

19th Annual Student
RESEARCH day

Center of Excellence

for Faculty and Undergraduate Student Research Collaboration

Proceedings of the 19th Annual University of Wisconsin-Eau Claire Student Research Day

May 2, 3 and 4, 2011

The UW-Eau Claire Student Research Day is supported by funds from the UW-Eau Claire Foundation. Grants supporting Faculty/Student Research Collaboration are made possible through funds provided by the Undergraduate Initiative of the University of Wisconsin System, the UW-Eau Claire Foundation, the University of Wisconsin-Eau Claire, and Blugold Commitment differential tuition provided by the undergraduate students.



Office of Research and Sponsored Programs
UNIVERSITY of WISCONSIN - EAU CLAIRE

Schedule of Events

Monday, May 2, 2011

Time	Event	Location
7:00 – 8:30 a.m.	Students set up posters	Zorn Arena
8:15 – 8:30 a.m.	Judges' orientation	Gold Room, Zorn Arena
8:30 – 3:00 p.m.	Judging (lunch ~11:30 in Dulany)	Zorn Arena
Noon – 6:00 p.m.	Poster session open, with student presenters at posters from Noon to 4:00 p.m.	Zorn Arena
3:45 – 5:00 p.m.	Student Research Day reception	Tamarack Room, Davies Center
~4:15 p.m.	<i>Reception Welcome Address:</i> Chancellor Brian Levin-Stankevich <i>Program:</i> Announcement of UWEC Student Research Day awards And Kell Container Corporation Collaborative Research Scholarship	Tamarack Room, Davies Center

Tuesday, May 3, 2011

Time	Event	Location
8:00 a.m. – 6:00 p.m.	Poster session open to University community and public	Zorn Arena

Wednesday, May 4, 2011

Time	Event	Location
8:00 a.m. – Noon	Poster session open to University community and public	Zorn Arena
Noon – 1:00 p.m.	Students remove posters	Zorn Arena

UW-Eau Claire History Conference

May 2, 2011 / 9AM to 7PM /Wisconsin Room (Davies Center) and Hibbard 705

Undergraduate session / Sponsored by Phi Alpha Theta: 9:00-10:15AM

Katherine Dahl - *"Women to the Rescue!": The Representation of African American Women in the Art and Illustration of African American Harlem Renaissance Publication*

Desirae Lezotte - *Girl-Man: Identity and Implications*

Elizabeth Wallace - *Murder in Eau Claire County*

Graduate session #1: 10:30-11:45AM

Ryan Hidelbraugh - *The Mercantile System in the 17th Century: How it Impacted Areas of Trade, Treaties, Privateers, and Pirates*

Todd Theiste - *Behind the Hornet's Nest: The Fifty-second Illinois and the Battle of Shiloh*

Jeffrey Cornell - *Stalin, Enemy of the People: Causalities of the Great Patriotic War*

Graduate session #2: 12:00-1:15PM

John Thompson - *Which side are you on?: The Press and the 1916 Mesabi Iron Range Strike*

Anya Piotrowski - *Before A League of Their Own: Female Youth Culture in Racine, 1930-1939*

Nathan Castillo - *A Kodak Christmas: Family Photo-Taking as Holiday Ritual, 1918-1923*

Thesis/Research paper presentations: 4:00PM (Hibbard 705)

Jordan O'Connell - *Gay Republican in the American Revolution: Wisconsin Congressman Steve Gunderson, 1989-1996*

Peter DeCarlo - *George Rogers Clark and the French Conspiracy, 1793-1794*

Logan Hoggatt - *George Washington's Relations with Virginia's Smallholders and Landless Whites: As Assessment of Hierarchy and Deference during the Revolutionary Era*

Provost's Honors Symposium for Research, Scholarship, & Creative Activity

May 6, 2011 / 1:00 to 5:30 PM / Schneider Hall

This year's symposium will feature 34 papers or presentations by approximately 65 students in 27 different fields of intellectual inquiry.

Session I: 1:00 to 2:00 PM

Session II: 2:10 to 3:10 PM

Session III: 3:20 to 4:20 PM

Session IV: 4:30 to 5:30 PM

Following the final Symposium presentations, Provost Patricia Kleine will host a fancy hors d'oeuvres reception for all Symposium presenters, nominators, and audience members. This year's reception will be held in the second-floor breezeway of McIntyre Library from 5:30–7 p.m.

Judges

Stephen Allard, Associate Professor of Geoscience, Winona State University
Dawn Albertson, Associate Professor of Psychology, Minnesota State University, Mankato
Mark Blegen, Associate Professor of Exercise and Sport Science, St. Catherine University
Emily Boyd, Assistant Professor of Sociology, Minnesota State University, Mankato
Chris Corley, Associate Professor of History, Minnesota State University, Mankato
Marilyn Hart, Associate Professor of Biology, Minnesota State University, Mankato
Dena Huisman, Assistant Professor of Communications, University of Wisconsin-La Crosse
Cindra Kamphoff, Assistant Professor, Human Performance, Minnesota State University, Mankato
Susan Kelley, Professor of Mathematics, University of Wisconsin-La Crosse
Karla Lassonde, Assistant Professor of Psychology, Minnesota State University, Mankato
Arriety Lowell, Adjunct Professor of Physics, University of Wisconsin-River Falls
Mark McCullough, Reference Coordinator of Library Services, Minnesota State University, Mankato
Robin Murray, Professor of Theatre Arts, University Wisconsin-River Falls
Alex Panahon, Assistant Professor of Special Education, Minnesota State University, Mankato
Nick Robertson, Assistant Professor of Chemistry, Northland College

Acknowledgments

Many people helped to make this event possible, and we heartily thank them for doing their part cheerfully and efficiently:

Su Miner and the moving crew—for carefully transporting poster panels to the arena from three different localities.

Jason Jon Anderson, Karen Stuber, Christine Henricks, and Event Services stage crew—for arrangements in Zorn and Davies Center and for setting up the arena.

Terri Knudtson, Kristine Hessler, and the Catering staff—for producing delicious victuals for the judges and for the reception.

Philip Ostrander (piano), **Jerry Young** (tuba), **Joe Niemann** (trumpet) and **Andy Detra** (bass) for performing at the Research Day reception.

Ann Statz, Yer Lee, Heather Johnson Schmitz, and Kelli Basa, ORSP office staff members—for helping with myriad organizational details.

Meghan Christian—for the design of the cover of this abstract volume and Research Day publicity materials.

Melissa Davey Castillo, Graduate Assistant—for compiling this abstract booklet and keeping track of participants and poster locations.

From **Learning and Technology Services, Beth Krantz, Gene Leisz, and BITS trainers**—for providing training in poster design and creation; **Mike Skarp** and **Matt Schultz**—for helping us improve our electronic application form and being ready and willing to assist whenever we needed them; **Sarah Brower, Brandon Knuth, and Help Desk employees**—for managing the increased load of poster printing with apparent ease; and **Rick Mickelson** and **Bill Hoepner**—for recording the event with their cameras.

