sample (cases) will be surveyed with anonymous questionnaires distributed through the regional HIV clinic using case management staff. Cases and controls will be matched on age and gender.

Robert Lucia, Lisa Katz, Megan Loos, Lisa Meyer, Jaime Mishler
Motivational Factors Associated with Alcohol Consumption
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 59

Alcohol has been associated with social activities at least since recorded time. A success is toasted by friends with a glass of champagne, birthdays are celebrated with cocktails, and families enjoy dinner with a glass of wine. However, drinking is not always done in celebration. Rather, some find alcohol an effective way to cope with a bad day. This study will look at the motivation behind alcohol

consumption by Bradley University students.

Methods: This research uses a correlational research strategy and cross-sectional survey design to assess the association behind motivational factors behind alcohol consumption. Undergraduate students at Bradley University will be surveyed using an anonymous questionnaire distributed during Psychology 104, Psychology 314, Psychology 345 and Psychology 410 class (approximately 450). It is hypothesized that Bradley University students are more likely to consume alcohol with enhancement motivation as opposed to consumption with coping motivation.

Participants will be a convenience sample drawn from designated psychology classes. All students will be surveyed in the classroom. A cover sheet, that will be removed, will explain the project and collect student names to be turned in to course instructors for extra credit. These sheets will not be available to any of the student researchers.

Laura Peters
The Role of Machiavellianism on Sexual Behaviors
Department of Psychology
Faculty Mentor: Dr. David Schmitt
Poster #: 69

This research reports the relationship between Machiavellianism (the extent to which one believes in the acceptability of manipulating others) and several measures of sexual behaviors. The research was completed in conjunction with the International Sexuality Description Project (ISDP), which involved 35,000 self-reported surveys across 57 nations. The surveys were twenty-two pages, and each contained twenty-five questionnaires about personality and sexuality. Regression analyses were conducted for eleven separate world regions, and the results suggested universal significant positive correlations between Machiavellianism and sexual desires, mating strategies, and relationship fidelity. Gender, self-deception, and cultural differences were controlled for in the analysis. The findings are discussed in relation to the effect of Machiavellianism on sexual behaviors and interpersonal relationships. Implications about the nature of exploitative relationships are explored.

Adriana Rodriguez, Caryn Musiala, Anita Roginski, Megan Reichel, Ronda Papner
Gender Differences in Exercise and Physical Activity
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 75

Until the 1960s, exercise and physical activity were regarded as activities to be pursued by people of financial means. With the institution of the President's Council on Physical Fitness, routine exercise and physical activity programs became parts of most school curricula and these activities were encouraged for everyone. This research examines the influence of knowledge of the health benefits of exercise and engaging in physical activities examining, in particular, possible differences in these associations by gender.

Methods: This research uses a correlational research strategy and cross-sectional survey design to assess the association between health knowledge, physical activity and gender. Undergraduate students at Bradley University will be surveyed using an anonymous questionnaire distributed during Psychology 104, 314, 345-02, and 410 classes, at Haussler and Heitz workout facilities, and also in Computers in Society 300, Art 131, and Sociology 300 classes. It is hypothesized that there is a significant gender difference in the behaviors, motivations for and perception of physical activity.

Other variables to be measured include: age, frequency, duration, and type of workout, motivation for exercise, preferred workout routine, and knowledge of physical fitness.

Participants will be a convenience sample drawn from designated classes and facilities. All students will be surveyed in the classroom or the workout room. A cover sheet, that will be removed, will explain the project.

