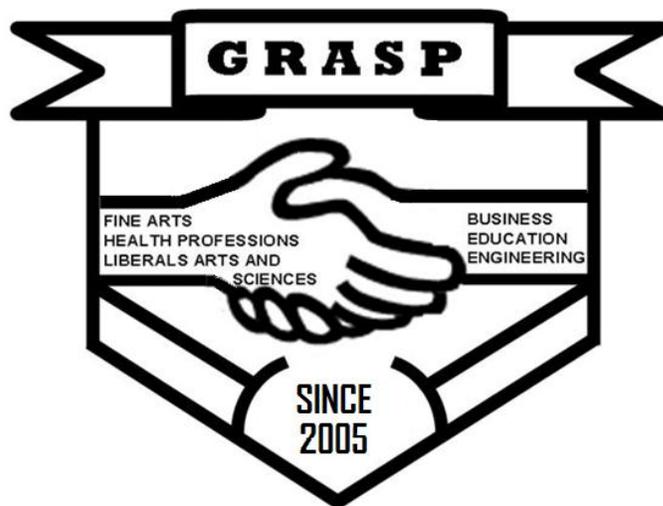


PROGRAM & ABSTRACTS

8th Annual Symposium on Graduate Research and Scholarly Projects

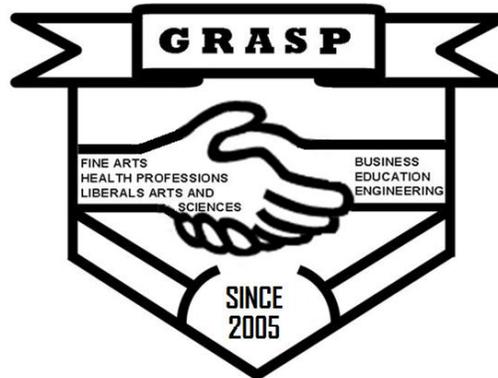


April 18, 2012

Marcus Welcome Center

Mara Alagic, GRASP Chair





2012 GRASP SYMPOSIUM

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8th Annual Symposium Graduate Research and Scholarly Projects–GRASP

Opening Session in Wallace Auditorium Marcus Welcome Center	
8:00 – 8:30	Registration
8:30 – 8:45	Opening Remarks: Zachary Kral, <i>Graduate student in Department of Aeronautical Engineering</i> Recipient of 2012 Capitol Graduate Research Summit award
Keynote 8:45 – 9:15	David McDonald Associate Provost for Research & Dean of Graduate School <i>Scholarly Research and the Value of Research Integrity</i>
9:15 – 9:30	Poster Viewing and Refreshments Clark & Armstrong Auditorium
9:30 – 10:30	Oral Presentations: Session 1 – Wallace Auditorium
10:30 – 10:45	Break/ Viewing Posters Clark & Armstrong Auditorium
10:45 – 11:45	Oral Presentations: Session 2 - Wallace Auditorium
11:45 – 1:00	Lunch Break/ Viewing Posters King Auditorium
1:00 – 2:00	Oral Presentations: Session 3 - Wallace Auditorium
2:00 – 2:15	Break/ Viewing Posters Clark & Armstrong Auditorium
2:15 – 3:15	Oral Presentations: Session 4 - Wallace Auditorium
3:15 – 4:15	Break/ Viewing Posters Clark & Armstrong Auditorium
GRASP Awards 4:15	Donald Gilstrap Dean of University Libraries & Professor of Educational Leadership

Scholarly Research and the Value of Research Integrity

Panel Moderator: David McDonald

Associate Provost for Research & Dean of Graduate School

All researchers must ultimately be trusted by those who consider the results of their research, otherwise the results are worthless. Therefore, it is of the highest importance that each researcher conducts their studies and themselves in such a way that trust will naturally be engendered. For this purpose, it is important to learn the standards and expectations for the conduct of research in our chosen field. Some of these will be unique to a given field, but there are also a number of general principles that extend to all fields of inquiry. A key part of our education is to learn these and to adopt them as our normal professional behavior. In my presentation, I will seek to present a number of the general principles and describe their value. I will also present the perspective, taken from my experience as a researcher, that it is not sufficient to be intelligent, innovative or hard-working, if we are not viewed as a trustworthy source.

GRASP ORAL PRESENTATIONS

Moderator: Dr. Abu Asaduzzaman			Page
9:30	Cristian Fernando Beza Beza	Using the Phylogeography of <i>Ogyges Kaup</i> and <i>Petrejoides Kuwert</i> (Coleoptera: Passalidae) as a Tool for the Prioritization of Conservation efforts in the Mesoamerican Cloud Forests	10
9:40	John (Jack) Brand	Due Diligence vs. Compromise in Communication Between Wind Energy Developers and Communities	10
9:50	William Cook	Measuring Joint Hypermobility using the Beighton Scale in Children with Intellectual Disability: A Study of Reliability	11
10:00	Katherine Coykendall	Linking Prairie Invasions by <i>Sericea (Lespedeza cuneata)</i> to Resource Competition and Plant-Soil Feedback	11
10:10	Amanda Dean	Effects of Neuromuscular Electrical Stimulation on Swallowing- Real or Placebo? One Case Study	12
Moderator: Dean Amanda			Page
10:45	Michelle R Dreiling	Beyond Annie Oakley: An Analysis of TV's Portrayal of Markswomen	12
10:55	Matthew Eames	Redefining Materiality: Physical Relationships of Materials in Comparison to Clay	13
11:05	Stephen Gardner	The Dynamics of Chinese Purchases of U.S. Securities	13
11:15	Farnaz Ghazi Nezami	Reliability-Based Energy Efficient Scheduling	14
11:25	Abby Guhl	A Pilot Study to Determine the Usability of the Falling LinKS Toolkit for Older Adults in Two Rural Kansas Communities	14

Moderator: Abby Guhl			Page
1:00	Alexander Petrenko	The Mirage of the Composer: A Performer's Musical Decisions	15
1:10	Jennifer Gurnsey	Increasing the Physical Activity Level of Older Women	15
1:20	Jung Sim Jun	Assessing The Mediating Role of Spirituality on the Relationship between Stress and Depression of Older Adults in Assisted Living Facilities	16
1:30	Zachary Kral	Use of Artificial Neural Networks to Detect Damage in Composite Laminates	16
1:40	David Libby	Evaluation of Driver Distraction: Text Messaging versus Talking on a Cell Phone	17
Moderator: David Libby			page
2:15	Jordan Poland	Lorenzo D. Lewelling and Kansas' "Civil" War	17
2:25	Patrick Rinker	Pellet Ablation in Tokamak Reactors	18
2:35	Colleen D Scott	Unreachable horizons- Women's Destiny in 2 stories of Carmen Martin Gaité	18
2:45	Prasannavenkatesh Tamilselvan	Quantification of Economic and Environmental Benefits for Predictive Wind Farm Operation and Maintenance	19
2:55	Mahendra Karthik Vepuri	Coverage Extension Using Power- Controlled Relaying In CDMA	19

GRASP POSTER PRESENTATIONS			Page
GP1	Jamie Agan	Incidence of Physical Activity Prescription in Older Adults by Healthcare Providers: A Systematic Literature Review	22
GP2	Jaime Andrews	A Case Study in Autism Intervention: A Novel Conversational Approach	22
GP3	Brian Austin Barnes	Measuring the Reliability of Motor Coordination and Balance Testing in Youth with Intellectual Disabilities	23
GP4	Shae A Blevins	Hunger Awareness Initiative: Are Wichita State University graduate students hungry?	23
GP5	Rondell Burge	The Effects Of Texting And Driving On Hazard Perception And The Adoption Of Drivers Response Strategies	24
GP6	Fatemeh Chadegani	F-NMR studies on Anthrax Protective Antigen	24
GP7	Taryn R Cipra	Comparative Demography of the Blue-gray Gnatcatcher and Cerulean Warbler	25
GP8	Ryan Cook	Google It! Comparison and Evaluation of the Quality of Online Information Regarding Concussion	25
GP9	Sileen Dowis	Use of Erythropoietin for Treating Anemia of Chronic Kidney Disease in a Hospitalized Pediatric Population: MUE	26
GP10	Lindsey Eckenrode	Perception about Concussions in the Missouri Valley Conference	26
GP11	Elizabeth Epps	Assessment of Balance and Cognitive Function in Youth Gymnast	27
GP12	Mohammad Amin Esmaeili	Computed Tomography (CT) Scan and Digital Radiography (DR) Direct Energy Consumption Comparison	27
GP13	Aubrey Fetherston	Kansas Pharmacists' Knowledge, Attitudes and Beliefs Regarding Over-the- Counter Emergency Contraception	28
GP14	Loralea M Francis	Vocabulary Instruction is Not a Luxury	28
GP15	Sarah Gayed	Fall Prevention	29
GP16	Armin Ghoddoussi	A Conceptual Study of Airfoil Performance Enhancements using CFD	29

GRASP 2012

GP17	William Hawkins	Effect of Whole Body Vibration Exercise on Muscle Activity When Using Elastic Resistance Bands	30
GP18	Rachael Hughes	Normative Values for a Functional Upper Extremity Strength Test	30
GP19	Brittany Imel	Correlations of Preadmission Criteria and Post Admission Didactic GPA to PANCE Results	31
GP20	Jo Rain Jardina	Which e-Reader is e-Sier to Use: iPad, Kindle, or Nook?	31
GP21	Babak Karimi	A Reliability Analysis for Smart Grid Distribution Communication	32
GP22	Kayla Keuter	Assessment of Community Fall Prevention Toolkit	32
GP23	Gladys Siok-Hian Kwa	The Handmaiden's Plight: An Investigation of Survivor Ideologies of Marginalized Asian Women	33
GP24	Sarah Lavallee	At War with Memory: National versus Local Interpretations of Vietnam Veterans Memorials	33
GP25	Katie Thanh Le	Unpacking Hunger on Campus: An Analysis of The WSU Hunger Awareness Initiative	34
GP26	Yung Lee	Determination of All Non-integer-Order PID Controllers that Satisfy a Weighted Sensitivity Constraint	34
GP27	Ashley Lentz	Body Mass Index in Relation to Foot Pronation	35
GP28	Archana Mishra	In situ Generation of Bromine for Micelle-Assisted Bromination and Oxidation	35
GP29	Melinda Mueller	Interactions between Ease of Bridging Inference Generation and Working Memory	36
GP30	Parisa Nazaran	Team Decision Skills Development Using MBTI © Step II	36
GP31	Bobby Nguyen	Spatio-Temporal Integration & Optic Flow Quality: Unpacking Factors that Influence Driving Performance	37

