

Southern Utah University

# Student-Faculty Scholarship Day

*Learn, Share, Grow*

April 21, 2010



Southern Utah University is a comprehensive, regional institution offering graduate, baccalaureate, associate, and technical programs. SUU is committed to providing an excellent education through a diverse, dynamic and personalized learning environment. The university educates students to be critical thinkers, effective communicators, lifelong learners and individuals who demonstrate integrity and empathy as they pursue their lives' ambitions.

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# TABLE OF CONTENTS

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	Page
Purpose & History of the SFSD.....	2
Abstracts of Creative Performances.....	4
Abstracts of Poster Presentations	
Agriculture & Nutrition.....	8
Biology.....	18
Education.....	19
Mathematics.....	24
Physical Science.....	25
Psychology.....	26
Abstracts of Oral Presentations	
Biology.....	31
Engineering Tech & Constr. Mgmt.....	34
Mathematics.....	37
Physical Science.....	41
Psychology.....	47
Name Index.....	61

### **Purpose**

The Annual Student-Faculty Scholarship Day (SFSD) is intended to encourage and promote scholarship among faculty and students. The conference honors and showcases the cooperative efforts between members of both groups to enhance their academic, professional, and personal growth.

The purpose of the SFSD reflects the philosophy that true and optimal learning comes not through osmosis in the classroom, but from concerted efforts to use this knowledge in the real world. Another equally important purpose of the SFSD is to celebrate the relationship between students and faculty. It is the reciprocal nature of this relationship that helps students and faculty unite to create a community of scholars.

### **History**

The first SFSD was held in the spring of 2000. Only a handful of students presented, and all belonged to disciplines with a long history of research activities. To promote the idea that all disciplines can and should participate in undergraduate research, organization of the SFSD was allocated to a different college each year. In 2006, the *Undergraduate Research and Scholarship Program* (UGRASP) was created. UGRASP assumed all responsibility for the SFSD, and continued to promote the interdisciplinary nature of undergraduate research. Today, SUU students from a wide variety of disciplines participate in undergraduate research: from Art & Design to Zoology. Some of these students and their projects are represented here.

# **ABSTRACTS**

## **Performances**

# PERFORMING AND VISUAL ARTS

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## **theatre arts and dance**

### *The Caper: A Theatrical Portrayal of the Effect Women and Riches Have on the Male Perspective*

KATELIN A. RUZZAMENTI and SHAUNA T. MENDINI

My main focus when choreographing my dance routine was to convey the plot of a story through the art of dance and characterization. I have used musical theater, jazz, pointe, and tap movement along with theater performance elements to portray characters that produce a complete story for the audience. I have incorporated many themes in my choreography that relate the piece to society today. One idea that I wish to express is the battle of the sexes. The female dancers in my piece use their femininity, alluring movement, attractive looks, and charm to sway the male characters' judgment and distract them from their initial objectives. The male characters use their masculinity and authoritative nature to try not to let the female dancers divert them from their intentions. In the end, the male characters appear to have prevailed when from out of nowhere the female characters charm their way to success. Ultimately this portrays how the strength and power that male figures in society believe they possess can be easily influenced by a pretty face and the simplest of flirtatious looks. Another message I wish to convey with my piece is how society places value on materialism. There are three major personalities portrayed in my piece: a business man who puts his love and value on the jewels that he is selling, another of women who place value in gaining riches and getting their way, and a group of officers who objectify women and place them above their lawful duty. This shows how even though different groups in society place worth in varying sources, they all place greater value in materialistic things whenever they become available. I feel my choreography uses these themes to present a story both entertaining and relatable for the audience.



*Alluring: A Study of Femininity*

STEPHANIE TERRY, ALEXIS SMITH, CHERISA TERRY, LEXIE WEEKS, MEGGAN FORSYTH, KATELIN RUZZAMENTI, KAY ANDERSEN and PAUL OCAMPO

Imagine sailing on a ship for five months with no other human interaction except for the unshaven, ape-like physique of the fellow crew. In the distance, a faint hum of women singing overcomes the sound of the harsh waves clashing up against the ship. It becomes the most pleasing tone to the ears that within seconds, becomes more mesmerizing, more intriguing, and more intense. A silhouette of a feminine creature becomes visible as she lies upon a glacier of rocks. The physical characteristics of this creature, along with the sweet singing, become so indulging and so sensual that the ship is lured to its destruction. The tale of *The Sirens* is one of my favorite stories in Greek Mythology. The way these creatures are described as sensual beings and are capable of luring sailors to destruction, reminds me of how women, in reality, can use their physical features to attract men in an elegant way. I choreographed a piece to illustrate that the feminine body is artistically beautiful, and can naturally attract the opposite gender without any use of plastic enhancements. I created a small vocabulary of movement that is reused throughout the piece to emphasize the different features of the dancer's bodies mostly the legs, back, and hips. The slapping of hands to the floor symbolizes the singing of the sirens. I wanted the audience to feel as if they were being lured into the performance, so I created the beginning and middle of the piece to have a hypnotic quality by using circular spatial patterns and diagonal formations to keep the eyes of the audience active. The ending of my piece is very strong with sharp, unison movement that indulges the audience with so much intensity that they cannot look away until it is over.

## **theatre arts and dance**

### *Pas de Deux for 9: A Study of Partnering as a Dance Style and the Communication of Abstract Concepts through Movement*

KATIE WACKOWSKI and CHIEN-YING WANG

This piece was created in an effort to represent a potentially abstract thought through movement. The piece deals with how we connect with one another on a soul to soul basis and how being a part of such a community opens us up to give and receive support no matter where we are in the world or in our separate walks of life. The use of associated gestures, shifting group relationships, partner trading, and organic formations and floor patterns were key tactics in creating mood and conveying the concept of the piece. In addition to these movement components, having thorough discussions of the concept with the dancers allowed for the utmost amount of expressiveness and truth. Because the piece had no counts for the dancers to follow, study through experimentation was also conducted on different ways of keeping the dancers in unison. Last, the creation of this piece was an experiment and observation on modern partnering as a dance style; the particulars of choreographing partnering and working with dancers on a piece that requires a heightened focus and sense of awareness. Improvisational work with and without a partner, the recording of such sessions, choosing dancers who worked together well, the creation of diagrams in order to track each dancer's movement, and focus on safety were vital components and successful research results of this particular creative project.

# **ABSTRACTS**

## **Poster Presentations**



*Consumer Behaviors in Self-Serve Salad Bars*

JAMIE NELSON, LACEY MECHAM, ARTIS GRADY, and  
MATTHEW SCHMIDT

Since their beginnings in the 1960s, self-serve salad bars have gained popularity in many restaurant settings. While this setting provides opportunity for customers to select foods they prefer, it also presents potential food safety risks. Since the behaviors of customers as they proceed through salad bars are poorly regulated, many consumer behavior problems can potentially lead to food contamination and other concerns. While many studies have been performed relating to food safety in restaurants, very few focus on the behaviors of the consumers. In order to provide further insight into this area, research was conducted in eleven Southern Utah restaurants with self-serve salad bars. One hour was spent at each restaurant, and seventeen predetermined problem behaviors were watched for, along with any other potentially problematic behaviors, as customers proceeded through the salad bar. A total of 412 consumers were observed, and all exhibited potentially problematic behaviors. The three most common behaviors were placing the plate over food bins (64.6%), spillage (42%), and tapping the serving spoon against the plate (30.1%). While these were often unavoidable and may not be a significant food safety concern, the remainder of the top ten most frequently observed behaviors have the potential to present food safety risks. Examples of such behaviors include touching food on the plate (27.2%), licking fingers (18.2%), and touching the face (15.8%). While the observed behaviors varied in the severity of their food safety risk, their common occurrence demonstrates the need for improved regulation. Possible recommendations for lessening the risks presented in self-serve settings include labeling foods to prevent sampling, providing a larger plate to avoid spillage, and tightening regulation by restaurant employees. The risk for food contamination and other food safety concerns can be decreased as food safety awareness is increased for consumers and employees in self-serve restaurant settings.