Lastly, we thank student participants and their faculty mentors, as well as faculty abstract reviewers, for all the hard work that led up to the polished presentations that are displayed at this 19th Annual UW-Eau Claire Student Research Day.

TABLE OF CONTENTS

Graduate Students	1	Natural & Physical Sciences	23
English	1	Chemical Science	23
History	1	Chemistry	23
Psychology	2	Materials Science Center	27
Education and Scholarship of		Computer Science, Information Systems,	
Teaching & Learning	3	and Mathematics	28
American Indian Studies	3	Computer Science	28
Chemistry	3	Information Systems	29
Communication Sciences & Disorders	3	Mathematics	29
Computer Science	5	Mathematics/Computer Science	32
Education Studies	5	Mathematics/Geology	32
English	5	Mathematics/Music & Theatre Arts	33
Foreign Languages	6	Earth Science	33
Foreign Languages/Education Studies	8	Geography & Anthropology	33
Geology	8	Geology	35
Mathematics	9	Geology/Geography & Anthropology	38
Music & Theatre Arts	9	Life Science	38
Psychology	10	Biology	38
Sociology/Communication &		Physical Science	45
Journalism	10	Physics & Astronomy	45
Student Affairs/Dean of Students	10	Social Sciences	47
Fine & Performing Arts	11	Accounting & Finance	47
Art & Design	11	American Indian Studies	47
Communication & Journalism	11	Economics	51
Music & Theatre Arts	12	Economics/Psychology	53
Health Sciences & Services	13	Foreign Languages	54
Biology	13	Geography / Anthropology	54
Communication Sciences & Disorders	13	Geography and Anthropology/	
Counseling Services/Psychology	15	Geology	56
Kinesiology	15	Information Systems	57
Music & Theatre Arts	18	Management And Marketing	57
Nursing	18	Political Science	58
Public Health Professions	19	Psychology	59
Humanities	19	Social Work	71
English	19	Sociology	71
Foreign Languages	21	Student Affairs/Dean of Students	73
History	22		

GRADUATE STUDENTS

ENGLISH

Jennifer Jill Kulasiewicz (9)

Faculty Mentor/Collaborator: **Jonathan R. Loomis**

Enlightenment and Religious Deception in The Female American

The Female American was first published in London in 1767 during the height of the Age of Enlightenment. In my paper I argue that after a near brush with death, protagonist Unca Eliza Winkfield is enlightened, but that this enlightenment becomes a catalyst for religious deception. Unca transforms from an unenlightened student that follows the rules, into a missionary who convinces a tribe of Indians to abandon their spiritual beliefs and follow Christianity. I demonstrate how Unca ironically utilizes enlightenment principles, which are supposed to free and better humanity, to instead enslave and colonize the Indians. Unca's identity goes from adventurous explorer to placing herself into a hierarchy where she has a tremendous amount of power, warping the very purpose of enlightenment. This research is important to further stretch the ideas of The Enlightenment Era, using a text that was written during the time, and I believe is an example of criticism of the era itself. In my study I used enlightenment theorists and their philosophies to support my claims. The paper was received with enthusiasm at the annual South Central Society for Eighteenth-Century Studies where I presented it with a panel titled Religion in the Age of Enlightenment.

HISTORY

Stephanie Renee Jarvais (10)

Faculty Mentor/Collaborator: **Teresa M. Sanislo**

Let's Go! Women Travelers!

Traveling across Europe is an activity often associated with college students. Students and other travelers often rely on a travel guide book, such as the popular series Let's Go!. In my research I looked at the Let's Go! series. The goal of this project was to determine how women travelers have been portrayed/included in guidebooks throughout the years. As a history student, it is important to see how women have been treated through the years, as well as what historical sites have importance compared to others. I have read the books, taken extensive notes, and compiled my findings with the earlier years. I will now continue with the later years. I expect in my future research to find that the books were geared more towards men than woman, but change in more recent years.

Rebecca Nichole Reid (24)

Faculty Mentor/Collaborator: **Jane M. Pederson**

"All Sorts of Domestic Occupations:" Early Twentieth-Century Media Portrayals of Female Circus Performers

This project examines the portrayal of early twentieth-century female circus performers in popular magazines and newspapers. It particularly examines the ways in which those portrayals sought to de-sexualize the women and fit them into the prescribed "women's sphere" and "cult of domesticity," even as they led lives of travel, athleticism and performance. This study also contributes to the discussion of women's historically accepted roles and the ways popular media encouraged conformity to a feminine ideal. Evidence is culled from numerous contemporary magazine and newspaper articles and popular circus fiction, as well as interviews with female circus performers and circus records that indicate the reality of daily life for female circus performers. The study also refers to recent scholarship concerning circus history, female performers and popular representations of women. It concludes that circus managers had to "sell" the circus through a combination of titillation and respectability, especially as concerned their female performers.

PSYCHOLOGY

Brianna Leigh Invie (25)

Faculty Mentor/Collaborator: **Michael I. Axelrod**

Investigating a Self-Management Intervention on Students' On-Task Homework Behavior at an After-School Program

Students often struggle to complete their homework assignments because homework is commonly considered aversive to students. Students engage in inappropriate behavior in an effort to escape the task demands of homework. This study examined the effectiveness of a self-management intervention for students at an after-school program. Students' levels of on-task behavior quickly and dramatically increased with the use of the intervention, which was considered to be highly effective. The treatment was also found to be highly acceptable by both participants and interventionists. These findings are consistent with the existing literature and indicate that self-management interventions can improve on-task behavior. Since this is the first known study to investigate the effects of a self-management program on students' on-task homework behavior at an after-school program, it also adds to the body of literature implying that self-management interventions can be effective in settings other than at home or school.

Elizabeth Mary Krueger (23)

Faculty Mentor/Collaborator: **Mary Tusing**

Validation Study of Magnitude Discrimination Number Sense Assessment Measure

Few assessments tools exist to measure numeracy skills of older children. This study aims to validate an assessment tool designed to measure magnitude discrimination in third grade students with other measures of numeracy. A second aim is to explore the relationship between magnitude discrimination abilities and math computation abilities in third grade students. Results include correlations between numeracy measures and computation fluency and concurrent validity of the magnitude discrimination test.

Rachel Katherine McCarthy (22)

Faculty Mentor/Collaborator: **Mary Tusing**

Use of the Dynamic Indicators of Basic Early Literacy Skills with English Language Learners

Research on the use of curriculum-based measures in reading with English Language Learners (ELLs) will be presented. With the growing population of ELL students in our schools, it is important that we are able to assess and evaluate their skills at a level commensurate with the tools we have for native English speakers. We will analyze the predictive validity of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) measures for future performance on the state mandated third grade reading test in Wisconsin (Wisconsin Knowledge and Concepts Exam). This will be done with a sample of primarily Hmong-speaking English Language Learners from the Eau Claire Area School District. Session attendees will learn about the use of DIBELS measures with ELLs, whether the measures function similarly for ELLs as compared to English speaking students, and which of the DIBELS measures were the most effective predictors of ELL students' reading performance.