GRASP 2012

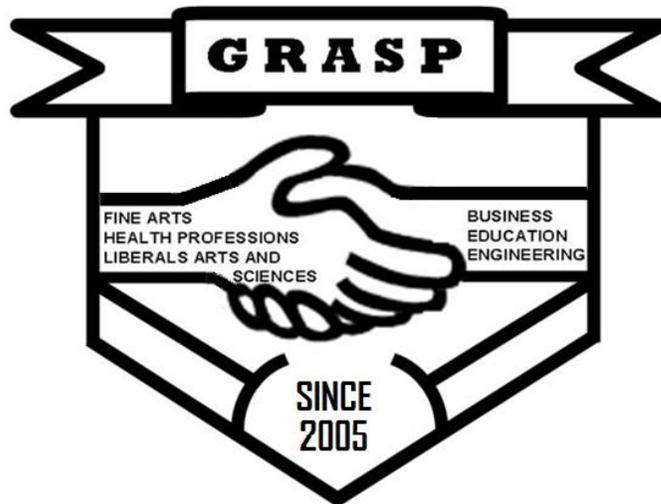
GP32	Rachel Norris	Communication Needs of Twins with Angelman Syndrome: A Qualitative Approach	37
GP33	Samuel Ofei-Dodoo	Impact of Moderate Intensity Physical Activity on the Functional Fitness of Older Women	38
GP34	Justin Owens	Are Two Computer Monitors Better Than One?	38
GP35	Vamsidhar Reddy Patlolla	New Progress in Self-Healing Technology of Composite Wind Turbine Blades	39
GP36	Sierra Patton	Respiratory Support During Speech Breathing In Adolescents In Different Positions	39
GP37	Ashlee Nicholle Pauls	Development, Implementation and Evaluation of a Senior Mentor Program in PA Education	40
GP38	Mikki Phan	Let the Games Begin: Video Game Usage Patterns among Current Gamers	40
GP39	Brandon Phipps	The Perceptions of U.S. Physician Assistants (PA) Regarding PA to Physician Bridge Programs	41
GP40	Ashley Reinhard	Current Knowledge and Beliefs of Kansas Physicians Regarding Domestic Minor Sex Trafficking	41
GP41	Austin Rhodes	Saloons: Eat, Drink, and be Civil	42
GP42	Devin C. Roberts	Physiological Fitness Profile of Collegiate Cheerleaders	42
GP43	Tao Shen	James Bond's Allure: A Semiotic Analysis of 007 Movie Posters	43
GP44	Kouri Simon	Patient-Provider Communication	43
GP45	Joyce St. Clair	Art Within Decoration	44
GP46	Carina Staab	Reproducibility of Balance Measures using Motion Sensors in Smartphone Technology to Measure Balance: Preliminary Result	44
GP47	Brent Swart	Acute Effect of Whole-Body Vibration on Knee Extensor Strength	45
GP48	Chai Fang Tan	In Defense of Nudism: Rhetorical Analysis of the Naturist Society's Website	45
GP49	Jessica Taylor	Effects of Skecher Shape-Ups on Muscle Activity During Walking, Sit-to-Stand, Balance, and Step-Ups	46
GP50	Kristen Tripp	Art and Science Intersect	46

GRASP 2012

GP51	Fernando Valenzuela	Statistical Analysis to Establish the Relationship Between Radiation Consumption and Energy Use for Medical X-rays	47
GP52	Hessamedin Vali	Cash Flow Optimization In a Multi-Project Environment	47
GP53	Heidi Vanravenhorst-Bell	Changes in Tongue Strength and Endurance After a Typical Meal in Healthy Older Adults	48
GP54	Lars Voltz	Ritual Genesis: Constructing Systems of Belief	48
GP55	Pravin K Wagley	Microbial Community Analysis of Open Ponds for Algal Biodiesel Production	49
GP56	Zifan Wang	LacI- DNA- IPTG Loops: Equilibria among Conformations by Single- Molecule FRET	49
GP57	Melissa Whitney	Physician Assistant Program Education on Spirituality and Religion in Patient Encounters	50
GP58	Arleta Wiebe	The Effects of Explicit Grammar Feedback on Student Writing	50
GP59	Bryant M Wong	Reducing Invasion by Targeting Vulnerable Life Stages: Effects of Fire on Survivorship of <i>Lespedeza cuneata</i>	51
GP60	Chok Meng Yip	A Microprocessor Based Green- Device for Analyzing Students' Classroom Attendance and Performance	51

ABSTRACTS:
ORAL PRESENTATIONS

**8th Annual Symposium on
Graduate Research and
Scholarly Projects**



Using the Phylogeography of *Ogyges* Kaup and *Petrejoides* Kuwert (Coleoptera: Passalidae) as a Tool for the Prioritization of Conservation Efforts in the Mesoamerican Cloud Forests

Cristian F. Beza-Beza^{*1,2}, J. C. Schuster², E. B. Cano², M. Palimieri² & D. Archila²

Faculty: Mary Liz Jameson

1: Department of Biological Sciences 2: Universidad del Valle de Guatemala

Cloud forests of the montane region of Mesoamerica have high levels of endemism and are important for biodiversity conservation. Prioritization of conservation areas is possible using biogeographic and phylogenetic information. The phylogeography of the flightless and endemic bess beetles *Ogyges* and *Petrejoides* (Coleoptera: Passalidae) will be used to prioritize conservation areas and identify unique genetic reservoirs in the southern Guatemalan montane region (*Ogyges*) and Mesoamerica (*Petrejoides*). I will evaluate the systematics and biogeography of *P. orizabe* species group. This research will be useful in clarifying the ongoing debate concerning the classification of *Petrejoides*, prioritizing conservation areas in Mesoamerica, identifying unique genetic reservoirs, and contributing to the knowledge in the natural history of the area.

Due Diligence vs. Compromise in Communication Between Wind Energy Developers and Communities

John H Brand III

Faculty: Deborah Ballard-Reisch

Master at Arts in Communication Program, Elliott School of Communication

Wind Energy is a critical issue in our nation and especially in Kansas. In 2010, a team of graduate students under the supervision of Dr. Ballard-Reisch conducted key informant interviews (KIIs) (n=30) and 9 focus groups (n=88) in three Kansas counties (Butler, Kiowa, and Wabaunsee), drawing on three very different contexts for assessing communication issues surrounding such development. This secondary analysis of the research data gathered in 2010 delves more deeply into the specific aspect of the relationships among consultation and information dissemination and community acceptance and involvement, as well as to explore the dichotomy of the perceptions of these issues for decision makers and community members. Data are analyzed using inductive, qualitative thematic analysis. Results indicate that community acceptance positively correlates with three themes: community notification, community dialogue and community benefit. The theme of community dialogue contained subthemes of channel selection, dichotomy of perceptions regarding due diligence and marginalization.

Measuring Joint Hypermobility using the Beighton Scale in Children with Intellectual Disability: A Study of Reliability

William Cook*, Maria Hadley, Courtney Harrington & Kendra Niederklein
Faculty: Ken Pitetti
Department of Physical Therapy

Hypermobility relates to excessive joint motion caused by laxity of surrounding tissue, thus allowing joints to move beyond the expected normal range. The 9-point Beighton Hypermobility Score (9-BHS) is the most widely used system for diagnosis of joint hypermobility in children without disabilities. However, it is not known if the 9-BHS, which involves 9 maneuvers, can be performed correctly by youth with intellectual disabilities (ID). The purpose of this study was to determine the reliability of using the 9-BHS for youth with ID. Twenty-five (14 male, 11 female; Age = 13.3±2.9 yrs) participants were assessed on two different days with 3-4 weeks between evaluations. Percent (%) agreement between tests was determined by Cohen's kappa coefficient. Kappa scores indicated moderate (.41-.60, 3 maneuvers), substantial (.61-.80, 5 maneuvers), and perfect (1.0, 1 maneuver) agreement. These results indicate that the 9-BHS has similar reliability when used to diagnose hypermobility in youth without disabilities.

Linking Prairie Invasions by *Sericea (Lespedeza cuneata)* to Resource Competition and Plant-Soil Feedback

Katherine Coykendall
Faculty: Gregory Houseman
Department of Biology

Invasive species such as *Lespedeza cuneata* (*sericea lespedeza*) can have detrimental effects on invaded ecosystems potentially due to low ecosystem resistance under resource limitation. To test this hypothesis, two greenhouse experiments were designed, one focusing on the response of dominant prairie grass *Sorghastrum nutans*, the other testing the response of multiple native species. Both used experimentally manipulated field soil with a history of either the invader or native species. In addition, the first experiment manipulated water level and nutrients, while the second manipulated water. In each experiment, native species were planted with either a congeneric or *L. cuneata* to compare the effect of invader relative to a native species. Both experiments resulted in decreased biomass for several of the native species. Additionally, low water conditions resulted in decreased biomass when grown with *L. cuneata* for *S. nutans*. In the multispecies competition study, *L. cuneata* biomass increased under low water conditions when grown in invaded soil relative to native soil. These results support multiple mechanisms for invasive success, specifically, increased competitive success under water limitation, and creation of plant-soil feedbacks that may increase invasion potential.

Effects of Neuromuscular Electrical Stimulation on Swallowing - Real or Placebo? One Case Study

Amanda K. Dean

Faculty: Lyn Goldberg

Department of Communication Sciences and Disorders

Neuromuscular electrical stimulation (NMES) of laryngeal muscles is a popular treatment strategy for adults with dysphagia (swallowing difficulty). However, the evidence base for the theoretical premise of this strategy is limited. Advocates of the approach state that notable improvements in swallowing ability can be observed after 12 consecutive days of treatment. The adult in this case study was a 42 year-old woman with a history of drug abuse and related physical and nutritional problems. She suffered a series of strokes and was admitted to the Veterans Administration system for care. Her difficulties were documented through a Modified Barium Swallow (MBS) videofluoroscopic examination as she swallowed thin and nectar-thick liquids. The transit of each liquid was measured at five specific landmarks and showed that her swallow was significantly delayed with evident aspiration of liquid into her airway. She underwent 10 consecutive days of NMES treatment and a repeat MBS examination. Post-NMES liquid transit measures continued to document a delayed swallow and aspiration. However, the participant felt strongly that NMES was effective. Results raise important considerations about the placebo effect in treatment and its influence in decision-making.

Beyond Annie Oakley: An Analysis of TV's Portrayal of Markswomen

Michelle Dreiling

Faculty: Patricia Dooley & Deborah Ballard-Reisch

Elliott School of Communication

Media portrayals influence how women are perceived in society. Historically, women have often been chastised or punished for exhibiting skills and attributes which have been traditionally perceived as appropriate for men and therefore, inappropriate for women. Currently, some reality television series seem open to portraying women in roles which have historically been considered inappropriate for them. The purpose of this study was threefold: to discern whether the History Channel's television series *Top Shot* provides a sexist representation of either gender, to determine whether casting is gender-biased when compared with ratios of women and men in the Military, Hunting, Law Enforcement, Exhibition, and Competition sectors, and to assess whether markswomen are marginalized based on their gender. This study finds that the series provides a slightly sexist representation of markswomen, that casting appears gender-biased, and that fan opinions reflect a difference in the treatment of female and male contestants.

Redefining Materiality: Physical Relationships of Materials in Comparison to Clay

Matthew Eames

Faculty: Ted Adler

Department of Fine Arts, Ceramics

Clay and its ceramic counterparts are one of the most prominent materials used within contemporary society. There is countless integration amongst the development of our surrounding world from utilitarian vessels to electrical conduits to space shuttle tiles. With that said, it can be argued that in nearly all areas of efficiency as a physical and malleable material, clay through its various states proves to be the superior medium. Yet what components of clay allow for such an efficient and malleable medium when compared to others? As the proponents of manipulation with materials will allow, I will be attempting to create a series of works replicating the effects of clay as material through wood, metal, plaster, fiber and plastic. Each piece will contain a clay portion and the additional collaborative material. The purpose is to relate the physical nature of materials and their relevance towards one another. The results will provide a symbiotic representation of the essential proponents of individual material advancements to effectively recreate clays' diverse material tendencies

The Dynamics of Chinese Purchases of U.S. Securities

Stephen Gardner

Faculty: Jen-Chi Cheng

Department of Economics

A significant amount of academic literature exists on the United States' trade deficit, and its financing through foreigners' purchases of U.S. securities. Over the last several years, the trade relationship between The U.S. and China has received considerable attention as China has acquired large positions in U.S. securities. This study examines the dynamics of how China has allocated its portfolio of short-term and long-term U.S. Treasury securities relative to its holdings of U.S. equity, corporate debt, and asset-backed securities. We find that changes in Chinese holdings of short-term Treasuries are well explained through portfolio allocation dynamics, while changes in Chinese holdings of long-term Treasuries are not well explained by portfolio allocation dynamics.

Reliability-Based Energy Efficient Scheduling

Farnaz Ghazi Nezami

Faculty: Mehmet Bayram Yildirim

Department of Industrial Manufacturing Engineering

A multiobjective model was proposed to minimize energy consumption, machine failure rate, and total completion time of jobs in a single machine manufacturing environment given that machine failure rates are different during idle, setup, and processing operation modes. Turning off the machine during the interarrival period between two consecutive jobs will save some energy in comparison to running the machine in idle mode. However, it may impact the reliability of the machine adversely due to resulting shocks during the setup (turn off/on) process. Energy consumption and total completion time minimization and reliability maximization are conflicting objectives which were considered simultaneously in this study. The proposed multiobjective model was solved using a weighted approach and sensitivity analysis was performed to investigate the impact of variations of some parameters on the model.