***Recommended until Six Months of Age, why do Rural Western Mothers Cease Breastfeeding before then?***

BRIANNE NOYES and ARTIS GRADY

It is well understood that breastfeeding (BF) is nutritionally beneficial for child and mother. The American Academy of Pediatrics recommends that infants be exclusively breastfed until six months of age. Can the reasons women discontinue BF before the age of 6 months be avoided with discussion, better knowledge, or changed opinion? Do mothers understand the benefits of BF? The purpose of this study was to determine when and why mothers stop breastfeeding. A group of new mothers (N=80) was sampled through three local pediatric clinics. The women responding (N=20) had a mean age of 25.7 years (range 18-35), their infants had a mean age of 8 months (range 6 – 15). Seventy-percent of the mothers breastfed until the recommended age of 6 months; 100% of the respondents breastfed at least once; 90% decided before giving birth that they were going to breastfeed. The three most common reasons the women selected to breastfeed were (1) healthier for the baby (2) more cost effective and convenient and (3) bonding ability with the baby. Although returning to work/school is often hypothesized as reasons why women might quit BF, those reasons were not mentioned by any of the respondents. Unfortunately this study was not able to clearly delineate ways in which discontinuance of BF before the age of 6 months might be avoided with discussion, better knowledge, or changed opinion. The relatively low response rate (25%) does not allow for accurate extrapolation to a larger population.

***Impact of the WIC Program on Hemoglobin and Growth Rates of Infants and Children in Iron County***

CYNTHIA WILSON and CYNTHIA WRIGHT

Women, Infants, and Children (WIC) is a nutrition education program for low-income women, children (up to age five), and infants who are nutritionally at risk. WIC provides vouchers for nutritious foods, breastfeeding promotion and support, and referrals to health care to individuals who qualify. WIC vouchers allow participants to purchase foods that are excellent sources of iron such as iron fortified formula, cereals, and dry beans. Vouchers also allow the purchase of foods that are outstanding sources of vitamin C such as fortified juices, fruits, and vegetables; these foods enhance iron absorption. The purpose of this research was to determine if the WIC program in Iron County had made a difference in the iron status and growth of infants and children. Permission to conduct this research was obtained from both the Southwest Utah Public Health Department and Southern Utah University's Institutional Review Board for Research on Human Subjects. Researchers randomly selected 30% of active Iron County WIC files (n=260), recording birth date, height, weight, and hemoglobin (Hgb) for each WIC visit since program enrollment. Height and weight data were categorized according to standardized height and weight percentiles for infants and children; hemoglobin was compared to anemia cut offs as defined in WIC policy. Each individual served as their own control. The data was analyzed using repeat measure ANOVA, paired t-tests, and frequencies. Results revealed that height percentile of subjects increased significantly over the time period studied ( $p=0.009$ ). There was also a significant increase in hemoglobin levels among the WIC participants ( $p=0.001$ ). This research reveals that Iron County WIC positively impacted height percentile and hemoglobin levels of study participants.

***Impact of Chocolate on Postprandial Glucose***

ALICIA JENSEN, SHELYNNE WILCOX, and CYNTHIA WRIGHT

Several studies have shown that consumption of dark chocolate improves insulin sensitivity. This study hypothesized that food products with chocolate flavoring would elicit a lower postprandial glucose response than the same food product without chocolate. To test this hypothesis, healthy young adults (n=22, 7 men, 15 women) were recruited. Subjects were excluded from the study if they were under the age of 18, taking medication that impacts glucose metabolism, or intolerant to any of the foods used in the study. Products pairs were matched based on protein, fat, carbohydrate, and calorie content, differing only on chocolate content. The product categories were a beverage, ice cream, and cake. Each morning, subjects consumed one of the six foods after an over-night fast. Blood glucose was measured at baseline (prior to eating the food), 30 minutes and 60 minutes after eating the food using standard home blood glucose testing methods. Data were analyzed using repeated measure ANOVA. The hypothesis that chocolate flavored foods would have less of an effect on postprandial glucose levels was not supported. Chocolate flavored foods raised the blood glucose levels as much as, if not more, than vanilla flavored foods. More research is needed to determine if chocolate flavored foods, as opposed to dark chocolate itself, have a positive effect on postprandial glucose levels.



*Effect of Cinnamon on Postprandial Glucose*

SARAH CALDER, LAURA HUMPHRIES, and CYNTHIA WRIGHT

Controlling blood glucose (BG) is important because type 2 diabetes is a common and increasing problem among Americans. Previous research on the impact of cinnamon on BG has produced conflicting results. The objective of the present study was to investigate the impact of cinnamon supplements on BG concentration among healthy young adults (mean age  $22.6 \pm 3.3$  years). Baseline fasting BG was measured before participants consumed a meal containing 76.25 g of carbohydrate and cinnamon capsules (0, 2, 3, 4, or 5 g) each day of a five-day trial. BG was also measured 30 and 60 minutes post-meal. Cinnamon supplements decreased the peak concentration of the BG curve in males ( $p=0.040$ ) and in those with a family history of diabetes ( $p=0.026$ ). Additional research on the impact of cinnamon supplementation on postprandial BG among individuals diagnosed with type 2 diabetes is warranted before health claims are made.

***Food Security at Southern Utah University: A Follow-up***

LAURA HUMPHRIES and CYNTHIA WRIGHT

In 2008, eighty-five percent of American households were food secure; this is a two percent decrease since 2007. A 2008 study examined the food security status of students, staff and faculty on the campus of Southern Utah University (SUU) revealing that the SUU community was less food secure than either residents of Utah or the United States as a whole. With the US economy on a downhill slide and thousands of people jobless, the rate of food insecurity may have increased. The purpose of this study was to once again assess the food security status of students, staff, and faculty on the campus of SUU to determine if food security on the SUU campus is increasing or decreasing and to determine if respondents believe the current economy has affected their personal food security. Data was gathered using a survey developed by the United States Department of Agriculture. Permission to distribute the survey was obtained from the SUU Institutional Review Board. With permission from course instructors, students completed the survey in large general education classes. Surveys were also sent through the SUU mail system to randomly selected staff and faculty. Frequencies, chi square, and paired *t*-tests were used to analyze the data. A total of 815 surveys were returned in 2009 while 821 surveys were returned in 2008 (n=1636). Results showed that respondents were more worried that food would run before the end of the month ( $p=0.040$ ) and less food secure ( $p=0.010$ ) in 2008 than in 2009. In 2009 students were more food insecure than faculty and staff ( $p=0.004$ ). Nearly 40 percent of respondents indicated that there had been a significant change in their household income over the past six months; ninety percent said that the change was negative. Thirty percent of respondents said the change in their income was a result of the current economic situation in the United States.

*Food Availability on the Campus of Southern Utah University:  
Survey of Interest*

BRYN WOOD, KATIE HAMRICK, and CYNTHIA WRIGHT

Southern Utah University (SUU) is unofficially split into three areas: lower campus, middle campus, and upper campus. Although lower campus has plenty of accessible, healthy food (and middle campus is within range to benefit from these food sources), upper campus offers food only from vending machines. The purpose of this research was to assess the interest of the SUU community in offering healthy, non-vending machine food on the upper campus of SUU. Data was gathered from students, staff, and faculty (n=651) using a written survey. Chi square analysis revealed that compared to those who spend the majority of each day on other areas of campus, those who spend the majority of each day on upper campus were less likely to buy food in the SUU food court (p=0.018), less likely to eat in the T-Bird Circle (p=0.03), more likely to bring food from home (p<0.001), and brought food from home more days each week (p=0.002). Nearly 87 percent of respondents who spend the majority of each day on upper campus indicated that they would be very (33.3%) or somewhat (53.5%) likely to support a venue on upper campus. As anticipated, those who spend most of their day on middle or lower campus were less likely to support such a venue (p=0.016). Analysis also revealed that there is no significant difference in responses between students, staff, and faculty. Further analysis will be conducted to determine what foods would be best received on upper campus.

***Food Availability on the Campus of Southern Utah University: Food Venue Trial*****BRYN WOOD, KATIE HAMRICK, and CYNTHIA WRIGHT**

Southern Utah University (SUU) is unofficially split into three areas: lower campus, middle campus, and upper campus. Although lower campus has plenty of accessible, healthy food (and middle campus is within range to benefit from these food sources), upper campus offers food only in vending machines. Previous studies conducted on the SUU campus revealed a strong interest in having healthy, non-vending machine foods available on upper campus. The studies also revealed the specific foods that would be best accepted at an upper campus food venue. The purpose of this study was to conduct a food venue on upper campus to assess the SUU community's support of such a site. A temporary food venue was set-up for one week in the General Classroom building on the upper campus of SUU. All food products offered were received from Chartwells, the food service contractor at SUU. Foods selected for sale were based on responses to a previously conducted written survey, along with input from the Director of Dining Services at SUU. Foods were sold by the researchers and volunteer nutrition students daily during a two hour period, which included the noon hour. Customers were able to pay with cash, checks, debit or credit cards. Food venue trial data was obtained by recording receipt/transaction information including payment method, total receipt amount (dollar amount), gender, and specific food(s) purchased. Results of statistical analysis are pending and will be presented at the UGRASP conference.

