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2011 Program for Celebrating Scholarship & Creativity Day

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COLLEGE OF
Saint Benedict Saint John's
UNIVERSITY

Celebrating
SCHOLARSHIP & CREATIVITY
2011

Music is associated with dissociation effects that may enhance exercise performance… In imperial China, gardens were often designed by and for viewers with a very specific education in the Chinese classics…Volcanism has shown dramatic and observable effects on climate and weather patterns throughout history… The results showed that the biodiesel obtained from the corn oil was the most efficient for cooler Minnesota temperatures… Providing the highest quality education to facilitate retention of the information for Veterans enrolled in a diabetes management program is essential… The analysis will deal primarily with observed magnitude of individual meteor events…The current study sought to examine the combined effect of social judgments and the media's presentation of the thin ideal on body dissatisfaction … The alloy was put through a series of chemical changes… The research and observations done on laughter reveal that laughter is a satisfying and productive way of de-stressing… This study investigates the influence of culture…

Table of Contents

Letter from the Provost

COLLEGE OF
Saint Benedict Saint John's
UNIVERSITY

Dear Students, Faculty, Parents and Friends:

Welcome to Celebrating Scholarship and Creativity Day!

We encourage and support scholarship and creativity in our classrooms, laboratories, and studios on a daily basis. Today, we make this work public. In both morning and afternoon sessions you will see and hear the fruits of countless hours spent by students and their faculty mentors in science laboratories, library archives, editing suites, rehearsal halls, art studios, and in the community. In poster sessions, talks, and performances, students will show us how they've challenged themselves to think, to analyze, to stretch, to imagine, and to create. It certainly is cause for celebration.

The high quality of scholarly and creative work done by our undergraduates often wins them fellowships and scholarships as well as invitations to state and national undergraduate research conferences and artistic exhibitions. Above all, it gives these students the invaluable opportunity to work in close partnership with the artists and scholars who are our faculty.

Student presentations take place from 8 a.m.-noon and 1-5 p.m. Both morning and afternoon sessions begin with poster presentations. Please take the time to have a bite of breakfast and explore the posters in the morning or have a cookie and a sip of lemonade as you talk with the poster presenters in the afternoon. The oral presentations begin immediately after the poster sessions in department specific locations. One of the new features this year is an on-line searchable schedule. You'll find information about time and place, authors or subject areas with a simple click of the button. In this Year of Sustainability, print only what you need to help you to enjoy the day.

Please join me in congratulating and celebrating our students — the 500 and more who are presenting as well as the hundreds of others engaged in research and creative scholarship throughout the year. I would like to congratulate the faculty members who mentor, teach, and model scholarly excellence for our students. Thank you to Dr. Richard White, Dr. Greg Walker, Bev Radaich, Communication and Marketing Services, IT Services, and the Events Staff for their fine work organizing and managing this event.

In closing, thank you for all that you do for CSB/SJU.

Sincerely,

Rita Knuesel, Ph.D.
Provost

The Day Before: May 4th

Two events marking our colleges' commitment to exemplary scholarship and creativity are scheduled for the day before.

PHI BETA KAPPA CEREMONY AND BANQUET

Haehn Campus Center, CSB

A new chapter of the nation's oldest academic honor society, Phi Beta Kapa, was established in 2009 at the College of Saint Benedict and Saint John's University. The Theta Chapter of Minnesota will induct its second group of student members, selected on the basis of excellence in academic achievement in the liberal arts and sciences.

Alumnae Hall

5 p.m. Chapter Installation and Induction of Students

6:30 p.m. Banquet (by invitation)

ERIC REGO BIG IDEA COMPETITION

Sexton Commons Lounge, SJU

5:45 – 8:45 p.m. All students are invited to present an idea that would make the world, or things in it, better. Individuals or teams first submit a venture idea description online by May 2 and then describe the idea in a 90-second "elevator pitch" to a panel of judges. Winners receive cash prizes and, if they wish, promotion of their idea on campus, to alumnae/i and to the local community. The Donald McNeely Center for Entrepreneurship along with the Rego family and Coordinated Business Systems annually sponsors this event in memory of Eric Rego, an E-Scholar student alumni of Saint John's who passed away in 2008. The competition is open to all CSB/SJU students. The winners in both categories, E-Scholars and general students, present their ideas the following day during Celebrating Scholarship and Creativity Day.

*G*eneral Student Winners:

1. $200 Winners — John Burns and Cole Schiffler with Kool Keg Inc.
   A Keg Wrapper that will fit around a keg and will keep your beer could for multiple hours on end.

2. $100 Winner — Ryan Wold with Ryan Wold's Elderly Events and Promotions
   Matching CSB/SJU musicians with nursing homes in need of entertainment.

3. $50 Winner — Fabricio Moncada with Moncada's Tennis World
   A specialty Tennis store in a high traffic mall in Miami

E-Scholar Winners:

1. $200 Winner — Ben Crist with Photon Lighting
   Energy efficient lighting for college campuses.

2. $100 Winner — Annie Carney with MN LEAP Program
   A leadership program modeled after the LEAP program in California, for MN adolescents.

3. $50 Winner — Trang Pham with ETL Promotions
   Extending the LINK promotional tours and items for sale.

2011 Scholarship and Creativity Day Schedule

ABBREVIATED SCHEDULE OF EVENTS

8 – 8:50 a.m.
Poster Session and Welcome (continental breakfast available)
9 a.m. – noon
Concurrent Sessions
noon – 1 p.m.
Lunch
1 – 1:50 p.m.
Poster Session and Welcome (cookies and juices available)
2 – 5 p.m.
Concurrent Sessions

FULL SCHEDULE OF STUDENT POSTERS AND PRESENTATIONS

Humanities & Natural Science Poster Session

Gorecki Center A, B & C, CSB

Chemistry

Lindsey A. Envall, Augusta R. Garberich, Dawn T. Williams, Tsuehue Xiong, Thomas C. Zasmeta (Dr. Brian Johnson, chemistry) Determining Iron Content in Organic vs. Non-Organic Vegetables by Spectrophotometry

> This experiment determined the iron content in different vegetable samples by the use of spectrophotometry. Samples included organic and non-organic spinach, peas, and broccoli. These samples were chosen because of their high iron content and their availability in both organic and non-organic forms. Each sample was uniformly chopped and burned to ash. The ashes were then filtered with 2.0M HCl by means of a Buchner filtration system. The filtrate was mixed with 1.5M KSCN and the absorbance was measured via spectrophotometry. Absorbances of standard iron (III) solutions were also determined by spectrophotometry and then plotted to create a trend line. The equation of this trend line was used to determine the iron content based on the absorbance of each food sample. The iron content per gram of organic vegetables was 8.7 percent higher than the iron content of non-organic vegetables, which was not significantly different (1.03x10-2 milligrams vs 9.41x10-3 milligrams, p=0.81).

Alex M. Hanson, Ashley L. Hager (Dr. Leo Seballos, chemistry) Vitamin C Content in Raw and Cooked Peppers

> The goal of this experiment was to determine the effects of cooking on the Vitamin C content in green peppers. The cooking methods used in the experiment were boiling, grilling, and heat conduction. The Vitamin C content in the peppers was determined by reducing a solution with a known quantity of iodine. Overall, the results revealed that the raw peppers contained the most Vitamin C, as it contained an average of 1.198 mg of Vitamin C per gram of pepper. The cooking method that produced peppers that retained the most Vitamin C was heat conduction, which contained an average of 1.048 mg of Vitamin C for every gram of pepper. Heat conduction was followed closely by grilling, wich contained an average of 0.855 mg of Vitamin C per gram of pepper. Finally, boiling had the least Vitamin C, because it contained an average of 0.657 mg of

Vitamin C per gram of pepper. From this we can conclude that, in order of decreasing Vitamin C, preparations are: raw, heat conduction, grilling, and boiling. Future experiments dealing with Vitamin C content of green peppers should include other cooking methods, and also more trials to yield precise results.

Adam D. Gooley, Patrick S. Wold, Phillip M. Dolan, Leroy N. Forbes (Dr. Leo Seballos, chemistry) Determination of Calcium Ion Concentration in water Through Titration of Ethylenediaminetetraacetic Acid Solution

Abstract: This experiment investigated water hardness in different water samples by calculating the molar concentration of calcium ions contained in each sample. Treatments included water from Saint Thomas Hall at Saint John's University, the Ardolf Science Center at the College of Saint Benedict, Crossroads Mall in St. Cloud, and Apple Valley, Minn. Calcium ion concentration was determined using a one to one complexometric titration of ethylenediaminetetraacetic acid (EDTA) and calcium ions. EDTA was first standardized using a 0.003 molar concentration of calcium chloride solution. Three trials were done and averaged to achieve a 0.00019 molar standard solution of EDTA. Using the standardized EDTA, three trials of titrations were done for each water sample and the results of each trial were averaged. Saint Thomas Hall was found to have a calcium ion concentration of 0.000296, Ardolf Science Center was 0.000507, Crossroads Mall was 0.000273, and Apple Valley was 0.000681. These results do not agree with the hypothesis that well/rural water should be harder water and suggests that rural areas use some type of water softening technique.

Alex Reid, Patrick Hayden, Maggie Gregg, Kellen Witschen (Dr. Leo Seballos, chemistry) A Gravimetric Analysis of the Percent Weight of Copper in Pre-1982 Pennies Compared to 2010 Pennies

This study analyzed the weight percent amount of copper used in pennies made before 1982 against pennies made in 2010 to determine if the value of the copper used is more than the value of the penny as currency. Pennies made before 1982 and in 2010 were used because in 1982 they changed the percent copper concentration. The process of gravimetric determination was used to determine the percent copper in each penny. Pre-1982 pennies were found to have 96.450 percent copper and 2010 pennies were wound to have 3.194 percent copper. For pennies made before 1982 it was found that the value of the copper in the penny ($0.0290) is greater than the value of the penny but for the 2010 penny the value of the copper in the penny ($0.000770) was less than the value of the penny.

Miguel D. Mendoza, Christian M. Schoen, Jacob G. Wolf, John P. Sexton (Dr. Leo Seballos, chemistry) Determination of Citric Acid Concentration in Diet vs. Regular Clear Sodas

> The research goal was to determine whether diet or regular sodas contained a higher concentration of citric acid. The analysis was done by quantifying citric acid content in Sprite, Sierra Mist, 7UP, Sprite Zero, Sierra Mist Free, and Diet 7UP by a titration technique incorporating a sodium hydroxide solution into these pops. All sodas showed roughly the same concentration, but overall diet sodas consistently had a higher concentration of citric acid than their regular counterparts. Citric acid concentrations were Srite: 0.0173 M, Sprite Zero: 0.0267 M, 7Up: 0.0171 M, Diet 7up: 0.0303, Sierra Mist: 0.0233 and Diet Sierra Mist: 0.0268 M.

Chris Beranek, Joe Dick, Duncan Secor, Mark Greci (Dr. Leo Seballos, chemistry) The Synthesis of a Cold Weather Biodiesel Fuel

> This experiment examined the effect that temperature had on the viscosity of a synthesized soybean oil based biodiesel fuel. The relative viscosity of the biodiesel was compared to that of a commercial diesel fuel at temperatures of -12°C, 4°C, and 20°C. The biodiesel froze at -12°C while the diesel did not, showing that it would not be able to flow through engines at winter temperatures, making it ineffective for a cold weather environment.

Kayla J. Zeltinger, Emelia R. Hauck, Anna K. Pilbacher, Sherelle Smart (Dr. Edward McIntee, chemistry) Analysis of Supplemental and Elemental Iron in Breakfast Cereals

> Iron occurs naturally in wheat used in breakfast cereals, but often to ensure that the recommended daily amount of iron is included per serving, supplemental or elemental iron is added. These elemental iron filings can be dissolved by hydrochloric acid, such as that found in the stomach, however, in the process of digestion, cereal does not remain in the stomach long enough to dissolve them. Therefore, a more accurate representation of the actual iron intake would be a measurement of the naturally occurring iron. In this experiment, the relative percentages of supplemental and naturally occurring iron per serving of several cereals are measured in order to determine which cereal yields the best percentage of usable natural occurring iron.

Michael T. Farrell, Jared W. Berg, Hiwote T. Bekele, Dylan E. Graves, Jacob A. Hall, Nikki S. Orth-Awenus (Dr. Edward McIntee, chemistry) The Decontaminating Effect of Metal-Permeable Reactive Barriers Dependent Upon Mass and Oxidative Properties in Purifying Groundwater

This experiment was designed to test factors involved in groundwater purification through the use of metal-permeable reactive barriers (PRBs) using UV-visible spectrophotometry to observe chemical absorbance. To simulate a wastewater solution, an indigo dye was prepared. Because oxidative metals have been traditionally known to reduce certain compounds, metals with high oxidative potentials (i.e. iron, chromium, and cobalt) were chosen for the experiment. In the experiment, the mass of PRB used was tested to find optimal conditions for the experiment. In addition, the effects of different oxidative metals including iron, chromium, and cobalt were compared. During the experiment, increasing masses of fine-grained iron were placed in the dye solution and measured under the UV-visible spectrophotometer. The wavelength for absorbance was kept constant at 636 nm. Lastly, the oxidative properties were tested under similar experiments using cobalt and chromium. Rates of change in absorbency were observed and used to determine the effectiveness of iron as a PRB. Further details regarding the patterns of these metals as used by the PRB experiment and their potential environmental effects will be presented.

Hanna M. Zerfas, Ellen M. Dean, Phong T. Truong (Dr. Edward McIntee, chemistry) Comparison of Vitamin C Concentration in Natural and Commercial Fruit Juices Using Iodine Titration Techniques

This study investigated the vitamin C (ascorbic acid) concentration in different natural fruit juices compared to their commercial fruit juices. Natural fruit juices being freshly squeezed juices directly from fruits with no added substances, and commercial fruit juices being Florida Natural Juices store bought. A titration procedure was done using a standardized iodine solution and a starch indicator. By titrating the iodine into the different solutions of fruit juices, the amount of vitamin C in the fruit can be determined. Then using stoichiometry we can determine the concentration of vitamin C in each fruit solution. Our control experiment was a vitamin C tablet with a known amount of vitamin C in it. We then compared commercial apple juice to natural apple juice, commercial orange juice to natural orange juice, and commercial grape juice to natural grape juice. Overall the commercial juices had a higher concentration of vitamin C compared to naturally squeezed juices.

Rebecca J. Rasmussen, Carla M. Saunders, Maria T. Peterson (Dr. Edward McIntee, chemistry) Analysis of Caloric Content of Mixed Nuts

This experiment studied the calorie content per gram of four different types of mixed nuts. The different species included: the Anacardium occidentale (cashew), the Bertholletia excelsa (brazil nut), the Prunus dulcis (almond), and the Corylus maxima (filbert) nut. Using a handmade calorimeter, the amount of heat released when each nut was combusted was measured, through the temperature change in 75 mL of water held in a cup over the calorimeter. Four trials upon each species of nut were conducted, after weighing the initial mass, the charred remaining material was weighed. The masses and the temperature change were used to calculate the energy contained in each nut, and the results were compared to the given nutritional information. The results will be discussed at a later date.

Joseph T. Thompson, Andrea M. Tobias, Amanda B. Wicker, Laura M. Wiechmann (Dr. Carleen Schomer, O.S.B., chemistry) Testing the Viscosities of Three Different Synthesized Biodiesels to Determine which Biodiesel is Most Efficient in Cooler MN Temperatures

The purpose of this experiment was to determine which one of three biodiesels works best in cooler Minnesota temperatures. This was determined by finding the viscosities of biofuels synthesized from everyday corn, soybean, and vegetable oils. The viscosities were tested by dropping a bead through the different biodiesels at room and cold temperatures and timing how long it took for the bead to fall a set distance (20 mL). The results showed that the biodiesel obtained from the corn oil was the most efficient for cooler Minnesota temperatures, and the biodiesel obtained from the vegetable oil was the least efficient.

Eddie R. McGinty, Madison Mick, Nikkie Reza, Mark Telthorst (Dr. Carleen Schomer, O.S.B., chemistry) Determination of Ability of Different Metals to Reduce Copper(II) in Copper(II) Sulfate Solutions

The purpose of this experiment was to determine the ability of aluminum, nickel and iron to reduce copper(II) in copper(II) sulfate solutions to copper powder. Samples of copper metal were carried through a series of reactions leading ultimately to the copper(II) sulfate solutions. The reducing metals were added to these solutions. Zinc was used as a control. The percent recovery of the copper was used to compare the effectiveness of the reducing agents. Zinc was found to be very effective with a percent yield close to 90 percent. Aluminum, specifically aluminum foil, was almost 100 percent effective at yielding solid copper. Iron was unsuccessful along with nickel. These results are odd, considering both nickel and iron are

higher on the activity series than copper. It is believed that these two metals were unsuccessful due to the fact that they contained an oxide coating, which could not be removed in lab, thus preventing them from reacting with the copper(II) sulfate solution.

Kelly M. Schroeder, Kristina A. Burk, Jacob L. Helmer (Dr. Edward McIntee, chemistry) Citric Acid Levels in Crystal Light

The experiment was designed to test the levels of citric acid in four different flavors of Crystal Light: lemonade, pink lemonade, fruit punch, and raspberry ice. The tested hypothesis was the concentration of citric acid in lemonade and pink lemonade flavored Crystal Light would be higher than fruit punch and raspberry ice flavored Crystal Light. A standard acid-base titration method was used to find the results. The results supported the hypothesis that the concentration of citric acid in the lemonade and pink lemonade flavors were higher than fruit punch and raspberry ice flavors. The average citric acid by weight of lemonade was 63.96 percent, pink lemonade was 64.39 percent, fruit punch was 49.15 percent, and raspberry was 57.23 percent. Citric acid is commonly used in food to produce a sour taste. The high concentration of citric acid in lemonade and pink lemonade Crystal Light is to match the sour taste of natural lemons. On the other hand, the lower concentration of citric acid in fruit punch and raspberry ice Crystal Light is the result of less sourness in raspberry and fruit punch.

Kevin L. O'Brien, Hannah M. Vanderheyden, Lee Vang (Dr. Carleen Schomer, O.S.B., chemistry) Determination of Water Hardness by Titration

The objective of this experiment was to determine the quantity of calcium and magnesium ions present in hard water samples, several obtained from CSB/SJU locations and one from Billings, Mont. A complexometric titration with EDTA was performed on each sample, as EDTA is able to form soluble complexes with calcium and magnesium cations. The indicator used was calmagite, which signaled the endpoint of the titration with a color change from purple to red. After water hardness, in ppm, was calculated for each sample, comparisons were made. Water from the Ardolf Science Center at CSB was the hardest. Water from Brian Hall at CSB was second-highest. The Montana tap water had similar results to Brian Hall and was third-highest. Lastly, water from Mary Hall at SJU was the least hard of all selected locations.

Catherine M. Pollock, Kelcey Kryzer, Julie Knutson, Molly Horton (Dr. Leo Seballos, chemistry) Acid Concentration in Oranges, Limes, & Grapefruits

The concentration of acid in oranges, limes, and grapefruits was measured by doing multiple titration trials of an NaOH solution with a known molarity of HCl. The overall acid concentration in limes was 0.727 M, grapefruit 0.1101 M, and oranges 0.182 M. The calculations determined that limes have the greatest acid concentration as compared to oranges and grapefruits.

Katherine E. Redmon, Karen E. Schmitz, Yuan Huang, Laura K. Knecht (Dr. Brian Johnson, chemistry) Analyses of Ascorbic Acid Concentration in Varying Colors and Cooking Lengths of Capsicum Annuum

This experiment analyzed the ascorbic acid (Vitamin C) content in varying colors of bell peppers (Capsicum annuum) at different cooking lengths. Treatments included the extraction of ascorbic acid from green, red and yellow bell peppers of roughly the same size that were cooked in a microwave for different amounts of time. The extraction was carried out using a mortar and pestle along with a Buchner filtration system. In order to determine the ascorbic acid concentrations, the extracts were titrated with an iodine solution (KI+KIO3) that was standardized with a 0.015 M ascorbic acid solution. Results will be presented that describe how an increase in the cooking time will affect the concentrations of ascorbic acid in the peppers. The relationships between ascorbic acid concentration and bell pepper color will also be discussed.

Brandon G. Plante, Ben J. Roske, Dan P. Flynn, Rich W. Rohlik (Dr. Edward McIntee, Chemistry) The Synthesis of Biodiesel through Transesterification

This study investigated the purity, percentage yield, and calorimetric properties of the synthesis of biodiesel from four different varieties of everyday oil (olive oil, vegetable oil, peanut oil, and used cafeteria oil) to determine which produces the highest quality product. This process was conducted using a base-catalyzed transesterification method, allowing a reaction of glyceride and alcohol to produce glycerol and esters (biodiesel) over several hours. IR spectroscopy testing was done to explore the purity of the product. Crude calorimetry testing was also conducted to explore the heat of combustion properties of our synthesized biodiesel to determine which is most energetic. Measurements of both initial raw oil and final biodiesel product were used to determine percentage yield. It was found that vegetable oil had the highest percent yield, vegetable oil was most energetic, and the purity results were inconclusive.

Brooklyn V. Leitch, Margaret L. LoBianco, Elizabeth A. Flynn, Harrison J. Gerdes (Dr. Edward McIntee, chemistry) Viscosity Comparisons of Synthetic Olive and Canola Oil Biodiesels

To determine the feasibility of biodiesel in colder Minnesota temperatures, this experiment synthesized biodiesel from olive and canola oil. Then the biodiesel viscosities were tested at 22 C and 1.5 C. The viscosities of water and the original oils were also tested for comparison. A t-test was performed to analyze the biodiesel viscosities at the cold temperature. The p value was 0.16, proving that the viscosities of olive oil biodiesel and canola oil biodiesel are not significantly different. Through calculations of percent yield, it was determined that biodiesel synthesized from canola oil (82.2 percent yield) is more economically efficient than biodiesel from olive oil (40.0 percent yield). The results of IR and NMR spectroscopy to verify the authenticity of the biodiesel will be discussed.

Luke Weyrauch, Lucas Wald, Nicole Theisen, Tu Tran (Dr. Brian Johnson, chemistry) Biodiesel Synthesis and Determination of Most Suitable Oil for Minnesota Weather Conditions

The goal of this research was to produce biodiesel using three different types of cooking oil. Vegetable, corn, and canola oil were individually mixed with methanol and sodium hydroxide to form biodiesel. After furthur research, a flammability test was conducted to confirm the product since flammability is a characteristic of biodiesel. Cooking oil itself is not flammable. All three biodiesel oils synthesized were indeed flammable. Next, viscosity tests were conducted to determine which of the oils had the most consistent viscosity in temperature changes. It was found that the biodiesel synthesized from vegetable oil had the most consistent viscosity over a range of temperatures. It can then be concluded that biodiesel from vegetable oil would best serve automobiles in the always-changing Minnesota climate.

Adam J. Sperl, Erik K. Engelsgjerd, Garrett P. Lee, Zach A. Danielson (Dr. Edward McIntee, chemistry) Calcium Levels in Milks of Differing Fat Content

This study investigated the amount of calcium in milks differing in fat content. The three classes of milk examined were skim, 2 percent fat, and whole. The different milks were compared to non-dairy coffee creamer, which was used as the blank. A mixture of the milk sample, EDTA, NaOH and calcium indicator (Hydroxy Napthol Blue) was back titrated with standard calcium solution. The amount of standard calcium solution used allowed for the calculation of calcium percentage in the milk sample. Results showed that calcium made up .761 percent of skim milk, .731

percent of 2 percent milk, and .660 percent of whole fat milk. The standard deviation was found to be .0265 percent for skim, .0126 percent for 2 percent, and .0222 percent for whole milk. This standard deviation of the results did not fall within the expected calcium levels for the milk samples, but the general trend of the calcium percentages was expected. It was concluded that fat content does affect the amount of calcium per unit of volume. It was expected that the amount of calcium in the skim milk was highest because there was less fat per unit of volume and more nutrients.

Abby J. Mohr, Maria E. Gathje, Robyn A. Hall, Kathryn M. Verchota (Dr. Brian Johnson, chemistry) Qualitative and Quantitative Determination of Biodiesel Produced by Varying Amounts of Catalysts

The aim of this experiment was to determine the amount of biodiesel produced when varying the amounts of acid and base catalyst. The free fatty acid (FFA) content was determined through titrations of commercial soybean oil, mixed with neutralized isopropyl alcohol, with standardized 0.0815 M potassium hydroxide. The experiment began by determining FFA content of commercial soybean oil, found to be 0.0077 percent (our first trial value). This experimental value was supplemented by second and third trial values, 0.22 percent FFA and 1 percent FFA, respectively found in literature sources. The volume (mL) of 6 M sulfuric acid catalyst added was 5 percent of the specific trial's FFA mass (g). After this acid transesterification, the 0.0077 percent trial was stopped due to no production of desired product. The mass (g) of sodium methoxide, the base catalyst, added was 0.5 percent of the mass of the product from acid transesterification. After base transesterification is completed, quantities of biodiesel produced will be determined and results will be presented.

Riley E. Johnson, Maddi R. Milton, Kirstin E. Maxam (Dr. Brian Johnson, Chemistry) Determination and Comparison of Iron Content in Commercial Grade-A Eggs Versus Organic Cage-Free Brown Eggs

The goal of this study was to compare the iron content in the yolks of three different types of eggs: Large Grade A, Jumbo Grade A and Cage Free. The iron was separated from the yolk samples through a series of chemical steps. Then, the centrifuge was used to separate the iron solution from the solid yolk mass. Using this iron solution supernatant, the absorbance of the solution was found. The absorbances of the collected samples were compared to the absorbances and concentrations of prepared iron standards. Using that data, the concentration was calculated and from that the value of the mass of iron in each type of egg could be calculated. It was found that the Jumbo Grade A egg had the highest iron content of the three types of eggs with an average of .00551 percent of iron in the yolk.

The differences in the iron content between commercial and cage-free were very small so we can conclude that there is no significant difference in iron content.

Michael J. Richter, Whitney L. Woehler, Mark D. Nowak (Dr. Edward McIntee, chemistry) Ascorbic Acid (Vitamin C) Content in Raw vs. Cooked in Red, Yellow and Green Bell Peppers

The bell pepper's nutritional value is determined by its vitamin C content. This content varies between each pepper and varies in their raw and cooked forms. A simple titration method was developed to measure the redox reaction between ascorbic acid, a potassium solution and a starch indicator to yield dehydroascorbic acid. A constant was created by using a known molar solution in a .05 percent starch indicator complex and titrated with a 1.3g iodine 2g potassium iodide per liter solution. The same process was followed for a given mass (g) of each pepper ground into a diluted aqueous form. Results showed at a raw state, red bell peppers had the highest ascorbic acid content followed by yellow, then green. The cooked peppers were microwaved at a constant setting for 1minute then titrated using the same procedure. Comparison data for cooked peppers will also be presented.

Patrick J. Miles, Sean T. Pickthorn, Jenna M. Glass, Colleen E. Bouchard, Kelsey E. Novak (Dr. Edward Mcintee, chemistry) Effectiveness of Various Metals in Contaminated Groundwater Remediation

This study investigated the effects of varying metals and their effectiveness in cleansing contaminated groundwater through the use of a new technology called iron permeable reactive barriers. Three different metals (iron, magnesium, and cobalt) were chosen for this experiment. The ability of the metals to cleanse indigo carmine (5,5'-indigoisulfonic acid, 20 ppm) from a solution was examined spectrophotometrically. To ascertain the effectiveness of the metal in cleansing the dye, a plot of absorbance versus time was created. It was concluded that iron is the most effective metal for cleansing groundwater with the most speed and quality. Cobalt can be used but will not be quite as effective. Magnesium cleansed the dye only at a very slow rate and was considered to be ineffective.

Melissa Jacobs, Melissa Lopez, Nicole Noyes, Brittany Ayers (Dr. Edward McIntee, chemistry) The Determination of Citric Acid and Ascorbic Acid in Lemons, Limes, and Grapefruits by Titration of NaOH and KIO3

Two acids, ascorbic and citric, are commonly found in various citric fruits. The experiment enclosed determined which fruit: lime, lemon, or grapefruit, has the highest concentrations of citric acid and ascorbic acid. A standard solution of .1 M NaOH was used to titrate each individual juice to determine the concentration of total acid. Then a standard solution of .01 M KIO3 was titrated with each individual juice to determine the concentration of ascorbic acid. Results will be discussed.

Ryan A. McMillan, Jordon A. Johnson, Anna E. Krieger, Marissa J. Loch (Dr. Edward McIntee, chemistry) Production of Ethanol from Corn and Potatoes

The research project worked on the synthesis of ethanol from two different starch sources: corn and potatoes. The goal was to compare the yield of ethanol from each source, in order to determine which was a more efficient producer of ethanol. Standard ethanol production techniques were used on a micro-level in order to produce enough products for us to quantitatively compare the two samples. Qualitative tests were also performed in order to ensure the identity was indeed ethanol. The project was aimed at finding optimum ethanol source in order to find a feasible alternative energy source. By determining which fuel source has the highest percent yield, large-scale production using that ethanol source could be performed in order to produce sustainable fuels. Ultimately it was found that corn produced a larger quantity of ethanol than potatoes.

Jennifer R. Hall, Anna L. Gunter, Bethani M. Sidla, Tyler M. Anderson (Dr. Edward McIntee, chemistry) Determination of Citric, Ascorbic, and Total Acid in Citric Fruit

This experiment has investigated the citric, ascorbic, and total acid concentration in grapefruit, oranges, and lemons. First an extracted, purified amount of each fruit juice was titrated with 1M NaOH to get total acid content. Then another sample of each fruit juice, starch, and HCl was titrated with .001 KIO3 to obtain the ascorbic content of each fruit. From the two titrations, the total acid concentration was found from the NaOH titration, ascorbic acid concentration was found from the KIO3, and the citric acid concentration was found from subtracting the ascorbic acid from the total acid. The results found the number of moles of acid per mL. The grapefruit contained the most citric acid, the lemon contained the most total acid, and the orange contained the most ascorbic acid.

Jared T. Baxa, Alex J. Baxa, Ryan L. Brutger, Drake A. Beyer (Dr. Edward McIntee, chemistry) Iron Concentration in Cereal

This experiment examines the iron content in the various cereals: Wheaties, Cheerios, and Special K. Iron is an essential nutrient for the body. People receive iron from a variety of sources, one of the main sources being cereal. The amount of iron in cereal can be determined in a variety of ways. The first method used to determine the iron concentration in the different kinds of cereal was by a mechanical method. The second method used on the different cereals was by form of titration. The results collected are analyzed by comparing the data to the given values of iron content on the nutrition labels present on the cereal box. After comparing, the decision can be made in which method used to determine the concentration of iron is most efficient in collecting the most precise amount of iron.

Richard J. Kirchner, Adam D. Johnson, Martha E. Anderson, Morgan M. Kahilainen (Dr. Edward McIntee, chemistry) Citric Acid Concentrations of Various Orange Juices

A method to determine the citric acid concentration in different types of orange juice has been developed based on titration processes. Store bought orange juice, orange juice from the Refectory cafeteria, orange juice from Gorecki Dining Center, and freshly squeezed orange juices were titrated and then compared using statistical analysis. Orange juice contains two separate types of acid, ascorbic and citric. The process of determining the citric acid concentration involves two separate titrations since a titration of only citric acid is not plausible. The orange juice samples were titrated with NaOH to determine total acid content and KIO3 to determine ascorbic acid content. The difference in these two concentrations is the concentration of citric acid. Experimental results will be presented.

Blake P. Belland, Hunter T. Carrico, William D. Moss (Dr. Edward McIntee, chemistry) Vitamin C Concentration in Peppers

In this titration experiment red, green, orange, and poblano peppers were tested to determine ascorbic acid concentration. Approximately 10 grams of pepper was used for each sample and there were three replicates for each pepper. Iodine was used as the titrant as it reacts in a one-to-one ratio with ascorbic acid. Red was found to have the highest concentration with orange, green, and poblano following in that order. The concentration of red in relation to the poblano was three times as much. Ascorbic acid is essential in numerous areas of the body; armed with knowledge of the concentrations one can better supply the body with this nutrient.

Nick G. Meyer, Miles P. Armitage, John T. Jaeger (Dr. Edward McIntee, chemistry) Reducing Agent Analysis of Zinc, Iron, and Aluminum

A method was developed to test various reducing agents such as zinc, aluminum, and iron to see which one would recover the greatest percent of copper from an aqueous copper (II) sulfate solution. Throughout the experiment other solutions such as 6M sodium hydroxide, 3M sulfuric acid, and 6M hydrochloric acid were used to eventually achieve the goal of recovering pure copper. Our final results showed that of the three reducing agents, zinc worked the best. It had a percent recovery of around 98 percent while iron and aluminum were both about 84 percent. The average percent recovery of the three reducing agents was 88.6 percent. Therefore, zinc's standard deviation was +9.3 while iron and aluminum's standard deviations were -4.6.

Alexa R. Goetsch, Jessica K. Biser, Kevin D. Klump, Austin D. McCoy (Dr. Edward McIntee, chemistry) Vitamin C Concentration in Peppers

In this experiment, juice was extracted from three different types of peppers and was tested with an iodine indicator to determine the amount of vitamin C they contained.
In conclusion, the red peppers contain the most vitamin C. The next pepper with the most amount of vitamin C is the yellow bell pepper. The pepper with the least amount of vitamin C is the green bell pepper. The values of the vitamin C for each pepper will further be discussed.

Alexandra C. Lentz, Michelle S. Anderson, Darbi L. Newham, Danelle M. Duppong (Dr. Brian Johnson, chemistry) Efficiency of Soaps in Waters of Varying Hardness

The research that was conducted explored the effects that water hardness has on soap and detergent efficiency. The more lather produced translates to a more efficient soap, and any precipitate that forms translates to a less efficient soap. The experiment compared Herbal Essence shampoo, Safeguard bar soap, Arm & Hammer laundry detergent, and Dove bar soap. In addition to comparing their efficiency while varying the hardness of water, the two different brands of bar soap were put side by side to compare whether or not a precipitate or lather formed in various water solutions. For the first experiment, three 30 mL water solutions were created with an increasing hardness of water in each one, using equimolar quantities of $CaCl_2$ and $MgCl_2$ to simulate hard water. In each solution the shampoo, Safeguard soap, and laundry detergent were added separately and mixed vigorously. The results showed that in harder water, the soaps were less effective, especially in the case of the Safeguard bar soap. In the

second portion of the experiment, four different 50 mL water solutions were created: deionized water, .12M CaCl2/MgCl2, .28M CaCl2/MgCl2 and 0.4M CaCl2/MgCl2. The Dove and Safeguard soap were added to each of the separate solutions and mixed vigorously. The results of each soap were compared, and it was determined that the Dove soap remained more effective in the harder water solutions than the Safeguard soap did. The Safeguard soap once again produced a precipitate and failed to lather in hard water. These findings emphasize the importance of softening water in order to maintain the success of soap and detergent.

Jillian M. Sampair, Rachael E. Newman (Dr. Brian Johnson, chemistry) The Determination of Copper in a Copper-Nickel Alloy

Our study investigated the composition of U.S. nickels, measuring the percent copper in the copper-nickel alloy over four decades. Because of our knowledge of the change in the look and process of creating U.S. currency, this study was aimed to determine whether there is a difference in the percent copper in a copper-nickel alloy over a span of four decades. To isolate the copper in the alloy, a gravimetric determination was used. The alloy was put through a series of chemical changes in which the last conversion reacted to create copper-thiocyanate precipitate, which was dried and weighed. The percent composition of copper in nickels from four decades will be presented.

Sara Buermann, Mary Carr, Rhiannon LeGarde, Amanda Luby (Dr. Carleen Schomer, O.S.B., chemistry) Determination of Percent Weight of Ammonia in Household Cleaners Through Titration

The goals of the research project were to determine the percent by weight of ammonia in a predetermined set of household cleaning products, and to determine the best value of ammonia using price per mole of ammonia in each of the products. To determine the percent by weight of ammonia, a sample of each product was titrated with HCl, and the number of moles per liter of NH3 in each product was determined. Then, the percent by weight of ammonia was calculated by converting the moles of NH3 to grams and dividing by the mass of cleaning product solution used. The price per mole of ammonia was calculated by dividing the number of moles in each product by the price of the product. This procedure was then used to determine the price per mole that the CSB/SJU Chemistry Department pays for 14. 8 M concentrated ammonia. It was found that Blue Ribbon Original Ammonia contained the highest percent by weight of ammonia, followed by Parson's Lemon Fresh, Fleet Farm Original, Parson's Sudsy, Fleet Farm Extra Strength, and Windex Original, respectively. The

conclusions, which were represented by the results for price analysis, will be presented.

Kendra C. Coleman, Elizabeth S. Elling, Heather R. Peyton, Sarah F. Reisdorf (Dr. Carleen Schomer, O.S.B., chemistry) Spectrophotometric Determination of Iron in Broccoli and Cauliflower

The goal of the experiment was to determine and compare the molar concentration of iron in broccoli and cauliflower. Five-gram samples of each food were heated in crucibles until they had been reduced to ash. The ash was combined with 2.0 M HCl and then filtered using vacuum filtration. The filtrate was then mixed with 1.5 M KSCN, resulting in a reddish-orange solution. The absorbance of the solution was read using a Spectronic 20. The absorbencies of standard solutions containing known concentrations of iron were used to construct a calibration curve. The resultant equation for a straight line was then used to determine the molar concentration of iron in each sample. The results will be presented.

Stephanie L. Heinz, Erin O. Wissler (Dr. Carleen Schomer, O.S.B., chemistry) Determination of the Concentration of Ascorbic Acid (Vitamin C) in Oranges, Lemons, and Limes

The goal of this experiment was to determine the concentration of ascorbic acid (vitamin C) in different kinds of citrus fruits, namely oranges, limes, and lemons. An oxidation-reduction reaction using iodine as the titrant was the method of choice. After the iodine solution was standardized with a standard ascorbic acid solution, the iodine titer, in mg vitamin C/mL iodine, was obtained. Juice was then squeezed from each citrus fruit and samples of each were titrated with the iodine solution. The mg of vitamin C in each sample was then calculated for the oranges, limes, and lemons. The results of the experiment will be presented.