A Pilot Study to Determine the Usability of the Falling LinKS Toolkit for Older Adults in Two Rural Kansas Communities

Jenna Gatz, Abby Guhl, Dana Neufeld & Brianne Porter

Faculty: Candy Bahner

Department of Physical Therapy, College of Health Professions

Falls among older adults (≥ 65 years) present major health and economic consequences. The WSU Falling LinKS research team developed a falls awareness and prevention toolkit tailored to rural areas in Kansas. *Purpose:* Evaluate the perceived usability of the Falling LinKS Toolkit by older adults in two rural Kansas communities. *Methods:* Thirty-one participants were given copies of the Toolkit. A survey regarding its usefulness was distributed six weeks later. *Results:* The majority of respondents (n=24, 77.4%) agreed that the Toolkit was easy to use (78%), useful (69.5%), and that they would recommend the Toolkit to others (60.9%). *Conclusion:* The Falling LinKS Toolkit is a useful resource for older adults in rural areas for fall prevention education and strategies.

The Mirage of the Composer: A Performer's Musical Decisions

Alexander Petrenko
Faculty: Gerald Scholl
Percussion Department

Up until recently, the Western art music tradition has privileged the composer as the best authority concerning issues of performance practice. This view was ingrained in the nineteenth century with European composers who sought complete control of their musical score. In the realm of Japanese contemporary music, the pieces do not conform to Western notions of cadence, phrasing or even harmonic structure. The performer furthermore has to make decisions which conflict with what the composer wrote. The piece "MIRAGE" for marimba (1971) by Yasuo Sueyoshi (b. 1937) will be discussed in the context of suitable methodologies to bring out the composer's ideas, which are not written explicitly into the score. The composer emerges as a "mirage" who then blends with the performer in order to create the final work. The inherent capabilities of the instrument, extended techniques, and music theory will be explored in how they relate to make the piece acceptable to Western ears. The author makes the case that "MIRAGE" is part of a growing trend in the dissolution of the Euro-Composer-Hegemony in the West.

Increasing the Physical Activity Level of Older Women

Jennifer Gurnsey* & Samuel Ofei-Dodoo
Faculty: Nicole L. Rogers
Department of Public Health Sciences – Aging Studies

The American College of Sports Medicine (ACSM) recommends older adults (OA) spend 30min/5d/wk engaging in moderate intensity physical activity (MVPA). However, OA spend considerable time engaging in low-level activity and little time in MVPA. **PURPOSE:** To determine the efficacy of detailed feedback (FB) to increase OA time spent in MVPA compared to a verbal recommendation (VREC) and control (CON). **METHODS:** Sixty-eight women recruited from senior-based programs for an 8-wk, 3-intervention arm trial, were randomly assigned to 1 of 3 groups: VREC, FB, and CON. Individuals meeting ACSM recommendations were excluded. Participants completed an ACSM recommendation knowledge questionnaire and wore an accelerometer (ACCEL) to monitor 8 weeks of daily physical activity. VREC read/received ACSM recommendations similar to mass media dialogue promoting MVPA and then asked to meet recommendations by the 8-wk point. No additional information was provided. FB walked 3 d/wk on a monitored indoor walking track, and on their own 2 d/wk. FB received all VREC procedures, received MVPA walking instruction (HR monitored) and weekly ACCEL feedback (time spent in MVPA and MVPA goals). CON continued their normal activities for 8-wks. **RESULTS:** Analysis includes descriptive, frequencies, and multivariate analysis of variance. **CONCLUSIONS:** Detailed feedback *will* successfully increase the amount of time older adults spend in MVPA. VREC and CON *will not* exhibit a significant increase in MVPA.

Assessing the Mediating Role of Spirituality on the Relationship between Stress and Depression among Older Adults in Assisted Living Facilities

Jung Sim Jun

Faculty: Brien L. Bolin & Kyoung H. Lee

School of Social Work

This study examined the relationship between stress and depression, and the mediating role of spiritual factors among 316 older adults, 65 years or older in assisted living facilities. Hierarchical regression analysis revealed that a high level of stress was associated with a high level of depression among older residents. For male residents, a Sobel test indicated that the direct coefficient of stress on depression decreased when spiritual coping and forgiveness were mediated. However, there was no significant mediating role of spiritual factors for stress and depression among female residents. This study suggests the importance of providing spiritual support for older men who are dealing with significant stress as a way to minimize depressive symptoms.

Use Of Artificial Neural Networks To Detect Damage In Composite Laminates

Zachary Kral

Faculty: Walter Horn & James Steck

Department of Aeronautical Engineering

Maintenance has remained an important issue in the aerospace structures and materials field. As technologies have improved, composites have begun to replace increasingly more structural components. However, these still have a long expected life for service use and damage can occur within that time. Ultrasonic sensors can be placed on or within composite laminates to scan for damage. Analysis of signals from these sensors is difficult for composites due to effects of material boundaries. A novel method of using artificial neural networks to interpret signals has been investigated for this research. A simple four sensor system was created for this study. Four sensors were placed 4.25 units apart. In a pitch-catch method, strain waves produced by one sensor (used as an actuator) passed through the material and were received by the other three sensors. The received waves are then analyzed by artificial neural networks and a damage position was predicted. This system has been trained to identify damage location within the square area for actuator signals ranging from 50kHz to 100kHz. The system of four sensors was demonstrated to predict the damage location with a confidence interval of 95%. The research presented is a novel method of interpreting ultrasonic signal analysis with artificial neural networks which could be adapted to future structural health monitoring systems.

Evaluation of Driver Distraction: Text Messaging versus Talking on a Cell Phone

David Libby

Faculty: Alex Chaparro

Human Factors Psychology

This study compared the effects of texting and talking on a cell phone while equating for the time on task. The purpose was to determine if differences in effect on driving performance in previous research was simply due to differing amounts of time required to complete each task. Participants responded to text messages and phone calls and categorized words as a state (e.g., Maine), fruit (e.g., Kiwi) or drink (e.g., Coke). There was a significant main effect of response mode (talking vs. texting) on all measures of driving performance. While texting, drivers had were slower to react to peripheral targets, missed more peripheral targets, had more variability in their mean speed and made more glances away from the roadway compared to when talking on a cell phone. Drivers also performed significantly worse on most measures when talking on a cell phone relative to the baseline condition.

Lorenzo D. Lewelling and Kansas' "Civil" War

Jordan A. Poland

Faculty: Jay M. Price

Department of History, Fairmount College of Liberal Arts and Sciences

"Lorenzo D. Lewelling and Kansas' "Civil" War," will examine one of the most obscure periods in Kansas political history, the early 1890s. The paper will explore the rise of Populism, a grassroots third-party movement that upset the long-standing Republican majority in Kansas, and show how this movement brought Kansans to the brink of violent conflict on the Capitol grounds. This study will examine the topic through the eyes of the state's twelfth governor, Wichitan Lorenzo D. Lewelling, and show how his action, and inaction, in office changed reform politics in Kansas for the next twenty five years.

Pellet Ablation in Tokamak Reactors

Patrick Rinker

Faculty: Tianshi Lu

Department of Mathematics, Statistics and Physics

Injecting frozen hydrogen pellets has been proposed as a method of efficiently refueling Tokamak fusion reactors. The intense heat of the reactor causes the pellet to lose mass in a process called ablation. This process creates a cloud-like area around the pellet which partially shields it from further ablation. We are interested in modelling the behavior of the pellet and the resulting flow numerically. We will present the effect of physical parameters such as magnetic field strength, pellet rotation, and pellet surface conditions on the rate of pellet ablation. Improvements made to older models will be discussed. Data and conclusion will be presented for the one-dimensional and two-dimensional case. Areas of further research will be explained.

Unreachable horizons – Women’s Destiny in 2 stories of Carmen Martín Gaité

Colleen D. Scott

Faculty: Eunice Myers

Department of Modern & Classical Languages and Literature/Spanish

I examine the oppressed role of women in two stories by author Carmen Martín Gaité. Set against the backdrop of a post-civil war Spain, the stories echo the desolation and angst felt by many during this time. The female protagonist in each story strives for a better life, away from her own. Each battles with internal conflicts as well as the external pressures of a patriarchal society. Escapism is their means of coping. I examine the incongruity between their dreams and their reality and what impedes them from realizing their full potential. The protagonist in "La oficina" represents the voice of a single, repressed woman, where as the character in "Un alto en el camino" represents an oppressed woman, within a marriage and within society. Even when the characters seem to be moving towards their full potential, they always return to their realities and thus continue to live an unfulfilled life. I show how societal pressures cause an unfulfilled life for these women with supporting references such as, "The Madwoman in the Attic" and "Archetypal Patterns in Women's Fiction", discussing the expected roles and norms of women in society. I conclude focusing on the limitations of women, not just in post-civil war Spain, but in society in general, and the ramifications that these limitations have for women.

Quantification of Economic and Environmental Benefits for Predictive Wind Farm Operation and Maintenance

Prasanna Tamilselvan

Faculty: Pingfeng Wang

Department of Industrial and Manufacturing Engineering

Maintaining wind turbines in top operating condition ensures not only a continuous revenue generation but a reduction in electric power drawn from non-renewable and more polluting sources. Tremendous advances in high performance sensing and advanced signal processing technology enable the development of failure prognosis tools for wind farms (WF) to diagnose, and predict the system-wide effects of failure events. However, the advantages of utilizing failure prognosis have not been fully recognized by the current wind industry, mainly due to the difficulty of quantitatively measuring the benefits of failure prognosis for the WF operation and maintenance (O&M) decision making. This paper presents a generic probabilistic framework for the quantification of economic and environmental benefits of failure prognosis for the WF O&M decision making. In the presented framework, probabilistic damage growth models are used to characterize WF performance degradation, whereas the economic losses measured by monetary values and environmental impacts measured by unified carbon credits are accumulated over the WF O&M processes. The efficacy of proposed methodology is demonstrated with case studies comparing the prognosis informed maintenance and existing maintenance policies.

Coverage Extension Using Power-Controlled Relaying In CDMA

Mahendra Karthik Vepuri

Faculty: Hyuck M. Kwon

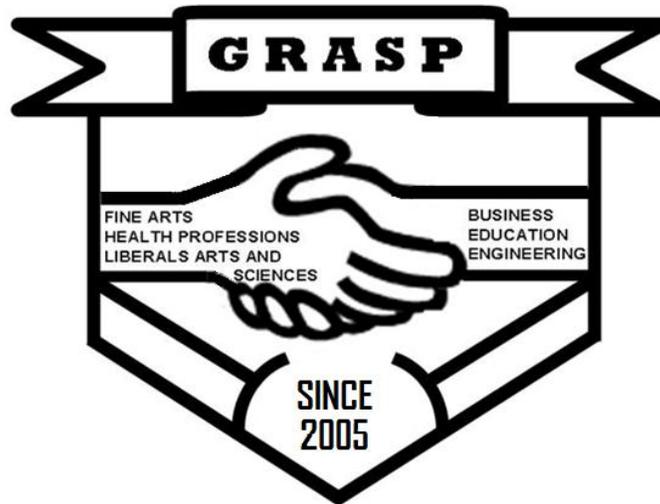
Department of Electrical Engineering and Computer Science

In this paper, the advantages of a power-control-based relay system for a code division multiple access (CDMA) network are explored. Relay nodes are placed in the form of a ring (not necessarily circular) based on system requirements, whereby a mobile user and base station can communicate directly or through relay nodes, depending on the received signal strength. Power control through the relays will provide an added advantage to the mobile stations, because they will use less power to transmit in reverse link. An optimal route is determined using the fundamental concept of the CDMA network, which is encouraging for implementing this system in practical circumstances. Through the proper allocation of relay nodes, coverage of the overall area (cell) can be extended. Area extension results for using relay nodes in the cell area are proven analytically. Finally, this paper shows that power-controlled relaying in a CDMA network will increase the number of active users per given cell at a given time.