### *Food Availability on the Campus of Southern Utah University: Preferred Foods*

KATIE HAMRICK, BRYN WOOD, and CYNTHIA WRIGHT

Southern Utah University (SUU) is unofficially split into three areas: lower campus, middle campus, and upper campus. Although lower campus has plenty of accessible, healthy food (and middle campus is within range to benefit from these food sources), upper campus offers food only in vending machines. Previous research analysis revealed that there is significant interest in having access to healthy, non-vending machine foods on the upper campus of SUU. The purpose of this study was to identify the specific foods that would sell best on upper campus. Data was gathered using a written survey from students, staff, and faculty (n=651). Chi square analysis and frequencies were used to identify those foods that respondents who spend the majority of each day on upper campus (n=305) were most likely to purchase. Those foods included: soup, salads (pasta, fruit, and side), sandwiches (club, deli, ham, roast beef, turkey, BLT, chicken salad, and turkey with provolone), beverages (bottled water, PowerAde® and Minute Maid® juices), and yogurt. A food venue trial will be conducted to determine if students, staff and faculty carry out their stated intention to purchase more nutritious foods from a temporary upper campus food venue.

*Hydration Status of Collegiate Female Basketball Players at Southern Utah University*

CHRISTOPHER FREHNER, MYKEL WALSH, and MATTHEW SCHMIDT

Proper hydration is essential for both mental and physical performance. The purpose was to determine the hydration status in collegiate female basketball players and examine if education would improve hydration status. Eleven athletes were recruited. Urine samples were collected before and after practice. Urine specific gravities (USG) were measured to determine hydration status. Four urine USGs were collected in the preseason and averaged. Athletes were unaware of the days of these measurements. It is recommended that athletes begin practice at or below an USG of 1.020. The team's average preseason USG was 1.020 at the beginning and 1.024 at the end of practice. Indicating that athletes came to practice minimally dehydrated with only four athletes at or below 1.020 and nine of them left significantly dehydrated >1.020. Athletes were made aware of their preseason USGs. Education and strategies on proper hydration were provided after preseason measurements. Athletes were instructed to implement hydration strategies and notified of the next set of USG measurements taken during the regular season. Average USGs for this measurement were 1.017 and 1.018 indicating that athletes entered and left practice minimally dehydrated. A third measurement was taken later in the season and athletes were unaware of the days that the urines would be collected. This was done to test if the improved hydration status found in the second measurement would continue. The average USGs were 1.018 with eight of the subjects coming to practice under or at 1.020 this was a significant improvement from preseason measurements. Although the end of practice USG was 1.023, four subjects were at or below 1.020 indicating a small improvement from preseason. These findings suggest that education and strategies provided did improve hydration status throughout the season but that subjects better prepared for urine test when they were aware of the measurement.

### *Skeletal Muscle Fiber Characteristics in Utah Desert Woodrats*

TARAN HANSEN, AMBER NEIGHBOR, PAUL PILLITTERI, and  
RACHEL D. SMETANKA

Southern Utah is home to several species of woodrats, rodents native to much of the western United States. Due to southern Utah's uniquely diverse geography, woodrat species can be found at varying elevations and different terrains while still within limited geographical region. Study of Utah's woodrat species has demonstrated differences in behavioral patterns based on habitat distribution, but little is known about their physiological adaptations to habitat differences. Numerous studies in humans, rabbits, and several species of rodent have shown significant changes in skeletal muscle fiber type distribution due to differences in habitat. Muscle fiber distribution and muscle characteristics have not been examined in any woodrat species. The purpose of this project was to determine skeletal muscle characteristics and fiber type distribution in desert woodrats (*Neotoma lepida*). Desert woodrats, which live primarily in rocky terrain of lower elevation desert areas, were collected via live traps. The gastrocnemius muscles were removed and skeletal muscle fiber type distribution was determined via immunohistochemistry. Muscle fibers were also evaluated for total cross sectional area, capillary density, mitochondrial content, and maximal force production. By analyzing other species of Utah woodrats, we can determine the extent of alterations in structure and function of skeletal muscle based on elevation and terrain.

***Does the Intensity of Physical Activity affect Coronary Artery Disease Health Risks among Active Senior Citizens?***

RACHELLE WENDLER, JUDY HIGBEE, and JULIE E. TAYLOR

**Introduction:** Previous studies indicate that the amount and type of physical activity has an effect on health risks across all ages. The intensity and duration of activity effects many aspects of individual health. The purpose of this study was to evaluate the relationship between the intensity of regular physical activity and coronary artery disease health risks including: cholesterol levels, blood pressure, height and weight, blood glucose levels, smoking habits, coronary artery disease signs, symptoms and family history of disease. Our goal is to answer the question, do senior athletes regularly participating in vigorous physical activity have fewer health risks compared to those participating in moderate physical activity and if so, how much time is required to see reductions in risk? **Methods:** Active seniors (n=80) participating in the Huntsman World Senior Games in St. George Utah in October 2009, participated in a survey of self-reported physical activity and health risks. These surveys allowed us to identify the athletes primary coronary artery disease risk factors and how much time they spent doing vigorous and moderate physical activity. Vigorous activity was stated to be jogging, swimming, brisk walking, etc. Moderate activity was said to be sports such as golf, yard work, bicycling on level ground, etc. The number of primary cardiovascular disease risk factors was compared to intensity and duration of physical activity among the senior athletes. **Results:** Discussion will include how the intensity and duration of physical activity may influence health risk factors among seniors. Results could impact the exercise prescription designed to improve health among active seniors.

## elementary education



### *G.N.A.T.S. (Great Native American Teaching Strategies)*

GENELL HARRIS, ANGELIA N. HANSEN, DARRELL MARKS,  
and SHAUN YELLOWHORSE

Although education has made significant changes towards multicultural learning over the past ten years (Doorlag, 2006) Native American students continue to have twice the drop-out rate of other middle class students (Reyhner, 2006). As future teachers we are extremely concerned about how this issue continues to impact Native Americans' ability to be academically successful (U.S Dept of Education, 1991). Our question is: What are some effective teaching strategies that can be used to help Native American students'? As naturalistic researchers we describe and interpret human phenomenon: "to be clear about [their] biases, presuppositions, and interpretations so that others (stakeholders) can decide what they think about it all (Guba, 1990)." Our design is based upon a meta-analysis of extensive literature review and triangulation of common findings among two or more studies and interviews. According to O' Donoghue and Punch (2003), triangulation is a "method of cross-checking data from multiple sources to search for regularities in the research data. This meta-analysis approach (Marzano, 2003), will provide the basis for our interviews and teachers of native students, and tribal elders. The hope is that this research will lead to in-service training for current and future teachers, as well as a handbook for teaching Native American students in their classrooms. This research takes us on a journey of discovery of how best to teach Native American students. Knowing learning styles of Native American students and the best practices for teaching these students is important for current and future educators. As education moves further into individualized instruction with mandates such as, No Child Left Behind, educators need adaptations and instructional strategies found to be successful with Native American students. Teachers deserve every tool possible to meet the needs of ALL students.

***Breathing Control and Oxygen Saturation in Collegiate Intermediate to Advanced Female Dancers***

KATHERINE L. HECKENBACH and JULIE E. TAYLOR

Introduction: Dancers often use breath control during training for various reasons. However, in the intermediate and advanced levels, dancers are often no longer conscious of their breath. Upon observation, dancers appear to hold their breath while performing some of the most basic ballet barre exercises. Purpose: The purpose of this study was to determine whether conscious breath control affects blood oxygen saturation among intermediate and advanced collegiate dancers compared to more natural breathing patterns. Oxygen saturation levels provided an objective measure to determine how conscious breath control affected oxygen levels within the body. Heart rate was also monitored alongside oxygen saturation. Methods: Ten female dancers, ages 19-22, of an intermediate to advanced level were recruited for the study. Dancers were classified as intermediate or advanced if they had completed an intermediate level ballet class at Southern Utah University. During the study, they were asked to complete a series of ballet barre exercises without verbal cues and with verbal cues. Their blood oxygen saturation levels and heart rates were measured before and after the exercise bout using a non-invasive fingertip pulse oximeter. Results: It was concluded that the verbal cues, and thusly conscious breath control, allowed oxygen saturation levels to be maintained closer to that of resting levels. Also, heart rate was maintained closer to resting levels with verbal cues as compared to the non-cue session. In the future, these verbal cue methods could be further evaluated among other athletic populations; also, it may be beneficial to see how increased oxygen saturation affects Rating of Perceived Exertion (RPE) and fatigue levels.