Amber Jo Zank (26)

Faculty Mentor/Collaborator: **Michael I. Axelrod**

Training Individuals to Implement a Brief Experimental Analysis of Oral Reading Fluency

As the Response to Intervention (RtI) movement has gained momentum, research in school psychology has focused more on data-based decision-making and applying these decisions to academic interventions. One area that has gained increasing focus is brief experimental analysis (BEA) of oral reading fluency. Although literature is replete with BEA research, the literature has yet to focus on training individuals to implement a BEA procedure. The purpose of the current study was to extend previous research on training individuals to conduct functional analyses to the context of BEA. In the study, three training conditions were evaluated using undergraduate volunteer students to implement BEA of reading to elementary school students. The three conditions were evaluated to determine which one resulted in the highest procedural integrity. Data were collected using direct observation and, subsequently, audiotapes. Through both forms of data collection (i.e., direct observation and audiotapes), participants in all conditions implemented the BEA with 98 – 100% accuracy. Results indicate that using a brief training of individuals to conduct a BEA of oral reading fluency holds promise for school personnel looking for effective and easy-to-implement interventions for increasing elementary students' oral reading fluency.

EDUCATION AND SCHOLARSHIP OF TEACHING & LEARNING

AMERICAN INDIAN STUDIES

Elizabeth Jade Pawlicki (113)

Faculty Mentor/Collaborator: **Wendy Makoons Geniusz**

Evaluation of a Distance Learning and Teaching Model for Endangered Languages

The objective of this research is to study and improve upon the effectiveness of University of Wisconsin-Eau Claire's Ojibwe language curriculum. Currently, UW-Eau Claire is the only college in the world to offer this kind of distance education of an endangered language. The curriculum designed and used at UW-Eau Claire has the potential for widespread use in other endangered language programs throughout the country. This research project accomplished 4 goals: it evaluated our model for learning, designed and implemented updates to the model, broadened the Ojibwe language dictionary from archived lessons of discussions involving elders from the Ojibwe tribe, and made it possible to distribute our curriculum's results to other endangered language programs. Current and former students were studied using a class evaluation survey through the online survey software Qualtrics. The data was analyzed using content analysis and meta-analysis to determine the effectiveness of the program's layout, activities, and distance learning room's atmosphere for in-class students as well as remote students. The resulting effectiveness of our Ojibwe curriculum will be shared with other endangered language programs throughout the country at an Indigenous Language Symposium in an attempt to spread a reliable and effective system of teaching endangered languages.

CHEMISTRY

Aaron James Brewster (153)

Faculty Mentor/Collaborator: **James A. Phillips**

Assessing Student Development in Bundled Courses: Critical Thinking, Content Knowledge, and Student Engagement

This project will address three primary questions:

1. Does bundling improve acquisition of content knowledge within a given course?
2. Does intentional instruction in critical thinking manifest these skills in a parallel course?
3. Are bundled students more engaged in a large lecture course?

To address these questions, we are examining quiz and test scores, attainment of critical thinking outcomes as evidenced by written work, and student engagement as evidenced by self-selected seating choices. Chem 127 (Fall 2010) offers a unique opportunity to make comparisons between four distinct student populations: Honors Program students, "Climate Bundle," "Planet Bundle," and general UWEC student population.

COMMUNICATION SCIENCES & DISORDERS

Erika Ann Andrlle and Katie Rose Anderson (91)

Faculty Mentor/Collaborator: **Marie A. Stadler**

Comparing English-Speaking Children's Retells with Two Culturally Different Stories

The purpose of the study is to discover the similarities and differences in how English-speaking children retell two culturally different stories. The two different stories being used are from the European North American and Hmong cultures. Research related to storytelling is significant to the field of speech pathology and education because of the impact it has on academic success. For collecting data, we met with each participant for a total of six times. The ten participants were read one story on the first two meetings, and the participant retold the story on the third meeting. The same methods were used for a second story. Each story retell from the participants will be analyzed for story grammar elements and other narrative structures. We expect the participants to retell the European North American story with more structures than the Hmong story.

Morgan Elaine Enright (92)Faculty Mentor/Collaborator: **Marie A. Stadler***Effects of Parental Gender on Book Reading to Preschool Children*

Our goal with this research study was to determine how parental gender affects reading interactions with preschool children. Also, regarding parental gender, what is the effect of written parent training on strategies used to teach and call attention to rhyming? We hope that information obtained from this study can be used to target specific reading interaction behaviors parents are more likely to use to help their children develop phonological awareness skills. To do this, we recruited parents of three and a half- to four and a half-year-old children. Both parents were given and told to read a Rhyming Information sheet with strategies for teaching rhyming during shared reading time and the benefits of their children learning rhyming skills. Then each parent audio recorded himself or herself reading a predetermined book with their child. The predetermined books focused on rhyming and provided opportunities for parents to practice the strategies in the handout. Analysis is still pending but we expect mothers are more likely to use any strategy than fathers are. Also, we think fathers are more likely to use active strategies, while mothers are more likely to explain the rhymes.

Lacey Joy Mancl (88)Faculty Mentor/Collaborator: **Vicki M. Samelson***Does Oral Language Skill Influence How First Graders Solve Arithmetic Word Problems?*

Learning how to solve arithmetic word problems in an academic setting is a challenge for many children, especially children with low oral language skill. If we can better understand how children with low oral language skill solve word problems, we can design interventions to improve their problem-solving skills and comprehension of curriculum language. Using an existing videotaped data set of first graders with average and low language skill solving word problems with and without rewording and gesture scaffolds, our research project aimed to 1) code a new portion of the existing data set and test statistically if group differences exist in first graders' flexibility in selecting solution strategies while solving traditionally-worded problems and 2) to re-code the scaffolding condition data set and test statistically if, when gesture and rewording scaffolds are presented, children with low oral language skill select different solution strategies than when traditionally-worded problems are presented. The principal investigator viewed 76 video files, expanded an existing coding system, coded the children's solution strategies, and resolved differences with the second investigator. Summative descriptive data analysis has been completed, and statistical analysis is underway. Descriptive and statistical data comparing the groups of children will be presented and discussed.