Lauren M. Furmanski, Annie A. Hansen, Michael T. Humbert, Kirsti M. Klaverkamp (Dr. Carleen Schomer, O.S.B., chemistry) A Comparison of the Amount of Heat Energy given off by Different Biofuels

The goal for this experiment was to compare the heat energy given off by biofuels synthesized using canola oil, peanut oil, and vegetable oil. Half a gram of solid NaOH was crushed with a mortar and pestle and then combined with 14 mL of 100 percent methanol. This solution was magnetically stirred until the NaOH was dissolved. Then 60 mL of oil was added. Three samples of each oil type were created. The samples were magnetically stirred for 25 minutes and kept at a temperature between 30

and 50 degrees celsius. The biofuel samples were covered with parafilm and allowed to sit for one day. Then the biofuel was separated from the glycerol, which had formed on the bottom of each sample, by pipetting the biofuel out of the beaker. About 60 mL of each biofuel sample was collected. Calorimetry was performed to determine how much heat energy was given off by the different types of biofuels. A homemade coffee can calorimeter was used to burn about 5 mL of biofuel in each trial. Methanol was used as a control in our experiment in order to find the value for our calorimeter. In order for our biofuels to ignite, about 10 mL of methanol was added to each sample. The heat energy was calculated using the equation $q=-mc\Delta T - \Psi\Delta T$ and the amount of heat energy given off by the methanol was subtracted from each calculation.

Erin Sand, Maggie Smith, Sarah Schmitt, Melissa Stuckey (Dr. Brian Johnson, chemistry) Determination of Citric Acid Content in Citric Juices

This study investigated the citric acid content in orange juice, grapefruit juice, lemon juice, and lime juice. A titration method was established to determine the concentration and the percent composition by mass of citric acid in these four juices. In order to perform the titration, the standardization of NaOH was necessary. Our results suggest that the order of citric acidity from greatest to least is lemon, lime, grapefruit, and orange.

Joseph B. Wick, Matthew J. Spreiter, Patrick M. Means, Kyle R. Gronbeck (Dr. Edward McIntee, chemistry) Comparison of the caffeine extraction efficiency of three different solvents using uv-spectrophotometry

A method for comparing the caffeine extraction efficiency of dichloromethane, trichloromethane, and 1-propanol, three organic solvents commonly used for decaffeinating beverages such as coffee, was developed using a UV-spectrophotometer. A calibration curve was established to relate caffeine concentrations to absorbance values at 272nm. The three organic solvents were used to extract caffeine from separate samples of a stock solution that had a concentration of .08mg/mL caffeine. After the extraction procedure was completed, the absorbance values of the stock solution samples were measured. The concentration of the caffeine was then calculated using the values obtained from the calibration curve in conjunction with the Beer-Lambert law. Significant differences were observed in the caffeine extraction efficiency of the organic solvents.

Samantha R. Imholte, Michaela R. Patton, Megan E. Bollin, Christine C. Hanish (Dr. Leo Seballos, chemistry) Determining the Vitamin C Content in Different Species of Apples

A titration method was used in this study to determine the content of vitamin C in different kinds of apples. The samples consisted of Granny Smith, Golden Delicious and Red Delicious. Vitamin C acid content was determined by titrating the samples with an iodine solution and a starch solution as an indicator. Acetic acid was used to stabilize the ascorbic acid within the apples. It was found that Golden Delicious contained the highest vitamin C content which was 0.0518 mg of vitamin C per one gram of apple. Red Delicious and Granny Smith had fairly similar vitamin C contents. Red Delicious had slightly more with about 0.0457 mg of vitamin C per one gram of apple whereas Granny Smith had 0.044 mg.

Kyle J. Bohm, John R. Dube, Mitch J. Lytle, Daniel M. Siers (Dr. Brian Johnson, chemistry) Year-round economic viability of peanut oil and vegetable oil based biodiesel samples in Minnesota

Biodiesel samples synthesized from peanut oil and vegetable oil were compared to determine their year-round economic viability in Minnesota. Viscosities of both samples and commercially available diesel fuel were tested at the temperatures of 45 degrees celsius, 22 degrees celsius, and 10 degrees celsius. Viscosities were established by measuring the time it took for 25 milliliters of both samples to drain out of a burette. At every temperature tested, the viscosity of vegetable oil biodiesel was noticeably lower than peanut oil biodiesel. Unlike commercial diesel fuel, both vegetable oil and peanut oil biodiesel solidify at temperatures above a typical winter night in Minnesota. Thus, both biodiesel samples are impractical for vehicular use during Minnesota winters.

Ethan Evenson, Hannah Christensen, Dylan Anderson, Abby Gauer (Dr. Edward McIntee, chemistry) Alcohol's Effects on Biofuel Viscosity

The purpose of this experiment was to analyze the effects of alcohols used in biofuel production on biofuel viscosity at different temperatures. It was hypothesized that biodiesel made from methanol would have a higher viscosity than biodiesel made from ethanol because of the relative sizes of the molecules. The biofuels were synthesized from canola oil and methanol or ethanol to create methyl ester and ethyl ester, respectively. NMR and IR spectrometers confirmed the synthesis of biodiesel and glycerol. A viscometer was used for measurement of biodiesel viscosity. Ethyl ester biodiesel in cold room conditions (7.5 C) exhibited the highest viscosity of any biodiesel-temperature combination and methyl ester biodiesel at room

temperature (25 C) exhibited the lowest biodiesel viscosity. Most biodiesel is currently synthesized with methanol as ethanol based biodiesel is generally diluted with a liquid of lower viscosity. Our data refutes our hypothesis that methyl ester is more viscous than ethyl ester because statistical analysis shows the methyl and ethyl ester viscosities to be significantly different. This suggests that biodiesel composed purely of ethyl esters would not be suitable for Minnesota winters, though it could be diluted with methyl ester biodiesel or another thinner liquid fuel to reach optimum viscosity in cold weather conditions. Ethanol is much more readily available in the midwestern United States because it can be made from corn as opposed to methanol (wood alcohol) which is not as prevalent or available in this region.

Sarah K. Harter, Alice K. Kuoc, Katherine A. Kutzke, Sara B. Matthews (Dr. Leo Seballos, chemistry) Determination of Citric Acid Concentration in Orange Juice by Titration

The aim of this experiment was to compare the critic acid concentration and the amount of citric acid in different brands of orange juice: Ocean Spray, Minute Maid, Kemps, Simply Orange and Tropicana, to fresh squeezed navel orange juice. The investigation focused on measuring whether the amount of citric acid in different brands of orange juice are significantly close to or different from the others. This was found by titrating the orange juice samples with 0.05 M standardized NaOH with phenolphthalein as an indicator. The result showed that there are no significant differences in the concentration (about 0.0028 mol/mL) of citric acid in the orange juices. By calculating the amount of citric acid in the orange juices, it resulted in about 1.3 grams per serving (one serving = 240 mL).

Kaitlyn E. Lauer, Graci M. Gorman, Trisha N. Johnson, Angela M. Stevens (Dr. Leo Seballos, Chemistry) Determination of Vitamin C Concentrations in Various Fresh Fruit Juices by Iodine Titration

This study investigated the vitamin C content in various fresh fruit juices. The fruits tested include: oranges, lemons, limes, red grapes, green grapes, red pumello, kiwi, and grapefruit. Each fruit was squeezed to extract the juice from the fruit, and each juice was then titrated with a standard iodine solution. This technique was used to find the volume of iodine needed to titrated the fruit juice to completion. This data was then used to calculate the vitamin C concentration in each fruit juice. The results concluded that vitamin C concentration varies in fresh fruit juices. Kiwi juice was found to have the highest concentration of vitamin C. It's vitamin C concentration was 3.59*10^-3, followed by oranges with 3.41*10^-3, red pumello with

3.35*10^-3, grape fruit with 2.13*10^-3, lime with 2.01*10^-3, lemon with 1.75*10^-3, green grapes with 1.31*10^-4, and red grapes with 1.30*10^-4.

Brett L. Anderson, Leif Jacobson, Chuck Dudek, August Tournay (Dr. Brian Johnson, chemistry) Synthesis of Bio Diesel and the Effect of n-hexadecane on Pour Point

Four different oils were used to synthesize biodiesel: canola, corn, olive, and soybean oil. The biodiesel was synthesized by adding the oils to a solution of anhydrous NaOH and methanol. The pour points, the lowest temperature where the biodiesel still pours out of a container, and melting points were determined in each of the different solutions. n-hexadecane is added to commercial diesel lowering the pour point of the diesel enough for the fuel to not gel at common winter temperatures. Another additive used to lower the pour point of diesel is acetone. A test of melting point was used to determine where the pour point is with the different amounts of n-hexadecane and acetone added. These temperatures were compared to the pour point for commercial grade diesel. The pour point of the commercial grade diesel was found to be much lower than the pour points of the synthesized biodiesel at every level of n-hexadecane and acetone added.

Megan C. Rieb, Stephanie K. Kellner (Dr. Leo Seballos, chemistry) Determining Harness of Water and Its Effects on Two Brands of Soaps

We determined the varied hardnesses of water by adding calcium chloride (0.2g, 0.1g, and 0.05g) and then for a different trial, adding magnesium sulfate (0.788g, 0.394g, and 0.197g). We used a titration by using EDTA, and then used EBT for an indicator to determine the concentrations of our water solutions. We then used Dial and Softsoap brands of soap to test how many bubbles were formed from each harness of water samples.

Ryan M. Peters, Isaac E. Johnson (Dr. Leo Seballos, chemistry) Determination of Ascorbic Acid (Vitamin C) Content in Tomatoes after Various Methods of Preparation

This experiment assessed which method of preparation — baking, boiling, or steaming — retains the most vitamin C compared to raw, uncooked

tomato. The vitamin C content for all cooked and raw samples was determined by a titration against a standardized NBS solution, which allowed for precise evaluation of percent ascorbic acid. Assessing which method of preparation retains the most vitamin C as compared to the raw, uncooked tomato allows for the healthiest possible choice to be made with respect to the condition of the tomatoes we eat. Three separate tomatoes were tested. After preparation, juice was extracted, and 5 ml portions of each sample were titrated against a standardized NBS solution until indication that the endpoint had been reached in each titration. Our results indicate that, with a 79 percent yield post-preparation, steaming was the most effective at retaining ascorbic acid; baking retained the second most vitamin C at 71 percent retained, while boiling retained only 23 percent of the original vitamin C content (with 51 percent being pulled out in the water used for preparation).

Dustin Schlangen, Matt Dummer, Drew Shelquist (Dr. Brian Johnson, chemistry) Determination of Vitamin C in Raw and Cooked Pineapple by Titration

The experiment was designed to measure the change of vitamin C in raw and cooked pineapples. To accomplish this task, titrations of three sample types were performed. The three sample types consisted of vitamin C solutions, solutions extracted from 40g of raw pineapple, and solutions extracted from 40g of cooked pineapple. Each sample was titrated using an iodine solution and the amount of iodine needed to reach the equivalence point was determined. The data suggests a 15.4 percent-39.6 percent decrease in the amount of vitamin C present in the cooked solutions of pineapple juice as compared to their raw counterparts. This indicates that when trying to maximize vitamin C intake, consuming uncooked pineapple is a better option than consuming cooked pineapple.

Luke Eggerichs, Maggie Morris, Caleb Vande Wege, Hayley Van Gelder (Dr. Brian Johnson, chemistry) Alternative Copper Reducing Agents

This study investigated possible reducing agents for copper. Possible reducing agents used were: aluminum, iron, zinc, magnesium, cobalt, tin, nickel, and chromium. All possible reducing agents used underwent the same treatment. Treatments began by suspending the copper in 6 M H_2SO_4 through acid-base reactions. The reducing agent was then added to reclaim the copper and then the copper was extracted and weighed. All results will be reported after completion of the experiment. The purpose of the experiment was to find the most efficient reducing agent for copper, which could maximize extraction of copper for industrial use.

Samantha J. Kessler, Kaitlyn D. Longley, Ryan D. Longley, Andrew M. West (Dr. Edward McIntee, chemistry) The Determination of Vitamin C Concentration in Raw and Cooked Cherry Tomatoes

> An experiment was conducted to determine how different cooking techniques could manipulate the vitamin C concentration in cherry tomatoes. It was speculated that vitamin C concentration is lowered in cherry tomatoes that are cooked such as boiled versus cherry tomatoes that remain raw. Vitamin C concentrations were determined by titrating a solution of 2 percent starch, acetic acid (0.2 M) and diluted cherry tomato juice with 2 percent iodine solution. The results demonstrate that the cooked cherry tomatoes had a lower vitamin C concentration than raw cherry tomatoes.

Nicholas Elfering, Joseph Hodapp, Stephanie Noyes, Isabel Pennings, Alexander Trujillo (Dr. Brian Johnson, chemistry) Amount of Citric Acid in Fruit Juices (Lemon, Orange, and Grape) Determined by Sodium Hydroxide and Iodine Titrations

> The aim of this study was to investigate the citric acid content of fruit juices, including 100 percent pure lemon, orange, and grapefruit juice. Each juice was titrated with standardized NaOH in order to determine the total acid content. The juices also underwent an iodine titration in order to determine the amount of ascorbic acid (Vitamin C), one of the major acids besides citric acid contained in fruit juices. These values were then used to determine the percent of citric acid in the total amount of acid. The lemon juice contained the highest percent of citric acid out of the total acid content, at 99.78 percent. The orange juice had the lowest percent of citric acid, at 98.40 percent. Grapefruit had the median percent citric acid, at 98.83 percent. From this we can conclude that the citric acid content in fruit juice is highest in lemons and lowest in oranges.

Stuart A. Fogarty, Kylene M. Fremling, Chelsea V. Komarek, Daniel K. Larson (Dr. Carleen Schomer, O.S.B., chemistry) Iodometric Determination of Vitamin C Content of Oranges and Commerical Orange Juice Stored at Different Temperatures

> The vitamin C content of oranges and commercial orange juices after storage at different temperatures was determined. The procedure involved titrating the orange juice with an iodine solution that had previously been prepared and standardized using a standard ascorbic acid solution. Then,

using a standardized iodine value, the vitamin C of each sample was calculated. The research and data indicated that storage temperature had little effect, but freshly squeezed orange juice contained more vitamin C than commercially-bought orange juice. No other consistent patterns were found in the data, and the reasons behind this will be explored in discussion at the presentation.

Julie A. Hulstrand, Michael L. Terhaar, Angela M. Holth, Emily D. Boser (Dr. Brian Johnson, chemistry) Concentration of Citric Acid in Common Household Fruits and Respective Commercial Concentrate Juices

The purpose of this experiment was to explore the concentrations of citric acid in common household fruits (orange, grapefruit, lemon and lime) and their respective commercial juices. This was done by a three trial titration with a standardized NaOH solution and performed on the filtered and centrifuged fruit juices. As expected the concentrations in the fresh produce juices were higher than the commercially processed juices as found by the data produced and most importantly calculations of the number of grams (of citric acid) per liter. An average of 2.65 grams higher of citric acid per liter between the freshly squeezed fruits and their respective fruit juices was calculated; however, this was only calculated between the orange, lemon, and grapefruit juices as the lime juices were not included in this calculation because the freshly squeezed lime juice citric acid content was so much higher than its commercial juice. The lime juice from the fruit had 92.7 grams of citric acid per liter content while the respective commercial juice was only 55.9 grams of citric acid per liter.

Paige M. Armbrister, Philan V. Bethel (Dr. Edward McIntee, chemistry) Determination of Iron Content in Different Kinds of Bread

The research goal of this experiment was to determine which kind of bread, Johnnie or white bread, was best to consume for nutritional value. In order to fulfill this goal or help to answer the research question, the different amounts of iron in each type of bread had to be determined by carrying out spectrophotometry. During the experiment, the different kinds of bread were burnt and solutions were made using the ashes. Also, standard iron solutions were made with concentrations of 0.000050M, 0.00010M, 0.00015M, 0.00020 and 0.00025M iron(III) ion solution. Then the absorbance values of these standard solutions were determined. These values were then compared to the absorbance values of the bread solutions. After carrying out the experiment, it was discovered that Johnnie bread had a higher iron content because it had a similar absorbance value to the second most concentrated iron solution. Therefore, it can be concluded that Johnnie would be more nutritional due to its high iron content.

Nursing

Emily A. Rud, Cassandra M. Harrington (Dr. Kathleen Twohy, R.N., nursing) Maximizing Skin Integrity in the Pediatric Intensive Care Unit

We have identified a recent decrease in skin integrity at the hospital in which we are completing our capstone course for the nursing program. Our purpose is to provide education to nurses in order to decrease pressure-induced skin breakdown related to the use of nasal and oral tubes in the pediatric population. We have three recommendations which are supported by research on the matter. This poster board is also being displayed in the pediatric intensive care unit at the hospital which we are currently placed for our final clinical rotation.

Xin Piao (Dr. Carie Braun, R.N., nursing) The Impact of StatLock in Pediatric Population

The insertion of peripheral intravascular (PIV) access device is one of the most common invasive procedures performed on hospitalized children for the administration of fluids, medications, nutrients, and blood products. Unfortunately, presence of peripheral IVs increases the risk for developing PIV complications, including phlebitis, infection, extravasation, and infiltration. In many healthcare institutions PIV catheters are secured by tape and a transparent dressing. However, there is a StatLock® device made specifically to hold the tubing of PIV catheters in place. During the summer of 2010, the nursing department of the College of Saint Benedict/Saint John's University and St. Cloud Hospital Children's Center started joint research to determine whether using the standard taping method or Statlock device is a better way to secure peripheral IVs in the pediatric population. The research is still currently in progress.

Amy E. Garmaker (Dr. Carrie Hoover, R.N., nursing) Enhancing Diabetes Education for the US Veteran

Diabetes affects over 25.8 million children and adults in the U.S. It is a costly disease to manage and is of top concern to provide self-management skills to prevent long-term complications among our U.S. veterans. Providing the highest quality education to facilitate retention of the information for veterans enrolled in a diabetes management program is essential. Traditional methods have been proven ineffective. As a senior nursing student, I completed a quality improvement program focused on enhancing diabetes education among U.S. veterans. Elements of the quality improvement process in health care will be presented, including, assessment

of the diabetes education environment, evidence to support the implementation, modification of the teaching methodology and the veterans response to the implementation of evidenced-based teaching.

Nutrition

Katie G. Jepperson, Katie A. Schwarz, Tyler J. Etheridge (Dr. Amy Olson, R.D., L.D., nutrition) Correlation of Vitamin D Status with Performance in NCAA Division III Women's Cross Country Runners

Vitamin D is not only important in maintaining bone and muscular strength, but may also have a role in the immune system and inflammatory response. Vitamin D status has been studied extensively in elderly populations, but little is known about the vitamin D status of athletes. A deficiency in vitamin D could impact athletic performance. This study examined the association between performance, anaerobic and aerobic, and serum vitamin D status in the CSB cross country and track and field athletes. Aerobic performance was assessed with a 2.5 mile time trial and anaerobic performance with a 20 meter sprint, a vertical jump test, and a four repetition jump test used to determine explosive leg power. Vitamin D (25(OH) vitamin D3) was assessed using an ELISA kit. The runners also completed three-day dietary records to assess daily vitamin D intake. The results indicate a possible correlation between vitamin D status and aerobic performance and a very strong correlation between solar radiation and vitamin D status. All but two subjects fell below optimal vitamin D status in January. None of the participants achieved the recommended dietary intake of vitamin D through diet alone. Maintaining optimal vitamin D status during the winter months appears to require either supplement use or access to direct UVB radiation.

Kristine E. Melody, Erica L. Manternach, Katherine G. Jepperson (Dr. Amy Olson, R.D., L.D., nutrition) Influence of Eating in a Cafeteria on Nutritional Adequacy of College-Aged Females

Pre-paid meal plans are more likely to result in better nutritional intakes in elementary and high school students; however, there are few studies on college-aged students. The purpose of this study was to determine whether or not consuming at least one meal a day in a college, buffet-style cafeteria improved the nutritional adequacy of participants' diets. College juniors and seniors (92 females ages 20-23) were interviewed regarding dietary intake. Subjects were solicited by going door to door in campus residence halls. Individuals were interviewed to obtain a 24-hour diet recall and asked to complete a survey regarding factors affecting their food choices. Diet records were analyzed to determine students' macro and micronutrient

intakes and whether or not they met food group recommendations according to MyPyramid. There was no significant difference in the adequacies of students' diets when comparing intake between those who ate in a cafeteria and those who did not. However, those students who ate in a cafeteria were influenced more by nutrition and tended toward a higher calcium and iron intake whereas those who did not eat in a cafeteria favored convenience over nutrition.

Sarah E. Sorensen, Jared J. Sundstrom (Dr. Amy Olson, R.D., L.D., nutrition)
Carbohydrate-Protein Drink Fails to Reduce Muscle Damage in Division III Racing CC Skiers

Sport drinks that contain protein appear to reduce the muscle damage caused by exercise under experimental conditions; however, the effectiveness under actual race conditions is not known. Purpose: to determine whether a sport drink containing protein consumed before/after a ski race reduces muscle soreness and/or damage as indicated by serum creatine kinase (CK). Methods: the study received approval from the college's IRB. Subjects were recruited from the men's and women's cross country ski teams. NCAA races were scheduled over two weekends; there were 16 participants (M=9, F=7) the first weekend [one race each day] and 14 (M=9, F=5) the second weekend [two races on one day]. Many of the subjects use Accelerade, carbohydrate-protein drink either after, or before and after skiing; however, some refuse indicating the product upsets their stomachs. Subjects were allowed to engage in their normal routine surrounding races; no attempt was made to intervene regarding the beverages selected before, during or after the races. Lactate was measured pre and post races using a handheld lactate analyzer to gauge exercise intensity. CK was measured the day before each race weekend and 24 hours later to assess muscle damage. Surveys were completed after each race to evaluate GI distress, hunger, thirst, and soreness. Another survey was given 24 hours after each race weekend to assess delayed onset muscle soreness. Results: Creatine kinase levels increased significantly for all skiers (pre to post) after both race weekends ($p=0.009$ and $p=0.0001$ respectively). However, there were no differences in CK levels [means or CK change (post-pre values)] between the Accelerade groups and the control ($p= 0.46$). There were no differences in gastro-intestinal distress, perceived exertion, post-race soreness, and 24-48 hr. soreness between the groups. Conclusions: Accelerade did not appear to confer any advantages or disadvantages under actual race conditions of ~10 K distances in this study. Consuming sufficient amounts of dietary protein before and after exercise appears to minimize muscle damage.

Elizabeth A. Petterssen, Jessica N. Vargason (Dr. Amy Olson, R.D., L.D., nutrition) The Truth Behind the Five Second Rule

The five-second rule, made famous by the Oreo cookie commercial, was introduced by high school student Jillian Clarke. The rule states that food is not contaminated with bacteria, and therefore is safe to eat, if picked up within five seconds of being dropped. A series of experiments were conducted to determine factors that may affect bacterial growth and the truth behind the five-second rule:

a) types of food (dry vs. moist)
b) contact surfaces (from stainless steel to carpet)
c) time of day (opening to close)
d) temperature (warm food areas vs. cold food areas)
e) duration (length of exposure on surface)

Kristina A. DeMuth (Linda Shepherd, M.P.H., R.D., L.D., nutrition) Identifying the Characteristics of Eating Disorders Not Otherwise Specified (EDNOS) in a Community Sample

The Eating Disorder Not Otherwise Specified (EDNOS) is the catch-all diagnosis for those that do not meet all criteria for Anorexia or Bulimia, and it is the most commonly diagnosed eating disorder in both clinical and community samples. EDNOS has the highest mortality rate of all eating disorders. An online survey, available via social networking sites, is composed of several scales: The Eating Disorder Diagnostic Scale, Eating Disorder Quality of Life Scale, The Satisfaction with Life Scale, Brief Screen for Depression, The Mini-IPIP scale, as well as questions about treatment, diagnosis, insurance coverage, and behavioral patterns. The survey will compare the characteristics of individuals with EDNOS to individuals with anorexia and bulimia. Data obtained will be used to determine commonalities among the diagnostic groups, as well as issues with insurance coverage and treatment issues. An eating disorders severity index created from items in the survey will be used to assess the variance in psychopathology among the diagnoses, as well as the body mass indexes.

Erica Manternach (Jayne Byrne, M.S., R.D., L.D., nutrition) Sustainably Incorporating Health-Promoting Omega-3 Fatty Acids into the American Diet

Omega-3 fatty acids are essential, polyunsaturated fatty acids that reduce risk factors for chronic diseases when consumed. Numerous government agencies have urged Americans to consume marine sources of omega-3 fatty acids to reduce cardiovascular disease risks. This study evaluates the unsustainability of marine sources and questions the safety of these

products. Finally, it offers an alternative, multi-faceted approach to increasing omega-3 fatty acid consumption in Westerners' diets through a variety of sources including hen eggs, grass fed meats, genetically modified meats, meats from alga fed animals, and sources of stearidonic acid.

Krista Mueller, Brittany Vaplon (Jayne Byrne, M.S., R.D., L.D., nutrition) Is There a Difference in the Effect of Consumption of Omega-3 Fatty Acid Enriched Eggs Versus Fish Oil on the Plasma Inflammatory Marker, C-reactive Protein?

Background: Chronic inflammation, indicated by elevated levels of serum inflammatory markers, is implicated in the pathogenesis of chronic disorders such as cardiovascular disease, diabetes, hypertension, arthritis, and cancer. Long chain omega-3 fatty acids, specifically eicosapentaenoic acid (EPA) and docosohexaenoic acid (DHA) decrease the production of strongly inflammatory eicosanoids and cytokines when they appear in sufficient quantity in the cell membrane or cytosol. Changes in blood lipids and C-reactive protein serve as measures of changes in inflammation and cardiovascular risk status that may be achieved with changes in dietary fatty acid profile. Objective: To compare the effects of consuming an equivalent dietary dose of EPA + DHA from omega-3 enriched eggs versus a fish oil capsule on serum lipid levels and the inflammatory marker, hs CRP. Design: Subjects (n=19) were randomly assigned to one of two groups: those who consumed two omega-3 fatty acid enriched eggs daily for six weeks (egg) or those who consumed two purified fish oil capsules daily for six weeks (fish). The total daily dose of omega-3 fatty acids was 500 mg, with ratios of EPA, DHA and other omega-3 fatty acids varying somewhat between treatments. Fasting serum levels of hsCRP; total, LDL and HDL cholesterol, and triglycerides were obtained prior to consuming the respective treatments and at the end of the six week trial period. Results: Results are pending on final three weeks of data collection. Conclusion: No conclusions can be drawn at this time as results are pending data collection completion.

Service Learning

Katrina R. Reker, Robert J. Floren (Dr. Stephen Stelzner, service learning) Good Shepherd

This was a service learning project for a community psychology class. As a group, we planned and scheduled events for residents of the Good Shepherd Community. A concept that we learned in class was "sense of

community." By planning and holding social activities for the residents, we were able to bring people together as a community.

Renee S. Young, Michelle M. Mueller (Dr. Stephen Stelzner, service learning) Puzzles for Pizza

Our project took place at the Southside Boys & Girls Club. Our primary focus was to observe and enhance the club's "sense of community." According to the club supervisor, many of the children do not receive the same attention and connections at home as they do at the club. In a sense, the Boys & Girls Club is a place for the kids to escape the harsh realities seen in their homes and neighborhoods. Therefore, our group decided to design a project to engage a small group of children in various activities in order to earn a pizza and movie night. In addition, the club had a strong need for new games and puzzles for the children to play with during their time at the club. While collecting donations from friends, family, and others who wished to contribute, we observed a strong sense of community amongst the club children and staff members. Even though some of the club's play equipment is worn down and essentially falling apart, the children did not seem to mind, their only request is to have friends with whom they can play and connect with and staff members they can rely on.

Laurie E. Bachman, Allison R. Muccio (Rachel Melis, M.F.A., service learning) Free At Last: Art Works Preventing Trafficking of Women

Two students from Professor Rachel Melis' Art of the Printed Book course will present fine press posters and a book they and their classmates designed and hand printed in response to a service learning assignment. All of the students in the class were asked to work with a local non-profit (Hands Across the World) to create educational and empowering art work to be distributed in the St. Cloud area.

Fine Arts & Social Science Poster Session

Quadrangle Alumni Lounge, SJU

Psychology

Andrew M. Obritsch (Dr. Aubrey Immelman, Psychology) The Influence of Personality on Presidential Decision Making: A Comparison of the Personality Profiles of Barack Obama and Franklin D. Roosevelt

The purpose of this project is to examine the relationship between the personalities of U.S. Presidents Barack Obama and Franklin Roosevelt and to determine how their personalities influenced the decisions they made prior to being elected president. This project is valuable to the fields of psychology and history because it builds bridges between the two disciplines as a way of better analyzing psychological and historical data.

Kelsea R. Schneider, Katherine E. Boehm, Evan A. Johnson, Jeremiah J. Martin (Dr. Aubrey Immelman, psychology) The Personality Profile of Gov. Tim Pawlenty

Group research project by members of a personality psychology class to determine the personality attributes of former Minnesota Gov. Tim Pawlenty, a prospective candidate in the 2012 republican presidential primary.

Matthew T. Draxler (Dr. Aubrey Immelman, psychology) The Political Personality of Former Minnesota Governor Tim Pawlenty

Construction of a personality profile of Tim Pawlenty, former governor of the state of Minnesota and prospective republican candidate in the 2012 presidential election.

Katelyn R. Bounds, Zhirou Chen, Samantha Wolf, Elizabeth Hanzlik, Kerri Graske, John Cicchese, Ellen Griffith (Dr. Aubrey Immelman, psychology) The Personality Profile of U.S. Rep. Michele Bachmann

Group research project by members of a personality psychology class to determine the personality attributes of Rep. Michele Bachmann, a prospective candidate in the 2012 Republican presidential primary.

Jordyn K. Reed (Dr. Rodger Narloch, psychology) Self-Monitoring and Self-Concept Clarity

The point of this study was to see if there was a significant relationship between self-concept clarity and the number of semesters spent in college as well as between self-monitoring and class year. One hundred and thirty students from the College of Saint Benedict and Saint John's University participated in this survey. Statistical analysis revealed no significant linear relationship between self-concept clarity and number of semesters spent in college. Statistical analysis also revealed no significant mean difference in self-monitoring across class year.

Jordan A. Gilmore (Dr. Rodger Narloch, psychology) Self-Efficacy in Relation to Height and Procrastination

> In a one-shot survey, 45 male participants from Saint John's University took a written, personal interview survey containing several scales including procrastination and self-efficacy. The study aimed to relate self-efficacy, height, and procrastination in males. Upon analysis, there was a significant negative correlation between self-efficacy and procrastination, but no significant correlations between height and self-efficacy or height and procrastination.

Orlando M. Jayasiri Gunesekere, Taylor L. Curtis, Eun Ah Kim (Dr. Robert Kachelski, psychology) The Effect of Physical Appearance on Overall Perceived Attractiveness

> It has been suggested that physical appearance determines the attraction one feels toward another person more than other factors do. Our experiment is designed to test the effect of physical appearance on overall perceived attractiveness. In order to measure this effect, participants will be assigned to one of two groups. In one group participants will read a detailed profile of an individual of the opposite sex and then rate the person on overall attractiveness as a potential dating partner as well as other traits. In the other group, participants will be given the profile and will also be shown a picture of the individual. A picture of an attractive individual will be used. Comparing the overall perceived attractiveness ratings given by those who see both the picture and the profile to those who just see the profile will allow us to determine the effect that physical appearance has on overall perceived attractiveness. We will also be testing whether the order in which participants receive the picture and the profile makes a difference. For those participants who are given the picture, half will receive the picture before reading the individual's profile, and half will read the individual's profile before seeing the picture. Physical appearance may have more of an influence on overall perceived attractiveness if it is the first information processed about the individual, because it is used in forming a first impression. It may have less of an influence if a first impression has already been formed based on the information in the profile. Varying the order in which the profile and the picture are presented to the participants will allow us to test whether or not this is true.

Catherine A. Kress, Amanda A. Olsen, Maria A. Stevens (Dr. Robert Kachelski, psychology) Role of Priming in the Stroop Color-Naming Task

The purpose of this research is to determine if reading a story before performing a Stroop color-naming test will prime words in the mind, affecting the participant's speed when performing the test. The participants will be randomly assigned into two groups. One group will be the experimental group. Participants in this group will be asked to read a story and then answer some reading comprehension questions regarding the story they just read. The purpose of the reading comprehension questions is to ensure that they have read the stories carefully. Next, they will be asked to complete two Stroop color-naming tests. One of the color-naming tests will have some of the words repeated verbatim from the story, while the other color-naming test will have some words that are directly related to the topic of the story, but were not actually used in the story. The second group will be the control group. This group will read a short story that is different from the one read by the experimental group and then answer reading comprehension questions regarding the story. Then, they will be asked to complete the same two color-naming tests as the other group, but since the story they read was different, neither of the color-naming tests will contain words related to the story they read. We will be measuring the amount of time it takes the participants to correctly name the ink colors of all the words on each of the two color-naming tests. Previous research indicates that words that have been primed are processed faster. Therefore, we predict that the experimental group will perform the color-naming tests more quickly because some of the words were related to the topic of the story they read or had words taken directly from the story. In other words, the priming effect from the story will result in faster processing of the words, allowing them to more quickly focus on the color of the ink. However, it is possible that the priming effect may make participants in the experimental group pay more attention to the words from the story, slowing them down. Therefore, we will be looking for any significant differences between the two groups.

Shari J. Ferere, John S. Lano, Adam F. Sattler, Megan M. Seipel, Chi Man Tang (Dr. Michael Livingston, psychology) Experimental Disclosure in Adolescents

Adults who write about their future best possible selves demonstrate increased subjective well-being and improved immune system functioning (King, 2001). The current study aims to discover whether the same effect can be extended onto adolescent populations. In the first study a group of adolescents from an alternative learning high school were selected. Results indicated that students in alternative schooling showed an increase in feelings of loneliness and depression when writing about their best possible selves. A possible explanation for such results could lie in the adolescents' severe emotional state. To determine the validity of such an explanation, healthy adolescents were tested using the present research design in a second study.

Jennifer A. Birkhofer (Dr. Pam Bacon, psychology) Self-Theories, Optimism, and Well-Being

> According to self-theory research, holding an incremental theory is generally more beneficial to one's well-being than holding an entity theory, while optimism researchers (Seligman, 1990) suggest that being an optimist is generally more beneficial to one's well-being than being a pessimist. However, these two theories contradict each other in how they suggest individuals' causal explanations for negative and positive events relate to well-being. Incremental theorists believe that abilities are malleable through effort, and may attribute both their successes and failures to their effort, whereas optimists believe that good outcomes/successes are due to permanent causes (traits and abilities, e.g., I'm smart) and that bad events/failures have temporary causes (moods and effort). In other words, self-theory predicts that holding an external explanation for both positive and negative events is beneficial, while the researchers who suggest that optimism is beneficial believe that holding an internal explanation for positive events and having external explanations for negative events or outcomes is essential for people's well-being. The purpose of this study is to determine which theoretical viewpoint, implicit-theories or optimism/pessimism, is more strongly supported by research findings. We hope to discover whether a belief in one's personal abilities or effort is more strongly related to well-being.

Anne E. Backe, Alexander C. Boyd, Rebecca J. Franklin (Dr. Rodger Narloch, psychology) Examining Procrastinators According to Gender, Self-Monitoring, Self-Efficacy, and Self-Concept Clarity

> The present study looked at how procrastination correlates to gender, self-monitoring, self-efficacy, and self-concept clarity. Researchers surveyed 130 participants who participated in a one-shot survey design. The study concluded four things. First, males procrastinate more than females. Second, there is a significant positive correlation between procrastination and self-monitoring. Third, there is no significant correlation between procrastination and self-efficacy. And lastly, there is a significant negative correlation between procrastination and self-concept clarity.

Amy E. Ranweiler, Gwendolyn L. Marrin, Rachel M. Haug (Dr. Robert Kachelski, psychology) The Effect of Chewing on Memory

> Previous research has been inconclusive in regards to the effects of gum chewing on memory. Some of the research has shown that gum chewing

positively affects memory, whereas other research has shown that gum chewing negatively affects memory. One study showed increased cognitive function from chewing because of an increase in cerebral blood flow. Other studies have not seen this difference. The purpose of this study is to clarify what effects, if any, gum chewing has on memory. Also, past research has focused on continuous gum chewing. Intermittent chewing has not yet been studied. Our study extends this research to include the discontinuous process of chewing and eating Mentos. The role of chewing in regards to memory will be analyzed by having individuals randomly assigned to one of three groups: a control group (nothing to chew), a continuous chewing group (gum chewing), or an intermittent chewing group (eating Mentos). Memory will be measured by having all three groups complete two memory tasks, and the performance of the participants in the three groups will be analyzed for any significant differences.

Amie M. Ernst, Mai Nhia Yang, Katelyn E. Myllykangas (Dr. Rodger Narloch, Psychology) Gender Differences in Procrastination, Self-Efficacy, and Self-Concept Clarity

This study was conducted to determine if there were differences across genders in procrastination, self-efficacy, and self-concept clarity. Also, the study tested if self-efficacy and procrastination are negatively correlated with each other. For this cross-sectional study, researchers used convenience sampling to find participants to complete a study with multiple questionnaires relating to personality. There were 85 female and 45 male college students who participated in this study. The results indicated males were more likely to procrastinate than females; there was not a mean difference in either self-efficacy or self-concept clarity across genders. There was no linear relationship between procrastination and self-efficacy.

Lisa A. Fenske (Dr. Rodger Narloch, psychology) Gender Differences in Procrastination and Self-Monitoring and their Relationship

The purpose of the study was to examine possible gender difference in procrastination and self-monitoring and relationship between those two variables. This cross sectional survey taken by 130 traditional-age college students used a convenience sample. Results indicated that males procrastinate significantly more than females, but that there was no significant difference between males and females for self-monitoring. Also, results showed that procrastination and self-monitoring have a significant positive linear relationship.