### **physical education**

#### *The Effect of Time Spent Doing Muscular Strengthening Activities on Biceps Strength and Body Age in Senior Athletes*

LINDI A. MATTHEWS, JUDY HIGBEE, and JULIE E. TAYLOR

Muscular strength is an important component of physical fitness. As age increases muscle mass and muscular strength tend to decrease. For many seniors this increases the risk of falling and joint problems. Maintaining muscular strength over time is an important component of overall health and physical fitness. The purpose of this study is to determine the effect of time spent doing muscular strengthening activities on biceps strength and Body Age in senior athletes. Body Age is a calculation based upon fitness and health measures that represents chronological age relative to biological age and is a measure of overall health and physical fitness. Methods: Senior athletes were recruited for this study from the 2009 Huntsman World Senior Games in St. George, Utah. Senior athletes (n=141) volunteered to participate in a health risk survey and fitness assessment to determine Body Age. Within the survey, senior athletes reported time participating in muscular strengthening activities. Muscular strengthening activities were defined as strength training, resistance training, push ups, sit-ups and other calisthenics. The Body Age assessment included blood pressure, body composition, a submaximal cardiovascular fitness cycling test, lower body flexibility, and a biceps strength assessment. The self-reported time participating in muscular strengthening activities was compared to biceps strength measures, as well as Body Age. The goal was to determine if there is a relationship between participation in muscular strengthening activities and measures of strength as well as overall health and fitness as determined by Body Age. These results may help with a more accurate muscular strengthening prescription for senior athletes, especially with regard to minimum time required for health and fitness benefit.

*The Effect of Time Spent Participating in Moderate and Vigorous Activity on Body Age in Senior Athletes*

HILLARY WHITE, JUDY HIGBEE, and JULIE E. TAYLOR

**Introduction:** Body Age is a calculation based upon fitness and health measures that represents biological age as compared to chronological age. Differences in Body Age exist between senior athletes of different sports and even athletes of the same sport. Duration and intensity of activity are possible explanations for this. The purpose of this study was to determine if duration of physical activity is predictive of Body Age, and whether moderate or vigorous activity is a better predictor of Body Age. **Methods:** Participants for this study (n=135) were recruited from the 2009 Huntsman World Senior Games in St. George, UT. Subjects volunteered to participate in a health risk appraisal and fitness assessment including: blood pressure, resting heart rate, height, weight, body fat percentage, a biceps strength test, a modified sit and reach, and a submaximal cardiovascular fitness test. Based on these assessments, a Body Age was calculated for each participant. Participants also completed a questionnaire where they reported the duration and intensity of activity per week. Self-reported physical activity was compared to Body Age results to determine the relationship between duration of physical activity and Body Age, and whether moderate or vigorous activity is a better predictor of Body Age. **Results:** Duration of physical activity is not correlated with Body Age in this population. Participants who engaged in vigorous intensity exercise had lower Body Ages than those who participated in no exercise or only moderate intensity exercise.

**mathematics**

*Lossless Data Compression for a Fixed Number of Bits for RFID Tags*

ANTHONY HERRICK, DEVIN WIGGINS, JOHN GALLIS, DEREK DOEL, and SARAH BROWN

The Math Capstone class is involved in an interdisciplinary project with the Computer Science/Information Systems Capstone class. Our role is investigating lossless data compression for RFID (radio-frequency identification) tags holding 96 bits of data, and using statistical analysis of reader data to optimize accuracy. IDT Services, a Nevada-based technology company, will use our findings in tracking railcar wheels affixed with the tags.



***Heavy Mineral Provenance and Clay Mineralogy of a Devitrified Carbonatite Volcanic Tuff from Southwestern Tanzania: Implications for Timing the Initiation of the East African Rift System***

TRENT HASKELL, ERIC ROBERTS, and MARK COLBERG

Recent fieldwork in southwestern Tanzania has resulted in the discovery of a new Paleogene sequence of fluvial and lacustrine strata in the Rukwa Rift Basin. Within these rocks are a series of bizarre claystone beds with calcite pebbles. These claystones contain an odd assortment of rare and unusual heavy minerals, which leads us to interpret these beds as volcanic tuffs of carbonatite origin. To test this hypothesis, we sampled one of these claystones for detailed clay and heavy mineral analysis. The coarse fraction was separated from the clay fraction, which was then separated into light and heavy fractions based on density and magnetic susceptibility. The identified heavy minerals include euhedral phlogopite, andradite garnet, titanite (sphene), and apatite; with a significant component of the light mineral sanadine; and minor amounts of magnetite, clinozoisite, ankerite, hematite, and pyrochlore. This unusual assemblage of minerals strongly supports an alkalic volcanic origin of unusual type (ex. carbonatite). Next, using x-ray diffraction, we identified montmorillinite as the dominant clay mineral, further supporting our hypothesis. Lastly, we made mineral mounts of the light and heavy mineral separates. These thin sections revealed mineral and melt inclusions in several of the minerals. The confirmation of these units as carbonatite ash beds, coupled with a new radiometric age date of 24.9 Ma, makes these the oldest volcanics in the Western Branch of the East African Rift System. This pushes back the previous age of tectonism and development of this part of the rift by nearly 15 million years. These carbonatites are also significant in that they can help both geologists and paleontologists understand the formation and evolutionary history of the East African Rift System and its important vertebrate faunas.



### *The Influence of External Stimuli upon Perception*

ELISE BERRETT, BRYAN BULLOCK, HOLLY SMITH, and GRANT CORSER

Mood and emotions are influenced by outside sources and are then used to make judgments (Clare et al, 2001). To test the influence of music and affective pictures upon perception, we invited students to view a slideshow of neutral pictures paired with either positive or negative pictures and positive or negative music. Each group either experienced positive pictures with positive music, positive pictures with negative music, negative pictures with positive music, or negative pictures with negative music. All groups were given the same questionnaire to fill out while viewing the slideshow. As well as demographics, questions consisted of a rating of how positive or negative the neutral picture appeared and other general questions not associated with affect. Responses were analyzed and tested for statistics. These results can be implemented in everyday situations, for example, in a classroom setting where a positive environment is desirable or in settings where one may be apprehensive, such as a dentist's or doctor's office.

*Visual Perceptions and Mood*

KELCIE CARTER, ELIZABETH COMBS, KELLIE ANDERSON  
and GRANT CORSER

People have been bringing plants into residential and other indoor settings for centuries, but little is known about their psychological effects (Bringslimark, 2009). The present study was to discover if living plants, dead plants, or no plants in a room had any effect on a person's mood. On the first day of the experiment five participants came into the room that was surrounded with living plants. After five to ten minutes the participants were issued the BFI-54 survey to complete. On the second day of our research, we used five new participants. We had dead plants in the room for this group. After about five minutes we asked these participants to complete the BFI-54 survey. On the third day, we had five new participants complete the BFI-54 survey in a room with no plants. The results of this study are that the living plants had a positive affect on the participants' mood while the dead plants had a negative affect on the participants' mood. When the classroom had no plants, the effects were neutral.

## psychology

### *Cultural Differences in Personality: A Study among Japanese and American Students*

KELCIE CARTER, ALEXANDRAH NEPPL, JANELLE  
LECKINGTON, HEATHER MURIE, and DAVID SHWALB

Our group decided to do our research project on personality. We chose to base our research around Dr. Taylor Hartman's book *The Color Code*. Dr. Hartman uses color codes for personality because color is already an established metaphor for emotion and behavior. We "see red" when we're angry. We "feel blue" when we're sad (Hartman). The idea is simple - there are four basic colors, white, red, blue and yellow. Each person is a mix of these, often having one color as the dominant. Each color also has a certain motive. Red is power, blue is intimacy, white is peace and yellow is fun. The goal of our research is to find out if there is a dominant personality in each culture and if there is a difference in dominance between the American and Japanese cultures and data.

*Media and Typical Behaviors*

BRETT GRIMM, ASHLEY HANSEN, MATTHEW STAHELI, LEVI ZITTING and GRANT CORSER

Research on mood can help clarify the effects and/or relationship of mood on self-perception. Mood can be used as a tool to help judge one's self-perception. This study attempts to show that an individual in a negative mood state will self-report a negative self-perception and an individual in a positive mood state will self-report a positive self-perception when the two groups are compared. Media clips of a positive and negative nature were shown to participants to induce a certain mood state. Participants were then asked to complete a self-report survey. Along with demographic information, this survey included questions regarding an individual's self-perception, and media memory questions designed to distract them from their awareness of mood. The results will be analyzed and are expected to show that mood will affect self-perception. This study can lead to greater understanding about the relationship between mood and self-perception, thus heightening participant's awareness of the impact of mood on perception. This awareness should aid participants in separating mood from self-perception—eventually leading to an increased ability to shape self-perception.