Emily Rose Nyeggen, Beth Louise Ascher, Stacey Michelle Erickson, Haley Marie Salaway, and Caroline Marie Schwedler (90)Faculty Mentor/Collaborator: **Kristine Retherford***The Autism-Spectrum Quotient: Autistic Traits of Students from Various Majors at UW-Eau Claire*

A growing number of children and young adults are being identified with Asperger's syndrome (AS), a high-functioning form of autism, and related conditions (Kaufman & Larson, 2005). Individuals with AS experience significant difficulties acquiring and using functional and necessary social-communication skills as well as acquiring skills related to impairments in executive functions and self-regulation (Winner, 2000; 2003). At present, one theory has emerged suggesting "that AS lies on a continuum of social-communication disability, with AS as the 'bridge' between autism and normality" (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001, p 4; Baron-Cohen, 1995; Frith, 1991). The purpose of this project is to examine this hypothesis by replicating and extending the work of Baron-Cohen and colleagues. Specifically, we propose to administer the AQ to undergraduate students from various majors represented at UW-Eau Claire, as well as individuals diagnosed with AS and autism. In addition, we intend to identify specific traits which may be useful in improving the communication skills of individuals identified with AS.

Alyssa Louise Yanzick (89)Faculty Mentor/Collaborator: **Vicki M. Samelson***Direct Teaching and Scaffolding the Comprehension of Arithmetic Word Problems*

Some children can't solve arithmetic word problems accurately because they don't understand the problem language. I hypothesized that combining Direct Instruction and Vygotskian Scaffolding approaches will facilitate second graders' ability to solve arithmetic word problems by increasing their awareness of specific words and more-appropriate solution strategies. Direct Instruction is a step-by-step process used to assist children who struggle academically. It breaks concepts down into smaller tasks and involves reviewing skills frequently, asking the child questions, providing feedback, and assessing

progress. In a Vygotskian Scaffolding approach, adults structure learning tasks so that task difficulty is within the child's ability to complete the task with assistance. Responsibility for successful task completion is gradually shifted from the adult to the child, until the child can complete the task independently. An initial baseline measure assessed two second graders' ability to solve two types of arithmetic word problems. An intervention script, incorporating both approaches, guided and structured intervention sessions with each child. Individualized scaffolding was provided during each session, and successive sessions were modified according to the child's previous performance. Results indicate that combining Direct Instruction and Scaffolding approaches facilitates problem comprehension and solution.

COMPUTER SCIENCE

Hannah Jean Miller, Isaac Marshall Schemm, and Matthew Nicholas Wisby (160)

Faculty Mentor/Collaborators: **Joline P. Morrison** and **Mike Morrison**

The Convergence Between Peer Review and Instructor Review

In today's environment of increasingly large computer science classes, educators face the challenge of delivering high-quality, individualized feedback. This feedback is essential to student learning because it provides the opportunity to learn and improve. Peer review is a proven learning approach that allows students to receive detailed feedback on their own work, as well as achieve additional understanding on the subject through critiquing the work of others. The overarching purpose of this research is to investigate whether peer reviews can adequately substitute for instructor reviews. This is significant because it directly seeks to improve student learning. This poster describes an experiment in which peer reviews were collected from students on actual assignments in two different computer science classes. Then, the reviews were compared to the instructor reviews of the assignments to assess reviewing skill level and accuracy. Following the reviews, a survey was conducted asking the students to rate the peer feedback and compare it to the instructor feedback. We expect to discover that peer reviews are accurate, and that students consider them to be superior to instructor reviews in the characteristic of providing more detailed feedback.

EDUCATION STUDIES

Gina Daniela Malagold (138)

Faculty Mentor/Collaborator: **Jill Pinkney Pastrana**

Popular and Non-Formal Education in Latin America

I, along with my mentor Dr. Jill Pinkney-Pastrana, am researching the theoretical and historical context of popular education and Non-Formal Education with a focus on the Southern Cone region. We will use this work as a foundation to understand the ley SEP, (Ley de Subvención Escolar Preferencial) including the history of Non-Formal Education in relationship to the current outcomes of the modern changes occurring in Chile, in particular the Santa Maria and Valparaiso area. The purpose of this act is to improve the quality and equity of education in Chile, directed towards establishments that serve the vulnerable populations. I will use my prior literature investigation as well as additional observation as a basis to understand and interpret the ley SEP in the larger context of Non-Formal Education. Through reading, reflections, and discussion we will address specific research questions such as: What are the purposes of education and schooling and how do the history, political economy, and the social framework effect education contexts in marginalized communities? Using the case study of Chile, I will apply my understanding to the larger context of the role of education in society and the connection between education, social movements and social change.

ENGLISH

Sarah Nicole Beam and Lauren Allyce Kurkowski (259)

Faculty Mentor/Collaborator: **JoAnne C. Juett**

Using PollEverywhere Mobile Response Technology in Higher Education

This project explores how mobile response technologies can be used in higher education through PollEverywhere, an online resource that can be used by educators and students in a multitude of disciplines for instant communication. Through PollEverywhere, students can use technology with texting, twitter, and/or internet access to respond to educators' questions and assessments. We examined students' comfort levels and productivity with PollEverywhere through technology-enhanced lessons in two different classes at UW-Eau Claire: a 100-level English literature class and a 300-level Women's Studies class. We concluded that PollEverywhere is an effective replacement technology for iclickers and can be used in face-to-

face instruction, hybrid/blended courses, and online education. The quantitative and qualitative results from our research have shown that Polleverywhere mobile technology is an affordable instructional response tool for higher education classes.

Christina Marie DeLapp and Michael David Jobb (103)

Faculty Mentor/Collaborator: **Shevaun E. Watson**

Students' Perceptions of ENGL 110

The primary objective of this study is to determine students' perceptions of, and experiences in, ENGL 110: Introduction to College Writing, the one course required of all students at UW-Eau Claire. This project is significant because it is a campus-wide study that potentially involves several thousand student-participants. The results of this research will guide major, ongoing curricular revision of ENGL 110. While this study is similar to traditional qualitative research performed within the discipline of psychology, and thereby provides the student-researchers with valuable survey methodology experience, the greatest importance of this work is its wide scale and future impact on students at Eau Claire. The data will be acquired by the distribution of an online survey to all students who have taken ENGL 110 in the past several years. The survey instrument was developed with input from student focus groups and then piloted with a test group before being disseminated. We expect that our results will show significant areas of variability among ENGL 110 sections, which may be negatively affecting the purpose and pedagogical impact of ENGL 110.

Lauren Allyce Kurkowski and Sarah Nicole Beam (258)

Faculty Mentor/Collaborator: **JoAnne C. Juett**

Using Google Applications in Higher Education

This project aims to identify and examine which technologies are most effective in higher education, which technologies students have access to, and student comfort levels with technology use. This research is important to all disciplines because it looks for ways to engage students by implementing technology in online and blended courses. After reading through online and blended course research from other universities across the country, we found that many universities are switching to Google Applications to better engage students in higher education courses. We tested this technology in an upper level Women's Studies course by engaging students through mobile devices and campus computers and found that Google Applications provides very effective, engaging, and diverse experiences for college students. We came to the conclusion that Google Applications is a user friendly, cost effective, useful tool for engaging college students through technology in face-to-face, online, and blended courses.