Valcia H. McGann, Megan A. Augeson, Raisa L. Guillemette (Dr. Robert Kachelski, psychology) The Effect of Clothing Color on Person Perception

This project aims to determine whether color of clothing is a significant factor in determining the attractiveness and perceived qualities of an individual. Previous research has found that red is a significant color/factor in determining attractiveness in an individual, and also that the color red has been found to make men feel more amorous toward women. Our research seeks to test whether the red effect can extend to women as well or if it would pose a reverse outcome. We are also testing to see whether there is a significant difference in attraction levels overall of individuals wearing blue, when compared to individuals wearing red. Participants will be randomly assigned two photographs, one male and one female. Each individual in the photographs will either be wearing a red or blue shirt. After observing each photo, participants will answer a series of questions about the individual's level of attractiveness, likeability, kindness, and intelligence. For both men rating women and women rating men, the attractiveness ratings are predicted to be higher when the individual in the picture is wearing red than when the individual is wearing blue. However, the clothing color is not predicted to affect ratings of likeability, intelligence, or kindness. When participants are rating an individual of the same sex, color is not predicted to have an effect on any of the ratings of attractiveness, likeability, intelligence, or kindness.

Pete J. McGrath, Aaron D. Beyer, Blaine H. Feia (Dr. Robert Kachelski, psychology) Effects of Competition and Incentives on Motivation

Previous research has shown that both competition and incentives positively affect motivation to perform well on a task. Our experiment is designed to see if competition and incentives affect motivation differently (whether or not incentives affect motivation more than competition alone). In order to measure motivation, we will use a proofreading task in which we record the number of mistakes that participants are able to find in a given document. These mistakes will be relatively simple mistakes, such as spelling errors or repeated words. Participants will be randomly assigned to three different groups, and the instructions given to the groups before the proofreading task will differ. One group will be the control group and the instructions will simply describe how to perform the proofreading task. The second group will be the competition group, and information will be added to the instructions for this group saying that the proofreading task is a competition among the participants, so they should try to do their best. The third group will be the Incentive Group, and the instructions for this group will add the information that, not only is the proofreading task a competition among the participants, but also prizes will be given to the top three performers.. In addition to the number of mistakes found by

participants in the proofreading task, we will also measure how motivated they are by asking them to rate their level of motivation in the task on a scale. We will be examining the performance of the three groups to see whether the different instructions had any effects on participants' performance in the proofreading task or on their self-reported ratings of motivation.

Michelle N. Pokorny, Allison L. Youngers (Dr. Rodger Narloch, psychology) Relationships Among Self-Concept Clarity, Self-Efficacy, Self-Monitoring, and Procrastination in College Students

In this study, research assistants surveyed college students to see if there were correlations among procrastination, self-concept clarity, self-efficacy and self-monitoring. Research assistants administered surveys to students (N = 130) from CSB/SJU. It was a one-shot survey design that used convenience sampling. Pearson's correlation did not reveal a significant linear relationship between procrastination and self-efficacy; however, it did reveal significant negative linear relationships between procrastination and self-concept clarity and between self-concept clarity and self-monitoring. In addition, results did reveal a significant positive linear relationship between self-concept clarity and self-efficacy. In order to show a correlation between procrastination and self-efficacy, future research would need to involve a larger sample size with students surveyed from a wide range of universities.

Michelle B. Wilczak, Logan P. Thomson (Dr. Janet Tilstra, psychology) Dating, Sexuality and Gender Attitudes of Emerging Adults at CSB/SJU

We explored beliefs of emerging adults at CSBSJU with regard to dating, sexuality, and gender. Specifically, we examined traditional dating and "hooking up" trends among students and how these patterns relate to student's personal goals, views of women, and family values. In this project, we examined traditional dating and "hooking up" trends based on quantitative and qualitative research completed in larger campus settings. In addition to extending this research to a small Midwestern liberal arts college, we examined the relation between students' views of women, family values and "hooking up" patterns. In this way, the current project both replicates previous research and extends these questions.

Laura C. Myllykangas, Ryan P. Miller, Katharine J. Fisher (Dr. Rodger Narloch, psychology) Inter-Correlates of Procrastination, Self-Efficacy, and Self-Monitoring in Undergraduate Students

The current study examined the inter-correlations of procrastination, self-efficacy, and self-monitoring as it relates to undergraduate students. Participants consisted of a convenience sample of 130 (85 female, 45 male) undergraduate students attending a small private liberal arts university. Researchers administered surveys to each participant which included the procrastination, self-efficacy, and self-monitoring scales. All participants completed the surveys in the presence of the researchers. Results indicated that procrastination was not significantly correlated with self-efficacy, while procrastination and self-monitoring were significantly correlated in the positive direction. In addition, researchers did not find a significant correlation between self-efficacy and self-monitoring, however this correlation did approach significance.

Lara M. Woyno (Dr. Rodger Narloch, psychology) The Relationship of Self-Efficacy with Procrastination and Academic Achievement

This study examined the relationship of self-efficacy with procrastination and academic achievement. In the presence of a researcher, 130 undergraduate students at CSB/SJU completed a written survey. The results did not reveal significant correlations of self-efficacy with procrastination and GPA.

Fine Arts Presentations:

Art

Schedule

10 - 11 a.m.
WarnP J Club Room Lindsay M. Tholen, Ben M. Schwamberger, Charlie D. Raeker, Jay M. Porten, Sammy M. Muldoon, Ashley E. LaLiberte, Megan E. Jagger, Jeremy M. Hill (Dr. Carol Brash, art) What's the Use of Art?: A Tour of Selected Works From Saint John's University

Abstracts

Tholen, Schwamberger, Raeker, Porten, Muldoon, LaLiberte, Jagger, Hill: This project is a tour of eight artworks on the SJU campus. Each object will be introduced as having a function related to the mission of the university. There will be a similar tour at CSB given by the rest of our FYS class.

Humanities Presentations:

English

Schedule

9 - 9:20 a.m.	
Gorec 120B	Miles J. Johnson, Julia Segeleon, Jacqueline Tulloch (Dr. Ozzie Mayers, English) Linguistic Explorations
10 - 10:20 a.m.	
Gorec 120B	Brittany A. Dingman (Dr. Ozzie Mayers, English) Society of the Spectacle: An Intellectual Peek Into Our Modern Society and its Entertainment

Abstracts

Johnson, Segeleon, Tulloch: (Miles Johnson) Russell Hoban's 1980 novel Riddley Walker has in the past been met with a mixture of amusement and dismissal by linguistic scholars upon strict analysis of its fictional grapholect. However, with both linguistic and literary elements in mind, examination of Hoban's "folk" etymology reveals the pervasive role of language as a playful but powerful analogy for the novel's themes. (Julia Segeleon) “There is a religious war going on in our country for the soul of America. It is a cultural war, as critical to the kind of nation we will one day be as was the Cold War itself.” These words rang out at the 1992 Republican National Convention, spoken fervently by candidate Patrick Buchanan in his famous keynote address, an address that would later come to be called the “culture war speech.” Today, the expression “culture war” has become commonplace, used to describe what political analysts see as an increasing polarization between the moral politics of the American public. However, by splitting the American public into two such divisive, polarized categories, analysts are ignoring the reality of the political climate, which features a strong moderate majority. So where does this polarization come from? I argue that this observation of political polarization stems not from the real outcomes of the political system, but actually from an increasingly bitter, divisive, and extremist political discourse which has both created and sustained this idea of a “culture war” in America. (Jacqueline Tulloch) I laugh, you laugh, we all laugh together. We humans laugh together in movies, during parties, and with those we enjoy spending time with. According to the researcher, Robert Provine, laughter is a “fundamental part of everyday life.” Without inspection, the act of laughter doesn’t seem that significant, therefore why should it be fundamental to daily existence? The research and observations done on laughter reveal that laughter is a satisfying and productive way of de-stressing, getting a workout, increasing one's health, communicating emotion and social norms, and bonding with others. Articles

from a spectrum of sources all agree that laughter is a unique expression of human emotion and sound which occurs in a kaleidoscope of forms and circumstances.

Dingman: Modern society has become consumed with the spectacle. Critics like Guy Debord believe our modern society lacks authentic substance because of mass media and commodity fetishism. We become drugged on images, ceasing to critically think. I will draw connections between Debord's criticisms on the society of a spectacle and popular artists, specifically centering on the pop force that is Lady Gaga.

Hispanic Studies

Schedule

9 - 9:20 a.m. *HAB 117*	Kate E. Rickert (Dr. Corey Shouse Tourino, Hispanic studies) Dictating the Future: Illustrations of Latinos in US Children's Literature
10 - 10:20 a.m. *HAB 117*	Jana Graczyk (Dr. Elena Sanchez Mora, Hispanic studies) Las voces silenciadas de Guatemala
10:20 - 10:40 a.m. *HAB 117*	Anna J. Hoeschen (Dr. Elena Sanchez Mora, Hispanic studies) Pintando La Verdad: El Arte Publico En Guatemala
10:40 - 11 a.m. *HAB 117*	Mollie McMahon (Dr. Elena Sanchez Mora, Hispanic studies) La adquisición de lengua en la escuela secundaria: El uso del inglés en la clase de español
11 - 11:20 a.m. *HAB 117*	Michael Neutkens (Dr. Elena Sanchez Mora, Hispanic studies) Los efectos persistentes del franquismo en la España actual y la necesidad de lograr una democracia completa
11:20 - 11:40 a.m. *HAB 118*	Jennie A. Olson (Dr. Gladys White, Hispanic studies) The D.R.E.A.M. Act

11:20 - 11:40 a.m.
HAB 117

Amy C. Weum (Dr. Elena Sanchez-Mora, Hispanic studies) Lo que no se cuenta: Historias Latinas de paz y éxito en Minnesota (Unspoken: Latinos' Stories of Challenge, Peace, and Triumph in Minnesota)

11:30 - 11:50 a.m.
HAB 118

Jessica E. Norman (Dr. Nelsy Solano, Hispanic studies) Senior Thesis

11:40 a.m. - noon
HAB 118

Christian A. Aguilar (Dr. Jose Fabres, Hispanic studies) The Cristo Rey Network: Transforming Urban America One Student at a Time

Abstracts

Rickert: This project investigates the presence of Latinos in U.S. children's books and analyzes books to judge their quality as well as decode the messages they convey about Latinos. The main areas of focus are winners of the Pura Belpré Award and the Dora the Explorer series.

Graczyk: Guatemala is a country of secrets. Its pristine lake and breathtaking volcanoes, its warm beach and tropical rivers and caves make it a beautiful small country. The lush fresh fruits and vegetables, the indigenous outfits, and the 23 different Indian dialects add color and life. But hiding amongst these colorful, yet impossibly steep hills, hungry eyes, dusty shacks, and memories of suffering are found. Years of terror-inspired fear have silenced Guatemalans into keeping the stories of the past as secrets. While visiting a small mountain village in Guatemala, a sad and difficult secret to hear was shared with me; since I cannot undo the past, I was told to share the secret, so that it would not happen again. This paper begins with that secret, and then goes back even further to a brief history of the first habitants of Guatemala, the Mayans. From there it describes the invasion of the Spaniards, the civil war, the involvement of the CIA, and how the Guatemalans, specifically the indigenous populations, were affected.

Hoeschen: My research highlights the social and political implications of public art in Guatemala, specifically art produced in the aftermath of the civil war. Public art can be expressed through a variety of mediums, including murals, graffiti, posters, and photographs. My aim is to examine the means and motives of various groups who created art in the aftermath of the war. Moreover, I am interested in public responses/reactions to those projects. I seek to analyze and explain the symbolic meaning of the art in terms of its capacity to occupy a public space, give voice to muffled memories, heal survivors, prompt protest, and bind communities.

McMahon: How much should English be used when teaching Spanish? As a Hispanic studies major with a K-12 education minor with the goal of becoming a Spanish teacher, this is a question that I wanted to answer. Through research and firsthand experience in Spanish classrooms, I have investigated how the education of language has progressed over the years in relation to the use of English. I have witnessed both situations in which English limited language learning, and also circumstances where the use of English allowed for better comprehension of the Spanish language and culture. What I will share in my project are the circumstances where English is detrimental in the Spanish classroom, and what situations are appropriate and beneficial to use English.

Neutkens: Spain is a country rich in traditions, and with a past full of war, conquests, re-conquests, and monarchies. All of these have contributed to forming the Spain of today — a democracy. The Spanish people have liberties and rights like never before, but the most recent dictatorship woefully lives on. Due to the implementation of "el Pacto del Olvido," or the "Pact of Forgetting," talk of the past, of the dictatorship, and of the Civil War victims remains hushed. The dark details are still hidden, and until the Spanish government releases them, admits fault, and recognizes all victims, full recuperation from the war and complete democratic shift will not be achieved in Spain.

Olson: Every year, millions of students graduate from high school with strong and ambitious desires to continue their education at the collegiate level. However, for over 60,000 graduates, their dreams of college are denied simply because they lack documentation. Although these students are of illegal status, many of them have been raised in the United States, investing much of their lives, dedication, and loyalty in this country. With the Development Relief and Education for Alien Minors Act piece of legislature, nicknamed the D.R.E.A.M Act, governmental officials are striving to give alien minors an opportunity for higher education and military service as a means toward gaining citizenship. Not only would this piece of legislature enable alien minors to realize their full potential, but it would also produce numerous positive effects in the United States economy. As President Obama stated, "The DREAM Act is a piece of a larger debate that is needed to restore responsibility and accountability to our broken immigration system broadly."

Weum: "Unspoken," tells a story in itself. By interviewing 10 Latino individuals from the Twin Cities metro and greater Minnesota areas, stories will be heard, seen, and felt with the heart as to what comprises the true reality of what it means to be Latino in Minnesota. Their words will tell journeys filled with discovery and peace, all to strive toward a better self and a better community. This book will serve to portray the real perspectives of Minnesotan Latinos, not what the media portrays, to disprove false accusations and ignorant claims. For the first time, we will see how obstacles are overcome and how peace is achieved through voices that have been silent for far too long. This is their story. Please listen.

Norman: I will be presenting my thesis for my Hispanic studies major. My project topic is the metabolic syndrome in Latino youth. I will be discussing factors that cause the disease in this population, negative health consequences, and various interventions that could be implemented to improve their current health situation.

Aguilar: "The mission of the Cristo Rey Network is to provide an education in the Jesuit tradition, which integrates college preparatory academic and professional work environments, thereby preparing students from under-resourced families for success in college and life."

History

Schedule

9:30 - 10 a.m. *Main TRC Board Room*	Kao N. Thao (Dr. Richard Bohr, history) The Secret War: Hmong People From Allies to Refugees 1962-1975
9:30 - 10 a.m. *Main TRC Alumnae Lounge*	Joe D. Boyle (Dr. Derek Larson, history) Southern Defiance: School Desegregation and Non-Compliance in Virginia
9:30 - 10 a.m. *Main TRC Fireside*	Anthony J. Jensen (Dr. Derek Larson, history) Understanding the A-Bomb: American Public Reactions to the Dropping of the Atomic Bombs from 1945 to 1949
10 - 10:30 a.m. *Main TRC Alumnae Lounge*	Bridget L. Saladin (Dr. Derek Larson, history) It Was Much More Than Compliance: 1961 Freedom Riders' Motivations Compared to the Media's Interpretations
10 - 10:30 a.m. *Main TRC Board Room*	Jonathan R. Dane (Dr. Derek Larson, history) A New Deal for an Old Society: Article 27 and the Postwar Japanese Economy
10 - 10:30 a.m. *Main TRC Fireside*	Tyler F. Kinsella (Dr. Derek Larson, history) World War I Chaplains: An Evolution to Professionalism
10:40 - 11:10 a.m. *Main TRC Fireside*	James M. Backes (Dr. Derek Larson, history) A Culture

	Engraved: Cartography, Orthography, Archaeology and Irish Identity in the Irish Ordnance Survey of 1822-1844
10:40 - 11:10 a.m. *Main TRC Board Room*	Alexander P. Obermeyer (Dr. Derek Larson, history) Console Cowboys: Representations of Hackers in Media
10:40 - 11:10 a.m. *Main TRC Alumnae Lounge*	Cheng Xiong (Dr. Derek Larson, history) Secret Allies:The Hmong and the United States Relationship during the Secret War
11:10 - 11:40 a.m. *Main TRC Board Room*	Rachel J. Peterson (Dr. Derek Larson, history) Practice What You Preach: Continuities and Discontinuities Between the Advertisements in Ms. Magazine and its Ideal for Women, 1972-1979
11:10 - 11:40 a.m. *Main TRC Alumnae Lounge*	Hannah M. Nelson (Dr. Derek Larson, history) Mission to the Middle Kingdom: Six Sisters in a Strange Land

Abstracts

Thao: I am interested in the relationship between the American public's understanding of Hmong's involvement in Laos's Secret War during the 1960s and 70s. With the use of newspapers from *The New York Times,* I hope to explore how events written in the articles are related to the lived experiences of the Hmong tribesmen. How did the press portray Hmong during and after the war? How are they remembered now?

The war in Laos played a pivotal role in the extended length of the Vietnam War from 1959-1975. Hmong clans were recruited to halt enemy advances of North Vietnam from reaching South Vietnam.

Materials I have consulted varies from both personal interviews of Hmong veterans, refugees, and newspaper articles, most specifically those from *The New York Times* and their coverage of events taking place in Laos during such times.

My goal is to explore what Americans learned of the Secret war to how the Hmong remembered the war to determine what should be the legacy of the Secret War in Laos and those who fought it? It is because of this war that America has experienced a great influx of Hmong immigrants who live in communities all across America.

Boyle: The U.S. Supreme Court ruled segregated schools to be unconstitutional in 1954, but not all states immediately complied. White Virginians spent the next five

years doing anything possible to stop the desegregation of their public schools. While they were able to resist for a short amount of time, ultimately resistance to the federal government is futile, and they were forced to comply.

Jensen: This project examines the American public's reaction from 1945-1949 to the dropping of the atomic bombs by examining records from the era including newspaper and magazine articles. In addition to this, also of interest is what shaped the reaction and why it was shaped in this manner. Overall, the project asserts that a combination of government censorship and control of information, in addition to an overall war mentality amongst the American people shaped U.S. opinions towards the atomic bombs in the immediate aftermath of their use.

Saladin: Fifty years ago this May, 13 brave men and women, both black and white set out on a bus ride. The ride was to test compliance to a Supreme Court ruling that stated segregation in interstate travel and the facilites involved in interstate travel was unconstitutional. In this project, I will be examining the original riders' motivations for participating in the rides and how those motivations differed from what the media said their motivations were. I will be using primary sources in the form of newspaper articles and oral accounts from the riders. All of the primary sources will be in conversation with what other historians have said on the topic.

Dane: This presentation's focus is on why the right and duty to work were included in the U.S. imposed 1946 Japanese Constitution, how its inclusion has impacted Japan in the postwar period and how people have reacted to it in the decades since. Through the examination of relevant government documents, memoirs, constitutional drafts, scholarly journal and newspaper articles the rationale behind the inclusion of a provision for the right and duty to work as well as its impacts and the state of public opinion can be clearly seen. In the course of my research I have found that the provision for the people's right and duty to work while seldom discussed, has come to form the backbone of the modern Japanese labor system and has played an important role in its success.

Kinsella: This thesis examines the U.S. Army Chaplaincy during World War I and their evolution into a professionalized organization that developed as a result. Using chaplain's letters, diaries, and other period publications this thesis asks, what forces and debates drove the evolution of the chaplaincy to the professional, autonomous organization it became, and what effects did it have? In the conclusion, the research will show that the U.S. Army chaplaincy that developed during World War I was a result of church organizations, in concert with General Pershing and concerned chaplains, in an effort to navigate the many controversies that surrounded their duty.

Backes: Using maps, memoirs and letters from the 1822-1844 Land Ordnance Survey in Ireland, I'm addressing the significance of the mapmaking process on places of Irish cultural significance. Despite its British roots, the efforts by surveyors to include and advance symbols of Irish cultural significance made the survey

important not only as a symbol of imperialism, but also an insight to Irish cultural identity.

Obermeyer: Behind the shiny veneer of the modern technology lies the counterculture of the techno-elitists known as "hackers." Over the 60 years of their existence the Hackers have changed as much as the computers that they have helped create. By looking at their representations in the news media and popular culture we can reveal their motivations, their history, and the complex relationship between technology and American culture.

Xiong: The United States involvement in Southeast Asia during the Vietnam War led to another under the radar wall called the "Secret War." The War was fought in the neutral country of Laos. Laos was treated as a buffer country to prevent the spread of communism. The United States involvement in this war created a relationship between the United States and the Hmong. This presentation will look at the relationship of the United States and the Hmong during the Secret War and how has this relationship changed after the United States pulled out of Southeast Asia.

Peterson: To what extent did the advertisements in Ms. Magazine align with their stated advertisement policy and editorial content from 1972-1979 and why? I will analyze the ads in Ms. Magazine during these years and compare their explicit and latent content to the messages present in the editorial content and the stated intentions for the advertisement content.

Nelson: My project focuses on the origins of the relationship between our local Benedictine community and China, specifically in the formation of women's higher education in the early 20th century. In 1929, after being called upon by Rome to join the China Mission, 109 sisters volunteered, and six were chosen to form a women's college in Peking. Who were these women? I will be examining their letters, mission notes, memoirs, oral histories, and other documents related to the China Mission contained in Saint Benedict's archives. My primary purpose is to understand how the Sisters viewed China and their relationship to the Chinese people, as well as to understand the challenges they faced in forming a women's college. Their identity as Benedictine women and as educators should influence the observations they make and relationships they form, as well as their struggles and successes during these formative years.

Modern & Classical Languages

Schedule

9:40 - 10:20 a.m.
HAB 128A Rachel M. Mathwig, Kia Her, Song Her, Micheal

	Hamilton, Tim Deda, Hannah Deblauwe, Emily Nieves, Mai Chua Yang, Ann Brase, Ngoc H. Bui (Dr. Yuko Shibata, modern & classical languages) Event Presentation in Japanese
10 - 10:30 a.m. *HAB 121*	Victoria K. Ly, Redmond J. Fraser (Dr. Sophia Geng, modern & classical languages) Pollution: The Price of Economic Growth in China
10 - 10:20 a.m. *HAB 120*	Nick J. Kroll (Dr. Andreas Kiryakakis, modern & classical languages) Tactical Blunders and Strategic Miscalculations in the Deployment of German Paratroopers (Fallschirmjäger)
10:20 - 10:50 a.m. *HAB 120*	Justin L. Bork (Dr. Mark Thamert, O.S.B., modern & classical languages) Germany's Energy Industry; A Case Study
10:20 - 10:40 a.m. *HAB 119*	Trung C. Van (Dr. Nathaniel Dubin, modern & classical languages) Verb Tenses — The Gateway to Foreign Language Proficiency
10:20 - 11 a.m. *HAB 128A*	Matt Triche, Will Tice, Courtney Kimball, Susana Gonzalez, Senai Mesfin (Dr. Yuko Shibata, modern & classical languages) 311/312 Japanese Speech
10:30 - 11 a.m. *HAB 121*	Philip J. Whitcomb, Peter G. Sneve (Dr. Sophia Geng, modern & classical languages) Open Door Policy: China's Economic Transformation
10:40 - 11:10 a.m. *HAB 119*	Elizabeth M. Humbert (Dr. Chuck Villette, modern & classical languages) Maternal Attitude : The Role of French Men and the Catholic Church During the Industrial Revolution in the Delay of the Women Suffrage Movement in France

10:50 - 11:10 a.m.	
HAB 120	Beatrice L. Zovich (Dr. Margaret Cook, modern & classical languages) Plato, Aristotle, and the Effects of Music on the Soul
11 - 11:30 a.m.	
HAB 121	Hyeok Oh, Eric Laine (Dr. Sophia Geng, modern & classical languages) Our Great Leader, Mao Zedong
11:10 - 11:40 a.m.	
HAB 119	Madeline A. Dragich (Dr. Chuck Villette, modern & classical languages) France, the Burqa, and Women
11:10 - 11:30 a.m.	
HAB 120	Benjamin J. Slabaugh (Dr. Wendy Sterba, modern & classical languages) Nature and Inspiration in the Goethe's Römische Elegien and the Elegies of the Latin New Poets
11:30 - noon	
HAB 121	Matt Laine, Brendan Gorman (Dr. Sophia Geng, modern & classical languages) Shenzhen; The World's First Special Economic Zone

Abstracts

Mathwig, Her, Her, Hamilton, Deda, Deblauwe, Nieves, Yang, Brase, Bui: To present Japanese and American seasonal events in Japanese in pairs.

Ly, Fraser: China has become the world's second largest economy, passing Japan in just the last year. This rapid growth and industrialization brings with it a large output of air and water pollution, as well as a surprising amount of land degradation. China's increased economic growth has also become a global controversial issue due to higher pollution emission. We will be presenting these issues, how they affect the growth of the country, as well as the measures being taken to reduce pollution.

Kroll: This project will examine the way Hitler employed his paratroopers during the Second World War. My premise is that if Germany had properly utilized its elite airborne Fallschirmjäger troops, the outcome of WWII might well have ended differently. As early as April 1940 the Fallschirmjäger were able to prove their superior tactical value in rapid Blitzkrieg airborne assaults. The Fallschirmjäger had superior training and equipment relative to their allied counterparts, especially in the early years of the war. However, after the Fallschirmjäger sustained very heavy

losses while capturing the island of Crete in May of 1941, Hitler forbade further large-scale paratroop assaults. The Battle of Crete was disastrous for the Fallschirmjäger for a number of reasons, yet most were not the fault of airborne assault tactics. Had Hitler taken the lessons of Crete and used them to further refine the tactics of the Fallschirmjäger he would have had a highly-mobile assault force of unprecedented skill and lethality at his disposal. Instead, he grounded this advantage and doomed his armies to fight conventional ground warfare, which ultimately lead to Germany's defeat.

Bork: Germany is known as a world leader in renewable energy, however this accounts for only a small portion of Germany's energy industry. Both economic and political reasons dictate the sources of energy a country such as Germany decides to utilize. My research looks into the resources and options available to Germany and their energy production, and why they've made the decisions they have.

Van: Time, a familiar but abstract concept, is reflected distinctively in each language. A good understanding of how time is presented in different languages will, therefore, indisputably bring us closer to proficiency in the foreign language we are studying. To demonstrate the relationship between time and proficiency, this project offers a comparison of English and French verb tenses and an overview of how time is expressed in Vietnamese, a language that does not have a tense system. A more comprehensive look at verb tenses also helps us answer a bigger question: what role should grammar play in foreign language acquisition in today's context when a communicative approach is preferred and widespread.

Triche, Tice, Kimball, Gonzalez, Mesfin: Each student will have a short presentation on a chosen person from the United States and Japan in Japanese. (approximately 5 minutes each)

Whitcomb, Sneve: Beginning in 1978, China implemented the Open Door policy, inviting foreign investors and making its labor force available to the international economy. China's state-owned enterprises have since been giving way to private companies and its economy has expanded vastly. This presentation will discuss the changes the policy brought in comparison to the China's old economic order. We will also examine how this economic transformation affected the people. For example, we will talk about the migration of Chinese workers from the farmlands into the cities.

Humbert: Women in Sweden received the right to vote as early as 1862. In the majority of the remainder of Europe, including the United Kingdom, Germany, and the Netherlands, women received the right to vote after World War I (between 1917-1919). Women in France received the right to vote after the second World War and the occupation of the Nazis in 1945. This delay can be traced throughout the social history of France, but one of the big influences in the delay came during the Industrial Revolution. During the Industrial Revolution, France saw a push for

women to stay out of the workplace and remain mothers. This idea as women as only mothers was made critical by the Catholic Church and political influences such as Auguste Comte, Michelet, Proudhon and Jules Simon. This maternal attitude led to the eventual belief in the incompetency of women to have political attitudes and vote.

Zovich: I am comparing the writings of Plato and Aristotle concerning the importance of music in the ancient Greek world. I am particularly examining the role they believed music played in education and in building character and nurturing the mind and soul.

Oh, Laine: Our project's primary objective is to demonstrate how Chinese propaganda worked and how it doctrinated many Chinese citizens. We are specifically aiming at propaganda produced during the Cultural Revolution period and we will analyze how it affected China economically and socially. We plan to use a front and back side poster, to show the propaganda on the front and the effects of the propaganda on the back.

Dragich: Today, there are nearly six million Muslims living in France. On Sept. 14, 2010, the French senate passed a law that forbids Muslim women from wearing the burqa in public. The law passed with a vote of 246 to 1 with 100 abstentions that came primarily from left leaning politicians. A recent poll from Pew Global Attitudes Project found that 82 percent of French citizens are in favor of the law banning the burqa in public and only 17 percent oppose it. If a Muslim woman does wear a burqa in public, she will receive a fine of $150 Euros and she may be subject to take a class on French citizenship in addition to the fine.

As a student of both peace studies and French, I must ask if this law is just. In reflecting upon the law banning the burqa, I find there are three questions that are essential to this debate. First, does France have the right to ban wearing of the burqa in public from a constitutional standpoint? Second, is the law just from a human right point of view? Finally, is the law just from a feminist point of view?

I hope to respond to these three questions in an objective manner and at the end give my personal conclusion about this law as if I was a French politician who was obligated to vote in favor of or against the law banning the burqa. There are days when I aspire to be a politician and I hope that this thesis will prove to be a good practice in weighing the different sides of a very controversial issue.

Slabaugh: In 1786, the German lyric poet Johann Wolfgang von Goethe departed for Italy to experience the culture, art and atmosphere of the region that had once been the capital of classical antiquity. From this journey came the Römische Elegien, a cycle of 24 elegiac poems in which the poet guides the reader through his spontaneous and fiery love affair with Faustine, a woman whom he had met on his travels.Goethe's reflection on passion, inspiration, nature and love leads him into a parallel love affair with the ancient city of Rome and the poetry that survived. While the Römische Elegien are in fact a series of love elegies dedicated to a woman, they also shed light onto Goethe's perception of antiquity and the literature of the New

Poets Ovid, Catullus and Propertius with respect to sexual nature and freedom. He allows their poetic legacy to live on through his elegiac verse, all the while diverging from their tradition by bringing his love for his puella to a passionate realization.

Laine, Gorman: We are going to be discussing one of China's fastest growing cities, Shenzhen in Guangdong Province. Shenzhen was the first Special Economic Zone created by Deng Xioaping in 1979. Due to the migration of millions of young workers flooding into Shenzhen to work in the factories, Shenzhen has unique demographics and is the third largest economy in China, behind Hong Kong and Shanghai.

Theology

Schedule

10 - 11 a.m.
Main 006 Katherine E. Hansen (Dr. Vincent Smiles, theology)
Family Ministry

Abstracts

Hansen: The Barna Research Group has discovered that six out of 10 teenagers in America actively participate in a church group once a week, however when they reach their twenties 61 percent of these teens will leave the church. Youth ministry is not actively engaging youth in fostering a lifelong conversion. The American church today has strayed from the Biblical and historical basis for the religious formation of their youth, and the church needs to minister to families first, youth second. First, through a study of the early Jewish and Christian communities and scripture, we are able to understand the role family played within the early church, and why over time they lost that role. Second, by studying the pre-industrial to the industrial time period, we are able to see a shift within society as youth were defined in terms of "adolescence." Finally, we will understand why the church today is not able to engage youth within their congregation and why we need to reevaluate the method of ministry that is used. Family ministry is not another form of youth ministry, but is instead a commitment by the church to equip parents in fostering a conversion of hearts within the youth today through active parent-child discipleship.

Natural Sciences Presentations:

Biochemistry

Schedule

10:30 - 11 a.m.
ASC 121

Michael D. Freeman (Dr. Henry Jakubowski, biochemistry) The use of 2D gel electrophoresis (2DGE), Western and Far Western Blotting Techniques to Identify Specific Proteins and Their Modifications Relevant for Cellular Responses

Abstracts

Freeman: Low molecular weight protein tyrosine phosphatase (PTP) is an enzyme that cleaves phosphates from cellular phosphoproteins, modifying the activity in complex signaling pathways in cells. PTP has demonstrated a role in cell cycle regulation and has been found to be over expressed in certain cancer and tumor cells. In order to determine the intracellular phosphoprotein targets of PTP, proteins were extracted from NIH/3T3 cells grown in culture. Following extraction, the proteins were separated by charge using isoelectric focusing and molecular weight by SDS polyacrylamide gel electrophoresis. After this 2D gel electrophoresis, the phosphoproteins were transferred to nitrocellulose and detected by adding p-Tyr (PY99) primary antibody and anti-mouse IgG with horseradish peroxidase as the secondary antibody attached (Western blot) or mutant PTP as the primary antibody and anti-GST with horseradish peroxidase as the secondary antibody (Far Western). In theory, it is possible to use a mutant version of PTP containing an attached glutathione S-transferase (GST) tag to identify the protein targets through Far Western blotting techniques. The mutant PTP should bind to the intracellular targets without cleaving the phosphate allowing the GST tag to be used as a binding site for a chemiluminescent identifier. Results of the 2-D gels on test samples and Western and Far Western blots on phosphoproteins from NIH/3T3 cells will be shown during the presentation.

Chemistry

Schedule

9 - 9:30 a.m.
ASC 105
Rachel L. Seurer (Dr. Md Abul Fazal, chemistry)
Interactions of Magnetic Nanoparticles with Common Human Blood Proteins

9 - 9:30 a.m.
ASC 121
Zach R. Lauer (Dr. Michael Ross, chemistry)
Photodecomposition of Quetiapine Hemifumarate in Water

9 - 9:30 a.m.
ASC 104
Lindsey J. Firman (Dr. Kate Graham, chemistry)
Explortation of the Synthesis of Substituted Tetrahydropyrans

9:30 - 10 a.m.
ASC 121
Timothy R. Juba (Dr. Michael Ross, chemistry) Photolysis of the Antidepressant Venlafaxine HCl (Effexor XR) in Surface Water

9:30 - 10 a.m.
ASC 105
Steven K. Sour (Dr. Md Abul Fazal, chemistry)
Determination of Carotenoid Composition of Egg Yolks

9:30 - 10 a.m.
ASC 104
Betsy J. Hutchinson (Dr. Edward McIntee, chemistry)
Development of an Enzymatic Resolution Experiment for First Year Chemistry Labs

10 - 10:30 a.m.
ASC 121
Benjamin B. Jagger (Dr. Richard White, chemistry) Plastic Polymers in Helmets

10 - 10:30 a.m.
ASC 104
Abdinasir A. Abukar (Dr. Kate Graham, chemistry)
Sublimation Experiment

10 - 10:30 a.m.
ASC 105
Mitchell S. Larson (Dr. Md Abul Fazal, chemistry)
Detection of Oxidation Level in Model Proteins Upon Exposure to Magnetic Nanoparticles

10:30 - 11 a.m.
ASC 104
Malinda M. Madery (Dr. Bornface Gunsaru, chemistry)

	Characterization and Isolation of Active Antimicrobial and Antimalarial Compounds From C. Papaya Leaves
10:30 - 11 a.m. *ASC 105*	Dustin T. Hansen (Dr. Edward McIntee, chemistry) Computational Based Modeling as a Means of Predicting Inhibitor Binding to Low Molecular Weight Protein Tyrosine Phosphatases
11 - 11:30 a.m. *ASC 104*	Jacob R. Petersburg (Dr. Thomas Jones, chemistry) Studies Toward the Alkynoic Acid Cyclization of Propargyl Proline

Abstracts

Seurer: Nanoparticles are quickly becoming important in various biomedical fields. Magnetic nanoparticles in particular are easily directed using magnetic forces as well as having additional applications in magnetic resonance imaging, bioseparation, and treatments such as hyperthermia. Despite considerable progress in the synthesis of nanomaterials our understanding of the interactions of these nanoparticles with living matter has not kept pace. This study looks at how human serum albumin and fibrinogen, the two most abundant opsonin proteins, interact with magnetic nanoparticles using various spectroscopic techniques including UV-Visible spectroscopy, infrared spectroscopy, and fluorescence spectroscopy.

Lauer: Recent studies have shown the presence of human personal care products in streams and rivers which receive water effluent from wastewater treatment plants. Antidepressants are one class of human personal care product which have been identified in waterways receiving treated wastewater effluent. Quetiapine Hemifumarate (trade named Seroquel) is one antidepressant which could be found in these waterways. This study investigates the photodecomposition of quetiapine hemifumarate. This study determined that quetiapine had a half-life (T1/2) of approximately 7.9 hours in East Gemini Lake Water, 63.6 hours in pH 9 buffered deionized water, 105.6 hours in pH 5 buffered water, and 153.7 hours in pH 3 buffered deionized water. Indirect photolysis experiments which eliminated hydroxy radicals raised the half-life in East Gemini Lake Water to 16.8 hours and those which eliminated singlet oxygen raised the half-life to 38.5 hours.

Firman: The Barbier-Prins cyclization is a reaction that results in the production of substituted tetrahydropyran rings (THP). THPs are six membered rings that contain one oxygen atom. THPs are important base molecules for a number of natural biological products, including the natural fish feeding deterrent, Kumepaloxane. The past research on the Barbier-Prins reaction has focused on varying the substituent aldehydes and ketones and using terminal alkenes. The focus of this work has been the synthesis of cis- and trans-homoallylic alcohols for use in

the Prins cyclization. Over two summers, the research resulted in the synthesis of two novel THPs, but new pathways to develop the desired substituents in a stereospecific manner are still being researched and attempted.

Juba: The antidepressant Venlafaxine HCl (VenHCl), trade name Effexor XR, has been found in research to be harmful to aquatic life in and present in the highest relative concentrations in natural water systems. Experiments were run with VenHCl solutions in varying PHS, lake water, and in solutions to test indirect photolysis in test tubes to mimic surface water conditions using natural sunlight and a photoreactor. Samples were analyzed through HPLC-MS to determine the photolysis half-life of VenlHCl in surface water, direct and indirect photolysis contribution, photolysis reaction products, and possible mechanisms for the photolysis reaction of VenHCl. The indirect photolysis of VenlHCl in East Gemine Lake (EGL) water has a half-life of 45.89 hours and the direct photolysis mechanism showed little contribution to the reaction. Experiments did show potential photolysis products that are stable. The long half-life due to indirect photolysis and lack of photolysis through direct photolysis show that VenHCl are present in natural water systems much longer than expected and thus helps explain the harmfulness of the drug to aquatic life.

Sour: Carotenoids are a group naturally occurring pigments most commonly found in food. They are known to help prevent cancer, protect cells from free radicals, provide a source of vitamin A, enhance the immune system and help the reproductive system in humans. In this study the carotenoid content of chicken egg yolks were determined using spectroscopic methods (UV-Vis). More specifically, the comparison of carotenoid composition was followed through with chicken eggs from commercially raised chickens and chickens whose diets were Omega-3 fatty acid enriched.