**Abstracts**

**Oral Presentations**

*The Effects of Wildland Fire Retardant on Hatch Rate, Development, and Survival in xenopus laevis*

LOGAN VANCE, BRETT RICHE, DEREK POTTER, PATRICK BELL,  
DALLAS WRIGHT, JARED GARLICK, and RACHEL SMETANKA

The African Clawed Frog (*Xenopus Laevis*) is a species of South African aquatic frog found throughout Africa and in specifically introduced populations in North America, South America, and Europe. This species is commonly used as a model of developmental biology due to embryos which are large, easy to manipulate, and develop rapidly. Phos-Chek LC-95A is wildfire retardant commonly used in the western United States. Previous studies have demonstrated that fire retardant has no effect on survival rates in adult aquatic invertebrates. The purpose of the current project is to test the effects of Phos-Chek LC-95A on embryo survival rate and development in *Xenopus Laevis*. To test survival rate, various concentrations of fire retardant were introduced into controlled environments which simulated a common freshwater pond containing *Xenopus* larvae. Both concentrations of fire retardant were detrimental to survival rate. To test the effect of fire retardant on development rate, low doses were introduced into similar controlled pond environments containing various developmental stages of *Xenopus* larvae. It is anticipated that low doses of fire retardant will also be detrimental to the larvae development rate. These results will be used to support and further develop environmental regulations governing the use of wildfire retardant near freshwater sources.

## biology

### *Correlation between Antibiotic Resistance and Heavy Metal Tolerance in Bacteria*

BRYCE CARTER and RON MARTIN

The frequency of antibiotic resistant microbes (ABRM) has grown dramatically over the past several decades. This poses a threat to humans and animals alike. ABRM are an increasing threat in hospitals and health related services around the world. Here in Southern Utah, we are affected as well. The surrounding mines located west of Cedar City have been found to have microbes living in a heavy metal environment. Previous research has demonstrated a linkage between antibiotic resistance and heavy metal tolerance (1). Our hypothesis is that there is a genetic correlation between antibiotic resistant microbes and heavy metal tolerance meaning that if a microbe is able to grow with metals such as lead or arsenic, it will have greater potential to be resistant to antibiotics as well. Our goal will be to prove or disprove that conjecture. To accomplish our task, the following has been completed or is in the process of being completed. 1) Taking water samples from the surrounding water filled mines; and culturing the microbes found therein on various amounts of nutrient broth mixed with various heavy metal concentrations. 2) Add the presence of various antibiotics and test the resistance to the antibiotics by the microbes. For the controls of the experiment, we will compare the above results to a known freshwater source; we will culture various strains of commonly used antibiotic sensitive bacteria such as *Escherichia coli* to compare to the bacteria found in samples; and culture *Bacillus* and *Acinetobacter* isolates as controls for the metal tolerance testing. The data will then be compiled and presented with further research as a possibility.



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***Hybrid Fitness among Members of Wild and Cultivated Rubus L.  
(Blackberry and Raspberry)***

JARED WEAVER and TERRI HILDEBRAND

Hybridization plays an important role in crop production and many *Rubus* hybrids have been developed for agriculture purposes. Plant hybridization also can produce new species and contribute to speciation and evolution. The purpose of our experiment was to investigate hybridization in members of raspberry. We hypothesized that when cultivars and wild relatives are hybridized, resulting hybrids will show greater fitness, *i.e.*, increased germination rates, seed production and biomass, than non-hybrid cultivars and wild species. Crosses were made between three seed (wild *R. ideaus*, *R. ideaus* cultivar, blackberry cultivar) and pollen (*R. discolor*) donor plants. Cross-pollination was performed using sterilized swabs; anthers were removed from seed donor blossoms that were then covered to prevent uncontrolled pollinations. Manipulative controls transferred pollen among plants of the same species and unmanipulative controls pollinated naturally. Seeds were harvested from ripe fruit and seed production and biomass recorded. Seeds from individual fruits were placed in potting soil and kept moist at 2 - 4 °C for twelve weeks after which they were moved to a warm light bench for 7 weeks. Efficacy of artificial pollination, germination rates, seed production and biomass were recorded both within and among groups. ANCOVA and regression investigated the observed differences among groups (SPSS). Significant differences in seed production and biomass occurred between wild species and cultivars, but increased hybrid fitness was observed only in wild raspberry. Wild species produced fewer seeds per fruit and wild raspberry produced the fewest and smallest seeds overall. No significant effect from artificial pollination was observed. Germination data remain to be calculated and those results may lend further support for our measures of fitness. Our results show *Rubus* cultivars have greater seed production and biomass than wild species and suggest cultivation in the genus has contributed to increased cultivar fitness.

*A CPLD Automation Project*

JAMES GALE, JACOB PORTER, and DAVE WARD

Understanding of IC's and Microprocessors is demonstrated by the water tank project. In this set up there are two IC's the first is used to control a temperature display that is hooked up to the tank using a temperature sensor, which controls the temperature of the water in the tank. The second IC uses a CPLD (Complex Programmable Logic Device) that we programmed to control the inputs that include: A low-level water float, a high-level water float, an overflow float for the tank, an overflow float for the out-bucket, and also the input from the temperature sensor. Also the outputs that include: A water pump from the water in-bucket, a pump from the tank to the out-bucket, a filament to heat the water, and an alarm that is a light bulb and or an audio alarm that will turn on when undesired conditions occur ex. (When either tank is too full) if alarm is tripped all outputs are disengaged. The operation of the system is: once the power is applied the in-pump is turned on, once the low-level float is reached the filament is turned on. The water continues to rise until the high-level float is reached, and then the in-pump is turned off. Once the water in the tank reaches a certain temperature (which we set with a variable resistor on the first IC). The out-pump is turned on until the high level water float is lowered. Once the high-level float is lowered the in-pump will turn back on. The purpose of the system is to heat the water to a certain temperature and to transfer the water from one bucket to the next while heating the water to a desired temperature.

*A Vision Controlled Robotic System*

AMMON LOSEE, SHANE CHRISTENSEN, and DAVID A. WARD

Our project was based upon our experiences with computer interfacing in a previous electronics engineering technology course. We desired to further our knowledge, expertise and experience in automated systems in particular with; pneumatic systems, vision acquisition, and National Instruments (NI) LabVIEW data acquisition and control software and hardware. We desired to build an automated system controlled by video input that could run on its own without any user input. We chose the Guitar Hero video game to demonstrate this vision controlled robotic system. First, our system receives continual video images from a networked Axis video surveillance camera. Secondly, we use NI LabVIEW software to filter and manipulate the video images eliminating unwanted portions of the incoming video image used for our outputs. Thirdly, through our NI Virtual Instrument (VI), we control a NI USB-6009 data acquisition hardware unit to control, turn on/off, pneumatic control valves which in turn control seven pneumatic cylinders. Fourthly, these cylinders actuate controls/buttons on a Guitar Hero video game guitar. We have developed a VI that will run Guitar Hero in the quick-play practice and head-to-head modes. We have achieved Guitar Hero percentage scores as high as 89% with a 52 note steak at the expert level with our system. Our system demonstrates the possibilities of vision controlled robotic/automated systems. Although this system uses a video game, the industrial applications of such a system are virtually unlimited.



*Efficient and Robust Design*

LANE GARDNER and RICHARD COZZENS

This project is to create, using CATIA, an efficient and robust design for parts and gears. Parametric programs make this possible, but I wanted to take it a step further. That is to take a base gear design and have the entire gear update when you change one parameter. The creation of a gear is very involved with mathematical relations and equations among all the elements. Much research was involved in finding the proper design of a gear, especially the teeth. The profiles of the teeth are an involute curve so as to keep one point of contact between the teeth and thereby create efficient distribution of the power and reduce wear. Once how to create this curvature was found the next step was creating a means of changing the gear to make it simple to create other gears. When an Excel table was created and linked to the elements of the sketch, with the correct formulas for their size, the time to create this type of gear was cut dramatically. The next step was to trim the process from a handful of simple steps to a just a couple clicks and an input. This was achieved by redoing the sketch, adding the mathematical relations inside the design itself, and creating a macro of the process. I added to the macro's programming code a dialogue box that pops up asking for the users input. This macro was then placed on the toolbar. Now all the user needs to do is to simply click the icon, enter the variable and the entire gear will update!