FOREIGN LANGUAGES

Amy Beckett and Ashley Anthony (162)

Faculty Mentor/Collaborator: **Beth Ernst**

Strategies for Improving Students' Critical Thinking and Discussion Skills

When international students matriculate into U.S. secondary schools or universities, they often are unfamiliar with the methodology which asks them to think critically. Indeed, they are often asked to read a text and come prepared to the next class to discuss it. Often, these students don't know how to approach a text, choose significant information, or analyze the material. Indeed, a lack of these critical thinking skills could lead to lower academic performance or an inability to fully participate in class discussions. Observing this lack of preparation in ESL classes at a public university in the U.S., the presenters thought about how to remedy the situation. They created a survey distributed to international students beginning their studies in an IEP. These students were all interested in earning an undergraduate degree at a U.S. university. They asked the students about their background knowledge of working with texts and discussion skills. From these results, the presenters determined that explicit strategy instruction was needed. Over the course of fifteen weeks, students developed these strategies. At the end of the semester, both instructors and students were given an exit survey to determine the effectiveness of the instruction.

Lindsay Marie Considine (128)

Faculty Mentor/Collaborator: **Kate Mastruserio Reynolds**

Needs Assessments: Enabling More Effective English Language Teaching

In the project we investigated how the administration of needs assessments to English language learners affects the quality of the instruction given to the students following the assessment. Needs assessments are diagnostic tests given to English-language learners prior to instruction for the purpose of understanding what their competence levels are in the four skills:

reading, writing, speaking and listening. We conducted case study research in Bagaces, Costa Rica with Spanish-speaking EFL high school-age students. The process included the following steps: 1) create a needs assessment, 2) administer it, 3) use the results to gather information about the students' language abilities and needs, and 4) create a curriculum for instruction that catered to those needs. We then used that curriculum to personally tutor the EFL students in their English needs two hours daily over a three-week period. During instruction we created a final assessment to gather data to display the improvement in the students' English abilities during that time. As a result, we saw that the quality of the instruction was positively impacted by the administration of the needs assessment, many of the instructional choices were directly influenced by the results of the needs assessment, and the students showed much improvement on the final assessment.

Sarah Elizabeth Hemmy (114)

Faculty Mentor/Collaborator: **Anne Cummings Hlas**

Students' Perceptions of English Use in the Spanish Classroom

A high quantity of quality input in the language of study (or target language) from teachers is essential for students' second language acquisition. Unfortunately, there are many classroom variables that contribute to teachers switching between English (their first language or L1) and Spanish (the target language or TL) in the classroom. These factors represent an area of growing interest in the field of language education research. This research study examined how students perceive the language used by teachers. When do students notice teachers switch between English and Spanish? Do they feel more comfortable when the teacher uses English? Would they prefer the teacher to speak in Spanish more than English? The current study surveyed Spanish language students in middle and secondary classrooms in the Chippewa Valley. Students completed a survey and some took part in qualitative interviews to determine why they responded the way they did on the survey. Preliminary results suggest students are aware of their teacher switching between English and Spanish. In general, students would prefer less Spanish usage in their classes although they feel comfortable when their teacher uses Spanish. Future research is needed to understand the root of why students would prefer less Spanish in a Spanish language classroom.

Abdulaziz Mohammad Mashat, Hanadi Eid S. Al Harbi, Nadar Saad M Alasis, Najlaa Ali A. Alhazmi, Salwa Mohammed S. Mothana, Abdulelah Uthman Sejini, Yijing Sun, and Jibao Xie (112)

Faculty Mentor/Collaborator: **Julie D. Adler**

UW-Eau Claire Students' Knowledge and Attitudes about Islam

Students in ESL 291 researched UWEC students' knowledge of and attitudes towards Islam. Background reading indicated lack of understanding of the basic tenets of Islam among U.S Americans. ESL students wanted to know how much understanding UWEC students have of Islam prior to instruction, and how much they had learned after instruction. The researchers created a survey for Prof De Grave's Geography 111 (Human Geography) students. They administered the survey at the beginning of the instructional unit on Religion, and again at the end. They hypothesized that Professor De Grave's Geography students would increase their knowledge of the philosophy and tenets of Islam as a result of the instruction and dialogue, and that attitudes also would become more positive.

Kallie Jo Sandell and Jingjing Jiao (136)

Faculty Mentor/Collaborator: **Kate Mastruserio Reynolds**

Measuring Teachers' Content-Based Learning

Content-based instruction (CBI) is one of the most influential instructional innovations in the field of Teaching English to Speakers of Other Languages (TESOL) within the last fifty years; however, there has been little opportunity to judge the quality of the teacher preparation of mainstream teachers in CBI. The research investigates the effect of Content-Based English as a Second Language Instruction (CBI) and its influence on pre-service teachers' (PSTs) perceptions of their existing knowledge and capabilities for teaching English language learners (ELLs). The goal is to examine the PSTs' development through taking a CBI course and report changes of pedagogical philosophy and awareness of ELLs' needs to reveal the impact of CBI in teacher education. The research evaluates whether the course has impact, and what areas of instruction were most influential on educators' understandings of teaching ELLs. Participants were PSTs at UW-Eau Claire taking the CBI course. The method consisted of an electronic pre-course survey taken at the beginning of the semester, and a complementary post-term survey taken at semester end. The survey questions were open-ended and Likert scale. The findings demonstrate that after completing the CBI course teachers felt more confident in their ability to engage ELLs because they better understood the depth and complexity of CBI.

Mikayla Rae Schroeder and Krista Rose Lindemann (137)

Faculty Mentor/Collaborator: **Kate Mastruserio Reynolds**

Do Experts Examine Their Text for Context?

Many teachers do not have helpful language standards, or a workable curriculum, therefore frequently textbooks become the backbone of the course. This practice clearly does not benefit language learners, because textbooks are not focused specifically on all of the unique groups of learner's goals, needs, or learning styles that exist in all ESL/EFL classrooms, or on the myriad contexts' unique characteristics. Our research sought to determine how ESL, EFL, and Foreign Language teachers (outside the United States) viewed their responsibilities for modifying textbook materials, creating materials in support of the text, designing curricula, and writing objectives. Evidence indicates that ESL teachers modify the text because they have more training to do so and field standards to serve as guidelines; whereas, EFL and Foreign Language teachers do not indicate the same degree of training, or engagement with the curriculum or text. In this session, attendees will view data sets and findings in an engaging manner. Causalities and implications for teacher education will be discussed interactively.

Laura Jean Szymanski (105)

Faculty Mentor/Collaborator: **Jessica S. Miller**

Effects of Learner-Produced Podcasting on French Conversation Skills

In recent years technology has been made available in classrooms, which facilitates an enriched learning experience. This exploratory study focuses on the incorporation of student-produced podcasting into the French language classroom and examines the potential benefits to learners. The methods used include researching existing literature and analyzing data from a French class. The preliminary results suggest that students gained from producing podcasts. This project is significant because it describes a new way to teach a foreign language that may benefit second language communication skills by giving learners a greater awareness of their own use of the language.