Hutchinson: Our goal is for students to develop practical skills in the laboratory so that they are prepared to apply their knowledge in a variety of situations. Our first semester Purification and Analysis I laboratory emphasizes the development of separation techniques without the use of column chromatography. In the pharmaceutical industry, there is a constant need for enantiomerically pure chiral compounds and thus a need for the development of more efficient strategies for racemic-mixture separation. Methods for obtaining enatiomerically pure compounds range from asymmetric synthesis, to chiral column chromatography, to enzymatic resolution. The use of enzymes, such as lipases, presents advantages over the other methods as they catalyze reactions under mild conditions with high enantio- or diastereoselectivity with high efficiency with the possibility of using different reaction media, such as organic solvents. We are presenting the development of laboratory that could be used for first-year chemistry students to resolve and separate secondary alcohols using enzymatic resolution.

Jagger: The plastic polymers used in helmets help prevent concussions due to their properties. By exploring the synthesis, structures, and polymer properties of

polycarbonate and polypropylene I will uncover why they are used for helmets. These polymers have specific properties that make them optimal candidates for being used in helmets.

Abukar: Many of the basic skills for working with compounds are developed in the introductory chemistry laboratory. Sublimation is one common technique that is usually developed at this stage. We have developed an open-ended sublimation experiment in which students must purify an unknown compound by sublimation. The compound is analyzed by 1H NMR, infrared spectroscopy and melting point. Students then select the identity of the compound from a list of possibilities of inorganic, organometallic or organic unknowns.

Larson: Due to their unique properties, a wide variety of magnetic nanoparticles have been developed for cellular labeling, targeted drug delivery, magnetic resonance imaging (MRI) and magnetic hyperthermia. Recently, a large number of nanomaterials have been reported to increase the generation of cellular reactive oxygen species (ROS) causing oxidative modifications of DNA, proteins, and lipids. This project is focused on detection of magnetic nanoparticle induced oxidative modifications in model bovine serum albumin using spectroscopic methods.

Madery: More than 70 percent of bacterial infections are resistant to a common antibiotic used to treat the infection. Malaria has also become more difficult to treat due to Plasmodium falciparum's resistance to a wide variety of drugs. New antibiotics and antimalarial drugs are constantly needed to control and treat these infections because of this increase in resistance. Natural products have played a significant role in treating diseases for thousands of years and they are still being discovered. Over 20 new drugs from natural products were launched on the market between 2000 and 2005. Among natural product sources is Carica papaya. This plant is known to have antimalarial, antibacterial, anticancer, and antifungal properties; however, the therapeutic compounds have not been isolated or characterized. Silica-gel column chromatography along with Sephadex LH-20 gels will be used for isolation of C. papaya leaves, and IR and NMR will be used for characterization. Isolation and characterization of these compounds could lead to useful synthetic treatments used for bacterial and/or malarial infections.

Hansen: It has been shown that the Low Molecular Weight Protein Tyrosine Phosphatases (LMW-PTP) play an integral role in cellular growth regulation. Based on the present understanding of LMW-PTP, there is great reason to pursue inhibition of this enzyme as an anticancer and anti-diabetes agent. One of the best LMW-PTP inhibitors that has been studied so far is Pyridoxal-Phosphate (PLP). However, this is only a temporary inhibitor, as the phosphate group is eventually cleaved from the molecule. In order to conserve time and resources computer based modeling techniques were employed to design and test potential inhibitors. Using PLP as a basis, potential inhibitors that lack the cleavable phosphorous-oxygen bond were built using ChemDraw software. Once built, these structures were imported into Maestro (Schrodinger, LLC) and docked into the Human A and B isoforms of

LMW-PTP using the Glide program. The docking results of each ligand in each isoform were normalized in order to compare them to PLP and determine which may prove most valuable to test in vitro. Some structures proved to be better theoretical inhibitors than PLP, while many had binding scores that were very close to that of PLP. Using these theoretical data, the computer based modeling techniques have given direction toward which potential inhibitors should be studied in vitro. Further testing in the form of laboratory assays will be necessary to confirm what has been computationally predicted.

Petersburg: Cyclization of propargyl proline is being investigated to provide insight into the regioselectivity of the alkynoic acid cyclization. This project will also evaluate compatibility of nitrogen containing compounds as well as the stability of stereocenters under reaction conditions. Propargyl proline was synthesized from propargyl bromide and L-proline methyl ester followed by hydrolysis to give the desired acid.

Nursing

Schedule

9 - 9:20 a.m.	
BAC 107	Lauren K. Varberg, Chelsea K. Willson, Sarah M. Thompson, Alisha M. Pepera (Dr. Rachelle Larsen, R.N. nursing) De-escalation or Medication: The Evidence Behind Alternative Nursing Interventions for Aggressive Mentally Ill Patients in an Acute Setting
9:30 - 9:50 a.m.	
BAC 106	Rachel Polk, Jessamy Lyons, Hans Gunness (Dr. Rachelle

	Larsen, R.N., nursing) Intramuscular Injection Techniques
10 - 10:10 a.m. *BAC 107*	Julie A. Strelow, Ph.D., A.P.R.N.-B.C. (NA NA, nursing) The Simulated Clinical Experience: Description and Comparison of Student Behaviors in the Traditional and Simulated Clinical Experiences
10 - 10:20 a.m. *BAC 106*	Ann K. Richie (Dr. Rachelle Larsen, R.N., nursing) Pain Assessment and Documentation in a Preterm Infant
10:30 - 10:50 a.m. *BAC 106*	Lindsay M. Anderson (Lindsay Anderson, M.S., A.P.R.N.-B.C., nursing) Learning Through Doing: Integrative Therapies in the Classroom
10:30 - 10:50 a.m. *BAC 107*	Heather A. Block (Dr. Carrie Hoover, R.N., nursing) Prevention of Delirium
11 - 11:20 a.m. *BAC 107*	Jessica L. Mault, Katara Dockendorf, Bethany Waletzko, Stephanie Revermann, Ashley Quam (Dr. Rachelle Larsen, R.N., nursing) Senior Nursing EBP Project: Falls Prevention at the St. Cloud Hospital
11:30 - 11:50 a.m. *BAC 106*	Kellyn A. Thomas, Kayla M. Solum, Lauren R. LaGue, Katy E. Trost, Sara M. Sandwick (Lindsay Anderson, M.S., A.P.R.N.-B.C., nursing) Intergenerational Volunteering in Long-term Care Facilities
11:30 - 11:50 a.m. *BAC 107*	Margaret E. Plog (Dr. Rachelle Larsen, R.N., nursing) Effectiveness in Childbirth Education Classes in Promoting Self-Efficacy in Expectant Mothers and Support Persons

Abstracts

Varberg, Willson, Thompson, Pepera: Our group of public health students will describe an evidence based practice project relating to the use of de-escalation techniques versus the use of medications and restraints with inpatient psychiatric patients. The findings of this project indicate that de-escalation techniques are at

least as effective if not more effective than the use of medications or restraints. The group will provide recommendations for practice and suggestions for future research.

Polk, Lyons, Gunness: The clinical question involved a patient population aged 18 years old and older and the issue of interest included aspiration techniques, intramuscular injection times, storage time of pre-drawn up syringes and the use of the tetanus versus tetanus, diphtheria and acellular pertussis (Tdap) vaccine. We will be presenting the recommended best practice techniques for intramuscular injections based on the evidence found.

Strelow: The purpose of this descriptive, quantitative study was to describe and compare nursing student behaviors in the traditional and simulated clinical settings. This study expands the knowledge specifically in the area of the use of simulation as a contextual learning experience, and more broadly in the field of nursing education. Simulated learning experiences are being used more frequently in nursing programs in addition to traditional clinical learning experiences. Because of this, it is important that nurse educators understand how the simulated clinical experience impacts student development of non-technical skills and clinical judgment. As nursing programs continue to increase the use of simulation and consider experiences outside of the traditional apprenticeship training model, educational research must begin to draw conclusions about the possible differences and similarities between the two types of experiences in relation to the development of non-technical skills and the development of clinical judgment. Using Lasater's Clinical Judgment Rubric as a tool, students were observed in both the traditional and simulated clinical experience. This study found significant differences in student behavior in the two experiences.

Simulated clinical experiences provide an innovative opportunity for nurse educators to transform nursing education from traditional to transformational. The simulated clinical experiences are accessible, contextual learning environments that provide opportunities for students to practice both metacognitive and psychomotor skills. This study helped lay a foundation for future research related to the comparison of traditional and simulated clinical experiences. The ability to use simulation in nursing education to support student development of non-technical skills in professional nursing practice is rapidly evolving. Contextual learning experiences such as traditional and simulated clinical provide opportunities for the students to practice these non-technical skills. Research in this area provides a platform for future research to determine the most efficient and effective learning experiences that promote the nursing students' development of problem solving skills and clinical judgment.

Richie: A senior quality improvement project was completed in the Special Care Nursery at Minneapolis Children's Hospital. Pain assessment in the neonatal population was identified as an important issue by the unit staff. This presentation will include information about the importance of and difficulties in assessing pain in

the neonatal population. Recommendations for future practice will also be addressed.

Anderson: Integrative therapies are becoming increasingly used by the general public, thus, it is imperative that health care providers, nurses included, are prepared to implement these strategies in their practice. The efficacy of various integrative therapies, used for a variety of physical and mental health concerns, has been increasingly investigated, Evidence from a number of studies suggest that these interventions are significantly effective and may be more cost effective than traditional westernized medical approaches. Despite mounting evidence supportive of the efficacy of integrative therapies, there tends to be a lack of provider knowledge and comfort using these strategies in practice. This session will review one educator's strategy to enhance nursing students' knowledge, comfort and personal use of integrative therapies in an effort to promote students use of these therapies with patients in the clinical setting.

Block: "Thirty-eight percent of all hospital inpatients in the United States in 2005 were older than age 65. The prevalence of delirium on hospital admission has been reported from 14 percent to 24 percent, whereas the incidence has been documented from 6 percent to 56 percent" (Steis & Fick, 2008, p. 40). This demonstrates how prevalent delirium is in our society, making it a costly and global problem for older adults. After becoming familiar with the staff members and the work environment, I observed several instances where the RNs and nursing assistants were unable to effectively communicate with patients who are diagnosed with delirium or dementia. Since our aging population is increasing, it is essential to understand both types of altered mental statuses, but more importantly, how to communicate with this patient population.

I was fortunate enough to have learned about the Hospital Elder Life Program (HELP) within the hospital through volunteer services. The program consists of trained volunteers that assist health care members in the prevention of delirium and functional decline. This is achieved by implementing appropriate interventions that are categorized under cognitive, stimulation, environment, and emotional. I strongly believe that if this program was utilized, staff members on the unit and HELP volunteers will decrease the onset of delirium and length of hospital stay.

Therefore, as a senior nursing student, I completed a quality improvement project incorporating the Hospital Elder Life Program on the unit. The quality improvement consists of assessment of the environment, evidence to support implementation through literature along with survey results of the staff members, and how easily the program can be effectively utilized on the unit. In addition, I presented in a power point format a quick review on delirium and dementia to enhance the staff member's knowledge on the prevalence of both mental statuses as well as how to effectively differentiate and communicate with this vulnerable population. Lastly, my project shows how HELP will enhance patient and staff member satisfaction, and benefit the hospital by cost effectiveness.

Mault, Dockendorf, Waletzko, Revermann, Quam: Our group of senior nursing students completed an evidence based practice project (EBP) related to falls prevention at the St. Cloud Hospital. Falls are a significant safety issue in health care; this EBP project was undertaken to assist with the St. Cloud Hospital's goal of decreasing the number of patient falls. Our presentation will describe the process for completing an EBP project. We will also present the findings of a survey nurses completed about knowledge of falls policies and prevention of falls, and recommendations for practice change.

Thomas, Solum, LaGue, Trost, Sandwick: This project looks at the evidence available describing the benefits of having intergenerational volunteers in long-term care facilities with patients who are diagnosed with mental illness. The evidence will be evaluated by strength and summarized to find what the best practice is for this topic.

Plog: The importance of research in nursing practice has been instilled through the nursing program at the College of Saint Benedict influencing me to assist Professor Rachelle with publishing a research study analyzing what variables influence the self-efficacy of expectant mothers and support persons. Bandura coined the term self-efficacy for analyzing the "conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). This study's purpose was to determine the impact of childbirth education classes on expectant mothers and support persons' childbirth self-efficacy. Expectant mothers and support persons completed a survey prior to childbirth education and immediately following childbirth education classes. This presentation will describe the findings of the research as well as recommendations for current practice and future research.

Nutrition

Schedule

9:30 - 9:50 a.m.	
ASC 107	Brianna M. Schneider, Melissa A. Nelson (Dr. Amy Olson, R.D., L.D., nutrition) Correlation Between Vitamin D Intake and Serum 25 (OH) Vitamin D3 Levels in Women of the Saint Benedict's Monastery ages 59-89
10 - 10:20 a.m.	
ASC 107	Katie G. Jepperson, Tyler J. Etheridge, Katie A. Schwarz (Dr. Amy Olson, R.D., L.D., nutrition) Correlation of Vitamin D Status with Performance in NCAA Division III Women Cross Country Runners
10:30 - 11 a.m.	

ASC 107 Krista L. Mueller, Brittany K. Vaplon (Jayne Byrne, M.S., R.D., L.D., nutrition) Effects of Consumption of Omega 3 Polyunsaturated Fatty Acid Enriched Eggs Versus Fish Oil Capsules on the Plasma Inflammatory Marker - C Reactive Protein

Abstracts

Schneider, Nelson: Vitamin D increases calcium absorption which strengthens bones and improves muscle strength helping to prevent falls and fractures. Vitamin D can be synthesized through exposure to the sun; UVB rays activate pre-vitamin D3 in the skin. Activation diminishes with age and rays are insufficient for synthesis of vitamin D in winter months.
The purpose of our study was to correlate vitamin D intake (diet and supplement), with serum vitamin D levels in elderly women living in central Minnesota. We conducted our research with 26 Sisters of Saint Benedict's Monastery, with an average age of 76. Meals were observed at the monastery dining room for five days and food selections were documented with menu-tracking forms and photographs of trays to accurately assess food choices and portion sizes. Diet Analysis Plus software was used to analyze the diets. The average vitamin D intake from diet was 163 IU/day, 96 percent of participants supplemented with vitamin D. The RDA for vitamin D is 600 for people under 70 years old and 800 for people 70 years and older. There was a strong, positive correlation between supplemental vitamin D intake and serum levels ($r = 0.79$). Approximately 84 percent of the women taking at least 2000 IU/day had optimal serum levels, compared to only 25 percent of those supplementing with less than 500 IU/day had optimal serum levels. Elderly women living in central Minnesota appear to need 2000 IU of supplemental vitamin D daily to achieve optimal serum levels during winter months.

Jepperson, Etheridge, Schwarz: Vitamin D is not only important in maintaining bone and muscular strength, but may also have a role in the immune system and inflammatory response. Vitamin D status has been studied extensively in elderly populations, but little is known about the Vitamin D status of athletes. A deficiency in vitamin D could impact athletic performance. This study examined the association between performance, anaerobic and aerobic, and serum vitamin D status in the CSB cross country and track and field athletes. Aerobic performance was assessed with a 2.5 mile time trial and anaerobic performance with a 20-meter sprint, a vertical jump test, and a four repetition jump test used to determine explosive leg power. Vitamin D (25(OH) vitamin D3) was assessed using an ELISA kit. The runners also completed three-day dietary records to assess daily vitamin D intake. The results indicate a possible correlation between vitamin D status and aerobic performance and a very strong correlation between solar radiation and vitamin D status. All but two subjects fell below optimal vitamin D status in January. None of the participants achieved the recommended dietary intake of vitamin D through diet alone. Maintaining optimal vitamin D status during the

winter months appears to require either supplement use or access to direct UVB radiation.

Mueller, Vaplon: Background: Chronic inflammation, indicated by elevated levels of serum inflammatory markers, is implicated in the pathogenesis of chronic disorders such as cardiovascular disease, diabetes, hypertension, arthritis, and cancer. Long chain omega-3 fatty acids, specifically eicosapentaenoic acid (EPA) and docosohexaenoic acid (DHA) decrease the production of strongly inflammatory eicosanoids and cytokines when they appear in sufficient quantity in the cell membrane or cytosol. Changes in blood lipids and C-reactive protein serve as measures of changes in inflammation and cardiovascular risk status that may be achieved with changes in dietary fatty acid profile.

Objective: To compare the effects of consuming an equivalent dietary dose of EPA + DHA from omega-3 enriched eggs versus a fish oil capsule on serum lipid levels and the inflammatory marker, hs CRP.

Design: Subjects (n=19) were randomly assigned to one of two groups: those who consumed two omega-3 fatty acid enriched eggs daily for six weeks (egg) or those who consumed two purified fish oil capsules daily for six weeks (fish). The total daily dose of omega-3 fatty acids was 500 mg, with ratios of EPA, DHA and other omega-3 fatty acids varying somewhat between treatments. Fasting serum levels of hsCRP; total, LDL and HDL cholesterol, and triglycerides were obtained prior to consuming the respective treatments and at the end of the six-week trial period.

Results: Results are pending on final three weeks of data collection.

Conclusion: No conclusions can be drawn at this time as results are pending data collection completion.

Physics

Schedule

9 - 9:30 a.m.	
PEngl 167	Hannah E. Walsh (Dr. Adam Whitten, physics) Spectrometry of SJU Solar Farm
9:30 - 10 a.m.	
PEngl 167	Ross M. Terhaar (Dr. James Crumley, physics) Automated Detection and Analysis of Meteor Showers
10 - 10:30 a.m.	
PEngl 167	Travis J. Mackey (Dr. Dean Langley, physics) Acoustic

Levitation of Dye Droplets

11 - 11:30 a.m.
PEngl 167 Andrew D. Hengel (Dr. Dean Langley, physics) Light-scattering from an acoustically levitated bubble

Abstracts

Walsh: Direct sun spectrometry was used to determine the affect of the Aerosol Optical Depth on the power production of the Solar Farm at SJU. The change in the sun's position, along with the AOD helps to explain the dip in power production at noon on the farm.

Terhaar: The focus of this project is video and radio meteor detection and the subsequent analysis of detected meteor events and meteor showers. The analysis will deal primarily with observed magnitude of individual meteor events. Additional topics will include the comparison of the radiant position for the past two Geminid meteor showers and the distribution of the maximum magnitude of meteor events. For different years of the same meteor shower with a large enough sample size, it was found that the position of the radiant agreed within error and that the distribution of the maximum magnitudes for the showers was similar both to each other and to the distribution of all meteors observed by the CSB/SJU Allsky camera.

Mackey: The overall goal of my project was to be able to steady a droplet of orange laser dye in midair that would enable me to shine a laser through it so I can measure the emitted wavelengths from the droplet to be able to tell how well the droplet was lasing.

Hengel: An acoustically levitated bubble undergoes shape and volume oscillations that are monitored using scattered light.

Social Sciences Presentations:

Entrepreneurship

Schedule

10 - 11 a.m.	
Simns 310	Jared R. Sherlock (Dr. Rick Saucier, entrepreneurship) Effects of Exposure on the Ecology of the Magic Industry: Preserving Magic's Secrets in the Absence of Law
10:40 - 11:10 a.m.	
Simns 310	Trang M. Pham (Terri Barreiro, M.B.A., entrepreneurship) Modernization and the Destruction of Culture in VN

Abstracts

Sherlock: The magic secret is a distinctive kind of intangible resource that defies established economic theory of intellectual property law. Exposure reveals the secret, and thereby destroys its value. The goal of this essay is to explore and frame significant problems within the enterprise of conjuring, and to illustrate how the magic industry has developed a particular set of informal norms and rules for violators, which go some distance toward protecting intellectual property in the absence of law.

Pham: Street vending is an occupation in Vietnam today dominated by women who have little education but who support their families with this work. Street vending has been outlawed since July 2008 because the government wanted to encourage globalization. Vietnamese have shopped for centuries at local markets and from street vendors who go by their houses daily. Visiting Vietnamese markets and street vendors is a popular activity for tourists, often recommended in many travel guides. Since the policy, the practice still happens illegally because vendors have no other ways to support themselves; residents and tourists still buy from them every day. However, it will disappear as the country gets more developed. CSB student Trang Pham, who is fluent in Vietnamese, reports on her four weeks in Vietnam during Summer 2010 researching that country's street vending culture, the importance of women entrepreneurs in this business, and the threat that an increasing globalization is playing in destroying this unique and vital Vietnamese tradition. She also discusses the implications of such trends for Asia today.

Management

Schedule

10 - 10:30 a.m.
Simns 340
Shafak Mohamed Samsheer, Laurra Deal, Michaela Foley, Blake Haller, Boyd Haller (Stephen Schwarz, M.B.A, management) Case Study Research - Whole Foods

10:10 - 10:30 a.m.
Simns 330
Jack Daggett, Travis O'Connell, Sam Pilney, Maija Schmelzer, Alex White (Margrette Newhouse, M.B.A, management) Comedy Show

10:30 - 10:50 a.m.
Simns 330
Ben Hillman, Billy Lawrence, Berrando Mackey, Michael Smith (Margrette Newhouse, M.B.A., management) Punches for the Poor

10:30 - 11 a.m.
Simns 340
Ben Bitterman, Dawid Chabowski, Jacob Moor, Sam Steffl (Dr. Lisa Lindgren, management) Product Innovation Assessment: Cardiovascular Disease Prevention

10:50 - 11:10 a.m.
Simns 330
Tyler Carlen, Tara Johnson, Adam Lommel, Sam Tillemans (Margrette Newhouse, M.B.A., management) High School Captaincy

11 - 11:30 a.m.
Simns 340
Tom Brekke, Liz Larson, Lisa Lindgren (Dr. Lisa Lindgren, management) American Marketing Association - Outstanding Chapter Plan Award

11:10 - 11:30 a.m.
Simns 330
Aaron Barmore, Zach Marchand, Patrick Schroeder, Josh Weinzettel (Margrette Newhouse, M.B.A., management) Clothing Drive

11:30 a.m. - noon
Simns 340
Emily Masters (Stephen Schwarz, M.B.A, management) Regional Competition Presentation

11:30 - 11:50 a.m.
Simns 330
Alex Budd, Alyssa Jenniges, Andrew Latzke, Sam Olson, Jennifer Paphatsalang (Margrette Newhouse, M.B.A.,

management) Aluminum for Animals

11:30 a.m. - noon
Simns 310 Mohamed Shafak Samsheer (Margrette Newhouse, M.B.A., management) Cultural and Ethical Reciprocity:

Abstracts

Mohamed Samsheer, Deal, Foley, Haller, Haller: Society for the Advancement of Management

Daggett, O'Connell, Pilney, Schmelzer, White: Mgmt. 314 Application of Scholarship and Creativity Through Leadership

Hillman, Lawrence, Mackey, Smith: Mgmt. 314 Application of Scholarship and Creativity Through Leadership

Bitterman, Chabowski, Moor, Steffl: Mayo Scholars Program

Carlen, Johnson, Lommel, Tillemans: Mgmt. 314 Application of Scholarship and Creativity Through Leadership

Brekke, Larson, Lindgren: Marketing Club

Barmore, Marchand, Schroeder, Weinzettel: Mgmt. 314 Application of Scholarship and Creativity Through Leadership

Masters: SIFE - Students in Free Enterprise

Budd, Jenniges, Latzke, Olson, Paphatsalang: Mgmt. 314 Application of Scholarship and Creativity Through Leadership

Samsheer: The interaction of culture and ethics is becoming such a hot topic; that it will burn top echelon managers if they fail to decipher the subtle and sensitive issues encountered in a diverse workforce. Despite the dire need to address a paradigm shift in handling employees and operating organizations, not much empirical evidence on the subject of cultural ethics can be found in the literature. Managers often err when a curve ball labeled culture and ethics intertwined is thrown at them since they are unfamiliar with the cultural background of those being supervised. Therefore, decisions are made without an awareness of how these cultural and ethical nuances affect the individual. This study investigates the influence of culture on concepts of what constitutes ethical leadership in business among United States citizens today. Issues of gender, ascribed vs. achieved status, and power distance are addressed in terms of what constitutes ethical leadership amongst business managers.

Physical Education

Schedule

9 - 9:20 a.m.
ASC 107
Megan E. Buermann, Anthony A. Willaert, Brian T. Ellingboe (Mary Pieklo, M.S. physical education) The Effects of Self-Selected Music and Researcher Controlled Music on Rate of Perceived Exertion, Running Pace, and Heart Rate in College-Aged Females.

10:30 - 10:50 a.m.
ASC 127
Brett Kramer, Josh Huot, Nicholas Roscoe (Mary Pieklo, M.S. physical education) A comparison of lactate threshold amongst fit male and female populations

11:00 - 11:20 a.m.
ASC 127
Jacquelyn M. Donohue, Kelly M. Fladebo, Sean P. Dykhoff (Mary Pieklo, M.S. physical education) Performance and Fatigue During Exercise with a Partner

11:30 - 11:50 a.m.
ASC 127
Anthony Z. Bozzo, Marie E. Boo, Johnathan M. Engholm, Steven R. Cherekos (Mary Pieklo, M.S., physical education) The effects of caffeine on anaerobic run test performance

Abstracts

Buermann, Willaert, Ellingboe: The purpose of this study was to determine the effects of music on certain physiological responses to running. Music is associated with dissociation effects that may enhance exercise performance by distracting the individual from the physiological changes occurring during exercise. To test this, our study used three different trials to examine difference between running performance with and without music as well as influences of different tempos of music.

Kramer, Huot, Roscoe: Lactate threshold is a good predictor of physical endurance performance, especially in young populations. In addition, lactate levels have been found to respond to a variety of training methods. Differences between genders including: fat free mass, body fat percentage, usage and content of glycogen, and VO2 max may influence lactate threshold in men and women. Due to the physiological differences between males and females, we hypothesized that fit, college aged males will have significantly higher lactate thresholds than their female counterparts. Fit subjects were categorized at or above the 70th percentile for age and gender for a 1.5 mile run test as determined by the National Strength and

Conditioning Association. Following qualification for the study, subjects completed a lactate threshold test using the modified Astrand treadmill protocol.

Donohue, Fladebo, Dykhoff: The purpose of this study was to examine differences in performance or fatigue in performing exercise alone or with a partner. Motivation is an important factor in a person's decision to perform exercise, thus, it is important to understand what motivates people to perform exercise so that exercise performance and adherence is increased. One factor that is important and provides significant motivation to people is performing exercise with a partner. Performing exercise with a partner may increase performance and make a person feel less fatigued than they would if they were exercising alone. To test this, subjects performed a one mile run test, a 1 minute push up test, and a 1 minute sit up test by themselves. They were then paired up with a partner of similar fitness and performed the tests again to examine changes in performance and perceived exertion.

Bozzo, Boo, Engholm, Cherekos: Our study was designed to test the effects of caffeine on anaerobic performance. Caffeine use is rampant in sports as it is a stimulant. Caffeine has been proven to reduce fatigue and increase wakefulness and alertness via various physiological mechanisms. Some of these mechanisms include: increased ATP production, catecholamine release, and motor unit recruitment. These combined effects may have an ergogenic effect on anaerobic performance. In order to test this, we designed a double-blind study in which the subjects performed two anaerobic treadmill tests, once after the consumption of caffeine and once after the consumption of a placebo.

Political Science

Schedule

10 - 10:30 a.m.	
Simns 360	Aaron J. Sinner (Dr. Kay Wolsborn, political science) Bureaucratic Behavior and Net Neutrality: Applying Leading Regulatory Theories to the FCC's Regulation of Network Neutrality
10:30 - 11 a.m.	
Simns 360	Lindsey E. Krause (Dr. Claire Haeg, political science)

Conditions for Success: Conditional Party Government in the Minnesota House of Representatives

11 - 11:30 a.m.
Simns 360

Jennifer L. Schwope (Dr. Claire Haeg, political science)
Female Legislators' Impact on Policy Initiatives Related to Gender Equity: A Case Study of the Minnesota Comparable Worth Act and the Lilly Ledbetter Fair Pay Act of 2009

11:30 a.m. - noon
Simns 360

Melanie A. Miesen (Dr. Claire Haeg, political science)
Financial Services Reform: A Case Study in Unorthodox Lawmaking

Abstracts

Sinner: This project is my senior thesis. I apply four leading regulatory theories to the FCC's regulation regarding network neutrality to both see what insight the theories offer into the events, as well as to see the strength of the theories' explanatory power.

Krause: Despite voter calls for bipartisanship in Congress, the national legislature has actually increased in terms of party polarization over the past two decades. In the United States House of Representatives, party structure is instrumental to legislative outcomes. Party leaders are in complete control: the rules, agenda, and legislative priority list are all at their disposal. For moderate members of the House, this may present a problem. Party leaders often gravitate to the polarized edges of their party, leaving middle-dwellers in the lurch. According to Aldrich and Rohde's conditional party government (CPG) theory, under certain conditions, party leaders will change the ideological composition of their party, making it more ideologically homogenous and differentiating it from the opposite party, creating party polarization and centralization of power in leadership positions. Scholars agree that the United States House of Representatives is polarized; however, does polarization exist in sub-national legislatures? This paper examines whether the Minnesota House of Representatives faces these same conditions and the consequences of conditional party government. It examines roll-call voting patterns and member interviews from the Minnesota House of Representatives' 84th, 85th, and 86th sessions, with a preliminary analysis of the current 87th legislative session. In examining these legislative sessions, changes in majority party control are taken into account, as are specific pieces of important legislation in each session. Other theories of governance, including the cartel theory, median voter theorem, and the strategic party government theory are also discussed.

Schwope: If there were more women in Congress would this have an impact on policy? Specifically, how would women's issues be affected? This paper explores the

impact of female legislators and the roles of substantive representation and women's critical mass in regards to policy-making. As research has previously revealed, gender may not have a significant impact on female legislators' voting behavior. However, if there was a critical mass of female legislators, would these women make a significant difference on policies that relate to gender equity? Using a qualitative and quantitative analysis of the Minnesota Comparable Worth Act and the Lilly Ledbetter Fair Pay Act of 2009, this study examines the cohesion of gendered voting patterns and the cohesion of co-sponsorship. Using these two pieces of legislation as a comparative case study, I will be examining the role of women legislators in this process of passage. According to the journey of these two laws, I find that female legislators' overall influence may be constrained by the gendered institution of the legislation, which poses challenges when trying to act as surrogate representatives. Furthermore, party ideology may have a most significant role in how women co-sponsor and vote on policies related to gender equity. These findings suggest that substantive representation of women may not provide enough motivation for female legislators so that they are encouraged to vote for "women's issues." Furthermore, because we have not reached a critical mass in the legislature, it is too early to determine whether or not this would change policy outcomes related to "women's issues." We can speculate that a critical mass of female legislators would indeed challenge the practice of voting along party lines and further positively impact female constituencies.

Miesen: The 2007 economic crisis and the subsequent Wall Street bailouts forced Congress to consider major financial reform including regulation of predatory and subprime lending practices, increased oversight of major banks, and a significant change in the role of the Federal Reserve Bank. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 was one of the landmark bills of the 111th Congress since it involved major restructuring of the financial industry; indeed, it was the most sweeping financial policy reform since the Great Depression. Because of its significance and consequent length — the final bill was almost 1,000 pages long — the Dodd-Frank bill was debated under special rules and required complex compromises, making its final passage remarkable. This legislative process certainly bore no resemblance to the "Schoolhouse Rock" version of bill passage that most Americans are taught in high school civics class. The role of individual party leaders and committee members, as well as the impact of particular institutional structures and norms, was evident throughout the progress and passage of the bill. How did the actions of leaders in the U.S. House of Representatives and the structure of the institution affect the Dodd-Frank bill's form and successful passage? This paper examines Barbara Sinclair's understanding of "unorthodox lawmaking" on the Dodd-Frank bill. Utilizing qualitative methodology, including participant observation, elite interviews, and historical analysis of the passage of the bill through Congress, this research is a case study that applies Sinclair's model and method to uncover the reality of unorthodox lawmaking in the 111th Congress.

Psychology

Schedule

9 - 9:20 a.m.
NewSc 146
Katherine (Katie) A. Kenefick (Dr. Rodger Narloch, psychology) Body Dissatisfaction, the Thin Ideal, and Social Judgments

9 - 9:20 a.m.
NewSc 140
Courtney Bloomfield, Nick Homen, Adam Justin, Jon Schumacher, Dominique Evich, Sara Lang, Sergio Aguilera, Taylor Curtis, Galen Himrich, Rochelle Taus-Dumdie (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 1

9:20 - 9:40 a.m.
NewSc 140
Ryan Mastellar, Allie Meyer, Hue Vang, Laura Trent, Angela Dols, Jennifer Deering, Brenda Xiong, Maria Greenwood-Sanchez, Amy Ranweiler, Sarah Wahl (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 2

9:30 - 9:50 a.m.
NewSc 146
Ellen M. Dehmer (Dr. Janet Tilstra, psychology) Gender Differences in Text Message Communication Content

9:40 - 10 a.m.
NewSc 140
Symphony Grant-Moser, Ryan Longley, Kate Johnson, Katie Kress, Rachel Heying, Lauren Wander, Natasha Harr, Caroline Haik, Beth Peichel (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 3

10 - 10:20 a.m.
NewSc 140
Stephanie Heinz, Jake Moore, Valcia McGann, Casey Roberts, Margaret Peyton, Molly Davis, Heather Jaqua (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 4

10 - 10:20 a.m.
NewSc 146
Megan E. Peterson (Dr. Pamela Bacon, psychology) What Makes a Good Doctor?: The Personal Qualities that Relate to Patient Satisfaction

10:30 - 10:50 a.m.

NewSc 146	Allison M. Homstad (Dr. Steve Stelzner, psychology) Comparison of Motivational General-Mastery and Motivational General-Arousal Imagery Interventions and Their Impact on Perceived Team Cohesion in a Collegiate Volleyball Team
10:30 - 11 a.m.	
NewSc 250	Pat Barlow, Jason M. Kelly (Jason Kelly, M.A., psychology) Who Goes on Academic Probation at CSB/SJU?
10:30 - 10:50 a.m.	
NewSc 140	Anne Pavel, Virginia Zenzen, Peter Ly, Mary Schweich, Brian Ellingboe, Laura Monahan, Caitlan Rocheford, Heather Gillund, Megan Smith, Stephanie Moran (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 5
10:50 - 11:10 a.m.	
NewSc 140	Molly David, Raisa Guillemette, Tara Serbus, Rachel Pelletier, Ricki Holupchinski, Kailyn Wilcox, Ashley Forstrom, Mattea Hahn, Andrea Dean, Michelle Olson (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 6
11 - 11:20 a.m.	
NewSc 146	Kaitlin M. Andreasen (Dr. Linda Tennison, psychology) Just Another Dumb Blonde? A Cross-Cultural Study of Implicit Hair Color Biases and Ambivalent Sexism
11:10 - 11:30 a.m.	
NewSc 140	Lauren Jones, Matia Twedt, Eric Nead, Kate Reichert, Alex Bangasser, Sierra Dooley, Katie Milroy, Kelsey Schmidt-Miller, John Weseman, Dan Gutmann (Dr. Janet Tilstra, psychology) Developmental Psychology Fair Session 7

Abstracts

Kenefick: The thin ideal is transmitted through the mass media's portrayal of female models that embody unattainable and unrealistic thinness providing women with an extreme standard for comparison. The current study sought to examine the combined effect of social judgments and the media's presentation of the thin ideal on body dissatisfaction and self-esteem in women. Before participating in the experiment, 110 participants from a liberal arts college completed a base-line

measure of body dissatisfaction. During the experiment, participants overheard a judgmental conversation about attractiveness in which the experimenter manipulated the gender discussed in the judgmental conversation. Participants were then presented with idealized media images and surveyed on their body dissatisfaction and state self-esteem. The purpose of this was to examine the circumstances under which women protect themselves against societal expectations of attractiveness and the negative influences of the media. This study found that, regardless of the participants' base-line measure of body dissatisfaction or the gender discussed in the judgmental conversation, post-experimental scores of body dissatisfaction and state self-esteem did not differ.

Bloomfield, Homen, Justin, Schumacher, Evich, Lang, Aguilera, Curtis, Himrich, Taus-Dumdie: In this session and the ones that follow in this room, students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Mastellar, Meyer, Vang, Trent, Dols, Deering, Xiong, Greenwood-Sanchez, Ranweiler, Wahl: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Dehmer: Text messaging is an emerging form of communication popular with teenagers and young adults. This form of discourse shares patterns of both spoken and written language. Well documented differences exist in the spoken and written language patterns of men and women (Baron, 2008), but less information is available related to male/female differences in language patterns while using electronic communication. Researchers in Europe, Asia, and the U.S. have noted differences in male/female text messaging habits and punctuation as well as preliminary differences in self-reports of text message content. Limited empirical information is available describing male/female content differences from actual text messages. In this study we examined the content of text messages and text messaging habits of 44 undergraduate students. Participants submitted eight text messages a day for a week. All text message content was coded using classifications similar to those of Ling (2002) with comparisons of communication content included in text messages of men and women. Researchers, blind to participant gender, used a coding system to code messages in the following communication categories: grooming, coordination, information, questions, answers, personal news, questions/jokes/quotations, greetings, closings, and emoticons. Based on previous research and preliminary studies examining male/female differences in spoken and

written language we expected women to include a greater number of grooming statements and questions in their text messages, and men to include a greater number of coordination statements and answers.

Grant-Moser, Longley, Johnson, Kress, Heying, Wander, Harr, Haik, Peichel: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Heinz, Moore, McGann, Roberts, Peyton, Davis, Jaqua: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Peterson: Past research has suggested that previous academic performance predicts only a small amount of success in and after medical school. More recently, those involved in the area of medicine have realized the importance of personal qualities that help form positive affective relationships between doctor and patient. Studies have suggested that positive affect between doctor and patient is related to higher patient satisfaction, adherence to treatment, and other favorable outcomes. Although a number of studies have examined the interpersonal qualities that doctors think are essential, relatively few studies have examined this question from the point of view of the patient. I wondered if the traits and skills that doctors thought corresponded with a successful doctor were the same ones that patients would identify. To gather data regarding patients' experiences in the doctor's office, participants filled out a questionnaire in which they were asked to describe an especially positive or negative doctor's office visit, focusing on their feelings during the experience and the doctor's characteristics and behavior. They also described the doctor's interpersonal qualities. Results showed that positive doctors were rated higher on positive interpersonal qualities and less on negative interpersonal qualities than negative doctors. Positive doctors were also rated higher on qualities related to competence. These results suggest that positive personal qualities are important in facilitating positive interactions and patient satisfaction. Knowing more about which personal qualities make a doctor successful is something we need to explore. More knowledge about important personal qualities will help admissions at medical schools determine which potential medical students are most likely to be successful. In order to understand what makes a good doctor, the viewpoints of patients need to be considered.