Jessica Sampias
Psychopathy Related to Relationship Aggression
Department of Psychology
Faculty Mentor: Dr. David Schmitt
Poster #: 79

Psychopaths possess four defining traits: antisocial behavior, impulsive thrill-seeking, interpersonal coldness, and shallow affect. Previous studies have linked psychopathy to relationship aggression, indicating that partners use fear and manipulative tactics to dominate their partners. This study investigated links between psychopathy and relationship aggression, hypothesizing that individuals with higher levels of psychopathy would be more likely to be perpetrators of domestic violence and engage in sexually coercive behavior. It was hypothesized these links would be pervasive across cultures (both within and across nations) and genders. Samples from a cross cultural study across the 11 major regions of the world including: North America, Central/South America, Northern Europe, Western Europe, Eastern Europe, Southern Europe, Middle East, Africa, Oceania, South/Southeast Asia, and East Asia completed psychopathy questionnaires and relationship aggression questionnaires which included measures of sexual aggression and domestic violence. Average levels of psychopathy among men and women were correlated at the national level. Across cultures, nation levels of psychopathy and domestic violence were positively correlated, as were national levels of psychopathy and sexual aggression. Clinicians trying to reduce national levels of relationship aggression might find these results applicable, as reducing national levels of psychopathy could reduce levels of relationship aggression.

Melissa Sherrill
Machiavellianim, Gender Role Ideology, and Social Dominance: Cross-Cultural Associations
Department of Psychology
Faculty Mentor: Dr. David Schmitt
Poster #: 84

Gender differences in Machiavellianism, sex role ideology, and social dominance were examined in the present study. The Machiavellianism measure consisted of deceit, cynicism, and immorality. Traditional gender views on sex role ideology and social dominance were hypothesized to correlate with higher levels of Machiavellianism. Traditional views were also presumed to be more prevalent among males than females cross-culturally. Findings from over 35,000 college students surveyed across 57 nations generally supported this hypothesis. Cultures that typically supported traditional views on gender (such as East Asian cultures), showed higher levels of Machiavellianism compared to cultures that were more progressive in nature. Progressive views on gender also resulted in little to no gender differences in Machiavellianism.

Anna Super
Sex Role Ideology Related to Rape Attitudes and Behaviors Across Cultures
Department of Psychology
Faculty Mentor: Dr. David Schmitt
Poster #: 89

Diana Taylor, Amy Smith, Alaina Sondag, David Houser
Are Bradley Students Over-Worked and Under-Slept?
Department of Psychology
Faculty Mentor: Dr. Marjorie Getz
Poster #: 90

It is estimated that over 80% of the American population is sleep deprived. It is also estimated that over 50% of students attending Bradley University work at least part time. Is there an association between the hours spent working and in the classroom and lack of sleep in these students? This study will try to assess these relationships.

Methods: This research uses a correlational research strategy and cross-sectional survey design to assess the relationship between hours worked and sleepiness of students attending Bradley University. It is hypothesized that students who work more hours will experience sleepiness during the day and have a lower GPA than those who work fewer hours. Other variables to be measured include: age, gender, class year at Bradley, hours of sleep, hours worked, and time when most sleepy.

Participants will be surveyed during the following classes: Psychology 104, Psychology 314, Psychology 345-02, and Psychology 410 using an anonymous survey. A cover sheet, that will be removed, will explain the project and collect student names to be turned in to course instructors for extra credit. These sheets will not be available to any of the student researchers.

Nina Tiberi, Benjamin Ehrenpreis, Joanie Ulrich, Julie Weber, Matthew Turner, Joanie Ulrich
Satisfaction with University Provided Health Services
Department of Psychology
Faculty Mentor: Prof. Marjorie Getz
Poster #: 91

University health services provide health care to students while they attend classes and live on college campuses. Often, while living away from home and attending school, this is the first time a young adult has had to negotiate the health care system on their own. This study will assess satisfaction with university health care provided on the campus of Bradley University.

Methods: This research uses a descriptive research strategy and cross-sectional survey design to assess satisfaction with health services provided at Bradley University. Undergraduate students at Bradley University will be surveyed using an anonymous questionnaire distributed during Psychology 104, 314, 345-02, and 410 classes. Participants comprise a convenience sample drawn from the designated classes. All students will be surveyed in the classroom. A cover sheet, that will be removed, will explain the project. The survey contains items related to basic demographics, extent of use of campus health services, comparison of experiences with campus healthcare facilities and other facilities and overall satisfaction with healthcare provided on campus.

Results showed that there was a great variety of opinions about health services provided on campus. A significant majority of respondents had not used health services at all.

Notes