FOREIGN LANGUAGES/EDUCATION STUDIES

Josephine Robinson (129)

Faculty Mentor/Collaborators: **Kate Mastruserio Reynolds** and **Aram deKoven**

Domestic Intercultural Community Practice: Embracing the Somali Immigrant Experience in Midwestern Public Schools

The purpose of this study was to measure the impact of a domestic intercultural immersion trip on the cultural awareness, competence, and comfort levels of a group of UW-Eau Claire students. The study entitled, Domestic Intercultural Community Practice: Embracing the Somali Immigrant Experience in Midwestern Public Schools, provided knowledge and awareness of Somali culture, tradition, and religion via an intercultural immersion trip to Minneapolis, MN. The participants consisted of fourteen elementary and secondary education majors from the University of Wisconsin-Eau Claire. Pre and post immersion experience surveys were collected and analyzed. A summary of surveys revealed increased feelings of comfort and awareness working with Somali youth and within the Somali community. In addition to the surveys, participants participated in videotaped focus groups and completed writing and reading assignments that provided further evidence that supported the qualitative findings. The results of this study support the importance of properly facilitated domestic intercultural immersion experiences in building multicultural awareness and competencies for college students.

GEOLOGY

Brady Joel Haas (151)

Faculty Mentor/Collaborator: **Scott K. Clark**

Measuring the Role of Image Representation in Generating Misconceptions Related to Plate Tectonics

An accurate understanding of the Theory of Plate Tectonics provides a framework through which most other dynamic processes on Earth are understood. Previous studies have indicated that students possess a range of alternative conceptions regarding plate tectonics. Some of these alternative conceptions may be derived from misinterpretations of aspects seen in typical plate tectonic images such as color selection and representation of the fate of a descending slab. At the 2008 and 2010 Geological Society of America (GSA) national meetings, we collected survey data to measure individuals' conceptual understandings of plate tectonics. The 2008 survey presented a typical plate-tectonics image, and the 2010 image was

designed to minimize potentially misleading aspects of the original image. Is the novel image effective? Preliminary analysis suggests that, relative to estimates of the solid:liquid ratio of the mantle in the 2008 survey, a smaller fraction of the 2010 participants provided an erroneously high estimate of liquid in the mantle. This suggests that the novel image might be more effective at presenting plate tectonic concepts to geoscience novices. We will be presenting findings from our on-going analysis, and will report on the effectiveness of modifying the image to improve people's interpretation of plate tectonic concepts.

MATHEMATICS

Chelsey Marie Drohman, Alice Evelyn Oswalt, and Ying Yang (152)

Faculty Mentor/Collaborators: **Diane K. Masarik** and **Simei Tong**

An International Study of Mathematics in Middle Schools

Education and economics are global issues; as such, we need to learn from other countries to enhance our K-12 education system. We present the results of a study of middle grade mathematics curriculum from China, Russia, and the United States. The study focuses on the algebraic concept of inequalities and the geometric concept of angles formed by the intersection of a transversal with non-parallel and parallel lines. The poster presents the similarities and differences of these concepts as presented in the appropriate textbooks and experienced by the student researchers. Examples and sample textbooks will be displayed.

Katie Ann Nestingen and Alison Mae Lau (159)

Faculty Mentor/Collaborator: **Manda R. Riehl**

OOMPH

OOMPH (Opportunities for Outstanding Mathematics Performance for Hmong Students) is a mathematics enrichment program designed for Hmong high school students. OOMPH is designed as a hybrid program between a math circle and preparation for mathematics competitions. Each year, the program serves 10-20 students. When we attempted to find resources for teaching high school mathematics to Hmong audiences, we found none. We therefore researched Hmong culture and history, as well as literature about the challenges students from other cultures face, in order to design lessons and activities that would be culturally relevant and engaging for the students. We assessed the effectiveness of our program by student performance on a skills exam and affective data about the students' confidence and interest in mathematics taken at the start and end of the program. We plan to use this data to help us revise and restructure the program in future years.

MUSIC & THEATRE ARTS

Amber Serene Tappe and Iansa Lucia Zaldarriaga (104)

Faculty Mentor/Collaborator: **Lee Anna Rasar**

Assessment of Types of Learning Engagement Which Contribute to Integrative Learning in Music Therapy

This project examined student reports of engagement in integrative learning in music therapy across the Fall 2010 semester using a definition developed through a previous literature-based research project. Students provided descriptions of how they made connections and specified which types of connections were useful in the processes of metacognition, reflection, and self-awareness in weekly written reflections and discussion. Comments from verbal sharing were recorded and typed up. Results were analyzed using a coding scheme and unitizing methodology along with frequency tracking for the larger sets of responses noted: interdisciplinary and cross-theory connections, frequency of use of different methods for acquiring learning, and intentionality in designing and following through with learning processes. Applications for non-academic contexts, dialectical reflection, metacognition, and self-awareness were reported by multiple students. Student responses explained how they demonstrated intentionality when problem solving, directing their own therapeutic work, and making connections across theory, practice, disciplines, and in specific contexts. Descriptions of methods used to acquire learning and evaluation of the implications of choices on their professional life and society as a whole were also noted. Although students were not specifically asked about courses which integrated into other learning areas for them, every student identified courses which were useful.

PSYCHOLOGY

Kari Marie Rajkovacz, Emily Rose Gazella, and Stephanie Anne Nohr (115)

Faculty Mentor/Collaborator: **Gita M. Sawalani**

A Meta-Analytic Review of Factors that Influence Students' Ratings of Their Instructors: Preliminary Findings and Future Directions

The current project involves conducting a meta-analysis (i.e., quantitative review) of the student evaluation literature. There are factors that have been found to produce mixed results (e.g., class size) in terms of their relationship with how students evaluate their instructors. Conducting a quantitative review of the literature will allow us to calculate overall effect sizes of the relationship that these factors have with student ratings. We will also calculate overall effect sizes for other factors that have been found to have a statistically significant relationship with student ratings (e.g., expected grade in a course). We plan on presenting some preliminary findings (and future directions) based on approximately a hundred peer-reviewed journal articles published between 1936 and 2011. We will then continue coding additional relevant studies by contacting researchers for their dissertations and unpublished studies (that are typically not published due to statistically insignificant results). Contacting individual researchers for dissertations and unpublished work will allow us to calculate more accurate overall effect sizes for each of the factors we consider in our review.