Homstad: This study examined the relationship between team cohesion and motivational general mental imagery for a Division III collegiate volleyball team. A

secondary purpose was to determine whether team cohesion scores varied with personality type based on the Five Factor Model of personality. Thirteen players participated in the study, listening to one of two different mental imagery scripts in alternating fashion before each home volleyball game. The first script was Motivational General-Arousal imagery and the second script was Motivational General-Mastery imagery. Following each game, the players recorded their feelings about team cohesion based on the Group Environment Questionnaire. The results did not support the hypothesis that Motivational General-Arousal imagery would be more highly correlated with an increase in team cohesion as compared to Motivational General-Mastery imagery. Rather, the results indicated that team success may have more of an impact on perceived team cohesion, regardless of the type of mental imagery used. There were also a number of significant correlations in perceived team cohesion depending on the Big Five personality factors. Differences on team cohesion also varied between first-year players and returners, as well as starters and nonstarters. The results suggest that future research should compare the impact of mental imagery between teams with varied success rates.

Barlow, Kelly: Are there academic behaviors and attitudes, demographics, or social attitudes and behaviors that predict a student being placed on academic probation at some point during his or her career at the College of Saint Benedict and Saint John's University? What unifying characteristics represent the CSB/SJU probation student population? In order to answer these and other questions Pat Barlow analyzed data from CSB/SJU's New Entering Student Survey to assess attitudes and behaviors of students as they began their academic careers. Together with advising data taken from students on probation, a profile of the average CSB/SJU probation student was constructed with the purpose of aiding academic advising in their mission to reduce probation incidence on our campuses. Presenters: Jason Kelly, assistant dean and director of academic advising, and Pat Barlow '10, SJU, who is currently pursuing his Ph.D. in educational psychology and Counseling at the University of Tennessee. Pat Barlow is a SJU alum of 2010 who is currently pursuing his Phd at the University of Tennessee.
This single evaluation question will be divided into the following subsets:

- Which academic performance variables are most predictive of a student being placed on academic probation at some point during his or her career at CSB/SJU?
- Which demographic characteristics are most predictive of a student being placed on academic probation at some point during his or her career at CSB/SJU?
- Which social attitudes are most predictive of a student being placed on academic probation at some point during his or her career at CSB/SJU?
- Which past, present, and future behaviors are most predictive of a student being placed on academic probation at some point during his or her career at CSB/SJU?

Pavel, Zenzen, Ly, Schweich, Ellingboe, Monahan, Rocheford, Gillund, Smith, Moran: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in

biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

David, Guillemette, Serbus, Pelletier, Holupchinski, Wilcox, Forstrom, Hahn, Dean, Olson: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Andreasen: Previous research has identified the prevalence and impact of stereotypes in the world today. People are driven by visual cues and often categorize others on the basis of physical appearance and expect them to encompass certain traits, characteristics, and role behaviors. The present study aims to uncover the unconscious association of blondes with the dumb blonde stereotype. Sixty participants from Spain and 60 participants from the United States will take an Implicit Association Test (IAT) which operates on the assumption that response time is proportional to the difficulty of associating a target group with an attribute. Participants will classify, under time pressure, positive or negative adjectives related to beauty or intelligence or images of blonde or brunette women. It is anticipated that in both cultures implicit hair color biases will prevail, and it will be easier to associate the dumb blonde stereotype with blondes rather than brunettes. Additionally, it is believed that for participants in the United States, it will be easier to associate negative adjectives related to intelligence (i.e. stupid, gullible) with images of blonde women than it will be for participants from Spain. The research will also explore the relationship between the presence of implicit hair color biases and attitudes of ambivalent sexism. Participants will take the Ambivalent Sexism Inventory (Glick and Fiske 1996) which is a 22-item assessment used as an overall measure of sexism and includes subscales to assess the separate components of hostile and benevolent sexism. It is expected that individuals from both Spain and the United States who reveal implicit hair color biases will be more likely to endorse ambivalent sexism.

Jones, Twedt, Nead, Reichert, Bangasser, Dooley, Milroy, Schmidt-Miller, Weseman, Gutmann: Students enrolled in Developmental Psychology Spring 2011 (sections 01A and 02A) will present interactive displays on lifespan development theory or practical application. Displays will relate to individual and age-cohort changes in biological processes, cognition, social development or personality. These presentations represent a consolidation of service learning experiences, research, and course content.

Service Learning

Schedule

9 - 10 a.m. *Gorec Pres. Conf. Rm.*	Aaron J. Sinner, Kaitlin M. Andreasen, Grace S. Mevissen, Kelsey E. Minten, Kelci A. Reiner, Carolyn Vandelac, Ashley L. Weinhandl, Casey B. Wojtalewicz, Daniel K. Walgamott (Marah Jacobson-Schulte, M.S., service learning) Jackson Fellowship 2010 & Jackson Fellows
9:30 - 10 a.m. *Gorec Pres. Conf. Rm.*	Marah Jacobson-Schulte (Marah Jacobson-Schulte, M.S., service learning) A Continuation of the Service Learning Poster Session 1
10 - 11 a.m. *Gorec Pres. Conf. Rm.*	Marah Jacobson-Schulte (Marah Jacobson-Schulte, M.S., Service Learning) A Continuation of the Service Learning Poster Session 2
11 a.m. - noon *Gorec Pres. Conf. Rm.*	Marah Jacobson-Schulte (Marah Jacobson-Schulte, M.S., Service Learning) A Continuation of the Service Learning Poster Session 3

Abstracts

Sinner, Andreasen, Mevissen, Minten, Reiner, Vandelac, Weinhandl, Wojtalewicz, Walgamott: The presentations during this session will cover the Marie & Robert Jackson Fellowship; Kaleidoscope Place, Minneapolis, Minn.;

Children's Museum, Brookings, S.D.; Jeremiah Program, St. Paul, Minn.; CLUES (Communidades Latinas Unidas en Servicio), Minn.; White House Project, St. Paul, Minn.; Catholic Charities/LaCruz, St. Cloud, Minn.; "Summer of Solutions" Campaign of the NGO Grand Aspirations, Minneapolis, Minn.; and the Al Franken Campaign, St. Cloud, Minn.

Jacobson-Schulte: Please see poster descriptions under the 8 a.m. poster session (page 36).

Jacobson-Schulte: Please see poster descriptions under the 8 a.m. poster session (page 36).

Jacobson-Schulte: Lunch for Service-Learning Presenters/Community Partners.

Sociology

Schedule

10 - 10:20 a.m.
Simns G30
Sierra S. Dooley, Yuri Nishiishigaki (Dr. Shelia Nelson, sociology) Everyday Theologies in the Lives of the Catholic GLBTA Community: What Difference Does Age Make?

10:30 - 10:50 a.m.
Simns G30
Katherine Sheehan, Peter Blattner (Dr. Sheila Nelson, sociology) Does location affect religious beliefs?: The Correlation Between Location and Scripture

11 - 11:20 a.m.
Simns G30
Kelsey E. Minten, Nathan D. Heilman (Dr. Sheila Nelson, sociology) Image of God and Views on Homosexuality

11:30 - 11:50 a.m.
Simns G30
Alyssa M. Arabadji, Breana M. Foley (Dr. Sheila Nelson, sociology) Homophobia on the Saint John's University Campus: Accounts From Past and Present Johnnies

Abstracts

Dooley, Nishiishigaki: We will be using a survey of over 400 people connected with five Catholic organizations serving the Catholic GLBTA community. Our research explores the impact on beliefs and involvements of language of emotion as discussed by Dawne Moon in her book *God, Sex, and Politics*. We contrast the views

and concerns of young adult respondents to those who came of age in the immediate aftermath of Vatican II.

Sheehan, Blattner: Sociologists in the U.S. frequently study regional differences in attitudes and beliefs. For example, when looking at homosexuality, it can be expected that attitudes in the Bible Belt will be different from those in the Northeast, Midwest, or West Coast. In our presentation, we will examine whether this regional variation holds true in Catholic attitudes towards scripture, church, and authority.

Minten, Heilman: Using a survey of 400+ respondents, we examine the connections between one's image of God and one's views on homosexuality. Previous research has indicated that a more warm and relational image of God leads to more accepting views toward sexual minorities. Our research explores this connection in a sample of persons connected to organizations serving the Catholic GLBT community.

Arabadji, Foley: The purpose of this study was to discover the prevalence or lack of homophobic behavior on the Saint John's University campus. Interviews were performed with both homosexual and heterosexual students in addition to a focus group of first-year students about their experiences with homophobic or anti-gay behavior on campus. From these interviews patterns and themes of behavior were identified. This study was based off of Michael Kimmel's article Masculinity as Homophobia: "Fear, Shame, and Silence in the Construction of Gender Identity" to test his assertion that homophobia is related to current definitions about masculinity.

Fine Arts & Social Science Poster Session

Gorecki Center A, B & C, CSB

Art

Joshua J. St. George, Sarah T. Mahowald, Nicole L. Werner, Nancy A. Krenn, Allison R. Muccio (Dr. Terri Johnson, art) Free At Last: An Exhibit of Posters Preventing Trafficking of Women

> Students from Professor Rachel Melis' "Art of the Printed Book" course will present fine press posters and a book they designed and hand printed in response to a service learning assignment. The students were asked to work with a local non-profit (Hands Across the World) to create educational and empowering art work to be distributed in the St. Cloud area. Rachel Melis will introduce the students and the project at the beginning of the session. The rest of the hour will be a typical "poster session" with students standing near their prints and books to answer questions.

Greta Barthelemy, Chloe Briggs, Caitlin Brutger, Jenna Clark, Caitlin Cooreman, Ellory Eggermont, Sienna Kuhn, Sarah Mahowald, Thomas O'Laughlin, Matthew Reeve (Dr. Terri Johnson, art) Miles Apart: A Student Photographic Exchange Exhibition

> Individual learning project and photography 2/3 students working with Professor Scott Murphy created photographic imagery to exchange with students from Wright State University in Dayton, Ohio. This midwestern exchange is an opportunity for students to explore similarities and differences in photographic approaches as well as to offer a venue for new audiences for students at both schools. The exhibition, which features work from WSU and CSB/SJU, will travel to Dayton in May. The project will begin with short introductory remarks by Murphy and will continue like a poster session, with students standing near their photographs and answering questions.
>
> There are two additional students participating, in addition to the list above: Jane Theobald and Nicholas Vogel.

Physical Education

Dan T. Schmit (Janna LaFountaine, M.S., physical education) The Cost of Culture

This project reviews whether sports should be a part of the public school system (K-12). It is vital to examine the academic, athletic, and social benefits students gain from sports and physical activity to see if they can exist in club sports. This study looks at the economic benefits that would be gained by the use of a private club system. The conclusion is that a private club system of sports would provide the same benefits as school sports while benefiting communities economically.

Paula K. Kearns (Janna LaFountaine, M.S., physical education) Testing for the Female Athlete Triad in High Schools

The female athlete triad is a disorder plaguing young female athletes nationwide. The triad is defined by the presence of amenorrhea, low bone mineral density, and disordered eating. The triad causes fatigue, muscle weakness, and musculoskeletal injuries. If not caught during adolescence, the triad can cause osteoporosis, among many other related health consequences. Testing for the triad in high schools is of utmost necessity in order to prevent injury and promote the health of the student body.

Jenna A. Bosch (Janna LaFountaine, M.S., physical education) Physical Education in Schools

Physical education (P.E.) is being cut from schools' curriculums because it is believed that P.E. does not provide valuable rewards, is not an important subject to be taught in school, and has many barriers that prohibit students from receiving benefits. Others think schools should have P.E. because of its positive effect on students, its support from federal organizations, and its overall value to the citizens of the United States. Experts argue that P.E. has more advantages than disadvantages. P.E. should remain in the school curriculum because it gives students academic, health, and physical fitness benefits, is supported widely, and is a program indispensable to the nation.

Kristen M. Beste (Janna LaFountaine, M.S., physical education) Stadium Building and Funding

There are many different points of view when it comes to professional sport stadiums and funding. One perspective believes that stadiums bring benefits to the economy such as generating jobs, promoting local economic development, and improving team finances. On the other hand, many experts believe these stadiums bring no economic benefit, and the

professional organizations have difficulty securing initial funding and enough cash for the upkeep of the stadium. Although professional stadiums present benefits to cities, there are more disadvantages than there are advantages.

Ryan L. Brutger (Janna LaFountaine, M.S., physical education) Title IX and Men's Sports: Why There is a Problem

Title IX deals with equality in federally funded programs, and because many athletic programs run by schools are federally funded, they fall under the governance of Title IX. Because of the nature of the amendment, it is open to interpretation, and therefore much debate. A current debate is whether men and their sports are being discriminated against because of Title IX. It can be found that male sport teams are not being harmed directly by Title IX; they are losing athletic opportunities because universities fail to allocate funding to men's programs in appropriate ways.

Molly I. Johnson (Janna LaFountaine, M.S., physical education) Male Body Image Issues

Male body image issues are prevalent in society, although not as discussed or researched as the female side of the spectrum. Some argue that sports cause body image issues, especially when size may be beneficial to the performance of that sport. Instead, men who take their training to an extreme level may do so because of body image issues including eating disorders, muscle dysmorphia, and body dissatisfaction. It is clear that male body image issues cannot be blamed on sports alone; rather, the culprits are factors such as media images, cultural norms, and ultimately one's self and psychological state.

Daniel M. Siers (Janna LaFountaine, M.S., physical education) American Dominance

The 21st century will bring about a competition between the United States and China for the role of preeminent world super power. This competition is likely to be similar to the Cold War, with the two governments continuously trading places as the first and second most powerful nations. During this time period both nations may utilize tangible tools such as the Olympic Games to provide visual evidence of their metaphorical superiority. However, as a consequence of China's continuing pollution of

their water supply, economic growth will eventually stagnate and decline, leaving the United States as the sole world super power.

Sarah M. Torchia (Janna LaFountaine, M.S., physical education) Is the Best Shoe Better?

Unlike the heel strike facilitated by the excessive cushion and structure of the modern running shoe, the forefoot strike utilized by barefoot runners leads to lower impact forces. This is believed to be the reason for a lower prevalence of common running injuries among barefoot running populations. Thus, questions have been raised by the performance shoe and sports medicine industries. Although barefoot running may initially seem to be inconvenient and dangerous, it's ability to enable a runner's feet and legs to move the way they were designed to makes it the best practice for the prevention and correction of common running injuries.

John B. Friesen (Janna LaFoutaine, M.S., physical education) Growth and Development in Youth Through Sport

Sport participation can help a child's growth and development in ways that will be beneficial later on in life. However, there are also long-term effects of sport participation on children. Getting children involved in sports at an early age can be damaging to their physical, psychological and social health. On the other hand the benefits of participation in sports include improved physical fitness, enhanced development of social skills, and improved academics. Sports and physical activity can be harmful for children, but the benefits outweigh the negative aspects.

Maureen M. Flynn (Janna Lafountaine, M.S., physical education) Stadium Sustainability

In the past, professional sport stadium operations have been criticized for their lack of sustainability. However, in the past decade, new stadiums are being built and old stadiums transforming to operate more efficiently, to leave a lesser impact on the earth. To be more sustainable, stadium management uses recycled materials, and are rethinking how to change overall operations. Sports stadium operations are making the effort to be more sustainable by giving back to the community, using energy more responsibly, and reducing the amount of waste they are producing.

Miles P. Armitage (Janna LaFountaine, M.S., physical education) Concussion Management in Sports

Concussions are one of the most common sports related injuries today, and whether or not these concussions are managed correctly is an argument arising among sports critics. Organizations have made it mandatory to have a concussion policy in place among the teams. Although these policies are being used by many sport teams, not all implement them, leaving some athletes at an increased risk of further injury. Until more education and proper concussion management techniques are utilized, players will face further concussive injuries.

Cody E. Voll (Janna Lafountaine, M.S., physical education) Professionals in an Amateur Association

College athletes generate a large amount of revenue for the NCAA, the universities they play for, and their coaches. However, they receive no compensation for their time on the field. College athletics are viewed by millions of people every weekend. They want to see the players in action; no one is watching just to see the coach. The NCAA is committed to amateurism, but these athletes are putting a strain on their academics, and they create revenue for the NCAA and their coaches; they deserve a cut.

Chaarissa C. Romero (Janna LaFountaine, M.S., physical education) Professional Athletes as Role Models

Professional athletes are recognized by many people, and in turn they have become role models for many people. Whether professional athletes should be role models or not is a debatable topic. They bring both positive and negative influences to the public. As role models, athletes have formed gender stereotypes, and some fail to accept the responsibility of being a role model. However, professional athletes can break down other obstacles, promote healthier lifestyles, and may help reduce the stigma associated with homosexuality in sports. Despite the negative actions by some professional athletes, they can still bring a positive outlook to various issues by being good role models.

Anthony A. Willaert, Bridget L. Rewitzer, Michael R. Schmit, Sean P. Dykhoff (Donald Fischer, A.B.D., physical education) Physiological Characteristics of Division III and Division I/Elite Female Soccer Players

Physiological characteristics of Division III and Division I/elite female soccer players: We tested the CSB soccer team using vertical jump, pro-

agility, 40 yard dash, and Yo-Yo Intermittent Recovery tests. We compared these results with previously published data of D1 and elite soccer players to see differences in aerobic and anaerobic capacities.

Marie E. Boo, Megan E. Buermann, Emily M. Willaert (Donald Fischer, A.B.D., physical education) Physiological and Biomechanical Factors Influencing Distance Running Performance

There is debate about what factors most contribute to distance running performance. Some research suggests running performance is correlated with V̇O$_2$ max. Other factors suggested to influence running performance include: running economy, lower body fat percentage, muscle recruitment and force production, and joint stiffness. The purpose of this study was to examine the changes in aerobic and anaerobic measures in Division III female cross country runners at the beginning and end of the season and to correlate these measures with running performance. Fourteen of the top 20 finishers of the 2.5 mile pre-season time trial participated in the study. Physiological and biomechanical data were collected at the beginning and end of the season, including performance on 2.5 mile time trial, treadmill V̇O$_2$ max, single repetition maximal vertical jump (power), four consecutive vertical jump test, and 20-meter sprint with flying start. The results indicated that female cross country runners had a significantly faster post-season 2.5 mile time trial ($p<0.05$) and 20-meter sprint time ($p<0.05$) while no significant change in other measures were noted. Pre-season time trial was correlated with pre-season mean power ($p<0.05$) and post-season time trial was correlated with post-season V̇O$_2$ max ($p<0.05$). Change in 2.5 mile time trial performance did not significantly correlate with changes in other variables. In conclusion, the Division III female cross country runners significantly improved their time trial and sprint time from pre- to post-season. This suggests that increased force production may be advantageous for endurance athletes. However, the degree to which aerobic and anaerobic factors influence distance running performance may vary based on the individual.

Political Science

Daniel J. Wattenhofer (Dr. Manju Parikh, political science) Arms Trafficking

Arms trafficking is a huge problem that is plaguing the world on a global scale. I will examine the history of arms trafficking and why it is such an important global issue.

Jeana C. Renier (Dr. Manju Parikh, political science) Children and Armed Conflict

War has tremendous physical and psychological impacts on children around the world. Despite human rights laws, protocols, and campaigns, 75 percent of armed conflicts involve children still today. My paper will discuss the prevalence of child involvement in wars, human rights issues regarding this topic, the Optional Protocol to the Convention on the Rights of the Child on the Involvement of Children in Armed Conflict, and the new Zero under 18 Campaign to reduce child involvement in armed conflict.

William G. Jaffee (Dr. Manju Parikh, political science) America's Global Responsibility

My topic is about the "Responsibility to Protect" civilians who face brutal violence and mass deaths from their authoritarian governments. The United States works in conjunction with the UN and Allies when dealing with such foreign states that are violating human rights. My project will examine whether United States, as the most powerful country in the world, should take leadership in protecting those in desperate need in the world or not.

Nicole A. Cariolano (Dr. Manju Parikh, political science) United States and Myanmar Relations

I will be researching the relations between Myanmar and the United States. I want to look into how the U.S. has reacted to the events that have occurred in Burma/Myanmar in the last five years and examine/or see if U.S. Policy is governed by economic interests or human rights.

Nay Zin M. Htet (Dr. Manju Parikh, political science) Rethinking U.S. Sanctions Against Myanmar

I will focus on the economic consequences of the sanctions for the Burmese people. The U.S. and its EU partners have kept on furthering its sanction policies towards the Burmese military junta in response to its poor record on human rights and authoritarian rule over the country. Western policy towards Myanmar over the last 25 years has been not only ineffective, but has also completely ignored the efforts of the military regime to improve the relations with the West. These sanctions have had a stronger impact on

small business than on the government of Myanmar and failed to achieve its initial objective of a transition to democracy and development in Myanmar. International efforts through the UN to censure Myanmar are more likely to achieve their objective. Without a significant change in international Myanmar policies, regime change is unlikely in Myanmar.

Ethan J. Mustonen (Dr. Manju Parikh, political science) Rise of China

This will be a poster presentation on the Rise of China. I am going to focus specifically on the political policies that contributed to China's economic rise. For example, I will explain how China's decision to open their borders and allow foreign investors to build factories in China helped their economy. How did technology and an open market affect the economy? I will also examine how China is expanding its international clout in pursuit of raw materials for its economic growth. These are a few of the questions I will be researching and presenting.

Kaitlyn J. Huntington (Dr. Manju Parikh, political science) Women of South Africa

My presentation will be discussing the current struggles and issues that South African women face daily. South Africa appears to be advancing in gender equality as it is in the top five out of 53 African countries for women's rights. On the other hand the United Nations gender development index rates South Africa as 129th out of 182. High rates of domestic violence and rape as well as the spread of HIV/AIDS in South Africa harm women's chances of sustaining a quality life. The extreme rate of poverty and unemployment also puts women at a disadvantage despite having several women who hold political office.

Yadan /. Zhang (Dr. Manju Parikh, political science) The Global Challenges China Is Facing Today

Since China has become a new rising power and is playing a major role for the world economy, people are wondering if China could take more responsibility on some global issues. However, the country itself also faces major challenges within the nation — the population is aging rapidly as a result of the one-child policy, and needs to find employment for millions of rural citizens to improve their poor living conditions. How can China

manage the balance between expectations of a major economic player and meet the needs of its citizens as a developing country?

Julius A. Gernes (Dr. Manju Parikh, political science) China's Economic Rise

My project will focus on how China's economy has risen to the second largest economy in the world. It will then illustrate why this has happened and examine if it will continue to grow.

Long D. Nguyen (Dr. Manju Parikh, political science) Vietnam-US Economic Relationship

This research paper will focus on the economic relationship between Vietnam and American. In the past, influenced by the Cold War, the conflict between communism and capitalism, Vietnam and the United States were engaged in a long war that has left deeply emotional pain in both American veterans and Vietnamese residents.
However, with the development of economy and new technology, Vietnam is now on the way to rebuild the country further and build new ties to the outside world, even the old enemy, the United States. It is currently one of the strong developing countries in Asia, and has attracted a huge investment from American companies that play an essential part in the reconstruction of the economy. The adversary connection in the past and the potential partnership at the present and in the future, this paper will look at different perspectives from expert economists and political scientists.

Alexa R. Bollig (Dr. Manju Parikh, political science) Conflict in Uganda/Republic of Congo: The Use of Child Soldiers

Since 2006, a group of rebels led by Joseph Kony, have been implementing attacks on the people of Uganda and the Republic of Congo. These attacks include the capturing of women and children, and also the use of children as soldiers. These attacks have left the people living in the surrounding villages scared for their lives with no one to turn to. For my project I will seek to look for the governments answers to these attacks and what has been done to limit the violence within Uganda and The Republic of Congo.

Kathleen E. Burns (Dr. Manju Parikh, political science) Revolution in the Middle East: Egypt vs. Libya

I will compare how the governments reacted to uprising in Egypt and in Libya; in what aspects they were the same and how they are different.

Bridget B. Gohmann (Dr. Manju Parikh, political science) Importance of Biodiversity and Consequences of Its Neglect

> My goal with this topic is to focus on terrestrial biodiversity, mentioning extinctions, results of climate change, and deforestation. I want to illustrate and highlight the importance of biodiversity from both environmental and international viewpoints; it will show how the global world will suffer if this issue is not addressed.

Aaron J. Guennigsman (Dr. Manju Parikh, political science) "Brain Drain" in Vietnam

> Vietnam, although having a growing economy and strong emphasis on education, cannot reach the next stage of economic development without a strongly educated population to support such growth. The problem, however, resides in a recent spike in Vietnamese students studying abroad, and many not returning to strengthen the working-class in Vietnam; this is known as the “brain drain.” I will investigate this problem, and also interview 2-4 teenage Vietnamese friends of mine and analyze their opinion on the topic.

Yama Moua (Dr. Manju Parikh, political science) Piracy in Somalia

> Piracy in Somalia has become a global issue that has threatened the safety of individuals in ships on water and increased delays for shipping food and natural resources across the sea. This presentation will look at the cause of piracy in Somalia and explore evolving conflicts and recent news about piracy in Somalia. Also, explore considered resolution from the United Nations and the United States to reduce actions of piracy in Somaila.

Adam T. Ironside (Dr. Manju Parikh, political science) The European Union and its Decision Making Process

> The European Union consists of many diverse countries. My research will be about how these countries overcome their differences to come to a general consensus on an issue. I find it interesting that a large amount of European countries with different political/economic agendas can agree on something. I will highlight 2-3 main issues in my presentation poster that the European Union has come to a general consensus on (example — the implementation of the Euro currency in European Union countries).

Robert L. Hedburg (Dr. Manju Parikh, political science) Genocide: Lessons from the Past and Problems in the Present

> The genocide of six million Jews in Nazi Germany proved that mankind is capable of committing great evil. Many believe that the Holocaust was the only instance of genocide to occur and that mankind has learned its lessons from that dark time; however several instances of genocide have occurred since World War II and continue to occur today. In order for people to understand genocide, the causes, effects, and its ramifications must all be understood. This project focuses on the factors that create genocide, the lessons drawn from past genocides and its significance in shaping global politics.

Matt J. Herdering (Dr. Manju Parikh, political science) The Israeli-Palestinian Conflict and Possible Solutions

> I will examine the Israeli-Palestinian Conflict including its roots, historical developments, and recent developments. Using this understanding of the conflict I will investigate possible solutions that have been discussed by the international community and identify the strengths, weaknesses, and feasibility of these solutions.

Gabriel O. Drouet (Dr. Manju Parikh, political science) Immigration and Its Effects on Europe

> This topic is to view recent immigration activities in Europe and explain how such movement affects its people and economy as well as comparing it to other countries such as the United States. The research will involve illegal immigration in the two settings and compare economic effects for both areas. Positive contributions as well as negative contributions will be considered in this paper. This paper will also examine laws that would help stop the flow of illegal migration into both areas, as well as opinions from some citizens within the sources.

Thomas E. Koehler (Dr. Manu Parikh, political science) Terrorism

> My project will be about the growth of terrorism. Terrorism has become one of the major issues in international relations since 9/11. I will focus on the different perspectives and explanations on the growth of terrorism since the September 11 terrorist attacks.

Christopher G. Nikolic (Dr. Manju Parikh political science) The Rise of China-Threat or American Obsession?

> Over the past few years, China has quickly risen as one of the largest economic powers and over the next couple years, it has been predicted by some scholars that it will surpass the USA as the largest economy in the world. Will China challenge the U.S. which has held the position of the dominant superpower since the fall of communism in the Soviet Union and Eastern Europe? The Chinese have repeated numerous times that their policy is for a "peaceful rise." Ambiguities about some of China's actions in recent years and greater anxiety of the U.S.' loss of number-one standing has created the obsession about "what will happen if/when China takes over as the number-one economy?" My project will be on Americans' obsession, which needs to be examined against the reality of China's uneven economic development.

Kelley K. Burg (Dr. Manju Parikh, political science) Genocide in Darfur

> I will highlight and discuss the human rights violations by the government of the Sudan upon the citizens in Darfur and I will also discuss the charges of genocide against the government of Sudan. Among the human rights violations, the topic of forced displacement and malnutrition need to be given special attention. I will try to give a more complete description of the events occurring in Sudan in the last decade.

Jordan C. Hagert (Dr. Manju Parikh, political science) Iran's Pursuit of Nuclear Energy or Nuclear Weapons Ambitions

> I will examine the controversy over Iranian nuclear power development, what has brought it about and how the United Nations and different countries are dealing with Iran.

Valeria A. Gift (Dr. Manju Parikh, political science) What Makes Whaling Controversial?

> Whaling is a highly controversial practice done by Japan and other pro-whaling countries. It is a point of tension between these countries and other anti-whaling countries such as Australia. Japan collects hundreds of whales from the Antarctic every year claiming that they are for research. Those that are against the act, claim that such research is not necessary and that the whalers are collecting the animals for meat. They are unable to come to an agreement regarding this and it remains a highly controversial topic.

Heather A. Beckius (Dr. Manju Parikh, political science) Current Situation of Women's Rights in Iraq

> I will examine the current state of women's civil rights in Iraq and conduct research on what is being done to improve these rights. Additionally, I will compare the state of women's rights under Islamic laws imposed by the new Constitution with their rights under Saddam Hussein's regime.

Tingting Zhang (Dr. Manju Parikh, political science) Women Entrepreneurs in Developing Countries

> Gender bias is especially serious in developing countries. Women's roles are limited within household activities, which are not paid with wages. Women make up about half the population of every country. Gender bias causes the economic development a huge setback. Women entrepreneurs are found to be more responsible for their loans and the money they earn is more likely to be used on the welfare of the family. Women are making efforts to contribute to the family as well as lifting up their status in societies. There are some banks that offer small loans to women in developing countries. Local governments support women entrepreneurs. These entrepreneurs employ new technologies in their business.

Scott D. Padrnos (Dr. Manju Parikh, political science) War's Long-Term Effects

> War not only wreaks havoc on towns and countries, it also alters a soldier's mind. Many soldiers returning home from the wars in Iraq and Afghanistan suffer from post-traumatic stress disorder, and they struggle while trying to adapt back to civilian life. Veterans need support and understanding from citizens to make the integration process easier.

Kimberly J. Vipond (Dr. Manju Parikh, political science) Sex Trafficking

> I will be looking at the problems of sex trafficking and what has been done to prevent the problem globally. I will focus on a couple countries in particular, so I can give specific examples and statistics. Overall, I will be critically looking at why people are being trafficked and what has internationally been done to prevent sex trafficking of people and whether these preventive actions have been successful.

Davina M. Schaetz (Dr. Manju Parikh, political science) The Future of Bioterrorism

This project will briefly examine — what is bioterrorism, its origins, and whether it poses a significant threat in the near future. It will cover the beginning of bioterrorism during the Cold War of the 1970s, the signing of the Biological Weapons Convention by the Soviet Union and the United States in 1972 and gained support of 142 other nations. The threat of anthrax scare in 2001 has renewed concerns about bioterrorism. I will also cover the U.S public health concerns regarding biosecurity.

Justin J. Morrison (Dr. Manju Parikh, political science) Globalization: The Springboard for China's Economy

In this project, I will examine and show how Chinese trade policies, use of low wage labor and foreign investments have transformed China's economy into the powerhouse it is today. I will review recent Chinese history to show how its trade and labor policies have evolved. My goal is to show why so many foreign companies choose to manufacture goods in China and how this practice affects the rest of the world.

Matt J. Rogers (Dr. Manju Parikh, political science) The Criteria for Humanitarian Interventions

My project will be on the criteria for humanitarian interventions. I will examine the legal aspects of humanitarian intervention. One question that will be brought up is how countries can protect the lives of innocent civilians, while respecting a country's sovereignty.

Patrick J. Cron (Dr. Manju Parikh, political science) Mexican Drug Cartels

Among all U.S. international concerns, the Mexican drug cartels have been the closest to home. Just miles off of the United States border, government officials have been grotesquely massacred for associating themselves with Felipe Calderon, Mexico's president. Calderon has been battling drug lords after his election to office in 2006, pledging a major offensive against drug trafficking throughout the country. With Calderon's use of military power to shut multiple drug trafficking routes, the cartels have begun fighting back using guerilla style warfare. Mexico's main goal in this conflict is attempting to arrest those behind the attacks while also shutting down the cartels' strongholds. Assisted by $830 million U.S. government dollars, the largest foreign aid grant from America to any foreign country ever, Mexican officials continue this bloody battle in the hopes of crushing the growing power of these drug lords.

Theater

Adam Houghton (Adam Houghton, M.F.A., theater) Maskmaking Research and Practice

This poster will report the varied experiences and research processes I used to develop my theater maskmaking skills and knowledge. Some highlights include: working with Horse + Bamboo Theatre, Lancashire, UK; researching Spanish polychrome sculpture techniques; researching skin structure and the aesthetics of beauty; and directing a play that used a full-head mask. Thank you.

Humanities & Natural Science Poster Session

Quadrangle Alumni Lounge, SJU

Biology

Stephani A. Seymour, Sophia May, Taylor Freetly, Danelle Duppong, Timothy Solfest (Dr. Barbara May, biology) Volcanic Ash, Global Cooling, and Mass Extinction: The Effects of Volcanic Eruptions on Worldwide Temperature

> Volcanism has shown dramatic and observable effects on climate and weather patterns throughout history. As early as 2000 years ago, philosophers began to note the long term effects of volcanic eruptions on the local climate (1). Since these observations were first documented, many changes in the way that scientists study volcanic effects on climate have been implemented. Scientific studies of eruptions at Katmai in 1912, Santa Maria in 1902, and Quizapuin 1932 noted declines in global temperature ranging from 0.2 to 0.5 degress Celsius (2). These findings suggest that there is indeed a correlation between the volume of aerosols expelled into the atmosphere and the amount of solar radiation that can be absorbed and conducted. This research explored the effect of a volcanic ash layer on the heating of an insulated, closed-system box. If there is indeed a correlation between the volume of aerosols expelled and the amount of solar radiation absorbed, then this research should show measurable effect on temperature as more aerosols are placed on the box. After analysis, results indicated that there was positive correlation between the amount of aerosols on the box's surface and the decrease of the box's internal temperature. The temperature of the box decreased 8.2 degrees Celsius from the trial with no aerosols to a large amount of aerosols. There was a difference of 4.7 degrees Celsius between the least amount of aerosols and the most. This supports the hypothesis that when the amount of aerosols on the box's surface is increased, then the amount of radiation transmitted to the interior of the box decreased.

John C. Nelson (Kristina Timmerman, M.S., biology) Dietary Analysis of the Andean Fox, Lycalopex Culpaeus, in the Ecuadorian Highlands

> The Andean fox (lycalopex culpaeus) has a geographical range spanning from Argentina to Ecuador. As a data deficient species in the northern part of its range, dietary information has not been documented. In order to manage this species properly, resource use and diet data are necessary throughout the species entire range. Therefore, the primary research goal was to compile fox dietary information in the Mazar Wildlife Reserve, Ecuador.

Dietary data were collected via scat analysis from samples found throughout the reserve. Each sample was identified to species (there is only one canid species in the region) and each sample location was recorded and reviewed for content (n = 10). In order of weight percentage, the following items were present in scat: mammalian hair (88.46 percent), mammalian and avian bones (2.95 percent), plant material (2.57 percent), insects (0.86 percent) and parasites (0.17 percent). Mammalian prey included wild guinea pig (cavia porcellis), Andean cottontail rabbit (sylvilagus brasiliensis), and scavenged alpaca (vicugna pacos).

Based on these preliminary research results, Ecuadorian L. culpaeus appear to focus on small mammals. These results are similar to dietary studies in Argentina and Chile. Our next goal is to initiate a more intensive scat analysis study that will include fox identification, and seasonal change over time.

Lisa A. Pitz, Ashley A. Vogt (Dr. Ellen Jensen, biology) Effect of Hydrogen Peroxide on Dimorphism and Viability of Candida Albicans

Hydrogen peroxide is one of the reactive oxygen intermediates generated within the macrophage and neutrophil phagolysosome. Reactive oxygen intermediates are responsible for killing microbes that are phagocytized. We hypothesize that hydrogen peroxide at high concentrations will kill C. albicans and at lower concentrations will interfere with normal dimorphism. Various concentrations (0 - 17.1mM) of hydrogen peroxide were tested to determine their effect on viability and morphology.

Jacob L. Helmer, Anna K. Pilsbacher (Dr. Stephen Saupe, biology) A critical test of the models calculating mean annual temperature from leaf margin morphology

We analyzed methods published by other scientists to predict the mean annual temperature based on the frequency in occurrence of entire margins. We hypothesized that with the proposed model, the percentage of entire leaf margin increases with a decrease of mean annual temperature, would hold true for Minnesota, and that once we had determined the percentage of entire leaves, we would be able to predict the mean annual temperature authoritatively. We scored leaves using characteristics described in Welby Smith's "Trees and Shrubs of Minnesota," and recorded their distribution in different parts of Minnesota. We then figured out the percentage of entire leaves in those areas and compared the mean annual temperatures calculated using the supplied formulas with the actual temperatures of those regions. After the analysis, we determined that the formulas do not apply for Minnesotan trees and shrubs, Instead of decreasing, the percentage of entire margined leaves increased when going north.