*Sexual Dimorphism in Sea Spiders Regarding Leg Size and Ovigerous Leg Size*

ANTHONY HERRICK, STEVEN PRICE, BONNIE BAIN, and FRED GOVEDICH

In this study, we look at the sexual dimorphism of sea spiders, mainly *Propallene longiceps*. We look at a reproductive organ which both genders have called the ovigerous leg mainly looking at average size and function of the leg for each gender. Twenty female specimens and 20 male specimens were photographed using a microscope and then measurements were taken in the picture using Image J and R statistics. Length, end widths, and middle width of leg segments containing eggs in female spiders were also taken and compared to the same measurements taken in male legs. We performed a bivariate distribution to see if there is any significant difference in size between male and female sea spider legs, both normal and ovigerous.

*The Many Facets of Job Satisfaction*

JOHN GALLIS and KIM CRAFT

This research paper explores the many factors which affect whether or not a person is highly satisfied with his or her job. Using the concepts and procedures of econometrics, I examine the effects of certain demographic, educational, and career aspects on job satisfaction in the United States. This project utilizes Ordinary Least Squares regression to statistically analyze the significance of these factors, making use of the data connected with the National Survey of College Graduates conducted in 2003 by the U.S. Census Bureau. This survey reached more than 100,000 college graduates, and the original data set contains more than 400 distinct variables associated with the questions posed to those who responded to the survey. Past studies in this subject have shown that in the U.S., in general, women are more satisfied with their jobs than men, older workers are more satisfied than younger workers, and whites are more satisfied than nonwhites, for example. In this paper, I investigate the importance of these factors along with other factors that have not been thoroughly analyzed by previous publications.



*Testing Whether Financial Markets Follow a Random Walk*

DEVIN WIGGINS and SAÏD BAHI

The Random Walk Hypothesis is a revolutionary idea that changed the way investors and academics alike view financial exchanges. Simply stated, random walk theory asserts that no amount of studying past information can help one consistently predict the price of a security tomorrow. Prices already reflect all available information. Piggybacking on the work of MIT Professor Andrew Lo and Wharton Professor Craig MacKinlay, this research utilizes their variance ratio specification test and takes a closer look at their surprising results using various financial securities data.



*Genetics or Healthy Living, Which One Will Win?*

DEREK DOEL, ANDREAS WEINGARTNER, and SARAH BROWN

Can choosing a healthier life style than your parents increase your life expectance despite a family history of heart disease? Life insurance companies weigh more on the cause of your parent's death rather than what you're doing to prevent your own. Through statistical research and conditional probabilities, this project intends to put life insurance to the test. Are they charging you too much?

*Determination of Chlorophyll in Natural Waters Using High Performance Liquid Chromatography*

DAVID BAUMANN, GEOFF THOMAS, KENNITH LAMLENN, and  
KIM WEAVER

Chlorophyll is a porphyrin based molecule that is found in plant life. Chlorophyll levels are used as an indicator of water quality. High levels of chlorophyll in water indicate large amounts of nutrients which promote the growth of algae. Contamination of natural waters with fertilizers often lead to algal blooms which can kill off all other forms of life in a stream or lake. The amount of chlorophyll in water obtained from the Virgin River, Coal Creek, and Green's lake will be determined over a several week period of time. The chlorophyll content of the natural waters will be determined by membrane filtration to collect algae present in the water. The chlorophyll will then be extracted from the algae and then analyzed using high performance liquid chromatography, HPLC.

### **physical science**

#### *Characterization of Storm Water Runoff in the Coal Creek Drainage Basin*

SHANNON FORCE, SAMANTHA HUNTSMAN, DARREN DILLARD, LAUREN BUNKER, JORDAN LEACH, KASIDY GRIMSHAW, KIM WEAVER, and TY REDD

Coal Creek is a small, perennial stream, fed by mountain runoff, which is located in the Coal Creek Drainage Basin in the Cedar City, Utah area. The increasing urbanization of the Cedar City area puts the water quality of this basin at risk. This study focuses on characterizing pollutants from non-point sources and their impact on the water quality of Coal Creek and the organisms living within it. Analytes of interest include common anions, mineral metals, pH, turbidity, conductivity and pesticides. The determination of pollutant concentrations in runoff and affected surface water will be beneficial to understand basic sources of non-point source pollution. It is hoped that this study will help to better understand the effects of population growth and urbanization on the water quality of Coal Creek and the organisms living within it.

***Determination of 2,4-Dichlorophenoxy Acetic Acid by Gas Chromatography***

DYLAN GARY and KIM WEAVER

2,4-Dichlorophenoxy acetic acid (2,4-D) is a common herbicide employed to control broadleaf weeds. It was first synthesized during World War II in Britain to increase crop yields for a nation at war. While the EPA has decided that current data does not link 2,4-D to cancer, the International Agency for Research on Cancer has classified the herbicide as a class 2B carcinogen. A study has been performed that found 2,4D to cause male reproductive problems. Gas chromatography will be performed on several water sources within Cedar City to determine the concentrations of 2,4-D as well as possible derivatives. Possible derivatives include 2,4-Dichlorophenol and chlorohydroquinone obtained from soil and aqueous metabolism. An electron capture detector will be employed as the device is 10-1000 times more sensitive than a flame ionization detector.

**physical science**

*Determination of Chlorophyll in Surface Water via Spectrofluorometry*

NICK LIEBHARDT, DAN FELTCH and KIM WEAVER

Fluorescence of chlorophyll has been widely used in ecophysiology studies over the years. Coal Creek has been identified as impaired due to the limited biodiversity. By measuring the chlorophyll levels in Coal Creek and its tributaries, it is hoped that the reason for this impairment may be discovered. In this study, the chlorophyll levels were quantitatively determined in the Coal Creek drainage system using spectrofluorometry. Chlorophyll levels were measured weekly in various local water bodies this spring, demonstrating the timeline of growth of photosynthetic organisms and identifying differences in the biological activity of the various water bodies. Samples were taken weekly from Coal Creek and its tributaries (Left Hand Canyon, Right Hand Canyon, Crow Creek), as well as other nearby sources for comparison.

*Characterization of Ions in Coal Creek*

JOSEPH RUESCH, KASIDY MILLER, SAMANTHA HUNTSMAN,  
SHANNON FORCE, and KIM WEAVER

Through the collection of multiple samples from the tributaries of Coal Creek at multiple times, we determined whether there is a temporal statistical difference in concentration of ions in Coal Creek during the Spring. We also determined whether there is a statistical difference in the ion concentration in the tributaries of Coal Creek. We used the ion chromatograph to separate and quantify the anions, and used the atomic absorption spectrometer to quantify the cations. The samples were taken during high flow and low flow.



*Dynamical Considerations of Relaxation Processes and Clusters of Galaxies*

BRANDON K. WIGGINS, ANTHONY R. THOMAS and BRENT A. SORENSEN

Data from previous numerical simulations in literature maintains that the initial conditions of N-body simulations dictate the final relaxed state of a gravitationally bound system. Understanding of dynamical relaxation may continue to shed light on processes incident to non-linear structure formation. In this paper, we present the results of successive n-body simulations produced through supercomputing containing up to 20,000 particles with differing initial physical and kinematical configurations. Brief discussion is provided on computing algorithms. We compare the results of our work with literature and observation and we discuss these processes in context of large scale structure formation and the kinematics of cluster members. Finally, we present and discuss the results of a simple code engineered to modestly reproduce the kinematics of members of a regular, rich cluster of galaxies which has achieved a semblance of dynamical equilibrium.



*Cross-cultural Emotion Comparison: Experience, Expression, and Interpretation Differences and Similarities between American and Japanese Student*

M. PRESTON LEAVITT, SEUNG-HWA JUNG, MELISSA DeMAIO  
LAUREL UDY, and DAVID SHWALB

As has been shown by Ekman (1972, as cited in Matsumoto & Juang, 2008), there is substantial evidence to support the theory that there are seven universal emotions which have been tested and identified across many cultures. Yet, many differences still exist in the experience of emotions (Shimmack et al. 2002). The question which we pose is simple: to what EXTENT are emotions recognized, expressed, and experienced across cultures? It has long been assumed that East Asians suppress the expression of emotion in comparison to those from Western countries. In order to test this conjecture, a sample of 102 male and female college students, 40 of which were American students and 62 being Japanese students volunteered as participants. These students were administered a 20 question survey, each question having a 1 to 5 ranking (never to often) in order to discover differences or similarities in emotional experience, expression and interpretation. It was hypothesized that Emotional experience will be similar between the two samples, whereas the emotional expression and interpretation is expected to differ. Results will be reported at the presentation.