ABSTRACTS:

POSTER PRESENTATIONS

8th Annual Symposium on Graduate Research and Scholarly Projects



Incidence of Physical Activity Prescription in Older Adults by Healthcare Providers: A Systematic Literature Review

Jamie L. Agan & Jessica M. Kelly*

Faculty: Nicole L. Rogers

Department of Physician Assistant

INTRODUCTION: A sedentary lifestyle is a developing health disparity in which healthcare providers (HCPs) have an opportunistic role to promote physical activity. Routine exercise provides many benefits such as reducing risk of chronic disease, premature mortality, and functional limitations. Some patients, especially older adults, may not engage in intentional exercise activities, even after counseling. Compliance may be higher if the exercise is prescribed, however, many providers do not prescribe physical activity despite the known health benefits. **PURPOSE:** This evidence-based review is to determine the incidence of monitoring and prescription of physical activity by a HCP, what types of activities were prescribed, and the possible barriers faced that would deter physical activity prescription. **METHODS:** Articles were retrieved from MEDLINE, CINAHL and the Cochrane Library using search terms elderly, exercise prescription, reimbursement for exercise prescriptions. Articles were limited to 1995-2010 publications that investigated HCP physical activity prescription in the older adult population (>50 years of age). **RESULTS:** HCPs fail to consistently prescribe physical activity to older adults. This is due to various factors, including lack of time, reimbursement for counseling, resources, and limited research supporting the efficacy of HCP prescribed physical activity.

A Case Study in Autism Intervention: A Novel Conversational Approach

Jaime Andrews* & Jennifer Francois

Faculty: Kathy Coufal

Communication Sciences and Disorder

The purpose of this clinical case study is to determine the effect of using scripted verbal prompts to elicit prepositions and verbal requests from a young boy with Autism. **RESEARCH QUESTION:** Can specific, scripted prompts targeting prepositions and requesting increase the spontaneous use of prepositions and requesting during highly structured Lego therapy activities? **METHOD:** The clinician working with this child used a hierarchy of specific, scripted prompts to elicit receptive and expressive use of prepositions and increased use of communication acts (e.g. requesting assistance, requesting more information). The hierarchy consisted of first visual prompts, then verbal prompts, then visual and verbal prompts, and finally a model. The prompts were scripted to achieve consistency in prompting, using either questions or open-ended “carrier phrases.” **RESULTS:** The child demonstrated a significant increase in use of the targeted words and communication acts, with a decrease in prompts as intervention progressed. Additionally, less structured prompts were needed to elicit targets.

Measuring the Reliability of Motor Coordination and Balance Testing in Youth with Intellectual Disabilities

Jeraka Adair, Brian Barnes, Ashlyn Fuller, Reine Nola & Theodora Stevens

Faculty: Ken Pitetti

Department of Physical Therapy

Work by Wuang and colleagues (2009) in Taiwan, using revised components of the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), established valid and reliable protocols in evaluating motor coordination (MC) and balance (BAL) in children with intellectual disabilities (ID). The purpose of this study was to determine if similar reliability scores would be recorded in youth with ID in the United States. Twenty-five youth (age = 14.0 ± 3.1 ; 15 males, 10 females) performed three MC and four BAL evaluations of the Wuang et al (2009) revised BOT-2 on two different days with three to four weeks between evaluations. Concordance between evaluations was estimated using percent (%) agreement and Cohen's kappa coefficient. Percent agreement ranged from 35%-88%, with kappa scores indicating one test with no (<0), three tests with slight (0-.20), two test with fair (.41-.50) and one test with moderate (.40-.60) agreement, respectively. These results differ significantly with those of Wuang and colleagues (2009), who reported excellent test-retest intraclass correlation coefficients (0.95-0.99) for the same tests. Although differences in mean age (present study older) and number of participants (25 vs 100) exist, results of the present study suggest further research is needed on reliability of the BOT-2 for youth with ID within the United States.

Hunger Awareness Initiative: Are Wichita State University graduate students hungry?

Shae A. Blevins

Faculty: Deborah Ballard-Reisch

Elliott School of Communication

According to the U.S. Department of Agriculture, food insecurity is a prevalent issue across the nation. Numerous colleges and state universities put effort in to solving the problem of food insecurity, or hunger, in their communities through volunteer organizations, such as the Campus Kitchens Project, and volunteer credit hour requirements, such as working with food banks and overflow shelters. However, preliminary research revealed no information concerning state university students as a population affected by food insecurity. Because state university students are an underserved research population, the present research targeted the college student population, specifically graduate students at Wichita State University.

The present research combined traditional and social media campaigns, including posters, flyers, emails, a Facebook fan page, a Twitter handle and a blog/website to increase hunger awareness and determine the nature and scope of hunger on campus. Information was gathered via an open-ended survey. Students, faculty and staff in the WSU campus community were invited to participate. The data will be analyzed through inductive coding methods (Boyatzis, 1998). From preliminary data analysis, the majority of respondents felt that hunger was an issue on campus. Anticipated research will reveal the nature and scope of hunger issues graduate students face at WSU.

The Effects of Texting and Driving on Hazard Perception and the Adoption of Driver Response Strategies

Rondell Burge

Faculty: Alex Chaparro

Department of Psychology, Human Factors

Hazard perception has received little attention compared to measures of vehicle control in studies exploring the effects of texting on driving performance, despite being a more direct measure of crash risk. Twenty participants drove in a simulator while text-messaging in order to assess its effect on hazard detection. Analysis revealed a greater response likelihood (i.e., responding to a greater number of potential hazards) in a relatively easy text-messaging task compared to a more difficult one, $t(19) = -3.24, p < .01$. These findings suggest that the impact of text-messaging on the detection of driving hazards depends in part, on the nature of the text-message, particularly in the adoption of strategies to compensate for interference on the driving task.

F-NMR Studies on Anthrax Protective Antigen

¹Fatemeh Chadegani, ²Vennela Mulangi & ²Masaru Miyagi

Faculty: James G Bann

¹Department of Chemistry and ²Case Center for Proteomics and Bioinformatics School of Medicine, Case Western Reserve University

Anthrax secretes a three component which is composed of three proteins: lethal factor (LF), edema factor (EF), and protective antigen (PA). PA transfers LF and EF into the host cytosol through a membrane spanning pore, which forms within low pH endosomes. Once EF and LF have entered the cytosol, the enzymatic activities block processes important to the host immune response. We biosynthetically labeled all seven tryptophans in PA with 5-fluorotryptophan to examine the structure of protective antigen using ¹⁹F-NMR spectroscopy. We have accomplished NMR experiments as a function of pH (8 to 5) to study the structure of PA. We also carried out temperature and binding studies with the goal of assigning these residues. By increasing temperature from 5 to 37°C, or by lowering the pH from 8 to 5, we notice several substantial changes in the resonances of the tryptophans in PA, suggesting that fluorine NMR is a useful tool to study protein structure, and can be applied to large molecular weight proteins such as PA.

Comparative Demography of the Blue-gray Gnatcatcher and the Cerulean Warbler

Taryn R. Cipra

Faculty: Christopher M. Rogers

Department of Biological Sciences Fairmount College of Liberal Arts and Sciences

The Neotropical-migratory Cerulean Warbler (*Setophaga cerulea*) is one of North America's strongest declining songbirds. The three hypotheses of alteration in breeding habitat, wintering habitat, and migration habitat potentially explain declines. Distinction between these hypotheses could potentially reallocate the resources of current conservation efforts. For the Cerulean, studies show that annual adult migration survival reflects the range expected for non-declining species (0.4-0.6), whereas annual reproductive output is very low. This suggests a strong role for events on the breeding grounds in its population decline. As an independent test of this qualitative model, annual survival and reproduction are being measured in a non-declining, small-bodied, blue, insectivorous Neotropical migrant, the Blue-gray Gnatcatcher (*Polioptila cerulea*). It is predicted that annual survival will be similar to that of the Cerulean, but reproduction will be significantly higher. Results from a first field season reflected severe drought which inhibited successful reproduction of the Blue-gray Gnatcatcher. Adult survivorship will be measured in Spring 2012. A second field season studying the Blue-gray Gnatcatcher, may reflect a significantly higher breeding output than the Cerulean Warbler.

Google It! Comparison and Evaluation of Quality of Online Information Regarding Concussion

Ryan Cook* & Dusty Atterbury

Faculty: Gina M. Berg

College of Health Professions

This study compared the online information available to consumers regarding the definition, symptoms, treatment and return to play recommendations after suffering a concussion. The top ten Google ranked non-media websites were identified using the key term concussion. Quality and accuracy of the websites were compared with the Consensus Statement on Concussion in Sports. Each website contained a general list of signs, symptoms and home treatment options. One website contained no information and eight sites recommended seeing your clinician before returning to play. The quality of information consumers can find on the Internet is generally accurate but widely varies in coverage. Searching for health information online is extremely popular and consumers should be aware of the inaccurate information that is not peer reviewed.

Use of Erythropoietin for Treating Anemia of Chronic Kidney Disease in a Hospitalized Pediatric Population: MUE

Sileen Dowis & Leah Finkeldei*

Faculty: LaDonna Hale & Patricia Bunton

Department of Physician Assistant

Background: Patients with anemia of chronic kidney disease (CKD) lack the ability to produce erythropoietin causing a deficiency of red blood cells. Erythropoietin-stimulating agents (ESAs) are recommended by the National Kidney Foundation to treat anemia of CKD in adults; however, only recently have guidelines included pediatric dosing.

Purpose: Determine if ESAs are being used appropriately in hospitalized children with anemia of CKD in accordance with guidelines from the National Kidney Foundation.

Methods: This retrospective, non-interventional, cross-sectional medication use evaluation included all children <18 years old with anemia of CKD admitted to a large, tertiary-care hospital in 2010 (n=10).

Results: Dosage reduction followed elevated hemoglobin levels 87% (13/15) of the time. Compliance was 100% for iron supplementation, laboratory monitoring, and route of administration.

Conclusion: In children with CKD, ESA is being dosed and monitored at an acceptable rate of compliance in accordance with current national guidelines

Perception about Concussions in the Missouri Valley Conference

Lindsey Eckenrode

Faculty: Julie Scherz

Department of Communication Sciences and Disorders

We report the results of a survey aimed at assessing how student athletes, athletic trainers, and coaches in the Missouri Valley Conference perceive and understand concussions, how the student athletes compare to their athletic trainers and coaches on these dimensions, how athletic trainers and coaches determine when student athletes who have sustained concussion return to practice and competition, and identify any tools used to assess a concussion and assist in return to play recommendations. We anticipated some variability among sports (e.g., low impact vs. high impact sports) and stakeholders (players vs. coaches and trainers). Study findings should lead to better understanding of perceptions about concussions and future educational information that might be needed for players, coaches and trainers.

Assessment of Balance and Cognitive Function in Youth Gymnast

Elizabeth J. Epps* & Carina A. Staab
Faculty: Jeremy A. Patterson & Douglas F. Parham
Department of Human Performance Studies

International recruitment of female gymnast identifies children from the age of 4 yrs. The basis of this is through a variety of skill assessments completed through performance. **Purpose:** This study focuses on measuring components of these skill sets, using validated equipment to assess balance, reaction time, and working memory of level 4-5 gymnasts. **Methods:** 17 competitive female gymnasts (6-13 yrs) were recruited. Participants were compared individually. Single leg and Tandem Balance Test measured sway and stability while holding the iPod. Reaction time and memory was measured through a sequence of screens asking the subject to touch a point as fast as possible and memorize a list of words, then tested on recall. **Results:** Data collection showed no significant difference between the gymnasts on all 3 trials. One leg balance-stance had lower scores suggesting that tandem-stance was more challenging in all age groups. **Conclusion:** No significance was found for balance, reaction time, or working memory with the gymnasts. A larger number of gymnasts may show a significant difference in scores in all 3 measures.

Computed Tomography (CT) Scan and Digital Radiography (DR) Direct Energy Consumption Comparison

Mohammad Amin Esmaili
Faculty: Janet Twomey
Department of Industrial and Manufacturing Engineering

One of the key factors for sustainable decision making is the ability to draw comparisons of environmental impacts between different alternatives. These decisions are the subject of many articles in most sectors of the economy. In one area of the service sector, healthcare, there is a lack of information to make the similar decisions. The significant growth in the healthcare industry implies a more detailed collection and examination of the environmental information so that decisions regarding those specific impacts may ensue. This research focuses on imaging in healthcare. Since the number of CT scans has significantly increased in the U.S. in recent decade, there are efforts to investigate alternative imaging tools. An available option is the latest technologies in digital radiography (DR): dual-energy imaging, digital tomosynthesis, and computer-aided detection. In this paper, the energy consumed by the DR technologies is compared to the energy consumed by CT. The overall goal is to determine areas for energy savings. The results reveal the delivery of a CT scan consumes much greater amount of direct energy in contrast to DR systems. In addition, the amount of embodied energy in medical consumables is also higher in the delivery of a CT.