Jacob D. Mellem, Eric G. Grussing (Dr. Barbara May, biology) Investigating Important Genes for Cellulose Growth in Cellulomonas Flavigena

> With growing dependence and depletion of current energy resources, cellulose, a highly prevalent plant material, is being investigated as a usable biofuel. Enzymes have been extracted from various microbial resources that can break down cellulose into its valuable sugars for biofuel production. However, there is a need for alternative enzymes that can break down cellulose under different pH and temperature ranges. In a program sponsored by the Department of Energy's Joint Genomic Institute entitled "Undergraduate Research in Microbial Genome Annotation," CSB/SJU has adopted a bacterium that is capable of breaking down cellulose and other polysaccharides. We are working to better understand its metabolic process of cellulose and xylan breakdown. By knocking out specific genes and identifying where they are located within the genome, we can identify the enzymes coded for within the genes. This will allow us to focus on the specific enzymes used in C. flav to break down cellulose in hopes of replicating and manipulating those genes to be used in future biofuel production under different conditions. The cellulolytic bacterium, cellulomonas flavigena has demonstrated the capability to accept transposons into its genome through electroporation. The Tn903 kanamycin resistance gene was used as the transposon. To determine whether a mutation had taken place or not, nutrient agar plates with kanamycin were examined for growth. Additionally, side experiments were conducted to ensure the viability of cellulomonas flavigena cells throughout the experiment and the effectiveness of the electroporator through the use of a pGLO Bacterial Transformation Kit.

Garrett P. Genereux (Dr. William Lamberts, biology) Tramadol's Effects on the Chaoborus and Daphnia Interaction.

> Chaoborus larvae involuntarily give off unknown chemicals (known as infochemicals) that are received by Daphnia. These infochemicals have many effects on Daphnia. This study looks into the effect on Daphnias' heart rate caused by the infochemicals coupled with the pharmaceutical Tramadol. Tramadol is a pharmaceutical that can be found in detectable concentrations after human metabolism and wastewater treatment as well as in surface waters. The poster presents the results of this experiment and what they mean in regards to aquatic environments.

Roxannef C. Franta (Dr. Jeanne Lust, O.S.B., biology) Spatial Distribution of Tardigrada in the Saint John's Arboretum

This project was an independent research project that investigated the presence of the invertebrate, Tardigrada, in the Saint John's Arboretum. Their presence was correlated to moss-area size, substrate type, and location throughout the Arboretum.

Jacob G. Burns (Dr. Jennifer Schaefer, biology) Motor Neuron Development in Drosophila Melanogaster

This project uses Drosophila Melanogaster, the fruit fly, to study the development of motor neurons. Specific identified motor neurons were labeled with GFP protein using a modified GAL4-UAS system. These fluorescently labeled neurons and their muscle targets were then imaged using immunocytochemistry. The goal of this project is to track these neurons through development from an embryo to a larva in order to analyze their developmental origins. This information could be used to compare the roles different genes have on motor neuron fate and morphology.

Communication

Stacy M. Monroe, Maggie P. Berg (Dr. Erin Szabo, communication) The Depiction of the "Thin Ideal" in Top Women's Fashion Magazines

Our research first utilized previous studies and content analyses, and through the critique and evaluation of this body of research, we conducted our own content analysis to study the question of the prevalence of the "thin ideal" in advertisements in the top circulated fashion magazines. We created a coding scheme and then randomly coded two months for four

different fashion magazines from the year 2010. Our findings showed that the "thin ideal" is significantly prevalent in advertisements in these top fashion magazines, where 52 percent of advertisements with models were coded as being "thin." We were then able to apply the "Cultivation Theory," that repeated exposure to media over time can affect the social perceptions of the consumer. This finding allowed us to speculate that the consumers of these advertisements may, over time, perceive these images as reality. We were lastly able to offer recommendations, such as requiring size, body mass index, or weight restrictions for models depicted in the media, offering incentives to advertisers when they feature models with healthy body sizes; developing and implicating stronger standards for advertisers to follow; requiring an image disclaimer within the advertisements when the image has been digitally modified; and taking into consideration the negative impacts of message content in order to hopefully decrease the pervasiveness of the "thin ideal" that now consumes our media.

Molly Davis, Jill Yanish, Heather Jaqua (Dr. Erin Szabo, communication) TV's Representation of Black and White Women: 2008

For this project, the researchers conducted a content analysis of six randomly selected popular TV shows from 2008 and 2009. The researchers examined how often, and in what light, black and white women were shown in these programs. Some of the variables looked at were race, time shown, personality, and occupation. This study found that black women were underrepresented in the media and that both black and white women were portrayed stereotypically. Advice is provided for future research.

Mathematics

Breanna M. Richey, Rachel E. Rimmele, Bryan Rodriguez, Jennifer A. Spellacy, Mariah J. Thompson, Sara B. Tiemens, Alexa R. Wachter, Brian K. Weyer, Gao Zong A. Yang (Dr. Bret Benesh, mathematics) Math 121 Poster Session D

This is a poster session for the students in Math 121, a mathematics course for elementary education majors. The primary aim of the presentations in this session is to explain why (rather than "how") aspects of arithmetic work. Examples of possible projects are: "Why do some decimals terminate while others do not?" "Why does 'casting out nines' work?" "Why can you determine if a number is divisible by three by simply determining if the sum of the digits is divisible by three?"

Lisa Lor, Bernadette A. Martinez, Katherine M. Murnane, Alexandra J. Noterman, Anthony D. Origer, Kelsey L. Peterson, Paul R. Plombon, Catherine S. Quinn, Cheyanne F. Reglin (Dr. Bret Benesh, mathematics) Math 121 Poster Session C

> This is a poster session for the students in Math 121, a mathematics course for elementary education majors. The primary aim of the presentations in this session is to explain why (rather than "how") aspects of arithmetic work. Examples of possible projects are: "Why do some decimals terminate while others do not?" "Why does 'casting out nines' work?" "Why can you determine if a number is divisible by three by simply determining if the sum of the digits is divisible by three?"

Shizuka Ahagon, Kirsten A. Anderson, Tatiana Anez, William T. Burns, Kathryn W. Byron, Sarah G. Calhoun, Leah M. Christensen, Katherine T. Claeys, Christine M. Cohen, Fergus A. Corbella (Dr. Bret Benesh, mathematics) Math 121 Poster Session A

> This is a poster session for the students in Math 121, a mathematics course for elementary education majors. The primary aim of the presentations in this session is to explain why (rather than "how") aspects of arithmetic work. Examples of possible projects are: "Why do some decimals terminate while others do not?" "Why does 'casting out nines' work?" "Why can you determine if a number is divisible by three by simply determining if the sum of the digits is divisible by three?"

Kathleen M. de St. Aubin, Janie C. Driver, Amanda K. Dvorak, Amanda F. Eaton, Jacob D. Essler, Kevin E. Hoisington, Kelsey R. Jacobson, Claire M. Kelly, Talitha D. Kopp (Dr. Bret Benesh, mathematics) Math 121 Poster Session B

> This is a poster session for the students in Math 121, a mathematics course for elementary education majors. The primary aim of the presentations in this session is to explain why (rather than "how") aspects of arithmetic work. Examples of possible projects are: "Why do some decimals terminate while others do not?" "Why does 'casting out nines' work?" "Why can you determine if a number is divisible by three by simply determining if the sum of the digits is divisible by three?"

Environmental Studies

Leah Koshmrl (Dr. Jean Lavigne, environmental studies) Minnesota's Gray Wolves: Perceptions, Recovery, and Management

The gray wolf has been protected under the Endangered Species Act since 1974. Minnesota's gray wolf population has successfully achieved recovery levels, but continues to be protected under the Endangered Species Act. This growth in the wolf population has led to an increase in wolf-human interactions and a rise in concern for cattle ranchers and deer hunters. The gray wolf population in the United States was initially diminished primarily by social factors such as negative attitudes. There is some evidence that these negative attitudes continue to be held by those who interact with wolves most. Given this, how can recovery levels be maintained under these circumstances? Assuming wolves will eventually be removed from the ESA, further methods of management must be employed and partnerships between the state and third-party organizations must be developed to educate the public and mediate interactions between wolves and humans. To examine this issue, I performed a literature review of relevant peer-reviewed articles and government reports. Additionally, I communicated with stakeholders of the delisting process to gain their perspectives on the issue. Possible options for future management include the introduction of a strictly controlled hunting season and a comprehensive state-wide education and mediation program.

Karen M. Kudrna (Dr. Jean Lavigne, environmental studies) Green Childcare: Moving Beyond a Green Environment to a Green Facility

Currently, there are no standards for green criteria for childcare facilities, creating confusion between a childcare facility that has a green environment and a facility that is green. A green environment means the facility has paid a lot of attention to basic health issues; a green facility has thought carefully about its practices and tried to choose the most sustainable option. There is a need for a list of criteria for both parents and facilities to use when trying to decide if a facility qualifies as green. I evaluated the currently existing lists of criteria for green environments, since there are no recognized criteria for a green facility. I separated out the health issues from the sustainable practices; I interviewed facilities, and compared the prices of regular products to green products. I created a list of criteria for energy efficiency, pesticide use, chemical use, plastics, education, and waste practices; in particular, waste practices need to go beyond recycling and focus on waste reduction. When childcare facilities are truly green, they must not only set an example of stewardship with sustainable choices, but must take advantage of their ability to educate the children in their care.

Matthew J. Coulter (Dr. Jean Lavigne, environmental studies) The American Lawn: Is The Grass Always Greener?

> Lawns in the United States have been associated with problems related to water usage, chemical usage, and emissions from lawn equipment. For those reasons the average American lawn is unsustainable. I did research on how current methods of lawn management could be improved to make them more sustainable and environmentally friendly, which include wise water use, alternatives to chemicals, and alternatives to gasoline powered lawn mowers. The region that I focused on was the Twin Cities area of Minnesota. I also looked at three common types of cool season turf grasses (Kentucky Bluegrass, Tall Fescue, and Perennial Ryegrass) and compared how each performed in the stresses associated with Minnesota weather. I found that we can make improvements in lawn care management to make lawns more sustainable and environmentally friendly. Most importantly people need to be educated about the small behavioral changes they can make to use fewer resources and pollute less.

Edward C. Colosky V (Dr. Jean Lavigne, environmental studies) Nutrient Farming: A Market Solution to Nutrient Loading in Minnesota

> Excessive nitrogen runoff, i.e. nutrient loading, is one of the largest problems facing the Mississippi River today. Nutrient loading ultimately causes the dead zone in the Northern Gulf of Mexico and results in unappealing algal blooms, which negatively affect freshwater ecology throughout the Mississippi River basin. Wetland restoration is one prominent nutrient reduction strategy; the only barrier is finding landowners willing to give up otherwise still productive land for wetland restoration. In this paper, I consider nutrient farming as a market solution that will motivate landowners to restore wetlands. I conduct a literature review, and interview various experts and landowners on the topic of nutrient farming and its feasibility for Minnesota application. Finally, I conclude that nutrient farming is viable in suite with other options. Unlike most other solutions, where landowners or the government is tasked with providing the funds to implement nutrient reduction strategies, nutrient farming creates a system that makes the dischargers pay for the pollution that they put into waterways, while at the same time paying back those who give up land resources for cleaning the nation's waterways.

Lindsay R. Wimmer (Dr. Jean Lavigne, environmental studies) Minnesota's Greenhouse Gas Footprint: Sequestering Carbon Dioxide in Wood

Minnesota's Next Generation Act, passed in 2007, requires the state to reduce greenhouse gas emissions. This thesis considers whether terrestrial carbon sequestration in forests can effectively reduce Minnesota's carbon footprint. In particular I examined the potential for reforestation and wood product substitution to reduce atmospheric carbon dioxide levels in Minnesota. For my research I conducted a literature review of books, articles, and correspondences connected to carbon sequestration and greenhouse gas reduction. I also interviewed key contacts connected to carbon sequestration in Minnesota about the potential of reforestation in Minnesota. Appropriate reforestation and forest management should not be overlooked as a method for decreasing the atmospheric carbon dioxide levels. Overall, forest conservation is important to keep current carbon dioxide sequestered, and reforestation could reduce emissions seven percent by 2025. A complimentary method, wood product substitution, can further decrease greenhouse gas emissions. Wood products embody minimal carbon dioxide emissions and are a low greenhouse gas alternative to other materials. Appropriate substitution of bioenergy would further reduce greenhouse gas emissions as well. The combination of these strategies would reduce atmospheric greenhouse gas levels in Minnesota.

Sarah C. Gossman (Dr. Jean Lavigne, environmental studies) Getting Rid of Garlic Mustard: Options for Control

Garlic mustard is an invasive plant that is spreading throughout Minnesota; it is even on Minnesota's noxious weed list. Because garlic mustard kills mycorrhizal fungi in the soil, it spreads very rapidly and is able to take the place of native species. I conducted a literature review exploring multiple control options for garlic mustard. I also interviewed individuals with direct experience controlling garlic mustard. There are a variety of techniques that landowners can use to stop the spread of garlic mustard populations, including prescribed burning, mechanical control, and chemical control. Another option that is being considered is biological control. Currently C. scrobicollis, a weevil, is being tested for use as a biological control, but it has not yet been approved for release. To control garlic mustard without causing substantial damage to the environment, a combination of approaches will be necessary.

Matthew V. Williamson (Dr. Jean Lavigne, environmental studies) Teaching for the Environment: Integrating Environmental Education into Minnesota's High School Curriculum

In Minnesota, as well as the nation, we are facing a variety of important environmental decisions that will impact our future. To help make these

critical decisions, it is important that improvements are made to levels of environmental literacy. By improving the public's environmental literacy, we can hope to begin seeing more creative approaches to reducing environmental problems. One way that this could be accomplished is through environmental education, something that many schools aspire to but is difficult to fund. Environmental education could be taught across a wide variety of subject matter, but most educators feel that it is most easily taught in science and social studies courses. Working with the Minnesota high school academic standards for science and social studies courses, I will show how the environmental literacy concepts can be incorporated into the required curriculum. This is an approach that will make the incorporation of environmental education both economical and time efficient. Because some environmental topics are too complex to be incorporated into academic standards, I also present plans for a semester-long environmental science course that could be added to the curriculum and will complete a student's environmental education.

Sean M. Egan (Dr. Jean Lavigne, environmental studies) An Alternative to Gasoline: In Search of the Best Transportation Biofuel for Minnesota

We should be looking for alternatives to gasoline. There are too many negatives associated with its use as a transportation fuel. In addition to the harmful effects it has on the environment, we are rapidly running out of petroleum reserves. I believe that we should be turning towards biofuels as a more sustainable alternative to gasoline. These biofuels are better for the environment, as well as being produced from renewable resources. Through my research, I have found that ethanol produced from switchgrass and miscanthus are the two best transportation biofuel options for Minnesota.

Andrew J. Rotschafer (Dr. Jean Lavigne, environmental studies) The Efficacy of Community Gardens in Improving Barriers to Access in Urban Food Deserts

Food deserts connote areas where citizens have limited access to healthy foods. Barriers which restrict access can be broken down into geographic, economic, and informational groups. This paper considers the effectiveness of community gardens in alleviating barriers to fruits and vegetables within food deserts. My research consisted of a literature review, a survey of community gardens from a historical perspective, and interviews with current community garden managers. Through case studies, I underscore the efficacy of community gardens and their effects on geographic, economic, and informational barriers to access. Community gardens provide major sources of access to fruits and vegetables, but are not a comprehensive solution to barriers of access within food deserts; thus,

community gardens yield “pieces of the solution” to barriers of access within food deserts.

Nelson C. Fox (Dr. Jean Lavigne, environmental studies) Minnesota Golf Course Management, The Drive to Sustainability

Golf courses are fixtures in Minnesota’s landscape. As such, golf courses use vast amounts of water and chemicals during routine maintenance, which affects local communities’ water supply and quality. Golf courses must address how they can become more sustainable in their use of water and chemicals. Analyzing current course management practices to find areas that have the most potential for reducing inputs provides a framework for what golf courses can and should do in the future to remain a viable part of the states economy. Golf courses must implement a variety of water and chemical saving practices that are best suited for their course to reduce their impact on the local watershed.

Fine Arts Presentations:

Art

Schedule

2 - 2:30 p.m. *BAC A 108*	Joel A. Cherrico (Samuel Johnson, M.F.A., art) Post-Bac. Artist Residency: Enriching Local Spaces with Handmade Pottery
2:30 - 3 p.m. *BAC A109*	Kelsey C. Daly (Andrea Shaker, M.F.A., art) Positive Stories Project: CSB Women's Trials and Triumphs
3 - 3:20 p.m. *BAC A108*	Shannon H. McEvoy (Elaine Rutherford, M.F.A., art) A Mural for Casa Guadalupe
3 - 4 p.m. *BAC C108*	Tyler J. Cornwell, Long D. Ngyuen, Hannah K. Anderson, Allyson H. Holtz, Katlyn M. Sovada, Mai Cua Yang, Daniel P. Flynn (Dr. Carol Brash, art) What's the Use of Art?: A Tour of Selected Works at the College of Saint Benedict

3:30 - 3:50 p.m.
BAC A109 Sophouen T. Chhin (Andrea Shaker, M.F.A., art) Yulsaup Ahkruht

4 - 4:20 p.m.
BAC A108 hongqiao lu (David Paul Lange, M.F.A., O.S.B., art) Images | Minds

4:20 - 4:40 p.m.
BAC A109 Carol Brash (Dr. Carol Brash, art) Classical Chinese Gardens in 21st-Century America: Cultivating the Past

Abstracts

Cherrico: Since June 2010 I have been making pottery and sculptural vessels through the CSB/SJU post baccalaureate artist residency. My presentation will provide an overview of process work, slides of finished artwork, and art events during my residency. I will also describe how I constantly deal with the delicate balance between entrepreneurial and artistic approaches to pottery making, in order to work as a full-time artist.

Daly: This project will creatively display, through photography and creative non-fiction text, the stories of women's trials and triumphs here at Saint Ben's. The stories, expressed through photography and creative text, address a wide range of issues including: insecure relationships, societal pressures on women, and mental disorders. Through image and text I will show how women have overcome their obstacles.

McEvoy: For my Honors Thesis in Spanish and Art, I will be creating a collaborative mural with the Latino community of Casa Guadalupe in Cold Spring, MN. This mural project aims to empower the Latino youth and celebrate their identity. In May, I will be presenting at a meeting of Cold Spring businesses to see who will be interested in hosting the mural. (Therefore, I would like to practice speaking about this mural project and the benefits that it will have for the community.)

Cornwell, Ngyuen, Anderson, Holtz, Sovada, Yang, Flynn: This project is a tour of seven artworks on the CSB campus. Each object will be introduced as having a function related to the mission of the university. There will be a similar tour at SJU given by the rest of our FYS class.

Chhin: Yulsaup ahkhrut literally means nightmare in Cambodian. This particular art exhibit is an exploration of nightmares and through process and reflection becomes the beginnings of healing and coping with the Khmer Rouge's atrocities for a new generation. I am a part of a new generation whose heritage becomes a source of burden for them. I am among the first of the newly college educated Cambodian-American born youth who are trying to understand a troubling past. One that should not havet happened, after the Holocaust, they said, "never again," but it happened in Cambodia. With that, this art exhibit, is an homage to the greatest women and man to influence and educate me; my mother, grandmother, and grandfather. They taught me to love and give to the world, and this is my story to share. My moment to show that, we, have not forgotten ...

lu: The installation Images | Minds is the outcome of my art concept focusing on presentations of collective memory with different ideological backgrounds in order to offer viewers a sense of artistic dissonance. My primary goal is to create art installations which actively involve the viewers as an organic component. During the spring of 2010, I had my first solo exhibition "Life is Elsewhere" at the Alcuin Library of Saint John's University. Inspired by Milan Kundera's book *Life is Elsewhere,* I tried to explore people's daily anxiety of being normal. By putting small paper models, which were all characters from books, above study spaces, I attempted to create an environment of surprise and dissonance for the viewers who would unintentionally notice the works during homework. The entire communication process in this installation from surprisingly noticing the works to carefully reading the text underneath became the actual content of viewing experience. By exploring my understanding of the production of space, I held my second solo exhibition "Images|Minds." This project originated from my interest in the Chinese traditional art form Paper Cut. It is an art form that has existed for hundreds of years and maintains great artistic value of conciseness. I was looking forward to use such an oriental art form to present western content, which would cause an interesting cultural and aesthetic dissonance. The exhibition focused on creating the illusions that paper sculptures were growing out of the wall. Such installation helped viewers experience a complete Buddhist's world view as "images come from the minds." Although the works are concentrated on one wall, the exhibition used the whole space and arranged chairs in certain spots to invite people to view it from certain angles. During the creation process of the art works, I selectively distorted the delicate images in order to input the concept of visual noise, which plays an important role of distracting people's internal communication. Such rich and colorful distractions, however, are products of human imagination. This exhibition opened my view to more diverse elements in the process of communication as well as the utilization of space.

Brash: Classical Chinese gardens have been migrating west for hundreds of years. This presentation will examine the classical Chinese garden as it appears in the

United States in the 21st century. In imperial China, gardens were often designed by and for viewers with a very specific education in the Chinese classics and in the history of Chinese art. Multiple layers of allusion were understood by these viewers. Today's garden designers face the challenge of making these gardens accessible to viewers who are not trained in the Chinese classics or in the history of Chinese art. In meeting this challenge, they have continued the growth of Chinese gardens. I will introduce a few examples of today's gardens and demonstrate ways in which they keep the past present and also rearticulate it for the future.

Music

Schedule

2:30 - 3:20 p.m. *BAC D040*	Tychito Cox, Marianne McCoy, Johnathan Rhodes, Nicole Larsen, Kayla Parker, Benjamin Carey, Wai Yan Lai, Rebecca Haile, Jack Barrett (Carolyn Finley, D.M.A., music) The Songs of Ned Rorem
3:20 - 3:30 p.m. *BAC D040*	Iliya M. Hoffert, Sean M. Jacobson, Katie E. Cossette, Alex J. Twohy, Josh M. Lindquist (Dale White, D.M.A., music) CSB/SJU Brass Quintet
3:40 - 4 p.m. *BAC D040*	Andrew R. Seitz, Charlie J. Bruber, Mara A. Syman, Jacob J. Gran, Connor W. Klausing (Dr. Gregory Walker, music) Composition Performance
4 - 4:20 p.m. *BAC Colman Theater*	Ryan T. Condon, Will Van De Crommet (Dr. Brian Campbell, music) Composing Music for Enigma of the Sky
4 - 4:30 p.m. *BAC D040*	Caleb R. Wenzel (Dr. Brian Campbell, music) Sing A New Song: Composing Music for the 21st Century Roman Liturgy
4:30 - 4:50 p.m. *BAC D040*	Mara A. Syman, Charlie Bruber, Andrew Seitz, Iliya Hoffert, Hayley Van Gelder, Robby Doss, Natalie Sultze,

Connor Klausing (Bruce Thornton, D.M.A., music) Jazz Combo

Abstracts

Cox, McCoy, Rhodes, Larsen, Parker, Carey, Lai, Haile, Barrett: American composer Ned Rorem (1923 -) has often been referred to as the American 'Schubert' due to his prolific output of art song — over 500 to date. This candid if not irreverent composer has also provided fans with several diaries and memoirs (18 in all) which have openly dealt with his sexuality, alcoholism, non-religious views, thoughts on composing and opinions about numerous contemporary poets, composers, and musicians. This project recital will feature 19 Rorem songs, spanning from the 1940's when he lived in France, through the early 21st century while living in New York City. Performers will also share insight into the composer's life and his ideology by sharing quotes from six of his personal diaries.

Hoffert, Jacobson, Cossette, Twohy, Lindquist: The CSB/SJU Brass Quintet consists of two trumpets (Sean Jacobson and Iliya Hoffert), a French horn (Katie Cossette), a trombone (Josh Lindquist), and a tuba (Alex Twohy). We would like to play a couple of songs on S and C Day, if possible. We have two songs prepared entitled "That's a-Plenty" and "Overture to the H.M.S. Pinafore." If there is only time for us to play one song, we would like to do "That's a-Plenty."

Seitz, Bruber, Syman, Gran, Klausing: Rock ensemble (guitar, bass, sax, keys, and drums) perform an Avante-garde Rock piece composed by Andrew Seitz. I explain the form, content, and techniques at work in the piece, followed by a performance.

Condon, Van De Crommet: Ryan Condon and Will Van De Crommert collaborated with each other and with choreographers Leigh Dillard and David DeBlieck to compose music for “The Enigma of the Sky,” a dance concert to be performed by the CSB/SJU student dance ensemble. Condon and Van De Crommert will play excerpts from their score and will talk about their music and the collaborative process. After the dancers have had a chance to talk and perform, all the artists will answer questions from the audience.

Wenzel: What is the role of the 21st century art composer in the Roman Liturgy? What should a composer write for liturgy? Who should the composer for liturgy be? The questions around contemporary composers for Catholic worship raise numerous concerns about the nature and purpose of music. The official church documents as well as the initiatives of the Unites States Conference of Catholic Bishops stress the need for congregation participation, but also urges composers of our day to expand upon the Church's great treasury of sacred music. Addressing the questions of today's liturgical music as well as attempting to combine the practical and creative elements of melody and harmony, I have composed a set of liturgical works designed to meet the pastoral criteria for congregations while pushing the creative boundaries of my musical composition.

Syman, Bruber, Seitz, Hoffert, Van Gelder, Doss, Sultze, Klausing: I will play the two pieces that I have arranged with my jazz combo. The first will be Quintessence by Quincy Jones, the second will be Loca by Chico Trujillo. I will talk about the significance of the two songs to me and the process of arranging the two pieces.

Theater

Schedule

2 - 2:30 p.m. *BAC A 104*	Patrick R. Campbell (Mark Hennigs, M.F.A., theater) SM Training: Stage Managing at CSB/SJU
2:40 - 3:20 p.m. *BAC A 106*	Jared R. Sherlock, Olivia M. Plaine, Katherine J. Dickinson, Megan Priebe (Dr. Kaarin Johnston, theater) "Touring A Live Theatrical Production:" An Individualized Major in Theater Entrepreneurship
3:30 - 3:50 p.m. *BAC 104 A*	Emily Jonas (Dr. Kaarin Johnston, theater) Creating and Performing "Night, Mother:" A Theater Senior Project
4 - 4:20 p.m. *BAC A106*	Kaarin Johnston, Mark Hennigs (Dr. Kaarin Johnston, theater) Sustainability in Theater
4:20 - 5:10 p.m. *BAC Colman Theater*	Leigh Dillard, David DeBlieck (Leigh Dillard, M.F.A, theater) Multimedia & Interdisciplinary Collaboration

Abstracts

Campbell: Participants will learn what it means to be a stage manager at CSB/SJU. They will be given the tools and knowledge needed to SM a main stage show in the theater department and outside of school. Information, tips, and tools come from the presenter's experiences and through professional stage managers at USITT.

Sherlock, Plaine, Dickinson, Priebe: The first-hand account of how four CSB/SJU students toured a professional live theatrical magic production regionally

around Minnesota in the spring of 2011. Come and have the opportunity to Q&A with the cast of The "Magic of Jared Sherlock Tour," and see the process of taking a theater entrepreneurial collaborative venture from a simple idea to a business plan to reality on the stages of college and community theaters across the great state of Minnesota.

Jonas: This presentation will cover the production process of bringing the play "night, Mother" by Marsha Norman to life. Senior theater major Emily Jonas will discuss the unique situations and challenges of bringing this piece to the stage, as well as the experience of working alongside faculty member Kaarin S. Johnston, Ph.D.

Johnston, Hennigs: How much does it really cost to produce a play? How can art be sustainable both financially and environmentally? Faculty shares their experiences as they attempted to create sustainable theater in the production of "The Bourgeois Gentleman" and in specific student class projects.

Dillard, DeBlieck: Demonstrating and discussing how dancers, choreographers and composers collaborated to create "Enigma of the Sky Above," a dance works.

Humanities Presentations:

Communication

Schedule

2 - 3 p.m. *Quad 339*	Benjamin T. Anderson, Natalie E. Bell, Andria K. Brandt, Peter J. Capecchi, Justin J. Edin, Simone N. Haider, Jacob P. Klis (Dr. Katherine Johnson, communication) Communicating Effectively Using Applied Media Aesthetics - Group 1
2 - 2:10 p.m. *Quad 344*	Andrew C. Norman (Dr. Katherine Johnson, communication) Tibetan Human Rights Issue
2:20 - 2:40 p.m. *Quad 344*	Kim Eskuri, Drew Breyer (Jennifer Kramer, A.B.D., Communication) Learning From the Health Narratives in Blogs
2:50 - 3:10 p.m. *Quad 344*	Andrew Norman, Jane Theobald, Kathleen Senske, Karyl Daughters (Dr. Karyl Daughters, communication) Sex-role expectations and the pressure to marry among college students
3 - 4 p.m, *Quad 339*	Kelsey M. Lehnertz, Maria V. Lovelette, Brittany S. Mallow, Joseph D. Mellenbruch, Eilise K. Rooney, Nicholas S. Tinucci (Dr. Katherine Johnson, communication) Communicating Effectively Using Applied Media Aesthetics - Group 2

Abstracts

Anderson, Bell, Brandt, Capecchi, Edin, Haider, Klis: Students will present their final digital video production projects for the class.

Norman: The purpose of this project was to analyze articles from two different newspapers within a specfiic time period in order to examine differences in the

framing of Tibetan Human Rights issues. Recognizing differences in framing is an important tool in critically analyzing news.

Eskuri, Breyer: Health narratives serve several purposes, both for the teller and the listener/reader. Illness serves as an interruption in one's life and through telling one's story s/he is able to try to make sense of a new identity and the meaning of the illness. Meanwhile, the receiver of the narrative is able to take away lessons from the story. Many health narratives are found through blogs, and the papers in this presentation will discuss the value of health narratives.

Norman, Theobald, Senske, Daughters: The students will present results from a study conducted in this spring 2011 semester section of COMM 385A: Love, Sex, Commitment, and Communication. The study was originally proposed by Courtney Hanson (CSB, 2010) in the fall 2009 section of COMM 385A and was chosen for implementation this semester.

The project represents an exploration of the relationship between pressure to marry and two established interpersonal dynamics (sex-role socialization and social scripts). There are two theories that support the proposed project.

Sex-role socialization is important to the extent that it teaches males and females about what it means to be appropriately masculine and appropriately feminine. These roles get performed in all communication contexts including within the marital relationship. This can result in a "marital ideology" (e.g., traditional or egalitarian) that serves as a set of expectations for how men and women are to behave within the marriage. Marital ideology is couched in the assumptions of social learning theory, which claims that individuals learn to take on feminine and masculine roles by modeling others. The learning is reinforced when individuals are socially rewarded for performing appropriately gendered behaviors and punished for deviating from social expectations (cf. Bandura & Walters, 1963). The study design included measurement of sex-roles and marital ideology in order to document the relationship between these variables. Religiousness and social environment (e.g., campus affiliation) were also explored as possible social influences that might further inform our understanding of sex-role socialization and marital ideology.

The study was conducted at CSB/SJU and SCSU. A total of 620 students participated in the study (109 from SCSU, 316 from CSB, 195 from SJU). Thirty-eight percent of participants were male (n = 236). Participants were unmarried and have never been engaged.

These students participated in study design, data collection, and data analysis. The presentation will include a summary of preliminary results.

Lehnertz, Lovelette, Mallow, Mellenbruch, Rooney, Tinucci: Students will present their final digital video production projects for the class.

English

Schedule

2 - 2:30 p.m.
Quad 365
Erik Engelsgjerd (Dr. Christina Shouse-Tourino, history) God Wills It!: The Crusades' Role in Creating Christian Civilization

2 - 2:50 p.m.
Quad 349
Kathleen A. Lutz, Nicholas F. Mayhew, Marina Naric, Anne M. Rasset, Brita M. Thielen, Katie L. Ulrich, Amy C. Weum (Matthew Callahan, M.F.A, English) This We Believe

2 - 2:40 p.m.
Quad 349
Ellen R. Balboila, Greta R. Barthelemy, Caitlin M. Brutger, Kelsey C. Daly, Elizabeth S. Haile, Elsbeth K. Haines, Regina A. Hanson, Aimee A. Hein, Edmund T. Kain, Christian J. Knox (Matthew Callahan, M.F.A., English) This We Believe

2:30 - 3 p.m.
Quad 365
Marissa Loch (Dr. Christina Shouse-Tourino, English) Disney Maintaining the Status Quo

2:30 - 3:30 p.m.
Quad 346
Michael J. Opitz, Will Moore, Colin Scully, Robbie Doss, Caitlin Brutger, Eric Loehr (Dr. Michael Opitz, English) Song Writing

3 - 3:30 p.m.
Quad 365
Lydia Ricard (Dr. Christina Shouse-Tourino, English) Fact, Fiction, or Somewhere in Between: Examining the Implications of Historical Trauma Narratives

3:30 - 4:10 p.m.
Quad 346
Matt Brolsma, Michael Opitz (Dr. Michael Opitz, English) Song Writing

3:30 - 4 p.m.
Quad 365
Kevin J. Windhauser (Elizabeth Johnson-Miller, M.F.A., English) Made in America: The Impact of Wal-Mart Stores in Small Communities

3:30 - 4 p.m.
Quad 349 Brita M. Thielen (Dr. Jessica Harkins, English) Revitalizing a Genre: Beauties, Beasts, and Women Writers in the Western Tradition of the Literary Fairy Tale

4:10 - 4:50 p.m.
Quad 349 Mary Catherine Mohr, Catherine Jensen, Mallory Heinz, Michael Olson, Alex Curwick, Cody Maynus, Angela Dols, Connor Grill (Dr. Jessica Harkins, English) Poetry Reading

Abstracts

Engelsgjerd: The Crusades are seen in today's society as strictly a military campaign by Christian forces to the Holy Land, which at the time was controlled by Islamic civilization. Historians on the other hand have illustrated that this is not true; in fact they have proven the exact opposite. Even though the Crusades were a military expedition, they created change through cultural interaction. I argue that this interaction was the fundamental cause of Christian societies being world powers and shapers over the next 1000 years.

Before the Crusades, Christian Europe was in depravity. Their society was in ruin and was both economically and artistically stagnant. On the other hand, Islamic civilization was the center for technological innovation and spiritual advancement. They used information from all over the known world to create new ideas. After the Crusades Christian societies flourished through the Renaissance. Christian societies not only advanced economically but also in the arts. Islamic civilization plunged into a war and the loss of world power.

The shift in these cultures definitively shows how the Crusades were a period of Christian absorption of Islamic technology through not only warfare, but also through coexistence. I argue that this is the fulcrum to which Christian societies swing them upon the world stage to world dominance. I apply the same concepts used in the book New Worlds for All by Colin Calloway, that societies are created through the interaction of societies, not through isolation. The Crusades provided this interaction, thus creating powerful Christian civilizations that ruled for 1000 years.

Lutz, Mayhew, Naric, Rasset, Thielen, Ulrich, Weum: As part of our "This We Believe" Scholarship and Creativity Day session, I will read my "This I Believe" essay, which I have written and revised during the past semester in Matt Callahan's Writing Essays course. "This I Believe" essays are creative nonfiction prose pieces limited to no more than 500 words. The essays range across the spectrum of beliefs

from the philosophical ("I believe in justice") to the whimsical ("I believe in cream cheese"), but they are all personal and, therefore, hopefully meaningful to the audience.

Balboila, Barthelemy, Brutger, Daly, Haile, Haines, Hanson, Hein, Kain, Knox: As part of our "This We Believe" Scholarship and Creativity Day session, I will read my "This I Believe" essay, which I have written and revised during the past semester in Matt Callahan's Writing Essays course. "This I Believe" essays are creative nonfiction prose pieces limited to no more than 500 words. The essays range across the spectrum of beliefs from the philosophical ("I believe in justice") to the whimsical ("I believe in cream cheese"), but they are all personal and, therefore, hopefully meaningful to the audience.

Loch: After decades of complaints from feminists and advocates of racial equality about Disney's patriarchal formulas of white supremacy in its animations, Disney produced films that ostensibly addressed these problems. Mulan and Pocahontus were the first heroines of color to challenge the status quo, but Disney productions remain just as sexist and racist as they were in the 40's. This is evident in films such as Aladdin, The Little Mermaid, Beauty and the Beast, multiple Disney/Pixar animations, and most recently The Princess and the Frog and Tangled. These animations constitute a regressive trend correlating with women's progress in society.

Opitz, Moore, Scully, Doss, Brutger, Loehr: This session will present student and faculty work in the area of song writing. In fall semester, 2010, I introduced poetic song writing as a element in my "seminar in creative writing." Several student song writers will present their work with me in this session. The session will also introduce my new Web site which is devoted to continuing a conversation about songs and song writing.

Ricard: What characterizes an ethically sound portrayal of historical trauma? This question has the potential to result in paradigm shifting revelations about truth in historical narratives. This paper examines the diverging arguments of numerous scholars to illustrate the importance of historical trauma narratives and their function within society, to discuss the benefits and difficulties of fictionalizing historical narratives, and finally to focus on the ethical implications behind historical trauma narratives in order to propose an ethical standard for constructing historical trauma narratives.

Brolsma, Opitz: Working with Matt Brolsma, I will project stuff from my songwriting Web page (including the songs of the students) and also a screen from the Mixcraft program to illustrate how sound can be manipulated in recording.

Windhauser: From its origins in Bentonville, Ark., to its current status as the world's largest retailer, Wal-Mart has become not only a permanent facet of the American economy, but also a fixture of American culture. But has the companies

mantra of "Low Prices, Always" bankrupted many of the small communities it calls home? From poor worker treatment to small business closure, Wal-Mart appears to exert a negative effect on the majority of rural cities and counties in which it is present. But against a massive corporation such as Wal-Mart, can anything be done?

Thielen: The research section of my thesis project focused on the role women have played, and continue to play, in the development of the literary fairy tale tradition. I particularly explore the ways contemporary feminist writers keep the genre active by retelling traditional tales and how this work connects to Mikhail Bakhtin's examination of the novel. In order to support the connection with Bakhtin, I examine retellings of the "Beauty and the Beast" narrative written by contemporary women writers Angela Carter, Tanith Lee, and Emma Donoghue.

I also completed a creative section for my thesis. This involved writing my own short story version of "Beauty and the Beast," as well as three personal poems from the perspectives of this fairy tale's principle characters. The goal of my creative work was to apply my knowledge of the fairy tale and gender in my own writing and to explore the impact these concepts had on the formation of my gender identity.

Mohr, Jensen, Heinz, Olson, Curwick, Maynus, Dols, Grill: Students from ENG 313 Advanced Creative Writing will be reading selected original poems that they have written this spring. These young poets have been focusing on the study and practice of poetry throughout these last months, writing in a variety of forms and modes, and addressing traditional and contemporary themes. For our reading the students will select recently revised creative work that they are excited to share. These poems convey the dynamic relationships between their study of prosody and poetics and their own voices and perspectives.