### **psychology**

#### *Impression Management: A Cross Cultural Comparison between American and Japanese Students*

RUTH BALLARD, TYLER HUNT, JENNA FLYNN, ELAINE ALLEN and DAVID SHWALB

As socially intelligent creatures we are capable of advanced cognition and social awareness. This awareness allows us to perceive others' impressions of us and allows for adaptation in interpersonal behavior to create impressions. Impression management is the process by which individuals manage others impressions of them. This cross cultural study assessed differences in impression management between American and Japanese college students using the impression management factor of the Balanced Inventory of Desirable Responding (BIDR). Results indicate that Japanese students score higher on impression management than American students. The data also suggests that the BIDR is less reliable in the Japanese sample  $r=.74$  than the American Sample  $r=.82$ . Further data analysis will be discussed.

*Defining Self-Respect and Disrespect among High School and College Students*

CAMERON G. BROWN, ALAYNA M. PURDY, DAVID W. SHWALB, KAITLIN A. SEVY, JENNA R. FLYNN, TYLER D. HUNT, and JEREMY R. SUN

This study investigated the meaning of self-respect and disrespect through a content analysis of self-reports by 179 high school and 200 college students. Participants generated 935 free-response examples of disrespect, 1,165 free-response examples of low self-respect and 1,079 examples of high self-respect. Items were q-sorted into 109 (high school) and 199 (college) categories.

## psychology

### *Mortality Salience and the Exploitation of Resources in a Simulated Commons*

TYLER D. HUNT, DARCI M. DIXON, CAMI R. SORENSON, KAEL M. NISSON and BRITTON MACE

The relationship between death and nature has an extensive history. Through evolution only organisms that could adapt to nature's terms could survive and reproduce. Within the circle of life, individual organisms serve as sustenance for one another. Goldenberg, Pyszczynski, Greenberg, Solomon, Kluck, & Cornwell, (2001) found that an increase in death awareness can increase a desire to deny our own animalistic nature. The tragedy of the commons occurs when a shared public good is depleted as a result of over-consumptive behavior. The dilemma becomes apparent when an individual or group takes more than their share from a common pool of resources. Destruction of the pool of resources results from short-term individual greed outweighing long-term collective benefit, resulting in a losing situation for all parties involved. Many simulations have been used in past research to gauge resource decision making, with multiple factors having been found to help prolong the life of the commons. In the present study it is hypothesized that mortality salience will hasten the collapse of a common pool of resources, in this case, fish. The goal of this study is to explore the connection between reminders of death and the exploitation of resources in a commons dilemma simulation. Groups of six college level introductory Psychology students were reminded of death and then asked to participate in a common's dilemma situation.

*Task Perception and Outcomes*

MATT HILL, CAMERON BROWN, ROBERT WARBY, and GRANT  
CORSEY

We conducted an experiment to study the effect of feedback on performance. To do so we used a simple online assessment program to measure the participants' reaction speed. The program flashed different images and the participants were asked to click when a predetermined image was shown (e.g. an apple). We recorded the participants' reaction times and their accuracy rate. We then played for them a sound clip with feedback that was either positive or negative and participants were tested again. The data was analyzed statistically. Results will be useful in giving feedback in the workplace. Now effects of feedback and the outcome most likely to result have scientific validity.

## psychology

### *Does Altering Perception Affect Test Anxiety?*

TIANA THURGOOD, MCKENZIE COOMBS, HANAH ATKINSON,  
RUTH BALLARD, MELISSA FRECKLETON and GRANT CORSER

Many students experience a certain degree of test anxiety, particularly in mathematics. We are studying the effects of positive and negative statements to see if we could potentially reduce this anxiety. A selected group of Salt Lake Community College math students will be given each be given a pop quiz with one of three statements at the top: 1) Most people can answer these questions with ease. Answer these questions as quickly as possible. 2) These are difficult questions that most people struggle to answer. Please take your time. 3) We are collecting data on people's capacity to take pop quizzes. The first statement will be used to initiate negative perception, the second will be used to initiate positive perception, and the third will be used as a neutral control group. Before taking the quiz, students will be given a survey to reflect on their anxiety level. They will then take the quiz for ten extra credit points. Results will be analyzed based on the differences between the positive, negative and neutral perception manipulations. We suspect that the positive statement will decrease anxiety levels due to a lessening of pressure. We suspect the opposite to be true as well; that the negative statement will increase anxiety levels. However, because of the lax nature of the pop quiz (i.e. only extra credit) we may not see a significant result. If we do, the possible benefits of this study will be a greater understanding of test anxiety and possible ways to reduce it.



*The Effect of Pictures on Short-term Mood State*

SEAN VANHILLE, RYAN AVERY, BYRON HEATON, KELSIE FERGUSON, and GRANT CORSER

Mood is a transient state which can affect people's behavior. In this project we are interested in testing whether exposure to certain images affects people's momentary mood state. Also, we were interested in whether other variables (e.g. duration of the exposure) affect mood state. In 1993 Ulrich, Lundén, and Eltinge showed that pictures of natural environment helped to reduce anxiety in surgery patients. Our question relates to the duration of the pictures and how quickly we may be able to manipulate mood if at all. The principle question of interest is whether mood can be manipulated within a short time frame by showing pleasant and unpleasant pictures, condition specific and counter balanced. To test the effect of these pictures, we administered a survey for the participants. In this survey they rated the pictures, their mood state, and then they answer two neutral questions. Our participant pool included students in biology, psychology, geology, and math courses. A PowerPoint presentation was used to expose the participants to the different pictures. Four different groups were used, one from each class. Two different time durations were used for each set of pictures. One time frame was 15 seconds for each the pleasant and unpleasant pictures. The other time frame was 45 seconds for each the pleasant and unpleasant pictures. The presentation of pleasant and unpleasant pictures was alternated in each time frame. Our research may contribute to the therapeutic efficacy of the short-term exposure of pleasant stimuli, specifically pleasant pictures.



*Evidence of Test-retest Reliability Found in the WMS-IV Spatial Memory Design 1 Test*

JESSICA HANSON, STEPHANIE BOWEN and STEVE T. BARNEY

Spatial Memory Design (SMD) is a subtest of the newest version of the Wechsler Memory Scale (WMS-IV). This subtest is designed to measure the participant's level of ability in spatial memory. The data that is going to be collected will be used specifically to look at test-retest reliability in the WMS-IV spatial memory design subtest. The subtest will be given to 20 individuals; 10 males and 10 females. All of which will be selected from a convenience sample of SUU students. After the first administration the participants will be asked to take the subtest again after one week. It is important to know if the SMD is a reliable subtest because it is administered quite frequently in the psychology field peoples' scores impact important decisions.

*Comparing Self-identified Political Views (Conservatism vs. Liberalism) with Quotes from Key Conservative vs. Liberal Philosophers and Politicians: How well do I know my side of the Aisle?*

COLT PERKINS and STEVE T. BARNEY

Pollsters identify one's political affiliation (Conservative, Moderate, Liberal) based on voting patterns. The assumption is that peoples' voting patterns match their political philosophies and beliefs. However, people may not be clear on the fundamental differences between conservative and liberal philosophies. The pollsters' claims may not accurately represent peoples' political views, rather the impact of media, social pressures, financial benefits, etc. to vote for a certain candidate. In this research I explored the relationship between peoples' self-identified political affiliation or view with how strongly they agreed or disagreed with conservative or liberal statements made by political philosophers or icons; when the source was identified or not identified.

**psychology**

*Concurrent Validity of the Four Horsemen Marital Satisfaction Survey*

CHELI WEBB, KELLI ASKEROTH, JARENE EVERTSEN, and  
STEVE T. BARNEY

Research on marital satisfaction and stability may provide insights and methods for newly married couples who are trying to adjust, for couples who are struggling in their marriages, or for couples who want to improve the relationship they share. Past research has suggested that the Locke-Wallace relationship Adjustment Test, is a brief, reliable, and valid measures of marital satisfaction. This study was conducted to (1) Examine responses on the Locke-Wallace Relationship Adjustment Test, and the Four Horsemen from a sample of couples in the Southern Utah area; (2) Assess the concurrent validity of The Four Horsemen Assessment; (3) Explore whether the Four Horsemen assessment is a reliable, and valid marital satisfaction instrument. A sample of 60 couples participated in this research. Couples were randomly picked to participate in this research. Assessments will be correlated and compared for concurrent validity.