Kansas Pharmacists' Knowledge, Attitudes and Beliefs Regarding Over-the-Counter Emergency Contraception

Aubrey Fetherston, Amanda Haffa & Kelsey Swisher

Faculty: LaDonna S. Hale

Department of Physician Assistant

Background: In 2006, the FDA approved over-the-counter (OTC) sale of emergency contraception (EC). A 2008 survey assessed characteristics, knowledge, and attitudes/beliefs of Kansas pharmacists regarding EC.

Purpose: Reanalyze the 2008 survey data to identify the influence of various factors on pharmacists' willingness to sell EC.

Methods: Univariate odds ratios and multivariate logistic regression analysis were performed.

Results: Factors associated with willingness to sell EC included high EC knowledge [OR 3.4 (2.1-5.6)], lack of moral objection [OR 58.6 (31.3-103.9)], non-conservative political views [OR 6.6 (4.3-10.1)], and working in a larger community [OR 1.6 (1.1-2.4)].

Conclusions: In theory, identifying factors associated with willingness to sell EC may benefit those wishing to improve access/availability; however, many of the factors identified represent personal values/beliefs which may not be easily modifiable.

Vocabulary Instruction is Not a Luxury

Loralea M. Francis

Faculty: Jeri Carroll

Department of Curriculum and Instruction

A review of educational research indicates that post-secondary students benefit in all academic areas when given direct vocabulary instruction, yet most community college course outlines do not require vocabulary instruction. This study sought to determine the most effective strategies for vocabulary instruction and to develop a process of instruction using those strategies to teach vocabulary keywords to English Composition I students in a local community college course. Nineteen of twenty-four students completed the 8-step instructional process in which forty keywords were taught over the course of six class periods in 20-45-minute segments of each class. Summary assessment results indicate that all nineteen students mastered all forty words as shown in the second post-test which was administered one month after instruction had ended. Results also showed that students believed that etymology and game practice were the most effective strategies to learn new vocabulary words.

Fall Prevention

Sarah Gayed, Trupti Patel & Travis Whitesides*

Faculty: Kayla Keuter

Physican Assisstant Department

Falls are the leading cause of injury-related visits to emergency departments in the United States and the primary etiology of accidental deaths in persons over the age of 65 years. Despite the consequences and the preventability of falls, there is no known data that have shown compliance with the CDC recommendations among adults 65 years and older who have fallen. The purpose of our research is to evaluate which CDC fall prevention guidelines are being followed in older adults with a recent fall. An IRB approved cross sectional survey was conducted at Wesley Medical Center (WMC), a Level I trauma center, to evaluate knowledge of fall prevention strategies in adults greater than 65 years of age. The survey included 13 men and 22 women who were admitted to WMC Trauma Service secondary to a fall between July 2011 and January 2012. A 30 question survey was given to assess whether or not CDC recommendations were practiced prior to their fall. Pre- surveys revealed that older adult fall victims are not being educated enough to adequately understand the importance of applying strategies to prevent falls. Although all of the post-surveys have not been completed yet, the few received leads us to believe that patients are very willing and eager to incorporate and implement fall prevention recommendations with ample educational tools such as a fall prevention toolkit.

A Conceptual Study of Airfoil Performance Enhancements Using CFD

Armin Ghoddoussi

Faculty: L. Scott Miller

Department of Aerospace Engineering

A conceptual study of performance enhancing devices for an airfoil is performed using Computational Fluid Dynamics. Three simple, passive devices are examined to explore alternate methods for stall control and lift-to-drag improvement. The motivation behind this research is to study effective techniques to improve performance with fewer drawbacks than previously existing methods. An evaluation scheme is presented to compute airfoil lift, drag and pitching moment for a range of angles-of-attack up to stall. NACA 64₁-212 single-element and slatted airfoil CFD results are compared with experimental data to validate the computational model. Evaluations on the first conceptual design show elimination of the separation at 15 degrees of angle-of-attack where the flow reversal normally starts at 86% - chord. A total drag increase of 22% is detected because of the sharp leading-edge of the device, but the main element drag has a reduction of 43%. The maximum lift coefficient does not show a significant change on the same model. The second device has a negative effect, initiating flow separation and causing a significant decrease in lift-to-drag ratio at a given lift coefficient. The third device demonstrates the potential of lift-to-drag ratio improvement at the higher angle-of-attack.

Effect of Whole Body Vibration Exercise on Muscle Activity When Using Elastic Resistance Bands

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Faculty: M.E. Rogers & J.A. Patterson

Department of Human Performance Studies

^ Department of Industrial and Manufacturing Engineering

INTRODUCTION: Whole-body vibration (WBV) has been shown to increase muscle fiber recruitment during isotonic contractions. No prior published studies have used elastic resistance. **PURPOSE:** The main purpose of this study is to investigate the acute effects of a single bout of WBV on electromyography (EMG) activity during exercise. **METHOD:** 30 participants were recruited for this study. EMG activity was then determined while participants performed the arm curl and squats using elastic resistance under three conditions: no vibration exposure, during acute vibration exposure, and following acute vibration exposure. **RESULTS:** Results indicate no statistically significant differences between the three conditions for the upper body but there was a decrease in the primary muscles involved in the concentric phase of the squat immediately after vibration exposure. **CONCLUSION:** These results suggest that there may be an effect of vibration on muscles in the lower body following vibration.

Normative Values for a Functional Upper Extremity Strength Test

Brandon McWilliams*, Lindsey Andrews, Kelli Berg, Katie Cole
& Rachael Hughes

Faculty: Robert Manske

College of Health Professions Physical Therapy

Standardized tests that assess functional performance for upper extremity (UE) strength and power are lacking. A functional performance test is an important tool in identifying strength, power, injury predisposition risk and readiness for return to activity following injury. The seated shot put test (SSPT) is a test of unilateral UE strength and power. The primary purpose of the present study is to determine normative test scores for the SSPT for a healthy high school aged population. A secondary purpose is to determine if any relationships exist between scores on the SSPT and arm length, body weight, sex and age. A sample of convenience testing only those within the high school population without UE pathology will be utilized. Participants with written consent from an adult were allowed to participate in the study. All the participants were instructed on how to properly throw the 2 kg ball. Participants were given four warm-up throws before official distance thrown was recorded. An average of three trials was used for score. Correlation analysis was conducted using a one-way Anova with Bonferroni adjustment ($p < .05$). Significant differences found that males throw farther with their dominant vs. non-dominant hand, and that as age of male subjects increases, so does distance thrown. Further studies are needed to determine a normative value.

Correlations of Preadmission Criteria and Post admission Didactic GPA to PANCE Results

Brittany Imel, Nick Jansen & Alyssa Nelson

Faculty: Gina Brown

Department of Physician Assistant

Background and Purpose: There has been limited research that identifies specific criteria to aid in predicting an applicant's ability to succeed in a master of physician assistant (PA) program. The primary purpose of this study is to provide research on possible associations between pre-admission and post-admission criteria to see if any statistically significant correlations could be found between these and Physician Assistant National Certifying Exam (PANCE) performance. **Methods:** An observational, retrospective cohort study was done utilizing three previous graduating classes of the Wichita State University PA Program (n=119). Students were divided into the following pre-admission categories: majority of core science prerequisites from four-year college versus two-year college, healthcare experience, and number of healthcare hours. **Results:** Institution type (four-year versus two-year) for core science prerequisites was moderately associated with first-time PANCE pass rate ($r=.269$). PANCE scores, but not pass rate, were strongly associated with didactic grade point average (GPA) ($r=.665$) and PA pharmacology GPA ($r=.678$). **Conclusions:** One moderate correlation was found between pre-admission criteria and PANCE so advice regarding applicant selection criteria is limited.

Which e-Reader is e-Sier to Use: iPad, Kindle, or Nook?

Jo Rain Jardina

Faculty: Barbara Chaparro

Psychology Department

Even though more people are beginning to use e-Readers, electronic reading devices, little research exists on the usability of these devices for book reading. This study looks at the usability of three touch-screen e-Readers (iPad, Kindle Fire, and Nook Tablet) for basic book navigation tasks. During the study, participants ($N = 16$) were asked to complete a series of tasks (e.g., bookmarking a page, highlighting text, etc.) on the three e-Readers, and rate the difficulty of each task. Task completion time and number of taps required to complete each task on each device was also recorded. Participants rated each device on their perception of workload and satisfaction. When they completed all the tasks on all the devices, participants were asked to rank each device on a series of attributes and overall preference. Results revealed no overall "winner" and no significant differences between the devices on perceived workload and satisfaction. Each device proved to have some strengths and weaknesses by task. The Nook was preferred more than the iPad and Kindle for its menu structure, and the iPad was ranked higher than the Kindle and Nook on highlighting and notes. The Kindle was preferred for tasks which required changing text size and text searching. Suggestions are offered for the improvement of future touch screen e-Readers.

A Reliability Analysis for Smart Grid Distribution Communication

Babak Karimi* & Parisa Nazaran

Faculty: Vinod Namboodiri

Department of Electrical Engineering and Computer Science

Intelligent network is an important mean to achieve energy saving and promote renewable energy develop. With the technology of power electronics, IT, communications continuing to evolve, the smart grid will be an important direction of the electric power industry development. It has been always said that Smart Grid communication should be reliable but this has not been clarified why and how. Although there has been some basic analysis and works but a thorough reliability study of any proposed architecture is still missing. Briefly, the goal of this project is to demonstrate a reliability and security assessment process. To do so, we utilized the most common methods (Reliability Block Diagram and fault tree) to analyze the system using powerful tool, BlockSim7.

Assessment of Community Fall Prevention Toolkit

Kayla R. Keuter

Faculty: Nicole Rogers, LaDonna Hale, Toni Pickard & Gina M. Berg

Public Health Sciences – Aging Studies Program

Abstract: Falls are the leading cause of injury death among adults age 65 years and older. There are many fall prevention programs to help reduce fall risk factors. The purpose of this study was to evaluate a locally developed toolkit, *Falling Less in Kansas*, which was designed to educate older adults on fall prevention strategies. Four focus group sessions, recruited from 2 urban organizations and 2 rural health clinics, were conducted. Although the participants felt the toolkit was attractive, well organized, and easy to use, they thought it may contain too much information. Interestingly, the majority of participants admitted they would not actively use the toolkit on their own, but would need it introduced to them by their care provider (primary care provider or pharmacist) or in a social setting.

The Handmaidens' Plight: An Investigation of Survivor Ideologies of Marginalized Asian Women

Gladys Siok-Hian Kwa

Faculty: Peter T. Zoller, Kimberly Engber & Doris Chang

Department of English

Despite the traumatic ordeals experienced by marginalized Asian women, many have emerged triumphant despite inconceivable odds to proclaim their tragic narratives. Such desperate struggles beg the question: "What sustainable ideologies helped them to transcend their perpetrators' inhumane treatment?" This study investigates the nature of women oppression represented by three Asian protagonists and their respective narratives: the concubine, in *This Earth of Mankind*, the sex slave in *Comfort Woman*, and the depreciated daughter in *The Woman Warrior*. This two-fold investigation of oppressive systems and women survivor ideologies employs three methodologies: the socio-historical to understand repressive systems, the psychoanalytical to assess psychological trauma, and the autobiographical to explore evolving identities. The investigation reveals the concubine's accomplishments, the comfort woman's inter-subjectivity, and the woman warrior's selfhood. The study implicates societies' collusion with hegemonic/monolithic ideologies and highlights modern-day cousins of female subjugation

At War with Memory: National versus Local Interpretations of Vietnam Veterans Memorials

Sarah Lavalley

Faculty: Jay Price

Department of History, College of Liberal Arts and Sciences

Much of the literature surrounding the public memory of the Vietnam War focuses exclusively on the National Vietnam Veterans Memorial in Washington, D.C., creating the impression that all Vietnam memorials carry the same message of a bitter war and entrenched in public debate. However, this narrow scope excludes smaller memorials, created by individual cities, for local soldiers. The difference between national and local war memorials produces significant variations in meaning, motivation, and public perception. A continuing issue facing war memorials are the changes in visitors and how to convey the meaning to new generations. Though built at approximately the same time, the Winfield Vietnam Veterans Memorial stands as a counter-point to the national dialog created by the Washington, D.C. monument. By ignoring other facets of Vietnam remembrance, a complete survey of public memory, or even opinion, cannot be concluded.