Gender & Women's Studies

Schedule

2 - 2:10 p.m.
Gorec 120A — Anna E. Kalmi (Dr. Shane Miller, gender & women's studies) College of Saint Benedict and Saint John's University Coeducation: Situation of Self-Silencing and Deficiency

2:20 - 2:40 p.m.

Gorec 120A	Reyne C. Kurpiers (Dr. Martha Tomhave Blauvelt, gender & women's studies) Sexual Images of Women in American Silent Films from 1909 to 1927
2:40 - 3 p.m.	
Gorec 120A	Margaret M. Niebur (Dr. Anna Mercedes, gender & women's studies) Women in the Catholic Church
3 - 3:10 p.m.	
Gorec 120A	Jennifer L. Schwope (Dr. Shane Miller, gender & women's studies) The Impact of Flexible Workplace Policies in the U.S. on Family Responsibility Discrimination
3:20 - 3:40 p.m.	
Gorec 120A	Jennifer L. Schwope (Dr. Patricia Bolanos Fabres, gender & women's studies) Minnesota Office on the Economic Status of Women Timeline Project
3:40 - 3:50 p.m.	
Gorec 120A	Zoua Yang (Dr. Shane Miller, gender & women's studies) Femininities and Masculinities of College-Age Hmong

Abstracts

Kalmi: The attitudes, values, and beliefs surrounding the idea of coeducation between the College of Saint Benedict and Saint John's University focused primarily on the benefit or detriment to SJU, and suggested CSB was deficient in all ways SJU was not. The lack of concern and interest of the impact of coeducation on CSB caused the CSB community to lose their voice in the discussion of coeducation.

Kurpiers: I will be looking at a few American silent films between the years 1909 and 1927 to see how women are portrayed in those films and why they are portrayed in that way. The main images of women that I will be looking at are women as "Eve, the True Woman," and "the New Woman."

Niebur: My project explores the current role and experiences of women in the Catholic Church. Through interviews, research, reflection and relevant events, I explored a range of topics including monasticism, women's ordination, and feminist theology.

Schwope: In the United States, cases of family responsibilities discrimination have increased by almost 400 percent in the last 10 years (Borstein and Rathmell 2009). This recent surge of litigation clearly indicates that the workplace environment does not permeate an equal and fair setting for women and men — especially those who have family commitments. Given the increased strains of work and family balances for employees, would implementation of flexible workplace policies, such as those

integrated in Europe, mitigate family responsibilities discrimination in the United States? The goal of this study was to examine whether policies similar to Great Britain's Right to Request Flexible Working, Germany's Part-Time and Fixed Term Employment Act, and the Netherlands' Working Time Adjustment Act would have a positive effect in diminishing family responsibilities discrimination in the United States. The implementation of such flexible workplace options is imperative to the security and well-being of the American workforce.

Schwope: In the fall of 2010, the Office on the Economic Status of Women embarked upon a research project which culminated into a Web-based timeline of important women's legislation passed in Minnesota since the time of suffrage. We had 90 years of significant milestones for women in Minnesota that we wanted to highlight in the timeline, but choosing which laws to feature was challenging and unfortunately not all laws could be included on our visual presentation. Each of the state laws we put on the timeline has a brief description, while some laws will have more in-depth descriptions and links to interesting details about the law, its authors and the social environment in which it was passed. We hope that all viewers will find this timeline to be a useful tool in exploring the legislative history of women in Minnesota.

Yang: Hmong in America have found the process of assimilating into American society to be confusing and difficult at times. In particular, many Hmong find it to be a challenge to balance traditional Hmong ideals with what they believe are the necessary American beliefs and attitudes necessary to lead a successful life.

First-hand Hmong accounts suggest that a particularly challenging part of this assimilation is the different gender expectations placed on them. This qualitative research examines the ways in which college age Hmong understand what it means to be male or female as it relates to being Hmong-American.

Philosophy

Schedule

2 - 2:20 p.m.	
Quad 353	Ryan D. Brown (Dr. Emily Esch, philosophy) Mathematics and Reality
2:20 - 2:40 p.m.	
Quad 353	James P. Darcy (Dr. Emily Esch, philosophy) Can You Tell It's an Elm?: An Examination of Social Externalism
2:40 - 3 p.m.	
Quad 353	Corbin J. Cleary (Dr. Emily Esch, philosophy)

	Wittgenstein's Private Language Argument: A Brief Examination
3:20 - 3:40 p.m. *Quad 353*	Benjamin D. Seefeldt (Dr. Emily Esch, philosophy) Frege's Flyswatter
3:40 - 4 p.m. *Quad 353*	Kathryn A. Gerdes (Dr. Emily Esch, philosophy) Russell's Analysis in Logical Atomism
3:40 - 4 p.m. *Quad 353*	Karen L. Duffy (Dr. Emily Esch, philosophy) The Deflationary Theory of Truth
4 - 4:20 p.m. *Quad 353*	Patrick M. Sitzer (Dr. Emily Esch, philosophy) Moral Attitudes in Light of Hypothetical Imperatives
4:20 - 4:40 p.m. *Quad 353*	Allison E. Davis (Dr. Emily Esch, philosophy) An Analysis of Delusion as a Belief and a Non-Belief
4:40 - 5 p.m. *Quad 353*	Corey P. Vollinger (Dr. Emily Esch, philosophy) An Investigation into the Epistemological Foundations of Praxeology
4:50 - 5:10 p.m. *Quad 353*	Daniel D. Iverson (Dr. Emily Esch, philosophy) Eliminative Materialism

Abstracts

Brown: A research paper inquiring into the relationship between mathematical propositions and our world, specifically looking at aspects of empiricism as a philosophy of mathematics.

Darcy: In this paper I examine the main arguments for social externalism, most notably in work done by Hilary Putnam and Tyler Burge, as well as a few major critiques of the view. Finally I will tie in recent work done in regards to cultural variation in our linguistic intuitions in order to fully examine the foundations of social externalism.

Cleary: This paper addresses the possibility of a private language known only to the speaker through an examination of Descartes, Wittgenstein, and some critiques of the private language argument.

Seefeldt: A critical look at Frege's revolutionary "The Foundations of Arithmetic." We will examine his work in depth before looking at how this work influenced the formation of analytic philosophy.

Gerdes: A research paper exploring the origins and effects of Russell's idea of logical atomism.

Duffy: A research project investigating the motivations for and central claims of the deflationary theory of truth, criticism of the theory and a brief discussion of the theory in light of the criticism.

Sitzer: Using Phillippa Foot's "Morality as a System of Hypothetical Imperatives," I wish to examine a conception of morality that works against Kant's categorical and universal morality. Do our cultural contexts give us enough grounding for ethics as a conversational interaction, rather than an appeal to external and universal principles? Foot and other analytic philosophers make a strong case for letting go of this old conception to make way for a more rational system of ethics.

Davis: There are two conflicting views on the classification of delusions within the fields of philosophy and psychology. The doxastic view holds that a delusion satisfies the conditions fo being a belief while the non-doxastic view does not classify delusions as beliefs. By examining these dissenting views we can come to a clearer understanding of both delusions and beliefs.

Vollinger: Praxeology, the science of human action, is a relatively new approach to the study of the social sciences. Developed and conceived by the leading members of the Austrian School of economics during the late 19th and 20th centuries, praxeology proposes an axiomatic approach to studying human behavior.

Iverson: Eliminative materialism is the idea that our common sense understanding of the way the mind works is false. This paper explores the claim that eliminative materialism demands a complete restructuring of common sense psychology.

Theology

Schedule

2 - 3 p.m.	
Quad 361	Kate E. Nowakowski (Jeff Kaster, M.A., theology) Religious Tolerance vs. Exclusivity

Abstracts

Nowakowski: The topic of this project will be pluralism. More specifically I will be attempting to answer the question: How is one to balance the virtue tolerance with denominational exclusivity? My goal is to understand this question from a Catholic perspective, however it may be necessary to broaden my scope to include other denominations. I plan to research using literature as well as Catholic doctrine. I may also interview various Catholic "leaders/experts" because I think the question may be answered in different interpretations.

Natural Sciences Presentations:

Biology

Schedule

2 - 2:10 p.m. *PEngl 373*	Benjamin T. Carlson, Ethan J. Evanson (Dr. Stephen Saupe, biology) The Effect of the Commerical Bacterial Soil Supplement TAZO on the Growth and Development of Cucumbers
2:10 - 2:20 p.m. *PEngl 373*	Courtney L. Schirmers, Rachel L. Ziegler, Mary K. Fahlstrom (Dr. Stephen Saupe, biology) The Effect of a Commercial Bacterial Soil Supplement (TAZO) on the Growth and Development of Cucumbers
2:20 - 2:30 p.m. *PEngl 373*	Alex Hemann, Mary Carr, Joe Tuzinski (Dr. Stephen Saupe, biology) The Effect of a Commercial Bacterial Soil

Supplement (TAZO) on the Growth and Development of Petunias

2:30 - 2:40 p.m.
PEngl 373
Xai Vang, Amanda M. Martin, Benjamin P. Moen (Dr. Stephen Saupe, biology) The Effect of Tazo Bacteria Supplement in Petunia Plant's Growth and Development

2:40 - 2:50 p.m.
PEngl 373
Sarah C. Gossman, Daniel P. Maxbauer, Andrew J. Happe (Dr. Stephen Saupe, biology) Effects of Azospirillum Cultures Within Dry Powder TAZO Product on the Growth and Development of Impatiens Walleriana.

2:50 - 3 p.m.
PEngl 373
Andrew M. West, Tristan N. Covington, Benedict F. Zilka (Dr. Stephen Saupe, biology) The Effect of a Commercial Bacterial Soil Supplement (TAZO) on the Growth and Development of Impatiens

3 - 3:10 p.m.
PEngl 373
Brent Christenson, Brandon Dale, Anna Pilsbacher (Dr. Stephen Saupe, biology) The Effects of TAZO on Cucumber Growth and Nitrogen Fixation.

3:10 - 3:30 p.m.
PEngl 373
Sara M. Kingston, Erica E. Nelson (Dr. Elizabeth Wurdak, biology) An Atlas of the Histology of Xenopus Laevis

3:30 - 4 p.m.
PEngl 373
Evan S. Forsythe (Dr. Charles Rodell, biology) Stress, Age, and Genetic Recombination in Drosophila mealnogaster

4 - 4:30 p.m.
PEngl 373
Paul T. Rolfes (Dr. Charles Rodell, biology) Sperm Competition in Drosophila Melanogaster

4:30 - 4:50 p.m.
PEngl 373
Katherine M. Sperides (Dr. Dave Mitchell, biology) An Understanding of Dental Anxiety

Abstracts

Carlson, Evanson: The purpose of this project is to determine whether the growth and development of cucumis sativus (cucumbers) are affected by the use of the commercial soil supplement TAZO. This supplement contains the bacteria Azospirillum, which reportedly helps fix nitrogen for non-legume plants, among other things. We planted cucumber seeds in potting soil with or without the presence of TAZO, and fertilized with three levels of standard garden fertilizer. Results are still pending, as data analysis is currently underway.

Schirmers, Ziegler, Fahlstrom: The purpose of this project was to determine the effect of TAZO, a bacterial soil amendment, on the growth and development of cucumbers. We planted cucumber seeds in a potting mix, with or without TAZO, and fertilized with three levels of nitrogen. Data analysis is underway.

Hemann, Carr, Tuzinski: The purpose of this project was to determine the effect of TAZO, a bacterial soil amendment, on the growth and development of petunias. We planted petunia plugs in a potting mix, both with and without TAZO, and fertilized with three different concentrations of nitrogen. Data analysis is currently underway; however, preliminary results suggest that TAZO is not a valuable soil amendment for growing petunias.

Vang, Martin, Moen: The purpose of this experiment is to determine the benefits of adding the bacteria TAZO into petunia. In this experiment, we sought to determine the effect of the TAZO bacteria on petunia's growth and development cycle. This experiment was a blind test on the growth of four different TAZO treatments. We planted plugs of petunias into potting mix from Mississippi Topsoil with or without TAZO and also fertilize with three levels of nitrogen. Data analysis is actually being analyzed at the moment, and will soon be done. The results will be finalized in the next two weeks.

Gossman, Maxbauer, Happe: The purpose of this study is to investigate the effects of dry powder TAZO product on the growth of the popular floricultural plant Impatiens Walleriana. We planted I. Walleriana plugs in potting soil mixed with different concentrations of the dry powder TAZO product and fertilized with three levels of nitrogen. We found that regardless of concentration, the dry powder TAZO product was ineffective at positively influencing plant growth. Our results suggest that the dry powder TAZO product is not a valuable soil amendment when growing I. Walleriana.

West, Covington, Zilka: The purpose of this project was to determine the effect of TAZO, a bacterial soil amendment, on the growth and development of impatiens. We planted plugs in a potting mix, with or without TAZO, and fertilized with three levels of nitrogen. The data analysis is underway. The results of this project will suggest that TAZO is/isn't a valuable soil amendment for growing impatiens.

Christenson, Dale, Pilsbacher: Studied different concentrations of TAZO bacterial product and its effects on cucumber growth and overall health of the plant.

Kingston, Nelson: The goal of the research project of seniors Erica Nelson (biology major) and Sara Kingston (biochemistry major) is to create an atlas which can be used to assist students in the histology lab. The tissues prepared and studied by these students are primarily those of the African clawed toad, xenopus laevis, in the tadpole stage. Publication on the histology of this species, however, has not been extensive and the researchers' goal is to provide a resource to be used by future histology students in their studies of xenopus laevis.

Forsythe: The existence and prevalence of sexual reproduction, and its resulting genetic recombination, has presented an evolutionary problem for biologists. That is, the efficiency of asexual reproduction provides advantages that seemingly outweigh the value of sex. Yet sexual reproduction predominates in nature presumably because it is advantageous. It has been demonstrated that in populations subjected to environmental stress and undergoing directional selection, the rate of recombination in the population will increase. This result is logical in that rates of evolutionary change are positively correlated with genetic variability. Thus, though population recombination rates can respond to environmental change, it has not been shown whether individuals can respond similarly. In this experiment, I assess the ability of individuals to modify their rates of genetic recombination exposed to stress.

Rolfes: Female Drosophila Melanogaster are able to mate in succession with more than one male, store the sperm from these matings, and use sperm from different males to fertilize eggs. As a result, the sperm from different males are in competition for access to the unfertilized eggs. When females have more than one partner, the better competitive males will be more successful at passing their genes on to offspring, i.e., the successful males are more fit. In order to examine the genetics related to this fitness component, this study compares sperm competitive ability among males from different wild-type strains of D. Melanogaster. One wild-type strain was initiated from flies collected in central Minnesota, a second strain from flies collected in western Wisconsin, and a third is a stand laboratory strain (OR-R). Virgin females from a genetic marker strain (se/se) were allowed to mate consecutively with two different males. Differences among the two geographic strains and the laboratory strain in their abilities to successfully fertilize eggs provide clues as to the genetics of sperm competitive ability, e.g., number and location of genes, maternal effects. Likewise, in similar tests, I compare females from different strains to see if there are female differences that contribute to the relative success of the first or second male.

Sperides: The objective of this independent learning project is to research symptoms and causes of dental anxiety. The exploration of the topic and the experience is to further understand patients' discomfort and fear of receiving dental

care. My intent for this project is to expand my knowledge of the biology and psychology disciplines beyond the classroom. I aim to integrate my education in the psychology and biology fields with my interest in dentistry and need for helping others. With the cohesion of both topics I propose that the experience within the dental field will deepen my understanding of the practice and solidify my passion to pursue it as a career. I hope to discover causes of general dental anxiety and recognize its symptoms.

Computer Science

Schedule

2 - 2:20 p.m. *PEngl 225*	William S. Tice (Dr. Lynn Ziegler, computer science) Neural Networks and Video Games: Developing an Interactive AI
2:30 - 3:10 p.m. *PEngl 225*	Jonathon Walz (Dr. Imad Rahal, chemistry) Secondary Protein Structure Prediction Combining Protein Structural Class, Relative Solvent Accessibility, and Contact Number
3 - 3:30 p.m. *PEngl 225*	Kurtis L. Nusbaum (Dr. Michael Heroux, computer science) Optika: A software framework for rigorous management of application input data
3:30 - 3:50 p.m. *PEngl 225*	Fru Nde (Dr. Lynn Ziegler, computer science) A Multi-Language Numeral to Text Translator using a Rules Engine

Abstracts

Tice: The ultimate objective of this project is to develop a neural network-based artificial intelligence that will be able to learn how to play simple video games based solely on visual input. In this regard, the artificial intelligence will be similar to a human player playing the game.

Walz: In the field of bioinformatics prediction of protein structure is a very important topic. As the amount of data on proteins grows — specifically, amino acid sequence data — it is impossible for proper analysis and annotation of all new

protein data in a wet-lab setting. Neural networks are often used to predict secondary structure from sequence data. Using additional information such as protein structural class, relative solvent accessibility, and contact number to provide extra information to the neural network has been shown to increase its accuracy. By combining these in different combinations the performance of the network can be improved even further.

Nusbaum: Optika is a graphical user interface (GUI) framework for technical applications. It enables scientists to write applications with complex input data and dependencies by providing a rules-based expression language in which the application developer encodes parameters and their dependencies in a simple syntax. Optika then parses the parameters and the corresponding rules for validation, and displays a GUI for defining or updating parameter values. Optika exchanges data with applications in several ways, including the standard XML format. Optika is an open source software package, distributed world-wide as part of the highly-regarded and award-winning Trilinos project.

Nde: Banks, automatic readers, translator systems etc. are faced everyday with the problem of translating numerals to words across different languages. It is often difficult and time consuming to collect, synthesize and hand code all the rules and exceptions that occur in the 6000+ langauges in existence today. In this paper, we would explore a more clever method for approaching this problem. We have designed and implemented a comprehensive Rules Engine, intended to provide easy access to the counting rules and variations that occur in different languages. The captured rules are stored in the form of an M x M matrix that can be accessed by any program at run time. Because of its highly recursive power, we utilized and built on the quadruple definition of a Context Free Grammar, to define an Augmented Context Free Grammar that easily encodes the variant properties of any Language. When trained on examples; this program would be able to to rapidly generate, generalize and produce optimized translation output for numerals in that language. For demonstrative purposes, we also developed a Web-based interface. This interface is accessible via Web browsers and is located on a commercial hosting account. The application's Web pages are generated by the server using a system of Java Server Pages (JSP), Java Servlets, MySQL database, and HTML for display.

Mathematics

Schedule

2 - 2:30 p.m.	
PEngl PE 229	Hongying Zhao, Kelsey Larson (Dr. Thomas Sibley, mathematics) A Step Further Groups of Graphs of Groups
2:40 - 3 p.m.	
PEngl 229	Cong Tuan Son Van (Dr. Bret Benesh, mathematics) A Mathematical Adventure With an Upper Bound of the Number of Conjugacy Classes of Finite Groups
3:10 - 3:30 p.m.	
PEngl 229	Kristin M. Reinsvold (Dr. Jennifer Galovich, mathematics) Pólya Counting of Chemical Isomers

Abstracts

Zhao, Larson: Cayley digraphs are well studied in group theory, but our imaginations can go far beyond them. We define edge-colored graphs for groups, using color the way Euclidean geometry uses distance. The elements of the group are the vertices of our undirected graphs and we color the edges using the group operation. It has the potential to expose us to more thrilling properties of groups than we are familiar with. The color preserving groups of these graphs have been successfully classified by other research students. Naturally, our goal is to classify the color permuting groups. In our presentation, we will show the interesting relationship between a group's automorphisms and the color permutations of its graph.

Van: This talk is based on my thesis about an unsolved problem of conjugacy classes in group theory, but I will talk more about the research experiences I had, i.e. making a big problem into smaller ones that we can solve, playing with examples/data to get conjectures, and an interesting link in my research between group theory, calculus, and number theory.

Reinsvold: Structural isomers are chemical compounds that have the same chemical formula but the atoms are joined together in a different configuration. The Pólya Enumeration Theorem can be used to count how many different isomers are possible for a given chemical formula by applying ideas from group theory and combinatorics.

Physics

Schedule

3 - 3:30 p.m.
PEngl 167
Brian A. Jennissen (Dr. Adam Whitten, physics)
Atmospheric Aerosol Optical Depth and Number Density Calculations Using Spectrometer Data

3:30 - 4 p.m.
PEngl 167
Jacob J. Rounds (Dr. James Crumley, physics) Saint John's Power Plant: Efficiency, Emissions and Cost

Abstracts

Jennissen: Water vapor, aerosols, and clouds all contribute to the atmospheric optical depth, or the scattering and absorption of sunlight. The atmospheric optical depth has been measured through irradiance measurements of the sun's light at WMO standard wavelengths: 362nm, 412nm, 500nm, 610nm, 675nm, 778nm, and 862nm. Variations in the atmospheric optical depth have been observed in a given day and from day-to-day. Aerosol optical depth (AOD) is calculated from the atmospheric optical depth by subtracting the contribution due to Rayleigh scattering. The diurnal range of the AOD for day 189 has been found to be 0.07-0.46. Day 190's diurnal range is 0.06-1.13 and day 193's diurnal range is 0.06-1.27. The amount of variation in these ranges is wavelength dependent; the wavelengths 500nm, 610nm, and 675nm have a less pronounced diurnal range than the other WMO wavelengths. The most pronounced diurnal range belongs to the 862nm wavelength since it is most affected by water vapor absorption. Information obtained from the single-data-point day AOD data includes turbidity and Angstrom's coefficient. The turbidity for these five days ranges from 0.23-45, while the Angstrom's coefficient ranges from 0.03-0.83. The AOD data has been used to compute the number density of aerosols present in the atmosphere above Collegeville, Minn., during July and August of 2010. This has been done by using the matrix inversion technique of King et al. [1978]. The presence of different-sized particles is examined throughout the day and day-to-day. It is found that a relationship between the AOD and the number density of aerosols in the atmosphere exists — an increase in the AOD for larger wavelengths indicates an increase in the number density of larger-sized aerosol particles. Likewise, an increase in the AOD for smaller wavelengths indicates an increase in the number density of smaller-sized aerosol particles.

Rounds: An analysis of the boiler system at the Saint John's University Power Plant, measuring the thermodynamic efficiency of each boiler along with the cost of fuel and emission of carbon dioxide.

Social Sciences Presentations:

Economics

Schedule

2 - 2:20 p.m. *Main 324*	Ross G. Neubauer (Dr. Louis Johnston, economics) Cell Phone Impacts on Sub-Saharan African Nations
2 - 2:20 p.m. *Main 322*	Jared P. Smith (Dr. John Olson, economics) Salary Determination in the National Hockey League: The Effects of Skills and Franchise Characteristics
2 - 2:20 p.m. *Main 320*	Joseph A. Thom (Dr. Louis Johnston, economics) Equilibria Relationships in the Videogame Console Industry
2 - 2:20 p.m. *Main 323*	Cory M. Kober (Dr. Louis Johnston, economics) Income and Subjective Happiness Across U.S. Census Regions: Assessing the Easterlin Paradox
2:20 - 2:40 p.m. *Main 323*	Eric T. Smith (Dr. Loius Johnston, economics) Attracting the Power Cohort to the 9th District
2:20 - 2:40 p.m. *Main 322*	Thomas P. Conway (Dr. Louis Johnston, economics) Occupational Licensing
2:20 - 2:40 p.m. *Main 324*	Luke T. Opsahl (Dr. Louis Johnston, economics) Economic Growth in South Africa: Measuring Convergence Among its Provincial Regions
2:20 - 2:40 p.m.	

Main 320	Kevin A. Welle (Dr. Louis Johnston, economics) Minnesota Snow and Snowmobile Sales
2:50 - 3:10 p.m. *Main 320*	Brent T. Brodersen (Dr. John Olson, economics) Determinants of Lottery Sales
2:50 - 3:10 p.m. *Main 323*	Jonathan J. Neitzke (Dr. Louis Johnston, economics) Economic Assessment of the Locks at St. Anthony Falls
3:30 - 3:50 p.m. *Main 322*	Mai Yia Thao (Dr. Louis Johnston, economics) The Prison Gold Standard
3:30 - 3:50 p.m. *Main 324*	Benjamin S. Casner (Dr. Parker Wheatley, economics) The Effects of Distraction on Future Discounting
3:30 - 3:50 p.m. *Main 323*	Andrew W. Enzler (Dr. Louis Johnston, economics) The Recovery of New Orleans After Hurricane Katrina
3:50 - 4:10 p.m. *Main 323*	Andrew Lick (Dr. John Olson, economics) OIL! Recent North Dakota Economic Growth: Energy Sector's Role
3:50 - 4:10 p.m. *Main 320*	James G. Condon (Dr. John Olson, economics) What Determines Gasoline Prices
3:50 - 4:10 p.m. *Main 322*	Darcy J. Delaney (Dr. Louis Johnston, economics) A Test of Optimal Currency Area for ECCU
4:20 - 4:40 p.m. *Main 323*	Tyler G. Berndt (Dr. Louis Johnston, economics) The Changing Face of Agricultural Output in the Red River Valley of Minnesota and North Dakota
4:20 - 4:40 p.m. *Main 320*	Thomas R. Hoffman (Dr. Louis Johnston, economics) Determinants of Global Soybean Futures Prices

4:20 - 4:40 p.m.

Main 322 William J. Fladland (Dr. John Olson, economics)
Analyzing the Extent and Determinants of Intra-Industry Trade in the U.S. Agricultural Products

Abstracts

Neubauer: This project addresses cell phone growth for Sub-Saharan African nations in conjunction with their GDP per capita growth. Cell phones subscriptions, population growth, and the level of savings are used as factors of production in my model.

Smith: This paper empirically examines the extent to which skills and franchise conditions determine salaries at all three positions in the National Hockey League (NHL). The data set is from the 2009-10 regular season and covers 699 players from all teams and positions in the league. The main conclusions are that skills, primarily points per game, are the principal determinant of skaters' salaries (forwards and defensemen) while experience (age), "star status," and draft position were the principal determinants for goalie salaries during the same time period. The franchise characteristics were examined and their effects have yet to be determined, but are expected to have a positive effect at all positions.

Thom: This project explores relationships between the quantity of consoles sold and the factors that influence demand. The analysis will look at factors such as income, population, and consumer expectations.

Kober: This study explores the relationship between income and subjective happiness across U.S. census regions. It focuses primarily on the south Atlantic region and incorporates data from the General Social Survey. It focuses on how rises in incomes correlate with higher levels of subjective happiness within the south Atlantic region, how incomes and subjective happiness have risen over time in the south Atlantic census region, and compares income and subjective happiness across U.S. census regions.

Smith: Do "people attract jobs" or do "jobs attract people?" This question is asked all of the time and I am looking at this within the 9th Fed District. Determining what variables affect the outcome of migration, from wages to unemployment rates and recreation opportunities.

Conway: I will be examining possible causes and effects of occupational licensing. I am looking at the pass rate of the bar exam over time and trying to determine if the pass rate is correllated with economic conditions. A high correllation could show that the licensing is not necessarily done to protect the consumer but may be to protect the licensed occupations from competition.

Opsahl: By using the neoclassical growth model of convergence, I plan to illustrate the degree of convergence of economic welfare of South Africa's provincial regions. Then explain my findings in terms of output factors to production and show why these differences may exist.

Welle: This is a discussion of the Minnesota Snowmobile Industry, and how varying levels of snow affect the sales of new snowmobiles. It will test whether we can expect sales to follow the total snowfall received in a winter, or if snowmobiles are sold independently of snowfall.

Brodersen: The use of lotteries as a revenue source by state governments has grown since New Hampshire initiated this movement in 1964. However, there is considerable variation among the states in the amount of lottery revenue generated, driven in part by economic factors which influence the lottery sales over time. This project analyzes the quantitative effects of those economic factors across states and over time on lottery sales.

Neitzke: The decision to construct two lock systems at St. Anthony Falls, one above the falls and one below, was very controversial for quite some time. This project will assess the economic impact of these lock systems and evaluate whether or not it was a good decision to build them.

Thao: This project will look at how an exogenous shock will affect the gold standard in prison. I will use an economic theory and model to analyze the affect.

Casner: A number of models in the literature and several experiments show that a high cognitive load will lead to individual decision makers selecting options which are emotionally appealing over less appealing but, in the long run, more advantageous alternatives. However, there has been little work examining the effects of cognitive load on intertemporal financial decisions. Researchers used data from an experiment run with 45 college students to test whether filling out a survey under conditions of distraction would elicit higher discounting rates than filling it out with no distractions. Additionally, a binary choice of a small immediate or larger delayed reward was offered at the end of the survey. Researchers found evidence suggesting that ability to defer consumption options that are immediately available is impaired when participants are distracted, but when making decisions about consumption options which are both unavailable until a later time, the distraction condition had little effect.

Enzler: This research traces the initial impact of Hurricane Katrina, the economic status of New Orleans today, and the process it has followed in recovering. Primarily, the project focused on the recovery of New Orleans with the Solow Model.

Lick: North Dakota is one of a few states which continued to economically flourish despite the recent major national recession. This study analyzes the state's experience

with particular focus on the role of the energy sector in contributing to economic growth. Attention is given to advances in oil extraction technology, which may have enabled this particular state's economic prosperity. Comparisons with past energy booms and forecasts for the future are also considered.

Condon: The price of gasoline has fluctuated much in the last 25 years for many different reasons. This paper takes a supply and demand approach into explaining what caused the price of gasoline to change. This paper examines the fluctuations in the price of gasoline and looks at different supply and demand variables that determine the fluctuations of gasoline prices and how these variables affect the price at the pump.

Delaney: The project focuses on the Eastern Caribbean Currency Union. It investigates the extent of symmetry in the small open economies of the ECCU and finds that domestic outputs of those countries are strongly influenced by regional shocks. With this project, I intend to determine whether or not the collectivity of the eight countries of the Eastern Caribbean Currency Union constitutes an optimum currency area.

Berndt: The Red River Valley of Minnesota and North Dakota is a leader in agricultural output in the states and the country as a whole, and the face of the industry has seen a shift in output over the past 40 years. The factors (subsidies, rising input prices, increased technology) that influence these output changes can be put into a supply and demand framework that aims to understand the decisions of the past while looking towards the future of the region.

Hoffman: By analyzing the market for soybeans over the last 10 years, I hope to determine not only the greatest influencing factors of futures prices but also whether the market is moved more greatly by supply-side or demand-side fluctuations. Supply dynamics include weather patterns (drought, crop shortages and floods), carry-in/out, yields, country plating and production acreage and changes in barriers to trade; demand dynamics include meat/animal feed consumption, population growth by country, hedge funds' entrance and speculation and exogenous market influences such as equities or other commodity prices. By treating every price point as an intersection of a supply and demand curve, one can attempt to observe whether movements were created by forces of demand and/or supply. Soybeans were not exempt from the 2008 record commodity prices and the lows thereafter; by understanding how these price peaks and troughs are formed in soybean futures, one involved in agricultural markets can more easily implement policies and effectively manage risk. I will look particularly at the largest commodity trading countries and centers for exchange in order to suggest regions or countries with the best prospective growth in soybean production and consumption.

Fladland: This project studies the extent and determinants of intra-industry trade in agricultural products of the United States for the period of 1995-2009. The empirical results concur with the Gravity Model of international trade, and

Heckscher-Ohlin model on the levels of IIT between the U.S. and its top 20 trading partners.

Education

Schedule

2 - 3 p.m.	
HAB 117	Kirsten M. Ostergaard, Stephanie M. Anderson, Angela N. Johnson, Patrick R. Bowlin, Jamie N. Wild, Mary C. Johnson (Dr. Theresa Johnson, education) Picture Books and Journeys: Exploring the World with Google Earth
3 - 4 p.m.	
HAB 115	Margaret J. Pitsenbarger (Dr. Michael Borka, education) Classroom-Based and Volunteer-Based Reading Method's Practica

Abstracts

Ostergaard, Anderson, Johnson, Bowlin, Wild, Johnson: During this session, self-created geography teaching materials that integrate children's literature and Google Earth will be presented. Some of Google Earth's unique features will be demonstrated within the context of the teaching activities modeled. Attendees will also be introduced to the project website.

Pitsenbarger: A common component in teacher preparation courses is the field-based practicum experience. In these experiences pre-service teachers develop their instructional abilities by working directly in a classroom setting. To be productive, a field-based practicum has to support course outcomes and provide pre-service teachers with meaningful opportunities to work with school-aged children. Creating and sustaining these experiences can be difficult given a college's access to surrounding schools and classrooms. Given these difficulties an existing community volunteer program that serves elementary-aged children may be an additional option for field-based placements.The purpose of this action research project is to describe the experiences of participants placed either in the classroom or the volunteer-based setting. During this presentation research methodology, data collection and analysis, findings and recommendations will be discussed.

Management

Schedule

3:20 - 3:40 p.m.

Main TRC Boardroom	Ricki Holupchinski, Ben Rossow, Amanda Wesley, Berrando Mackey (Dr. Marcie Young Illies, management) A Selection Proposal for a Culinary Services Assistant at Gorecki Dining Center
3:40 - 4 p.m.	
Main TRC Boardroom	Blair E. Brookman, Sydney Klinker, Max Concha Berger, Mitch Voight, Ali Shadow (Dr. Marcie Young Illies, management) A Selection Proposal for a Barista at CentraCare's Hospital Bistro
4 - 4:20 p.m.	
Main TRC Boardroom	Jessica Florek, Nathan Jans, Thomas Kerber, Dan Iverson, Bethany Luckemeyer (Dr. Marcie Young Illies, management) A Selection Proposal for a Child Development Associate for Creative Kids Child Care Center
4:20 - 4:40 p.m.	
Main TRC Boardroom	Sarah Krantz, Mark Verdun, Lauren Wander, Gerald LeGarde (Dr. Marcie Young Illies, management) A Selection Proposal for a Career Assistant at Career Resources at SJU
4:40 - 5 p.m.	
Main TRC Boardroom	Brent P. Theisen, Molly J. Jackson, Mary E. Jarrell, Hayden E. Zimmerman (Dr. Marcie Young Illies, management) Selection Proposal — CNA at SJU Retirement Center
4:50 - 5:10 p.m.	
Main TRC Boardroom	Becca A. Scholz, Giavanni C. Rolle, Abbie M. Neubarth, Amy M. Mueller, Sam L. Tillemans (Dr. Marcie Young Illies, management) A Selection Proposal for an Elementary Education Teacher at Park Elementary

Abstracts

Holupchinski, Rossow, Wesley, Mackey: A selection system encompasses the methods and tools organizations employ in the hiring process. We are developing a selection system for a job one of us previously analyzed earlier in the semester. Since the project is fairly labor intensive, we are working in groups. In this proposal, we are considering: what types of selection tools will be used, number and order of selection tools, application of the selection process, costs associated with tools and process, and appropriateness of the selection system. Specifically within each

individual tool, we are considering aspects such as adverse impact, validity, reliability and practicality. The HR panelist will judge the presentations on the realistic application of the proposal, legal issues, creativity, appropriateness/effectiveness, and presentation skills. This is a great opportunity for us to practice a formal presentation and to obtain feedback about their proposals from professionals.

Brookman, Klinker, Concha Berger, Voight, Shadow: A selection system encompasses the methods and tools organizations employ in the hiring process. The project is a selection system for a job they previously analyzed earlier in the semester. Students work in groups for this project as it is fairly labor intensive. In this proposal students will need to consider: what types of selection tools they will use, number and order of selection tools, application of the selection process, costs associated with tools and process, and appropriateness of the selection system. Specifically within each individual tool, students need to consider aspects such as adverse impact, validity, reliability and practicality.
The HR panelist will judge the presentations on the realistic application of the proposal, legal issues, creativity, appropriateness/effectiveness, and presentation skills. This is a great opportunity for students to practice a formal presentation and to obtain feedback about their proposals from professionals.

Florek, Jans, Kerber, Iverson, Luckemeyer: We will be presenting a selection method for the selection of a child development associate using researched methods.

Krantz, Verdun, Wander, LeGarde: As a group, we will be presenting a project based upon a selection process of a particular job. We will be basing this off of a job analysis for a career assistant at career resources at Saint Johns University. Our project will determine which selections tools we will use and how many. We will also consider how we will put this selection process into place and what resources we will need. We will be presenting these projects to a group of human resource professionals and receiving feedback.

Theisen, Jackson, Jarrell, Zimmerman: We are presenting our final project for MGMT 311. Our assignment is to propose a selection program for a CNA position at the SJU retirement center.

Scholz, Rolle, Neubarth, Mueller, Tillemans: A selection system encompasses the methods and tools organizations employ in the hiring process. We are working to develop a selection system on a job analyzed earlier in the semester. In the proposal we need to consider: what types of selection tools should be used, number and order of selection tools, application of the selection process, costs associated with tools and processes, and appropriateness of the selection system. Considering validity, reliability and practicality are also all very important. The human resource panelist will judge us on everything mentioned above, along with our presentation skills. Feedback will be given by the human resource panelists.

Honors Thesis Abstracts

Biochemistry

Alexander Hansen — Proof-of-Concept: The Transgenic Transformation of "Medicago sativa" with "Agrobacterium Tumefaciens"

Advisor: Michael Reagan

The forage plant "medicago sativa", commonly referred to as alfalfa, has great economic value. The introduction of novel DNA sequences of genes into the plant offers the potential for further increasing the plant's value. Using agrobacterium mediated transformation, a gene cassette (cauliflower mosaic virus 35s promoter, β-glucuronidase, and neomycin phosphotransferase II) was incorporated into the plant's genome for the purpose of assessing the constitutive and specific tissue expression properties of the Cauliflower Mosaic Virus 35s

promoter. Histochemical staining with 5-bromo-4-chloro-3-indolyl-β-glucuronide (X-gluc) demonstrated the expression of the novelty cassette with the plants. These stains were confirmed with PCR confirm the presence of the GUS gene.

Peter Ly Analysis of Heavy Metal Content in Chicken Eggs

Advisor: Kate Graham

Fish are a rich source of omega-3 fatty acids but can be contaminated with heavy metals. As a potential alternative to fish consumption, a common practice in industrial egg production is to enrich grain based chicken feed with fish and fish oil which results in the production of omega-3 enriched eggs. We set out to determine if there is transfer of heavy metals from livestock feed containing menhaden oil to omega-3 enriched eggs. Results from atomic absorption spectroscopy show that there is little difference in heavy metal content between the conventional eggs and the omega-3 enriched eggs, yet the feed enriched with menhaden oil had much higher concentrations. This suggests that chickens do not pass heavy metals from the feed to eggs.