SOCIOLOGY/COMMUNICATION & JOURNALISM

Roxanne Stephanie Schmidt (102)

Faculty Mentor/Collaborators: **Pamela J. Forman and Ellen D. Mahaffy**

Measuring the Effectiveness of a Transformative Learning Experience: Travel Seminar to San Francisco (2010)

UW-Eau Claire is committed to supporting transformative learning. With the support of a domestic intercultural immersion grant, 11 students took Lesbian, Gay, Bisexual, Queer and Ally (LGBTQA) Studies: San Francisco Travel Seminar in summer 2010 through the Women's Studies Program. After the course, 7 students worked together to create and plan the inaugural Eau Queer Film Festival. Our research study measured the effectiveness of taking a course and planning a film festival as a transformative learning experience. Survey data were collected at three points in time (first day of class, last day of class, and after the film festival). In addition, students voluntarily recorded their impressions during the course on a video camera. Our poster summarizes results from surveys and video transcriptions. We will discuss domestic intercultural immersion courses as a means for students to encounter cultural diversity, create a documentary film that is shared with the Eau Claire community, and develop leadership skills.

STUDENT AFFAIRS/DEAN OF STUDENTS

Cara Mee Shimon, Cassidy Megan Brandt, Aubrey Jo Charlier (127)

Faculty Mentor/Collaborator: **Lissa Jo Martinez**

Blugold Beginnings Elementary Research

The purpose of this study is to assess the effectiveness of the Blugold Beginnings project by studying the impact of pre-college mentoring on underrepresented students. The Blugold Beginnings program is designed to increase the number of underrepresented, low-income/racially diverse students within the greater Eau Claire area participating in post-secondary education. Researchers will develop tools, gather and analyze data and gain direct research experience working with data and subjects. The faculty/staff mentor has provided student researchers' access to subjects: active mentors, teachers, parents, and elementary students participating with the program. Pre- and post-assessments were used. Pre-assessments were administered in October, 2010 and post assessments will be administered in April, 2011. Data and results concerning the impact of the Blugold Beginnings program will be shared from active mentors, teachers, parents, and elementary students participating with the program.

FINE & PERFORMING ARTS

ART & DESIGN

Christine Jo Alexander and Daniel Lee Ruff Smith (30)

Faculty Mentor/Collaborator: **Wanrudee Buranakorn**

Book Arts: A Study, a Collection, and an Exhibition

This project combines studies of book arts, artists' books collections, and curating book arts exhibition. Research accumulated over the course of this project aided the collaborators to understand the process of curating and to garner an appreciation for established institutional collections. The collaborators studied artists' books collections held by various institutions, as well as past book arts exhibitions. The collaborators also made trips to institutions and museums in order to research and visually document display options. The research will be used to curate a book arts exhibition at the L. E. Phillips Memorial Public Library in Eau Claire, WI.

Rachel Jeanne Konsella, Marguerite Berg, Kaleb Durocher, and Daniel Lee Ruff Smith (29)

Faculty Mentor/Collaborators: **Wanrudee Buranakorn and Jyl A. Kelley**

Visual Art Explorations in Thailand

During the summer of 2010, two faculty members and four art students embarked on an international immersion project to Thailand. The project, titled "Visual Art Explorations in Thailand," focused on how societies interpret and create art on a global level. While immersed in the Thai culture, the team participated in various scholarly and professional events, gaining experiences that will eventually translate into necessary skills to enhance the global workforce. During the three-week period, each member of the team purposefully photographed and video-documented their encounters and their interpretations of the culture around them, as subject matter for use in production of artworks. The final production of these works is still in progress. As a result of their time in Thailand, the team completed two objectives: first, each person presented a lecture based on his or her personal artwork to students and faculty at Assumption University of Thailand on June 20, 2010. Second, the team designed and installed a retrospective exhibition of fine art photography by Wanrudee Buranakorn at the Seven Art Gallery in Bangkok, Thailand, that was ultimately displayed in July 2010.

Kimberly Jean Roffers, Glenn Allen Terpstra, Lydia Gantert, Megan Ekenstedt, and Rachel Jeanne Konsella

Faculty Mentor/Collaborator: **Jyl A. Kelley and Wanrudee Buranakorn (28)**

Cultural Perceptions: Latvian Exchange Program

The objective of our research was to stretch scholarly and professional boundaries of perception, photographic vision, and personal understanding within an international collaborative environment between faculty and students. In sharing and interpreting aural and visual culture between the University of Wisconsin Eau Claire and The Latvian Culture College in Riga, Latvia, our objective was realized through successful research presentations and exhibitions. Initially, students from both schools selected music and audio from their respective country that would assist with photographic interpretations from the other participating school. The project encouraged joint research and integrated learning via internet technology, online correspondence with participating students, and live streaming video. Cross-cultural awareness of history, art and music was integral to the exhibits attendance and success. After presenting exhibitions with live video feeds between Eau Claire Wisconsin and Riga Latvia in Spring 2010, students from both schools were invited to present their artworks and scholarly research at the Embassy of the Latvian Republic in Washington DC in October, 2010. Students, faculty and administrators from both countries traveled to Washington DC to present public lectures hosted by **Latvian Ambassador Andrejs Pildegovičs**. Student lectures at the embassy highlighted individual scholarly research from the Cultural Perceptions project.

COMMUNICATION & JOURNALISM

Michael Graham Jacobs (18)

Faculty Mentor/Collaborator: **Ellen D. Mahaffy**

Of Sight and Sound

This creative research project develops a visual-aural medium of musical collaboration through inter-media composition and spontaneous group performance. A group of artists will come together and use a live-feedback loop of musical and

visual instrumentation to research and develop a collectively defined ‘language’ upon which we may practice and perform a coherent multimedia composition. This project will yield a case study on the creative process, and provide a foundation upon which future research and further theoretical exploration may develop. The development of this project has been supported through several independent study courses and will culminate as my thesis project for a Liberal Studies Major designed to support the research. This semester I will be reporting the results of my interdisciplinary research and present my plan’s methodology for the practical development of the project.

MUSIC & THEATRE ARTS

Nicole Marie Brellenthin (21)

Faculty Mentor/Collaborator: **Phillip A. Ostrander**

Addressing Issues of Technique and Style in Tenor Trombone Repertoire

This research project focused on the study of style and technique in two standard tenor trombone solos, Launy Grøndahl’s Concerto for Trombone and Orchestra and Camille Saint-Saens Cavatine for Trombone and Piano, Op. 14. Specifically, the authors exhaustively examined approximately fifty related etude books and technical methods and their application (in practice) to both solos. The Concerto and Cavatine and considered standard tenor trombone repertoire and there is currently no “study guide” for either piece available for trombone students. The study also included a brief analysis of each piece followed by the discussion of applicable exercises and etudes for study of each solo. The collection of applicable exercises, etudes and practice methods could easily be used by high school and college trombone students.