Unpacking Hunger on Campus: An Analysis of The WSU Hunger Awareness Initiative

Katie Thanh Le

Faculty: Deborah Ballard-Reisch

Elliot School of Communication

In the U.S. we often hear phrases like “starving college student” and “freshman 15” to the point that they have become clichés. How much truth lies behind these phrases? Existing data on hunger and food insecurity does not effectively address these issues. Ironically, despite the fact that research is conducted on university campuses, there is still significant need for such research. The present study reports phase 1 results of an on-going community-based, participatory initiative to enhance understanding of hunger issues on one campus, the Wichita State University (WSU) Hunger Awareness Initiative. Data were collected through surveys made available online through a social media campaign directed toward the WSU community, during a food-packaging event, and through focus group discussions. Data from 44 individual survey respondents to the prompt: “Tell us your hunger story” and the information shared by 50 participants in focus groups held during a campus-based “Dinner and Conversation about Hunger” were analyzed using inductive thematic analysis. Results indicated that while hunger stories varied widely among participants, several themes were found within participant groups. Stories offered by international and graduate students indicated that food insecurity was an issue for them. Indicating the complexity of this issue, three consistent themes found in the focus groups were that students feel reluctant to admit they are food insecure due to the stigma of asking for help, or the need to be self-sufficient; students eat low-budget meals regardless of nutrition or taste due to lack of resources; and finally, there are opportunities to help hungry students now, and that preventative measures can be taken. The WSU Hunger Awareness initiative is the first step in a coordinated effort to understand hunger and food security awareness on college campuses.

Determination of All Non-integer-Order PID Controllers that Satisfy a Weighted Sensitivity Constraint

Yung K. Lee

Faculty: John M. Watkins

Electrical Engineering and Computer Science

This paper presents a complete and generalized method for finding all non-integer order or so called fractional-order (FO) proportional-integral-derivative (PID) controllers that stabilize a given system of integer or non-integer order and at the same time satisfy an H_∞ weighted-sensitivity constraint for the system. The H_∞ weighted-sensitivity condition is selected to meet performance specifications such as a settling time, percent overshoot, and a steady-state error. All the parameters of such FO PID controllers are determined in the frequency domain and are given in terms of the proportional gain K_p , integral gain K_i , and derivative gain K_d . In this paper, they will be calculated and plotted on the (K_p, K_i) plane with a fixed value of K_d . This approach provides all the possible parameter values of integer order or non-integer order controllers that satisfy a given weighted-sensitivity condition even when the transfer function of a system is not available, so long as the frequency response thereof can be obtained. In particular, the presented method brings existing results applicable only to integer order PID controllers under one generalized solution. An example is given by way of illustrating usefulness and effectiveness of the method.

Body Mass Index in Relation to Foot Pronation

Ashley M. Lentz

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Department of Human Performance Studies, College of Education

Excessive pronation of the foot may create an imbalance over time, potentially leading to injuries of the lower limb. It is important to understand what causes over pronation and how to prevent or correct this issue. The purpose of this study was to examine effects of body mass on foot pronation. Subjects were examined according to BMI, sex, age, shoe size, and amount of regular running activity performed per week. Each participant completed a Sit-to-Stand Navicular Drop Test (SSNDT) to measure individual foot pronation. It was concluded that using the SSNDT is a reliable way to measure foot pronation. Most individuals naturally pronate, though no strong correlation was observed between foot pronation and BMI, age, sex or shoe size.

In situ Generation of Bromine for Micelle-Assisted Bromination and Oxidation

Archana Mishra * & Zifan Wang

Faculty: Erach Talaty & Douglas S. English

Department of Chemistry

This poster describes our recent work in which CTAB (cetyltrimethylammonium bromide) micelles are used as catalytic platforms for performing bromination and oxidation reactions in water. The bromide counter ion is used to prepare Br_2 in situ which is subsequently employed as a brominating and oxidizing agent. In this process the bromide is rapidly oxidized to bromine using BPO (benzoic peroxyanhydride). The reaction is facilitated by the micelle which improves the BPO solubility and its proximity with Br^- . Several example reactions are discussed including micelle-assisted bromination of cholesterol and methyl styrene along with an example of mild oxidation of benzyl alcohol to form benzaldehyde. These examples illustrate the use of bromine as a mild oxidizing agent and also as a brominating agent. Kinetic studies of Br_2 formation and cholesterol bromination are also presented

Interactions between Ease of Bridging Inference Generation and Working Memory

Melinda Mueller

Faculty: Catherine M. Bohn-Gettler

Department of Counseling, Educational and School Psychology

Although research demonstrates that bridging inferences are generated at coherence breaks, increased reading times also occur two words after a coherence break. This processing delay could be related to the ease of generating bridging inferences. Working memory is also related to the inferences readers generate. Readers with high working memory are more strategic in which inferences they generate or suppress. To explore the cause of this processing delay, participants in the current experiment read several passages for comprehension. The ease of generating an inference was manipulated by gradually decreasing the explicitness of an action in a critical sentence. Reading times for target sentences that followed the critical sentences increased as explicitness decreased. In addition, this effect was more pronounced in readers with high working memory. These findings provide preliminary evidence that processing delays during bridging inference generation are affected by ease of generation.

Team Decision Skills Development with MBTI © Step II

Parisa Nazaran

Faculty: Don Malzahn

Department of Industrial and Manufacturing Engineering

As part of an Engineer as Leader course, students learn to dynamically take leadership in team problem solving. Part of this development makes use of Myers-Briggs Type Indicator ® Step II. This assessment provides scores on 40 facets of the eight Types. An objective is to help students develop a richer vocabulary for thinking about themselves and others. A standard transition is used as students learn to transition between decision making stages and individual team members' facets. The paper will present the process through which each student's vocabulary is developed and reinforced and the tools that support transitions and compensate for missing facets in the team decision process are described.

Spatio-Temporal Integration & Optic Flow Quality: Unpacking Factors that Influence Driving Performance

Bobby T. Nguyen
Faculty: Rui Ni
Department of Psychology

Research has shown that optic flow plays an important role in self-motion, such as walking or driving. Further, research has demonstrated that spatial, temporal, and qualitative aspects of optic flow have an effect on motion perception. This study has three stages: 1) examine how spatial, temporal, and qualitative aspects of optic flow interact to affect motion perception, 2) determine whether threshold tasks can predict driving performance, and 3) if threshold tasks can be used as training tools to improve driving. This is the first of three experiments of Stage 1, examining how optic flow quantity (spatial) and lifetime (temporal) affect motion perception. The tasks require participants to identify a 2D shape from kinetic occlusion, measuring the threshold of one optic flow characteristic while manipulating different levels of the other two. Current results indicate a stronger potential effect of temporal integration than spatial integration on motion perception.

Communication Needs of Twins with Angelman Syndrome: A Qualitative Approach

Rachel L. Norris
Faculty: Kathy Strattman & Julie Scherz
Communication Sciences and Disorders

Families with children who have low incidence, severe disabilities have unique needs and concerns, which may not be revealed through traditional methods of assessment. These methods are generally previously determined by professionals working with them and follow a prescribed protocol. Qualitative studies, using multiple data sources allow professionals a more realistic view from families' perspectives. Nine year old twins with Angelman syndrome and their families participated in this qualitative study. Information from previous ethnographic interviews of family members revealed three domains. These domains then framed additional data collection using results from a questionnaire, parent interview, and videotaped observations at home. Two overarching themes were identified: current differences between the twins and ways each of them encounter communication and learning. These data will be used to address goals and intervention to meet their communication needs. Results demonstrate how professionals serving these children and their families may use qualitative approaches to identify children's preferences and family's priorities.

Impact of Moderate Intensity Physical Activity on the Functional Fitness of Older Women

Samuel Ofei-Dodoo*, Amy L. Morgan & Nobuo Takeshima

Faculty: Nicole L. Rogers

Aging Studies, Department of Public Health Sciences, College of Health Professions

As adults reach advanced ages, the purpose of physical activity (PA) may shift from disease prevention to functional fitness and mobility. **PURPOSE:** To determine the amount of activity necessary to positively impact functional fitness, by determining cutoff points in which additional minutes in moderate/vigorous physical activity (MVPA) do not further improve functional fitness. **METHODS:** Functional fitness was assessed by the Senior Fitness Test (Chair Stand, Arm Curl, 6 min Walk, Up-and-Go, Sit and Reach, and Back Scratch) in 125 women (73.42 ± 8.84 yrs) from 2 Midwestern communities. Participants wore an accelerometer for 7 days without altering their normal activity. Accelerometer data were downloaded, MVPA determined via proprietary filtering, and time spent in each intensity (sedentary, low, moderate, vigorous) was calculated. A 5 day average of time spent in MVPA was organized into 4 groups. **RESULTS:** ANOVAs revealed significant differences between groups on all measures except sit and reach. **CONCLUSIONS:** Results show threshold of 20 min, suggesting that engaging in more MVPA yields no additional statistical gain on the lower body strength and mobility measures of chair stand, up-and-go, and 6 min walk. With regard to upper body strength and flexibility, less than 10 min of MVPA is detrimental to performance.

Are Two Computer Monitors Better Than One?

Justin Owens, Jennifer Teves*, Amanda Smith & Bobby Nguyen

Faculty: Barbara Chaparro

Department of Psychology

Several studies have found using more than one monitor increases productivity, but such benefits may diminish when monitor size or the number of monitors becomes large. The purpose of this study was to determine whether increases in productivity hold true for business users with newer technology like wide flat-screens, and in scenarios where multitasking is required. Participants were asked to complete a series of tasks commonly completed in an office environment. These tasks included creating a presentation, newsletter, meeting agenda, and financial report. Each of these tasks were completed on one of four monitor configurations: single and dual 17" monitor(s) and single and dual 22" monitor(s). They were required to locate information from a variety of other documents and compile this information into their own document. Several dependent variables measured efficiency, effectiveness, and satisfaction. Results indicated a performance benefit for dual monitor usage, regardless of monitor size. Participants exhibited a preference for the dual 22" monitors and least preferred the single 17" monitor. The study supports the productivity increases found in previous literature, extends this finding to more modern technology such as wide flat screen monitors, and generalizes to common office settings and tasks.

New Progress in Self-Healing Technology of Composite Wind Turbine Blades

Vamsidhar Reddy Patlolla* & Amir Jabbarnia

Faculty: Ramazan Asmatulu

Department of Mechanical Engineering

Wind turbine blades are subjected to cyclic loadings, resulting in the development of micro and Nano cracks, which in course of time becomes macro cracks, thus leading to fatigue and failure. The concept of self-healing composite materials might be introduced into the blade manufacturing to reduce the cost and to increase the life expectancy of the turbine blades. This can be performed by introducing urea-formaldehyde (UF) micro capsules into the epoxy matrix of the composite materials. The urea-formaldehyde microcapsules are filled with dicyclopentadiene (DCPD) which acts as the healing agent. When DCPD is introduced into the crack of the epoxy matrix, it reacts with a catalyst in the matrix and heals the cracks. The dispersion of Nano scale inclusions in the epoxy matrix has the potential of increasing the mechanical properties of the polymer composite in a great deal. When the nanoscale inclusions are used as reinforcements in the composite material, the rate of crack growth could be considerably reduced. This work deals with the self-healing of the wind turbine rotor blades, we used different Nano scale inclusions in the microspheres of DCPD to increase the healed fracture toughness and avoid crack regrowth. It is believed that this process potentially increases the service life of the composite wind blades and reduces the overall costs.