Chemistry

Billman, Mardi M. Molecular Modeling of Multicopper Oxidases: The Binding of O_2 to a Tri-Copper Active Site

Advisors: Brian J. Johnson and T. Nicholas Jones

Bioinorganic chemistry is the study of inorganic elements in biological systems. One such example of a system can be found in the active site of enzymes, where clusters of metals are chemically responsible for biological reactions. Specifically, this research focuses on multicopper oxidases—enzymes that possess a tri-copper cluster in the active site with the purpose of reducing dioxygen to water, among other reactions. The method of biomimetics is employed, which simplifies researching the tri-copper-oxygen binding mechanism. In using this method, ligand scaffolds are synthesized that mimic the enzyme's active site and therefore reduce the complexity of the studied reaction by removing the bulk of the enzyme. Various ligand scaffolds have been synthesized and characterized, but none to date have perfectly modeled a multicopper oxidase after copper(I) was added to the system. The purpose of this research then was to attempt synthesizing a new ligand scaffold for characterization, ultimately with the hope of correctly mimicking a multicopper oxidase. If the molecular model successfully reflects a multicopper oxidase, all research of the binding mechanism would go toward finding a treatment for Wilson disease, which occurs in multicopper oxidases that have become defective in humans, causing illness or even death.

Nathan Louwagie Study of Pyridoxal 5' Phosphate (PLP) Analogs as Potential Inhibitors to the Enzyme Low Molecular Weight Protein Tyrosine Phosphatase (LMW-PTP)

Advisor: Edward McIntee

It has been shown that low molecular weight protein tyrosine phosphatase (LMW-PTP) human isoform II has increased expression in certain types of cancerous cells. Moreover, it has also been shown that increased expression of LMW-PTP can be predictive of more aggressive or invasive cancers. Our project has been centered on discovering a specific inhibitor for LMW-PTP using analogs of pyridoxal 5' phosphate (PLP), a known inhibitor. While PLP is a successful inhibitor, it is not specific to LMW-PTP human isoform II. A combinatorial library of PLP analogs was created using maestro (Schrodinger, LLC) at the Minnesota Supercomputing Institute. This library was created by linking all the primary amines sold by Sigma-Aldrich to the aldehyde on PLP creating an amide linker. The modeling was done at a pH 5.5 +/- 2 (the pH at which in-*vitro* biochemical testing is done), and the entire library was docked using high throughput visual screening (HTVS). The 19 compounds which displayed the highest glide scores were then docked to PTP using

standard precision docking in both LMW-PTP human isoform I and II, and compared to PLP. Some of these compounds displayed some specificity and good binding affinity. These results were analyzed to determine which intermolecular forces were involved in docking, and which compounds appear to specifically inhibit the human isoform II. The predicted compounds will be synthesized and tested using an in-*vitro* screening assay.

Chemistry and Mathematics

Sara Kokkila — Modeling the Kinetics of an Enzyme System

"Outstanding Thesis Nominee"

Advisors: Henry Jakubowski and Thomas Sibley

The enzyme catalyzed hydrolysis of para-nitrophenylphosphate was studied using progress curve analysis techniques. The product of this reaction is a known enzyme inhibitor for this system. The system was assumed to follow michaelis-menten kinetics. From modified michaelis-menten differential equations, lambert function models for competitive, uncompetitive, mixed inhibition, and their respective product inhibition versions were determined. These models can be used to fit progress curve data in order to determine the michaelis constant, inhibition constants, and the maximal velocity of the system.

Computer Science

Kurtis Nusbaum — Optika: A GUI Framework for Parameterized Applications

Advisor: Michael Heroux

In the field of scientific computing there are many specialized programs designed for specific applications in areas such as biology, chemistry, and physics. These applications are often very powerful and extraordinarily useful in their respective domains. However, some suffer from a common problem: a non-intuitive, poorly-designed user interface. The purpose of optika is to address this problem and provide a simple, viable solution. Using only a list of parameters passed to it, optika can dynamically generate a GUI. This allows the user to specify parameters' values in a fashion that is much more intuitive than the traditional "input decks" used by some parameterized scientific applications. By leveraging the power of optika,

these scientific applications will become more accessible and thus allow their designers to reach a much wider audience while requiring minimal extra development effort.

William Tice Neural Networks and Video Games: Developing an Interactive AI

Advisor: Lynn Ziegler

For years, video games have been a field of innovation and progress, but mainly in the realms of graphics and control. Game logic is a relatively overlooked field of game design. My research focuses on creating an adaptive type of game logic using neural networks. Using unique strategies, neural networks were trained to control games as a human player might. The purpose of this experiment was to verify that it is possible to control games using a neural network and to measure how well it could control them. This offers new possibilities for programming adaptive adversaries for human players to face off against. The ultimate purpose of such adversaries would be to keep the game fresh and exciting, eliminating predictability. In my final experiment, the neural network's task was to control the flow of the game instead of playing the game. A human player plays the game while the neural network directs which types of enemies the player will fight. It's able to learn which enemy types are performing poorly against the player as well as which are performing well. My thesis explores this as a possible way to achieve an adaptive gaming experience.

Jonathan Walz Secondary Protein Structure Prediction Combining Protein Structural Class, Relative Surface Accessibility, and Contact Number

Advisor: James Schnepf

Using neural networks to predict the structure of proteins from amino acid sequences is a very common technique. Accuracy of these methods varies greatly depending on the network design, methods used for training, and input datasets. Neural networks tend to work for secondary structure prediction due to the pattern recognition nature of the task. Procedural methods tend to fail to give high accuracies due to the complexities of the interactions. Several show how prediction accuracy can be increased through the addition of information such as contact number, relative surface accessibility, protein structural class, and other data. While these studies have focused on the improvements by adding individual data, none have been completed that show what effect adding more than one together would have.
To see if the combination of additional data has a positive effect on the accuracy of a prediction network, additional data points will be combined together. Contact number, relative surface accessibility, and protein structure can be combined together in seven different ways and have been independently shown to increase accuracy. These different combinations should allow the determination of how much of an effect the data combinations have on prediction accuracy.

Economics

Edward Byrne — The Minimum Wage's Effects on Teenage Employment

Advisor: John Olson

This paper continues the current discussion as to how increases in the minimum wage effect teenage employment. This debate focuses on model specification, centered about the inclusion of year effects for modeling the employment effect of the minimum wage. We use the recent federal minimum wage increases to continue the work of Burkhauser, Couch and Wittenburg (2000a) and Sabia (2009a) using month Current Population Survey (CPS) data from 1994 through 2009. Consistent evidence is found that minimum wage increases reduce teenage employment across specifications. These findings validate BCW's and Sabia's results, showing that increased variation in the minimum wage variable leads to a significant negative impact of increases in the minimum wage on teenage employment.

Benjamin Casner - Now or Later: An Experimental Analysis of the Effects of Distraction on Individual Financial Decisions and Preferences

"Outstanding Thesis Nominee"

Advisor: Parker Wheatley

A number of models in the literature and several experiments show that a high cognitive load will lead to individual decision makers selecting emotionally appealing options over less appealing but, in the long run more advantageous, alternatives. There has been little work examining the effects of cognitive load on intertemporal financial decisions. Researchers used data from an experiment run with 45 college students to test whether filling out a survey under conditions of distraction would elicit higher discounting rates than completing it with no distractions. Additionally, a choice of a small immediate or larger delayed reward was offered at the end of the survey. Researchers found evidence suggesting that ability to defer consumption options that are immediately available is impaired when participants are distracted, but when making decisions about consumption options which are unavailable until a later time, the distraction condition had little effect.

English

Katherine Boehm A Novel: and in the Waiting You Become

"Outstanding Thesis Nominee"

Advisor: Michael Opitz

On the 20th anniversary of her mother's death, waitress Bekka begins to write again. Over the course of one year, she creates a collection of autobiographic vignettes by observing people around her and reluctantly examining her own history. On the periphery of her life and included as a character in her narrative is belligerent author and frequent customer Alexander Thad. Because the two are drawn together by their similarities and a mutual dislike for one another, Bekka is compelled to give her work to Thad. He begins to comment critically on her writing, but his notes quickly become a journey of begrudging self-examination. Their interdependent first-person stories are presented in a creative format to emphasize the manner in which each writes.

Alissa Pehrson - Can Romance Novels Occupy a Progressive Space Within Feminism?

Advisor: Mara Faulkner

Despite the tremendous success of romance novels in literature markets, the romance genre has been largely excluded from academic study. In an effort to examine romance novels with a feminist lens and uncover their academic value, I identified that significant progressive change in alignment with feminist agendas has taken place in the romance genre, largely in response to the concerns of women readers. We can see the conversations driving the genre forward taking place in online romance blogs, where communities of romance readers ask questions, discuss the best way to approach sensitive topics, and analyze the development of trends within the genre. Thus, I have determined that the romance genre acts as a textual space for women to sort out their feminist politics and think critically about the rapid social change occurring in their own lives. Examining women's responses to the romance genre will work to reveal women's responses to real life change.

Abigail Spaniol The Peace in Chaos: A Memoir in the Form of a Collection of Essays

Advisor: Ozzie Mayers

This thesis is a creative project focusing on an illness within my family. In August of 2009, my father became sick with septic shock and survived. When first developing this project, I wanted an answer. I wanted to know what saved my dad from septic shock. This collection of essays was my attempt at answering that question. Within my essays, I examined the power of prayer, community, relationships and medicine within the experience to try and

determine what allowed him to survive. Interviews with doctors, nurses, friends and family, personal experiences, and research all gave me insight when searching for an answer to this question. However, in the end I found that science and spirituality merge within the illness experience and both play a part in a person's survival. My essays reveal how illness equally affects both the human body and human spirit.

Brita Thielen — Revitalizing a Genre: Beauties, Beasts, and Women Writers in the Western Tradition of the Literary Fairy Tale

Advisor: Jessica Harkins

The purpose of my research is to respond to M.M. Bakhtin's assertions in "*Epic and Novel"* that the novel is the only continually evolving literary genre by applying his criteria to the genre of the literary fairy tale. The basis for this discussion requires a brief examination of the fairy tale as a written rather than oral genre, for such distinction is vital to understanding how the genre continues to evolve. This paper follows the role of women writers of fairy tales, and in particular the writing of the 17th century *conteuses* and 20th century feminist writers Angela Carter, Tanith Lee, and Emma Donoghue. Their stories often defy the traditional idea of the fairy tale: one that begins with "Once upon a time" and ends with "Happily ever after." Though current women writers may approach the role of their female characters and the tales themselves in a variety of ways, they continue to create stories which provide meaning for female readers. I examine versions of *"Beauty and the Beast"* by Carter, Lee, and Donoghue, and demonstrate how each writer's unique version highlights her specific concerns and pushes the reader to view the story from a new perspective. My thesis project also includes my own short story version of "Beauty and the Beast," as well as three personal poems written from the perspectives of Beauty, her father, and the Beast. I composed these creative pieces in order to apply my new knowledge of gender within the literary fairy tale genre and to further develop my writing abilities in the genres of short fiction and poetry.

Scott Twelves — Anyman, Everyman

Advisor: Steven Thomas

For my honors senior thesis, I chose to do something different than a typical research paper. I instead crafted a creative thesis in the form of a novel, titled "Anyman, Everyman." In short, my novel is about an identity thief who tells about his past from his prison cell. The novel brings up many philosophical questions, including questions about morality, criminal behavior, and identity. But my thesis was as much about the finished product as it was about the process of creating the novel. I had to do extensive research on identity theft, which included reading legal statutes, case studies, and studying other novels, films, and TV

shows that dealt with identity. Through all of this research, I was able to create a hyper-real novel — a novel that exists on the border of reality and fantasy — and a compelling character. In the end, my novel asks a question that I believe we all struggle with: are we our own person, or just a product of the world around us?

Environmental Studies

Lief Davisson — The Green Driver's Dilemma "Choosing an Environmentally Friendly Car"

Advisor: Derek Larson

The current U.S. automotive fleet is composed largely of inefficient, polluting, gasoline powered vehicles. Factors such as increasing gas prices, anxiety regarding energy security, and environmental concerns have combined to make efficiency an important factor for new car buyers. However, no comprehensive buyer's guides currently exist to consider such factors to which technology is appropriate for each person's different needs and what criteria should be weighed most heavily. This paper attempts to fill that void. It assembles the five most accessible and economical green car technologies, explains and compares them, and creates a rubric based on their strengths and weaknesses to help buyers choose the most efficient car for their given driving profile. It also evaluates the future of several high-efficiency automotive technologies that are not currently viable options for consumers.

Hispanic Studies

Ashley Weinhandl — Language Brokering Within Latino Immigrant Families: Outcomes and Opportunities

Advisor: Bruce Campbell

Language brokering is defined as the practice in which children of first-generation immigrants act as linguistic and cultural intermediaries for their parents, assisting them by translating and interpreting in a variety of contexts. This study examined the nature of language brokering in Latino immigrant families in terms of educational and developmental effects, cultural dimensions, and the relationship between outcomes of language brokering and bilingual education.

The study also examined the prevalence and nature of language brokering within Latino immigrant families living in Central Minnesota. Sixteen individuals were interviewed in matched pairs (eight parents, eight children) using an ethnographic approach to assess the prevalence of language brokering in various contexts and participants' feelings toward the practice.

Parents identified positive educational and developmental effects of language brokering on their children, and participant responses supported the hypothesis that collectivist family values contribute to the experience of language brokering. Participants did not identify specific ways that language brokering impacted their childrens' cultural identity beyond language maintenance. Parents expressed a great deal of pride at their childrens' bilingual abilities and expressed support of educational initiatives that would help their children to maintain and improve their bilingual abilities.

Results of this study were used to analyze potential social implications of language brokering in terms of cultural and ethnic integration, bilingual education, and national policy. Results of the study demonstrate that children who language broker contribute to society in a variety of ways. It is essential that their contributions be recognized and skills developed as we move toward an increasingly diverse, multicultural society.

History

Robert Lennon — Dividing the Land, Uniting the Peoples: The Hospitallers on Rhodes, 1347 – 1374

Advisor: Theresa Vann

When the Order of the Knights of St. John of Jerusalem captured the island of Rhodes in 1310, they were faced with the dilemma of having to govern a primarily non-Latin populace of Rhodian Greeks, while still trying to attract other Latin settlers from Western Europe to the island. This paper examines how the Order tread a fine line between favoring the different groups on the island, focusing on property grants from 1347 to 1374. It makes the case that the Hospitallers, by granting land fairly evenly among the different peoples of the island, gave all the differing groups an economic stake in the island, thereby promoting the common good.

Interdisciplinary

Kristin Reinsvold — A novel Antimicrobial Peptide From Aspergillus Fumigatus

"Outstanding Thesis Nominee"

Advisors: Jennifer Galovich and Barbara May

In the broadest sense, antimicrobial peptides (AMPs) are small strings of amino acids that can effectively destroy different types of microorganisms and can be beneficial in protection against infection as part of innate immunity. Although several databases of antimicrobial peptides have already been identified, the goal of this thesis was to identify a new antimicrobial peptide. Our research can be broken up into three main steps: investigate characteristics of known antimicrobial peptides, identify and explore novel AMPs, and perform various laboratory experiments on a novel AMP.

First, bioinformatics tools, such as the creation of phylogenetic trees, were used to study patterns relating to structure and sequence of these known peptides, specifically looking at sequential relationships among known antimicrobial peptides. Second, we used this information to identify new potential antimicrobial peptides by using BLAST analysis. One such peptide (nicknamed AFAMP) was identified in the fungus aspergillus fumigatus. More bioinformatics research suggests that AFAMP is homologous to MiAMP1, an antimicrobial peptide from the macadamia nut tree macadamia integrifolia. Once we made these bioinformatics predictions, we transitioned to the laboratory to determine the function of AFAMP. AFAMP was expressed using an escherichia coli vector and cell-free expression system. Preliminary data from an antimicrobial assay suggests AFAMP is effective at killing two bacteria, Escherichia coli and staphylococcus aureus.

Individualized Major

Jared Sherlock — Effects of Exposure on the Ecology of the Magic Industry: Preserving Magic's Secrets in the Absence of Law

Advisor: Rick Saucier

The magic secret is a distinctive kind of intangible resource that defies established economic theory of intellectual property law. Exposure reveals the secret, and thereby destroys its value. The goal of this study is to explore and frame significant problems within the enterprise of conjuring, and to illustrate how the magic industry has developed a particular set of informal norms and rules for violators, which go some distance toward protecting intellectual property in the absence of law.

Management

Shafak Mohamed Samsheer - Impact on Culture on Concepts of Ethical Business Leadership

Advisor: Wendy Klepetar

The interaction of culture and ethics is becoming such a hot topic; it will burn top echelon managers if they fail to decipher the subtle and sensitive issues encountered in a diverse workforce. Despite the dire need to address a paradigm shift in handling employees and organizations, not much empirical evidence on the subject of "cultural ethics" can be found in the literature. Managers often err when a curve ball labeled "culture and ethics" intertwined is thrown at them since they are unfamiliar with the cultural background of those being supervised. Therefore, decisions are made without an awareness of how these cultural and ethical nuances affect the individual. This study investigates the influence of culture on concepts of what constitutes ethical leadership in business among United States citizens today. Issues of gender, ascribed vs. achieved status, and power distance are addressed in terms of what constitutes ethical leadership amongst business managers.

Mathematics

David Byrne Groups of Graphs of Groups

Advisor: Thomas Sibley

We can construct an edge colored complete graph of a group by generalizing the notion of distance in the reals. Each graph of a group G has color preserving bijections called isometries, and the collection of all isometries of a group forms a new group. We have classified the isometry groups of all groups, and I will discuss in detail my part of this classification. I will discuss the use of direct products and semi-direct products for discovering isometry groups, and I will show that abelian groups and dicyclic groups are the building blocks for groups whose isometry group is twice as big as the original group.

Matthew Donner Groups of Graphs of Groups

Advisor: Thomas Sibley

Groups can be graphically represented using edge colored graphs. For a given group G, the color preserving bijections of the graph of G form a group themselves, called the isometry group. I did research in collaboration with David Byrne. The central goal of our research was to classify the isometry groups of all groups. My thesis covers the theorems I have shown that have contributed to our complete classification.

Cong Tuan Son Van The number of Conjugacy Classes of a Finite Group and its Sylow P-Subgroups

Advisor: Bret Benesh

The project will investigate the relationship between the number of conjugacy classes of a finite group and the number of conjugacy classes of its sylow p-subgroups. The idea of this project comes from problem 14.74 of the Kourovka Notebook of Unsolved Problems in Group Theory (submitted by L. Pyber). The problem states: "Let k(H) denote the number of conjugacy classes of a group H, and G be a finite group with Sylow p-subgroups $P_1, \ldots, P_n$. Prove or disprove: $k(G) \leq k(P_1) \ldots k(P_n)$." In this project, we will discuss my approach to this problem, some upper bounds of k(G), some lower bounds of $k(P_i)$ and some families of groups for which this result holds.

Music

Caleb Wenzel Sing a New Song: Composing Music for the 21st Century Roman Liturgy

Advisor: Brian Campbell

What is the role of the 21st century art composer in the Roman liturgy? What should a composer write for liturgy? Who should the composer for liturgy be? The questions around contemporary composers for Catholic worship raise numerous concerns about the nature and purpose of music. The official magisterial documents as well as the initiatives of the United States Conference of Catholic Bishops stress the need for congregation participation, but also urge composers of our day to expand upon the Church's great treasury of sacred music. Addressing the questions of today's liturgical music as well as attempting to combine the practical and creative elements of melody and harmony, I have composed a set of liturgical works designed to meet the pastoral criteria for congregations while pushing the creative boundaries of musical copmposition.

Natural Science

Daniel Maxbauer — A New Approach to Understanding the Early Miocene Paleoenvironment of Rusinga Island (Lake Victoria, Kenya): Using Leaf Margin Analysis, Leaf Area Analysis and Digital Leaf Physiognomy

"Outstanding Thesis Award Winner"

Advisor: Larry Davis

Nearly 100 years of field work has established Rusinga Island, Lake Victoria, Kenya, as one of the most important Early Miocene (17-20 Ma) primate sites in Africa. In order to fully understand the patterns of Early Miocene primate evolution, it is critical to understand the paleoenvironments and paleoclimates in which these primates lived. In spite of the amount of paleontological work that has been conducted on Rusinga Island, results of paleoenvironmental and paleoclimatic studies have been contradictory. Furthermore, although there are abundant fossil plant remains on Rusinga, there have not been any studies that have attempted to reconstruct paleoclimate directly from fossil leaves. The correlation of the size and shape of woody dicot leaves with temperature and rainfall has been used to develop proxies for reconstructing mean annual temperature (MAT) and mean annual precipitation (MAP) from fossil leaves. Thus, the fossil leaves from Rusinga can be used to directly reconstruct the paleoclimate and paleoenvironment that existed during the evolution of Early Miocene primates, including the stem hominoid "Proconsul."

A preliminary collection of 91 fossil leaves representing 28 distinct morphotypes (26 woody dicotyledonous (dicot) angiosperms and 2 monocotyledonous angiosperms) was made from a fossiliferous deposit near the top of the Grit Bed Member of the Hiwegi Formation near Kaswanga Point on Rusinga Island. I used the dicot morphotypes to estimate MAT and MAP using both univariate and multivariate methods. These analyses demonstrate that the Early Miocene MAT and MAP on Rusinga Island were ≥ 30°C and ~100-160cm, respectively. These estimates provide good preliminary evidence to suggest that the Early Miocene paleoenvironment on Rusinga may have been a tropical-seasonal forest, and not a tropical woodland as reported by previous studies.

Nutrition and Psychology

Kristina DeMuth — Identifying the Characteristics of Eating Disorders in a Community Sample

"Outstanding Thesis Nominee"

Advisors: Linda Shepherd and Richard Wielkiewicz

Eating disorder not otherwise specified (EDNOS) is a diagnosis category for those who do not meet all criteria for anorexia or bulimia and it is the most commonly diagnosed eating disorder in both clinical and community samples. The characteristics of those with the EDNOS diagnosis and the prevalence of EDNOS diagnoses may be a signal that the theory underlying diagnosis needs to be revised. An online survey, available via social networking sites, compared the characteristics of individuals with EDNOS to individuals with anorexia and bulimia to determine commonalities among the diagnostic groups, as well as issues with insurance coverage and treatment. An eating disorder severity index created from items in the survey was used to assess the variance in psychopathology among the diagnoses, as well as the body mass indexes. Results provided strong support for the transdiagnostic approach that suggests there is a core cognitive component to eating disorders and that the behavioral patterns displayed will migrate between restricting, binging and/or purging as the course of the disorder progresses.

Philosophy

James Darcy — The Multiple Drafts Model and the Transcendental Argument for Passage

Advisor: Emily Esch

The passage of time remains a central topic of discussion in the debate between the A-theory and B-theory accounts of time. In a recent paper Adrian Bardon offers a transcendental argument for passage, which concludes that the passage of time is necessary for there to be coherent experience, and thus must be included in our concept of time-order, and viewed as a feature of the objective world. In this paper I will first present different conceptions of passage. The remainder of the paper focuses on a critical examination of the transcendental argument for passage offered by Bardon in light of a cognitive theory of temporal ordering, the Multiple Drafts Model proposed by Daniel Dennett. I present this model as a plausible alternative to the passage of time, in that it can account for the necessary components of experience on the preconscious level without an appeal to passage. Finally, I briefly present a concept of time-order that is compatible with the Multiple Drafts Model and also explains our experience of passage.

Physics

Rachel Dols — A Cost-Effectiveness Analysis of Radon Mitigation in the Upper Midwest

"Outstanding Thesis Nominee"

Advisor: Dan Steck

Minnesota, Iowa, and parts of the surrounding states comprise the "Radon Belt" of the upper Midwest, an area of the U.S. where the radon levels are naturally higher than in the rest of the country. This investigation analyzes the cost-effectiveness of lung cancer prevention through radon mitigation in the upper Midwest, examining the cost of mitigating high-radon homes as well as the number of lung cancer deaths which would be averted by doing so. The purpose of this analysis is twofold: first, to compare the cost-effectiveness of mitigation in the upper Midwest to the cost-effectiveness of mitigation in the U.S. as a whole and, second, to compare the cost-effectiveness of mitigation in the upper Midwest to the cost-effectiveness of lung cancer medical treatment. The analysis ultimately finds that mitigation in the upper Midwest, which yields a cost of $13,000 per year saved, is decisively more cost-effective than lung cancer treatment, which costs approximately $92,000 per year saved. Furthermore, the cost per life saved by mitigation in the upper Midwest is considerably lower than the EPA's 1992 estimate for the cost per life saved in the U.S. as a whole, at $210,000 compared to the EPA's $700,000 (or $1,040,000 in 2010 dollars).

Political Science

Lindsey Krause — Conditions for Success: Conditional Party Government in the Minnesota House of Representatives

Advisor: Claire Haeg

Despite voter calls for bipartisanship in Congress, political party polarization in the national legislature has actually increased over the past two decades. In the United States House of Representatives, party structure is instrumental in determining legislative outcomes. Party leaders are in complete control: the rules, agenda, and legislative priority calendar are all at their disposal. For moderate members of the House, this may present a problem. Party leaders often gravitate to the polarized edges of their party, leaving middle-dwellers in the lurch. According to Aldrich and Rohde's conditional party government (CPG) theory, under certain conditions, party leaders will change the ideological composition of their party, making it more ideologically homogeneous and differentiating it from the opposite party, creating party polarization and centralization of power in leadership positions. Scholars agree that the United States House of Representatives is polarized; however, does polarization exist in sub-national legislatures? This paper examines whether the Minnesota

House of Representatives faces the same conditions and the consequences of conditional party government. It examines roll-call voting patterns and member interviews from the Minnesota House of Representatives' 84th, 85th, and 86th sessions, with a preliminary analysis of the current 87th legislative session. In examining these legislative sessions, changes in majority party control are taken into account, as are specific pieces of important legislation in each session. Other theories of governance, including the cartel theory, median voter theorem, and the strategic party government theory are also discussed.

Melanie Miesen — Financial Services Reform: A Case Study in Unorthodox Lawmaking

Advisor: Claire Haeg

The 2007 economic crisis and the subsequent Wall Street bailouts forced Congress to consider major financial reform including regulation of predatory and subprime lending practices, increased oversight of major banks, and a significant change in the role of the Federal Reserve Bank. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 was one of the landmark bills of the 111th Congress since it involved major restructuring of the financial industry; indeed, it was the most sweeping financial policy reform since the Great Depression. Because of its significance and consequent length (the final bill was almost 1,000 pages long), the Dodd-Frank bill was debated under special rules and required complex compromises, making its final passage remarkable. This legislative process certainly bore no resemblance to the "Schoolhouse Rock" version of bill passage that most Americans are taught in high school civics class. The role of individual party leaders and committee members, as well as the impact of particular institutional structures and norms, was evident throughout the progress and passage of the bill. How did the actions of leaders in the U.S. House of Representatives and the structure of the institution affect the Dodd-Frank bill's form and successful passage? This paper examines Barbara Sinclair's understanding of "unorthodox lawmaking" on the Dodd-Frank bill. Utilizing qualitative methodology, including participant observation and historical analysis of the passage of the bill through Congress, this research is a case study that applies Sinclair's model and method to investigate unorthodox lawmaking in the 111th Congress.

Jennifer Schwope — The Impact of Female Legislators on Pay Equity Policy: The Minnesota Comparable Worth Act of 1982 and the Lilly Ledbetter Fair Pay Act of 2009

Advisor: Claire Haeg

Gender politics literature emphasizes that electing more women in the legislature will have an increased impact on the likelihood that women's issues will be supported in the legislature at higher rates. Pay equity has been framed as a women's issue as women continue to face gendered wage discrimination and the gender wage gap has not been eliminated yet. Because

all women encounter pay discrimination in various forms, this thesis utilizes a qualitative and quantitative analysis of the Minnesota Comparable Worth Act of 1982 and the Lilly Ledbetter Fair Pay Act of 2009 to examine the cohesion of co-sponsorship and the cohesion of voting patterns among female legislators in Minnesota Legislature and in U.S. Congress. Using these two pieces of legislation as case studies, I examine the role of women legislators passing pay equity legislation. Examining these two policies shows that party ideology may have the most significant role in how women (and men) co-sponsor and vote on policies related to pay equity. These findings suggest that simply increasing the number of female legislators may not have an impact on pay equity legislation, because they do not exemplify cohesion in the legislature on behalf of women's issues.

Psychology

Kaitlin Andreasen — Just Another Dumb Blonde? A Cross-Cultural Study of Implicit Hair Color Biases and Ambivalent Sexism

Advisor : Linda Tennison

Previous research has identified the prevalence and impact of stereotypes in the world today. People are driven by visual cues and often categorize others on the basis of physical appearance and expect them to encompass certain traits, characteristics, and role behaviors. The present study aims to uncover the unconscious association of blondes with the dumb blonde stereotype. Sixty participants from Spain and 60 participants from the United States will take an Implicit Association Test (IAT) which operates on the assumption that response time is proportional to the difficulty of associating a target group with an attribute. Participants will classify, under time pressure, positive or negative adjectives related to beauty or intelligence or images of blonde or brunette women. It is anticipated that in both cultures implicit hair color biases will prevail, and it will be easier to associate the dumb blonde stereotype with blondes rather than brunettes. Additionally, it is believed that for participants in the United States, it will be easier to associate negative adjectives related to intelligence (i.e. stupid, gullible) with images of blonde women than it will be for participants from Spain. The research will also explore the relationship between the presence of implicit hair color biases and attitudes of ambivalent sexism. Participants will take the Ambivalent Sexism Inventory (Glick and Fiske 1996) which is a 22-item assessment used as an overall measure of sexism and includes subscales to assess the separate components of hostile and benevolent sexism. It is expected that individuals from both Spain and the United States who reveal implicit hair color biases will be more likely to endorse ambivalent sexism.

Katie Brown — Proportional Representation of Women and Perceptions of Leadership Roles

Advisor: Pam Bacon

According to the role-congruity theory, prejudice against female leaders arises from the lack of fit between the communion required of the female gender role and the agency required of the leadership role (Eagly & Karau, 2002). Previous researchers have suggested that the improved evaluations of female leaders over the past four decades has occurred due to the greater proportion of women in leadership positions, which has altered perceptions of either the gender role, leadership role, or both to create greater congruence between the female gender role and leadership roles (Eagly & Karau, 2002; Eagly, Makhijani, & Klonsky, 1992). To further examine this claim, the researcher of the present study varied the proportion of fictional female managers in a work group and asked participants to rate the degree to which a female manager possessed communal and agentic qualities as well as rate the importance of communal and agentic qualities for effective leadership. Contrary to my predictions, the proportion of female leaders in a work group did not affect perceptions of the female manager or the perceptions of qualities necessary for effective leadership. The results of the present study indicate the stagnancy of gender and leadership stereotypes as well as suggest that increasing the proportion of female leaders in a work group alone is insufficient in lessening the incongruence between the female gender role and leadership roles.

Ellen Dehmer Gender Differences in Text Message Communication Content

Advisor: Janet Tilstra

Text messaging is an emerging form of communication popular with teenagers and young adults. This form of discourse shares patterns of both spoken and written language. Well documented differences exist in the spoken and written language patterns of men and women (Baron, 2008), but less information is available related to male/female differences in language patterns while using electronic communication. Researchers in Europe, Asia, and the U.S. have noted differences in male/female text messaging habits and punctuation as well as preliminary differences in self-reports of text message content. Limited empirical information is available describing male/female content differences from actual text messages. In this study we examine the content of text messages and text messaging habits of 40 undergraduate students. Participants will submit eight text messages a day for a week. All text message content will be coded using classifications similar to those of Ling (2002) with comparisons of communication content included in text messages of men and women. Researchers, blind to participant gender, will use a coding system to code messages in the following communication categories: grooming, coordination, information, questions, answers, personal news, and other. In addition, participants will complete a short survey related to text messaging habits including when they choose to text vs. make a voice call, to whom they text, and judgment of what type of messages are appropriate and inappropriate to send by text. Based on previous research and preliminary studies examining male/female differences in spoken and written language we expect women to include a greater number of

grooming statements and questions in their text messages, and men to include a greater number of coordination statements and answers. We anticipate that in the survey students will report a favorable attitude towards texting, frequent text message use to communicate with friends, and provide information about assumed etiquette rules for texting.

Allison Homstad — Comparison of Motivational General-Mastery and Motivational General-Arousal Imagery Interventions and Their Impact on Perceived Team Cohesion in a Collegiate Volleyball Team

Advisor: Steven Stelzner

This study examined the relationship between team cohesion and motivational general mental imagery for a Division III collegiate volleyball team. A secondary purpose was to determine whether team cohesion scores varied with personality type based on the Five Factor Model of personality. Thirteen players participated in the study, listening to one of two different mental imagery scripts in alternating fashion before each home volleyball game. The first script was Motivational General-Arousal imagery and the second script was Motivational General-Mastery imagery. Following each game, the players recorded their feelings about team cohesion based on the Group Environment Questionnaire. The results did not support the hypothesis that Motivational General-Arousal imagery would be more highly correlated with an increase in team cohesion as compared to Motivational General-Mastery imagery. Rather, the results indicated that team success may have more of an impact on perceived team cohesion, regardless of the type of mental imagery used. There were also a number of significant correlations in perceived team cohesion depending on the Big Five personality factors. The results suggest that future research should compare teams with varied success to see whether mental imagery affects teams differently depending on success.

Katherine Kenefick — Body Dissatisfaction, The Thin Ideal, and Social Judgments

Advisor: Rodger Narloch

The thin ideal is transmitted through the mass media's portrayal of female models that embody unattainable and unrealistic thinness providing women with an extreme standard for comparison. The current study sought to examine the combined effect of social judgments and the media's presentation of the thin ideal on body dissatisfaction and self-esteem in women. Before participating in the experiment, 110 participants from a liberal arts college completed a base-line measure of body dissatisfaction. During the experiment, participants overheard a judgmental conversation about attractiveness in which the experimenter manipulated the gender discussed in the judgmental conversation. Participants were then presented with idealized media images and surveyed on their body dissatisfaction and state self-esteem. The purpose of this was to examine the circumstances under which women protect themselves against societal expectations of attractiveness and the negative influences

of the media. This study found that, regardless of the participants' base-line measure of body dissatisfaction or the gender discussed in the judgmental conversation, post-experimental scores of body dissatisfaction and state self-esteem did not differ.

Andrew Obritsch — The Influence of Personality on Presidential Decision Making: A Comparison of the Personality Profiles of Barack Obama and Franklin D. Roosevelt

Advisor: Aubrey Immelman

This project entails an examination of the political and economic challenges that faced presidents Barack Obama and Franklin Roosevelt before him. The historical analysis will be followed by an evaluation of the personality profiles of Obama and Roosevelt to investigate the role of personality (similarities and differences of presidential decision making) with reference to the challenges listed above. The personality profiles were conducted using the Millon Inventory of Diagnostic Criteria (MIDC) adapted from the work of Theodore Millon by Aubrey Immelman for the study of personality in politics. Conclusions will then be drawn as to how each president's personality influenced his decision making.

Megan Peterson — What Makes a Good Doctor?: The Personal Qualities That Relate to Patient Satisfaction

Advisor: Pamela Bacon

What characteristics are important in a doctor? Researchers have looked into this question from the doctors' perspective, but patients' opinions may differ. This study aimed to look at what characteristics are important in a doctor from the viewpoint of the patient; participants described a positive doctor's office visit or a negative doctor's office visit, depending on condition assignment, answered questions about satisfaction and quality of the doctor, and rated the doctor on a variety of characteristics. Results found that doctors described in the positive visit condition had significantly higher ratings on interpersonal qualities and on competence. Their ratings were also significantly positively correlated to patient ratings of satisfaction, overall quality of the doctor, and successfulness of the doctor. These results suggest that both interpersonal qualities and competence are important in a doctor; this information could be used by medical school admissions to admit students with the most promise for becoming a successful doctor.

Alec Shern — Can Using My Cell Phone Lower My Grades? A Study of Correlations Between Cell Phone Use and Academic Performance

Advisor: Richard Wielkiewicz

Ever since arriving at Saint John's University I thought, "Man these people text a lot!" Everyone is always on their cell phones. Even during class people would be texting away. I tried it myself, but found that it hindered my ability to pay attention to the material in class. I wondered if texting in class could actually lower your GPA. Freshman year I sent out a confidential and anonymous survey as part of the course requirements for my applied behavioral statistics course. The survey asked students whether they regularly sent text messages while in class, and for their cumulative GPA. I found a significant difference in GPAs of those who did send text messages in class (M = 3.01; SD = .333) and those who did not (M = 3.34; SD = .421), t (73) = 3.82, p = .000. The effect size for this difference was .893. I am now working on a follow study that includes a plethora of questions about cell phone usage as well as questions on motivation, life-long learning, and leadership qualities. My job is to find correlations between all of these variables. What I am mainly looking for is to see if there is any correlation between cell phone use, academic performance, and the other variables in the survey. I anticipate finding many significant correlations between the cell phone use, academic performance, life-long learning and motivation. My data will not be able to draw causal conclusions, but hopefully the statistical correlations will be a useful tool for teachers, parents, and kids.

This form of discourse shares patterns of both spoken and written language… This project investigates the presence of Latinos in US children's books and analyzes books to judge their quality as well … THPs are important base molecules for a number of natural biological products, including… The war in Laos played a pivotal role in the extended length of the Vietnam War…Vitamin D increases calcium absorption which strengthens bones and improves muscle strength helping to prevent… I argue that this observation of political polarization stems not from the real outcomes of the political system, but actually from…Direct sun spectrometry was used to determine the affect of the Aerosol Optical Depth on the power production of the… Magnetic nanoparticles in particular are easily directed using magnetic forces as well as… The U.S. Supreme Court ruled segregated schools to be unconstitutional in 1954, but not all states immediately complied… This rapid growth and industrialization brings with it a large output of air and water pollution, as well as… FCC's regulation regarding network neutrality to both see what insight the theories offer into the events…

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