*Assessment of Students Knowledge of Service and Learning Center*

ALAYNA PURDY, KAYLEE TRUJILLO, and STEVE T. BARNEY

This study is aimed to gain insight into the students at Southern Utah Universities knowledge, opinions and use of the Service and Learning Center and the services that they offer to the campus and community. Service and Learning Centers are found in almost all Universities in the United States and are used to help people worldwide. In this study 100 students from SUU of all ages and majors will be given a survey to fill out. This survey will be given in a split half format to test for reliability of the survey itself. The data will then be ran to see what factors of the survey are useful and what they show us about the students and their experiences with the Service and Learning Center. This information will allow the center to better advertise and inform the students and the community of how their services may be of personal use to them.

**psychology**

*Concurrent Validity of Extroversion from the Glamour Magazine Personality Test with the Big 5 Personality Inventory*

SHERYL HARDY, ELIZABETH COMBS, KATIE PICKETT and  
STEVE T. BARNEY

Using data collected from students attending the Southern Utah University we examined if the personality test from the popular magazine “Glamour” has concurrent validity with the Big Five Personality Test. The subjects were given both tests online and the personality trait scores for extraversion from both tests was correlated. Since the Big Five Personality Inventory is a reliable and valid measure, if the Glamour Magazine Personality Test accurately measures Extroversion respondents’ scores on it should correlate with their extroversion scores on the Big Five. As a popular media source with millions of viewers, Glamour’s personality test could have an influential impact on important decisions such as employment and relationships.

*The Correlation between Cognitive Ability and GPA*

LEE LARSON, ERIC MOLEFF, HALEY HYNES, MELISSA  
DEMAIO, ROBERT SPURRIER, and STEVE T. BARNEY

There are many decisions made about students according to their GPA without necessarily considering their cognitive ability. Theoretically GPA is one measure of cognitive ability but there are many other factors that may influence one's GPA. In this study we will compare respondents' scores on two cognitive ability tests and compare them with reported GPA. One apparatus is *The Booklet Category Test Second Edition*. This apparatus tests the ability to group criterion and the ability to elaborate upon categories; it also involves the comprehension of similarities and differences (DeFillippis and McCampbell, 2). The second apparatus is *The Portable Tactual Performance Test* by Michael David PhD. This gives a measure of a subject's tactile memory by blindfolding the subject and having them place wooden blocks in their respective holes. This will be done with the subjects in the study using only their dominant hand. GPA will be obtained through self report by the subjects.

**psychology**

*Self Evaluation of Classroom and Test Preparation*

TIM VAIL, SHUNDA POPE, ADAM AHQUIN and STEVE T. BARNEY

We are looking at an individual's overall view of their study, and classroom behavior. We hope to see how they feel they do in such areas as studying, note taking, and paying attention during their class. Then we are going to ask the same questions once they have received a grade for a recent test and compare the scores at both times of test taking to the score they received on their original test to find out if students views of their class preparation change once they receive their grade from a test. Participants will be recruited through General Psychology Pool at SUU, and also selected from a convenience sample of available classes in the Psychology Dept.

## NAME INDEX

---

Ahquin, Adam.....	60
Allen, Elaine.....	48
Andersen, Kay.....	5
Anderson, Kellie.....	27
Askeroth, Kelli.....	56
Atkinson, Hanah.....	52
Avery, Ryan.....	53
Bahi, Saïd.....	39
Bain, Bonnie.....	37
Ballard, Ruth.....	48, 52
Barney, Steve T.....	54, 55, 56, 57, 58, 59, 60
Baumann, David.....	41
Bell, Patrick.....	31
Berrett, Elise.....	26
Bowen, Stephanie.....	54
Brown, Sarah.....	24, 40
Brown, Cameron.....	49, 51
Bullock, Bryan.....	26
Bunker, Lauren.....	42
Calder, Sarah.....	12
Carter, Bryce.....	32
Carter, Kelcie.....	27, 28
Christensen, Shane.....	35
Colberg, Mark.....	25
Combs, Elizabeth.....	27, 58
Coombs, Mckenzie.....	52
Corser, Grant.....	26, 27, 29, 51, 52, 53
Cozzens, Richard.....	36

# NAME INDEX

---

Craft, Kim.....	38
DeMaio, Melissa.....	47, 59
Dillard, Darren.....	42
Dixon, Darci.....	50
Doel, Derek.....	24, 40
Evertsen, Jarene.....	56
Feltch, Dan.....	44
Ferguson, Kelsie.....	53
Flynn, Jenna.....	48, 49
Force, Shannon.....	42, 45
Forsyth, Meggan.....	5
Freckleton, Melissa.....	52
Frehner, Christopher.....	17
Gale, James.....	34
Gallis, John.....	24, 38
Gardner, Lane.....	36
Garlick, Jared.....	31
Gary, Dylan.....	43
Govedich, Fred.....	37
Grady, Artis.....	8, 9
Grimm, Brett.....	29
Grimshaw, Kasidy.....	42
Hamrick, Katherine.....	14, 15, 16
Hansen, Ashley.....	29
Hansen, Angelia.....	20
Hansen, Taran.....	18
Hanson, Jessica.....	54

## NAME INDEX

---

Hardy, Sheryl.....	58
Harris, Genell.....	20
Haskell, Trent.....	25
Heaton, Byron.....	53
Heckenbach, Katherine.....	26
Herrick, Anthony.....	24, 37
Higbee, Judy.....	19, 22, 23
Hildebrand, Terri.....	33
Hill, Matthew.....	51
Humphries, Laura.....	12, 13
Hunt, Tyler.....	48, 49, 50
Huntsman, Samantha.....	42, 45
Hynes, Haley.....	59
Jensen, Alicia.....	11
Jung, Seung-Hwa.....	47
Lamlenn, Kennith.....	41
Larson, Lee.....	59
Leach, Jordan.....	42
Leavitt, M. Preston.....	47
Leckington, Janelle.....	28
Liebhardt, Nick.....	44
Losee, Ammon.....	35
Mace, Britton.....	50
Marks, Darrell.....	20
Martin, Ron.....	32
Matthews, Lindi.....	22
Mecham, Lacey.....	8
Mendini, Shauna.....	4

## NAME INDEX

---

Miller, Kasidy.....	45
Moleff, Eric.....	59
Murie, Heather.....	28
Neighbor, Amber.....	18
Nelson, Jamie.....	8
Neppl, Alexandrah.....	28
Nisson, Kael M.....	50
Noyes, Brianne.....	9
Ocampo, Paul.....	5
Perkins, Colt.....	55
Pickett, Katie.....	58
Pillitteri, Paul.....	18
Pope, Shunda.....	60
Porter, Jacob.....	34
Potter, Derek.....	31
Price, Steven.....	37
Purdy, Alayna.....	49, 57
Redd, Ty.....	42
Riche, Brett.....	31
Roberts, Eric.....	25
Ruesch, Joseph.....	45
Ruzzamenti, Katelin.....	4, 5
Schmidt, Matthew.....	8, 17
Sevy, Kaitlin.....	49
Shwalb, David.....	28, 47, 48, 49
Smetanka, Rachel.....	18, 31
Smith, Alexis.....	5

Smith, Holly.....	26
Sorensen, Brent A.....	46
Sorenson, Cami.....	50
Spurrier, Rob.....	59
Staheli, Matthew.....	29
Jeremy Sun.....	49
Taylor, Julie E.....	19, 21, 22, 23
Terry, Cherisa.....	5
Terry, Stephanie.....	5
Thomas, Anthony R.....	46
Thomas, Geoff.....	41
Thurgood, Tiana.....	52
Trujillo, Kaylee.....	57
Udy, Laurel.....	47
Vail, Tim.....	60
Vance, Logan.....	31
Vanhille, Sean.....	53
Wackowski, Katie.....	6
Walsh, Mykel.....	17
Wang, Chien-Ying.....	6
Warby, Robert.....	51
Ward, David.....	34, 35
Weaver, Jared.....	33
Weaver, Kim.....	41, 42, 43, 44, 45
Webb, Cheli.....	56
Weeks, Lexie.....	5
Weingartner, Andreas.....	40
Wendler, Rachelle.....	19

# NAME INDEX

---

White, Hillary.....	23
Wiggins, Brandon.....	46
Wiggins, Devin.....	24, 39
Wilcox, Shelynn.....	11
Wilson, Cynthia.....	10
Wood, Bryn.....	14, 15, 16
Wright, Cynthia.....	10,11,12,13,14,15,16
Wright, Dallas.....	31
Yellowhorse, Shaun.....	20
Zitting, Levi.....	29