Respiratory Support during Speech Breathing In Adolescents in Different Positions

Sierra Patton & Jennifer Sticken

Faculty: Douglas F. Parham

Department of Physician Assistant

Introduction: This research aims to study the effects of position on the respiratory support of speech breathing in adolescent children. It was hypothesized that when children were seated, speech would be supported mainly by rib cage movement (expansion of the thoracic cage) with limited abdominal movement, and that both rib cage and abdomen would contribute equally when children were standing. **Methods:** The rib cage and abdominal muscle movements of children ages 8 to 12 were measured using inductive plethysmography during both conversational and scripted speech. Their respiratory signals were compared to determine the relative contributions of the rib cage and abdomen during the speech tasks. **Current Results:** During reading in both positions, rib cage contributions tend to be greater than those of the abdomen. During speaking in both positions, there is high variability, with neither rib cage nor abdominal contributions being consistently higher than those of the other. **Discussion:** More data is currently being analyzed. The results to date suggest that it is not the position that influences the contribution of each chest wall component, but the type of speech task. The findings of this normative research may increase our understanding of respiratory support for speech in atypical situations.

Development, Implementation, and Evaluation of a Senior Mentor Program in PA Education

Anna Jennings & Ashlee Pauls

Faculty: Sue M. Nyberg

Department of Physician Assistant

As the US population ages, improving geriatric-related medical and interpersonal skills among healthcare providers is increasingly important. There is currently a national call to increase geriatric content in healthcare curriculum. Senior mentor programs (SMPs) partner students with older adults for the purpose of increasing positive attitudes about aging and improving assessment and communication skills. SMPs have been noted as a promising geriatric curriculum strategy and are expected to become increasingly popular within medical curriculums. The purpose of this project is to design, implement, and evaluate the benefits of a SMP for the WSU Physician Assistant (PA) program. A thorough literature review identified the characteristics of successful SMPs that will be incorporated into this program as well as barriers to program success. Assignments and activities have been designed to achieve the developed learning objectives. Quantitative research methods will be used to evaluate the impact on student attitudes, beliefs and geriatric-related assessment and communication skills. Implementation of a SMP will improve PA student attitudes and beliefs towards aging, increase empathy and respect for older adults, and will better prepare them for providing quality care to older adults.

Let the Game Begin: Video Game Usage Patterns among Current Gamers

Mikki H. Phan* & Brandon Haist

Faculty: Barbara Chaparro

Department of Psychology (Human Factors)

The continual growth of the video game industry is a testament to many people's enduring hobby of playing video games. Playing video games now is very different than when it first reached mainstream popularity in the 70s. Today, the average video game consumers have more options than ever in regard to the types of video games, devices, and game-related items (e.g., game memberships, game magazines) that they can purchase and use. This study investigates the general preference, habit, and behavior of current video game players. Respondents ($N = 341$) to an online survey were mostly males ($n = 252$), full-time college students ($n = 251$), with an average age of 21.61 years old ($SD = 4.43$). Participants also reported spending more hours per week playing video games on a computer ($M = 14.60$, $SD = 18.74$) than on a game console ($M = 5.05$, $SD = 7.67$). Many of the respondents identified video game playing as their main hobby, and indicated a preference for violent video games. The most recently purchased and most favorite video games reported were from the Action, Role Playing, Adventure, and Strategy genres. Additionally, the gamers in this sample tend to game during weekends, evenings, and for long periods of time.

The Perceptions of U.S. Physician Assistants (PA) Regarding PA to Physician Bridge Programs

Brandon Phipps & Shawn Vredenburg

Faculty: Richard Muma

Department of Physician Assistant

The purpose of this study was to determine the perceptions of PAs on the creation of a PA to physician bridge program; whether they would support a bridge program, its feasibility, or generally whether or not bridge programs should be initiated. A cross-sectional, random sampling of PAs in the United States were sent an online survey with a 5-point Likert scale regarding their perceptions of a PA to physician bridge program. A Chi-squared analysis was performed to determine significant relationships. PA respondents were strongly supportive of the bridge program concept. This study may help the medical community to evaluate the applicability, feasibility, and practicality of the proposed program. Results of the study show support for a bridge program amongst PAs, yielding the first recent study information on this topic for the medical community about the perceptions of PAs regarding a PA to physician bridge program.

Current Knowledge and Beliefs of Kansas Physicians Regarding Domestic Minor Sex Trafficking

Ashley Reinhard & Ina Whitacre

Faculty: Gina M. Berg

Department of Physician Assistant

Domestic minor sex trafficking (DMST) is increasingly in the news. Therefore, it is instrumental that healthcare providers are educated about the topic and feel confident in their ability to identify and report a victim. The purpose of this study was to determine Kansas physicians' knowledge, attitudes, and training regarding DMST. A 20-question survey was emailed to 1,668 physicians registered with the Kansas Board of Health Arts in the specialties: family medicine, pediatrics, obstetrics/gynecology, and emergency medicine. Of those emailed 69 (4%) responded to the survey. Respondents agreed that DMST is currently a problem in the US (86%) and KS (80%). Of the respondents, only 12% felt confident in identifying a victim and only 11% screened patients for DMST. Over half (61%) reported encountering possible signs of DMST in patients, however only few suspected DMST. Providers reported encountering victims of DMST in their practice, which validates the existence of DMST in Kansas. It is evident that even physicians with interest in DMST are lacking in knowledge. Even if they suspect a victim based on signs, it is rare that they follow through and report the victim. Training is necessary in order for Kansas physicians to successfully identify and report victims.

Saloons: Eat, Drink, and be Civil

Austin Rhodes

Faculty: Jay Price

History College of Arts and Sciences

Through Hollywood and dime novels the old west saloons have achieved a mythic status. Saloons are almost always shown as exciting places full of gambling, prostitution and violence. A place where a person was just as likely to get shot as they were to get a drink. There is a grain of truth to every myth. The myth of saloons is no exception. With the utilization of newspapers County Commissioner minutes, and other primary sources from 1865 through 1881 I will examine violence and services within saloons, in order to create a better picture of the true role of drinking establishments at that time. One of the biggest myths around saloons involves the frequency of violence. While there is a significant amount of articles in newspapers regarding violence, shootings, and robberies at saloons it is nowhere near what is frequently portrayed in movies. Variety and services help to illustrate a more complete picture of the old saloon. Because of the great number of different types of saloons, with foods from different cultures each one was a gathering place for different socio-economic groups. The reality of old west saloons is a key place of culture within the community.

Physiological Fitness Profile of Collegiate Cheerleaders

Devin Roberts*, William Hawkins, Cody Scott & Justin Harland

Faculty: Jeremy Patterson & Michael Rogers

Human Performance Studies

Introduction: Cheerleading is a highly competitive sport that is physically demanding and requires specificity in training as is necessary for other sports. Although cheerleading has evolved into one of the most popular activities with hundred's of thousands of high school and collegiate participants, there are surprisingly very few research publications on this population, and none assessing fitness capacity. The purpose of this study was to complete physiological assessments of college cheerleaders and compare the results to collegiate athletes. **Methods:** 12 male members of the WSU Cheerleading squad participated. Demographic and anthropometric data including participants' age, height, and weight were gathered. Participants then completed five fitness test: 30 second anaerobic power test, YMCA push-ups, YMCA curl up, Vertec vertical jump, and sit and reach. **Results:** Results suggest cheerleaders are above the ACSM normative values. In conclusion, the data presented here shows that cheerleaders have similar fitness capacity scores to other collegiate athletes. Additionally, using a regimen of laboratory based assessments of fitness capacity to measure individual physical abilities of cheerleaders can be a method used by strength and conditioning specialists and/or cheer coaches to design training programs based on athletes' physiological strengths and weaknesses.

James Bond's Allure: A Semiotic Analysis of 007 Movie Posters

Shen Tao

Faculty: Patricia Dooley
Elliott School of Communication

The history of Hollywood films in the spy genre has been indelibly marked by the 22 films based on Ian Fleming's 007 novels. The research uses qualitative semiotic analysis to identify how signs of all sorts, which appeared in the posters of all 22 official James Bond films, changed from 1960s to the first decade of the 21st century.

The research will focus on signs such as actor's and actress' costumes, weapons, poses, titles and other written materials and backgrounds.

By the study of all signs in the poster, the research attempts to locate the elements in 007 film posters that attracted audience and made the 007 series films one of the most successful series films ever produced in film industry.

Patient-Provider Communication

Jamie L. Mude & Kouri Simon

Faculty: Julie Scherz
Department of Communication Sciences and Disorders

A study was conducted addressing the document *Advancing Effective Communication, Cultural Competence, and Patient-and-Family-Centered Care: A Roadmap for Hospitals*, which was developed by JCAHO (Joint Commission for Accreditation and Certification for Hospitals). Our research question was: Does a heightened awareness of the JCAHO standards within the health care setting lead to a more effective patient-provider interaction. A survey was posted to the listserv for American Speech-Language-Hearing Association (ASHA) Special Interest Group 2 (Neurophysiology and Neurogenic Speech and Language Disorders) and 85 Speech- Language Pathologists from across the country responded. Results from analysis of the data obtained suggested that awareness of the JCAHO standards does not necessarily lead to a more effective patient-provider interaction.

Art Within Decoration

Joyce St. Clair
Faculty: Ted Adler
School of Art and Design

Decoration in early ceramic work stemmed from the abstraction of culturally significant symbols and motifs now serves as a record of cultural identity. Contemporarily, the role of decoration in our visual culture has been relegated; commonly artists view decoration not as an element of cultural significance but as a dispassionate method of image making. I will research the use of decoration in contemporary ceramics and in my studio work and what role decoration plays with regard to individual and cultural narrative by conducting a review of contemporary ceramic artists and examining their methods of making and use of decorative motifs in addition to utilizing a range of decorative elements within my own work and incorporating decorative motif

Reproducibility of Balance Measures Using Motion Sensors in Smartphone Technology to Measure Balance: Preliminary Result

Carina A. Staab*, Ryan Z. Amick, Elizabeth J. Epps & Tarunkumar Thummar
Faculty: Jeremy A. Patterson
Department of Human Performance Studies

PURPOSE: This pilot study was to determine the reproducibility of the output generated by Smartphone accelerometers when used for balance assessment. **METHODS:** 61 healthy individuals (28 male, 33 female; avg age = 23.8+6.2yr) performed a static Single Leg Athlete's Test (SLS) and a Tandem Stand with eyes closed (TSEC) for 10 seconds each. A commercially available Smartphone was used to determine Anterior/Posterior stability. 4 trials were completed for each test with 1 minute rest between trials. **RESULTS:** For each balance assessment, one-way ANOVA was performed and pairwise comparisons determined. For SLS, no significant differences were noted between trials ($p = 0.05$). For TSEC, trial 1 was significantly different from trials 2, 3, and 4 ($p < 0.05$). Additionally, for TSEC, a significant difference was observed between trials 2 and 4 ($p < 0.05$), however neither trial 2 nor 4 was significantly different than trial 3. For SLS, no significant differences were observed between trials 2, 3, or 4. **CONCLUSION:** No significant differences were found between trials for SLS, the first trial of TSEC was found to be significantly different than subsequent trials. This may indicate a familiarization trial is necessary if Smartphone technology is to be used for conducting balance assessments.

Acute Effect of Whole-Body Vibration on Knee Extensor Strength

Brent Swart

Faculty: Jeremy A. Patterson

Department of Human Performance Studies

INTRODUCTION: The purpose of this study was to investigate the effects of whole body vibration on knee extensor muscle strength. **METHODS:** Male college students (n=7) were recruited for the research study. Subjects performed baseline measurements on the isokinetic dynamometer (BIODEX®; System 4 Pro, New York, NY, USA) to test for peak torque output of the knee extensor muscles. The subjects then were exposed to three 60-second bouts of whole-body vibration (WBV) with 60-second rest periods between. Immediately after WBV exposure the subjects were then placed back in isokinetic dynamometer to test peak torque of the knee extensor muscles two minutes after treatment. The highest peak torque value of the baseline testing will be compared to the highest post-WBV peak torque value. **RESULTS:** Test results are still pending. Data collection is expected to be complete by the end of Fall 2011 with anticipated outcomes of no significant difference between baseline and post-WBV values.

In Defense of Nudism: Rhetorical Analysis of The Naturist Society's Website

Chai Fang Tan

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Elliott School of Communication, Liberal Arts & Sciences

Nudism, also known as naturism, is a controversial practice popularized mainly in the Western cultures where individuals get together to go skinny-dipping, sunbathing, or simply enjoying leisure activities in the nude in assigned locations. For decades, there have been many arguments about naturists' activities. Among those criticisms are: First, nudism promotes sex; second, it has negative impact on children; third, it is unhygienic; and therefore nudism is immoral. Naturists, on the other hand, defend themselves by arguing that nudism is a healthy hobby because it promotes individuals' well-being and social equality. This study serves an important purpose as it intends to identify how naturists seek to gain social acceptance in the electronic media, particularly their expressions in the World Wide Web. Since its establishment in 1980, The Naturist's Society has been a popular nudist organization. Using a rhetorical analysis method, this study answers three main questions: First, how are nudists represented in the organization's website; second, what arguments do they express; and third, do the representations of nudists in the website constitute a system of justification. Future studies are needed to better understand the justifications from both sides of the argument.

Effects of Skecher Shape-Ups on Muscle Activity During Walking, Sit-to-Stand, Balance, and Step-Ups.

Jamee Funk*, Hannah Kueny, Chelsea Ratzlaff, Emily Schlosser & Jessica Taylor
Faculty: Camilla Wilson, Michael J. Jorgensen, Ryan Z. Amick & Barbara Smith
Department of Physical Therapy

The purpose of this study was to analyze the effects that Skecher's Shape-Ups have on muscle activity of the lower extremities in women 50-65 years of age. Although there has been limited research on rocker-soled shoes in relation to muscle activity, there has been no research on the age group we have selected. The subjects for this study were recruited using a sample of convenience. EMG of specified muscles was recorded using MyoResearch XP Master Edition 1.07.25 Software. Subjects performed three trials of sit-to-stand, single leg balance, and step-up exercises each, as well as a 3 minute walking period with 15 second rest breaks between exercises. These were performed while barefoot, wearing regular tennis shoes, and wearing Skecher's Shape-Ups with a 1 minute rest break between each set. Statistical analysis was performed using repeated measures ANOVA. There was no significant difference in electromyographic activities in all muscles tested during walking, sit-to-stand, single leg balance, and step-ups between barefoot, daily tennis shoes, and Skecher's Shape-Ups. Results from this study provide knowledge for physical therapists to educate patients about rocker-soled shoes and to appropriately recommend for or against the use of Skecher Shape-Ups.

Art and Science Intersect

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Department of Fine Arts, Ceramics

Scientists such as biologist Gunther von Hagens and medical doctor Mark Gilbert, among others, have been turning to art to create scientific sculptures whose main purposes are not only to teach to general public and science community, but also be aesthetically pleasing. However, Von Hagens and Gilbert create their pieces with more than just the science community in mind. Conversely, contemporary artists, including Damien Hirst, Mel Chin, and many others, seem to be turning to the science field for inspiration in creating their artwork by incorporating various aspects of science into their artwork. Artists can gain their inspiration from science, but science can also gain inspiration from art. Can these intersections cause aspects of art to fall into a scientific range and aspects of science to be considered art? Even though there is a scientific basis for the work of some of scientists and artists, alike, they are working to communicate to an audience something important to them. Deliberate choices and aesthetic decisions in both fields create a link between the disciplines, causing some scientists to be considered artists and some artists as scientists. They are both working towards discovery.

Statistical Analysis to Establish the Relationship Between Radiation Consumption and Energy Use for Medical X-rays

Fernando Valenzuela

Faculty: Janet Twomey

Department of Industrial and Manufacturing Engineering

Ways to determine how much radiation is actually used to produce an X-ray image have not been developed and this is an essential step for a complete life-cycle analysis (LCA) of medical imaging procedures. The work presented here was an exploration of a statistical method, based on image processing, of an actual X-ray image to determine how much radiation was used to create that image. The X-ray source, the interaction of the X-ray photons from source to target, and the interaction between photons and soft and hard tissue were simulated. An estimation of how much radiation was produced, and how much radiation was used was obtained. Also, the level of radiation absorbed by the patient was described here by using a correlation function between a non-filtered X-ray image and a filtered X-ray image. The complete work described in this paper presents basis towards a complete LCA on radiology imaging procedures.

Cash Flow Optimization in a Multi-Project Environment

Hessamedin Vali

Faculty: Mehmet B. Yildirim

Department of Industrial and Manufacturing Department

In this paper, we address the problem of budget allocation in a multi-project environment under uncertainty. The uncertainty is in the completion time of milestones of individual projects. Companies have the opportunity to invest funds allocated for these projects and also to borrow funds to pay the subcontractors at each milestone for a predetermined amount. The corresponding mathematical model is a linear (dynamic) programming model with stochastic due dates. We propose heuristic methods to solve this problem and compare the performance of these methods with the optimal solution using a simple numerical example.

Changes in Tongue Strength and Endurance After a Typical Meal in Healthy Older Adults

Heidi A. VanRavenhorst-Bell

Faculty: Lyn Goldberg

Department of Communication Sciences and Disorders

Aging affects all physiological processes including swallowing. Swallowing safely is vital for nourishment and hydration of the body and brain. A primary component of a safe swallow is adequate tongue function, particularly strength and endurance. *Purpose:* Investigate changes in tongue strength and endurance following a typical meal in healthy older adults (65⁺ years). *Methods:* Self-reported healthy adults (n=20; 15 women, 5 men) completed tasks to measure tongue strength and endurance before and after a midday meal using the *Iowa Oral Pressure Instrument (IOPI)*. *Results:* A paired samples *t*-test documented a statistically significant increase ($p<0.05$) in tongue strength from pre- to post-meal measures. This contrasts with recently published data. Implications for optimizing oral function in older adults are explored.

Ritual Genesis: Constructing Systems of Belief

Lars Voltz

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School of Art and Design

Throughout clay's history, material choices directly shape cultural practices and the structuring of ceremonial and mundane living. Within this context, "ritual" is a transient term describing actions covering a broad scope of day-to-day and elevated/special circumstances that retains potency depending on the contexts of the performed action. I will be investigating how rituals rooted in ceramic materials, impact the lives of those who participate with the ritual. References will be made to very personal rituals I have recently created and to those of foreign cultures. I hope audiences to question their associations with their own rituals and to examine how their beliefs shape how they live.

Microbial Community Analysis of Open Ponds for Algal Biodiesel Production

Pravin K. Wagley
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Department of Biological Sciences

Algae farming in shallow open ponds require little technology, with low capital and operating expenditures. In relatively uncontrolled ponds there is a high likelihood that microbial contamination will affect algal yield. We are interested in understanding natural contamination as an ecological process to better control the trajectory of microbial community assembly. *Nannochloropsis salina* was grown in small open ponds (100L). Extracted metagenomic DNA was subjected to PCR for amplification of 16S and 18S rRNA genes with the products examined by denaturing gradient gel electrophoresis (DGGE) and excised bands were sequenced. DGGE fingerprints can provide a measure of relatedness between communities that will indicate whether the assembly process is mainly stochastic or deterministic.

LacI-DNA-IPTG Loops: Equilibria among Conformations by Single-Molecule FRET

Zifan Wang*, Kathy A. Goodson & Aaron R. Haeusler
Faculty: Douglas S. English & Jason D. Kahn
Department of Chemistry

The *E. coli* Lac repressor (LacI) tetramer binds simultaneously to a promoter-proximal DNA binding site (operator) and an auxiliary operator, resulting in a DNA loop, which increases repression efficiency. Induction of the *lac* operon by allolactose reduces the affinity of LacI for DNA, but induction does not completely prevent looping *in vivo*. Our previous work on the conformations of LacI loops used a hyperstable model DNA construct, 9C14 that contains a sequence directed bend flanked by operators. Single molecule fluorescence resonance energy transfer (SM-FRET) on a dual fluorophore-labeled LacI-9C14 loop showed that it adopts a single, stable, high-FRET V-shaped LacI conformation. Ligand-induced changes in loop geometry can affect loop stability, and the current work assesses loop population distributions for LacI-9C14 complexes containing the synthetic inducer IPTG. SM-FRET confirms that the high-FRET LacI-9C14 loop is only partially destabilized by saturating IPTG. FRET histograms suggest that the remaining population is a mixture of lower-FRET states ascribed to specific-nonspecific or extended LacI loops, not free DNA. Repression by persistent loops at saturating IPTG should be considered in models for the regulation of the operon. In addition, we propose that specific-nonspecific DNA loops near the operator function to accelerate re-repression upon exhaustion of inducer.

Physician Assistant Program Education on Spirituality and Religion in Patient Encounters

Melissa Whitney*, Callie Wentling* & Ashley Hervey

Faculty: Gina Berg

Department of Physician Assistant

Motivation: This study describes instructional practices of physician assistant (PA) programs in educating students to discuss spirituality and religion during patient encounters. Methodology: An electronic survey was emailed to 143 programs across the U.S., with question regarding these practices. Results: Of the 143 PA programs, 38 schools completed the survey for a 27% response rate. 68.4% of respondents expressed that their students have a desire to be trained to discuss spirituality or religion during patient encounters while 36.8% of program respondents do not offer this training. 69.2% of respondents would consider adding curriculum to teach students to discuss spirituality during patient encounters. 92.3% would not consider adding curriculum to teach students to discuss religion during patient encounters.

The Effects of Explicit Grammar Feedback on Student Writing

Arleta L. Wiebe

Faculty: Mara Alagic

Curriculum and Instruction

Grammar, the order and coordination of words in the English language, is essential to useful and elegant communication. This study addressed the effect of teacher feedback on student writing. Following a pre-study essay to establish a baseline of grammatical accuracy in writing for each participant, three groups of five freshmen students wrote three essays, and following teacher critique, revised the writing. Each group received a different style of feedback. The teacher responded to one group by giving explicit grammar corrections within the text, and no affective comments. The teacher's response to another group involved marginal marks without specific corrections, requiring the students to search for grammar mistakes. The final group received no grammar corrections in the text of the writing; instead, the teacher wrote narrative responses, which included affective comments. The results showed that all students improved their writing. Compared to the other groups, the group receiving narrative responses to their writing maintained a higher level of grammar accuracy in their writing as evidenced by the post-study essay. The final survey suggests that they pursued a more active role in correcting their mistakes than those from the other groups. As compared to the other groups, this group also developed a higher level of ideas and organizational structure within their writing.

Reducing Invasion By Targeting Vulnerable Life Stages: Effects of Fire on Survivorship of *Lespedeza cuneata*

Bryant M. Wong
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There is a growing interest in whether invasive species may be controlled by targeting key life stages. In this study, I test whether fire applied at potentially vulnerable life stages can increase mortality and limit the spread of the invasive legume, sericea. Although laboratory experiments indicated that fire inflicted extremely high mortality on sericea seeds, fire enhanced germination rates in the field suggesting that seeds may be protected from fire by mixing with soil. Furthermore, fire had little effect on seedling survival even for very young plants. This suggests that sericea seedlings may quickly reach a size from which they are capable of resprouting. These results illustrate that, although certain life stages are presumed to be vulnerable to disturbance, such untested assumptions can result in unanticipated outcomes due to interactions between biotic and abiotic factors.

A Microprocessor Based Green-Device for analyzing Students' Classroom Attendance and Performance

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Attending classroom activities is the primary method in traditional colleges to conduct knowledge to students. The traditional method for taking attendance is tedious and vulnerable to dishonesty. Our project goal is to overcome these problems using a mobile device by reading biometrics. This system is built with privacy, mobility, and power efficiency as key factors. Privacy can be maintained by using an algorithm to maintain the identity of a fingerprint without capturing the image. Mobility is enabled using WI-FI connectivity. Power efficiency is achieved by utilizing power management schemes and multiple power sources. Based on our experience in the CAPPLAB, the device is capable of expansion into assisting organizations in managing identity security using the same method we developed.