Jonas Marcel Hacker and Erin Lorraine Kenneavy (6)

Faculty Mentor/Collaborator: **Mitra M. Sadeghpour**

King and Queen of the High C’s: The Bel Canto Love Affair of Luciano Pavarotti and Joan Sutherland

Luciano Pavarotti and Joan Sutherland were masters of the opera style known as *bel canto*, or “beautiful singing.” Sutherland’s facility with highly ornamented music, Pavarotti’s beauty of tone, and their thrilling high notes were main reasons for their success in this repertoire. We chose six *bel canto* operas that the duo recorded and selected scenes that would be accessible for undergraduate singers, specifically sopranos and tenors. Through transcriptions of ornamentation, interviews, listening analyses, and an extensive literature review, we created “listening packets” that students and teachers could use in their own study. These packets serve as guides to understanding what the *bel canto* style is and as models for what Pavarotti’s and Sutherland’s stylistic choices look and sound like. By learning how these great artists influenced *bel canto*, future singers will be able to integrate their own individual style into the body of work that has already been established by Pavarotti and Sutherland. To illustrate our findings, we presented a lecture-recital, during which we performed four scenes from the listening packets. The results of this project define and record the stylistic choices of Pavarotti and Sutherland and present the *bel canto* style in a format accessible to the undergraduate performer.

Aaron Norell Hedenstrom (7)

Faculty Mentor/Collaborator: **Ethan F. Wickman**

The Cross-Relationship Between Art Music and Big Band Jazz

The European classical art-music tradition and the American jazz tradition have had major impacts on one another throughout the 20th and 21st centuries. The goal of this project is to elucidate specific events in history to show the progression of 20th century music as creating a relationship between the traditions of big band and art music. The importance of this relationship is evident in the immense popularity of jazz-art music hybrids (e.g. Rhapsody in Blue), and in the vast range of possibilities offered by future musical creations. The main research method of this study was the timeline: we examined important composers, pieces, events, and assembled them into a timeline by decades to render a clear correlating progression of this history. Using biographies, online databases, interviews, publication records, and CD-release dates, a revealing timeline of events was constructed. Our findings demonstrate that it did not take long for jazz to affect popular art music, while art music also quickly influenced the music of Duke Ellington and other big band composers. This often-overlooked relationship between these two traditions created many great works of 20th-century music, and must therefore be recognized.

Alyssa Rae Severson and Anna Laurel Brake (20)

Faculty Mentor/Collaborator: **Ethan F. Wickman**

New Music Project

The goal of our New Music Project is to bring contemporary music experiences to UW-Eau Claire. This is important because

it brings thriving, current musical artists, performers, composers and compositions to students, demonstrating the variety of opportunities and ideas for musicians. We search for contemporary art music by composers representing an aesthetic not typically represented on department programming, and assemble musicians to play this music for our New Music Ensemble recital. We bring professional performers to give concerts and master classes, musicians to play students' compositions, and professional composers for students to meet. We expect all involved to gain insight into playing or listening to new music and for students to learn from a chance to meet, listen to, and work with professional musicians. Our principle metric in interpreting the impact of this initiative to this point has been informal measurement of student participation. We have noted increased participation both in student performers and student audience members in conjunction with these events. A byproduct is the increased number of student performers that have solicited new works of student composers. In future we hope to survey our participants to find out specifically what appeals to them about this program, and how it has impacted their opinion of new and unfamiliar music.

Benjamin David Zimmer (19)

Faculty Mentor/Collaborator: **Nicholas S. Phillips**

Examining Editions of Beethoven's Piano Sonatas

This project examines the processes by which Beethoven wrote and published his piano sonatas, as well as different musical score editorial approaches, in order to determine the best editions available today. Today, piano teachers and students are presented with many editions of Beethoven's piano sonatas, and some of these editions represent Beethoven's source material much better than others. For this project, we researched common goals in editing music and general editorial issues of Beethoven's piano sonatas. Finally, we examined Beethoven's Piano Sonata No. 28, opus 101 in depth, comparing the autograph version and original edition with six editions readily available today. We concluded that modern critical editions represent the source material more accurately than older performance-oriented editions, although the critical editions often do not clearly describe their editorial choices. Specifically for Piano Sonata No. 28, opus 101, Henle's edition edited by Perahia and Gertsch offered the clearest representation of the original sources and the most insight into the decisions made by the editors.

HEALTH SCIENCES & SERVICES

BIOLOGY

Stanton Peter Jasicki (15)

Faculty Mentor/Collaborator: **Daniel P. Herman**

Household Infestation Rates of Chagas Disease Vectors and Trypanosoma cruzi Prevalence in Southern Ecuador

It has been over 100 years since the discovery of Chagas disease and the identification of its causative parasite (*Trypanosoma cruzi*) and insect vectors (triatomines), yet the disease runs rampant throughout endemic regions in Central and South America. The purpose of this study was to detect the presence of triatomines within 13 communities in southern Ecuador as well as to determine the seropositivity for *T. cruzi* of residents within the communities. Houses in each community were screened for the presence of triatomines and collected specimens were subjected to microscopy to determine the prevalence of *T. cruzi*. Screening for the presence of *T. cruzi* within community residents utilized the InBios and Stat-Pak rapid field tests, both of which detect antibodies produced to *T. cruzi*. Village triatomine infestation indices ranged from 0-32.1%, the highest of which were Tacoranga (32.1), Coamine (25.0), Jurupe (25.0), Guara (24.0), Chirimoyos (16.7), and Chaquizhca (15.2). Prevalence of *T. cruzi* within the 1,678 triatomines collected was 1.4%. Out of 949 administered tests, 9 reactive tests were confirmed serologically, corresponding to a 0.95% prevalence of *T. cruzi*. These results show that triatomine infestation rates are high within many communities and confirm the presence of Chagas disease in southern Ecuador.

COMMUNICATION SCIENCES & DISORDERS

Laine Elizabeth Hanson and Michelle Lee Baranek (79)

Faculty Mentor/Collaborator: **Kristine Retherford**

Twins: Comm Diff

The purpose of this research is to find a correlation between concordance rates for communication disorders in monozygotic

and dizygotic twins. Being twins ourselves, we have become very interested in this topic. There have been twin studies conducted in the past but none focus on communication disorders as a whole. Our review of the current literature as well as the information gathered from our survey will address this subject. The survey was sent out to 533 University of Wisconsin-Eau Claire alumni of the Communication Science and Disorders department. Questions asked pertained to twin clients that the Speech-Language Pathologists have had in the past as well as the type of communication disorder they presented. We are currently still in the process of gathering survey data and compiling it into our literature review. We expect to see a higher concordance rate among monozygotic twins than dizygotic twins when presenting the same communication disorder.

Heather Sue Lindert and Lauren Ruth Demcak (80)

Faculty Mentor/Collaborator: **Jerry K. Hoepner**

The Influence of Partner Training for an Individual with Corticobasal Degeneration

The present case study involved an individual with corticobasal degeneration (CBD) and her husband. The purpose is to provide a description of the cognition, speech, and language characteristics of an individual with CBD, as well as investigate the effect of partner training on the communication between the individual with CBD and her husband. It was hypothesized that partner training would increase positive communication supports. The pilot data regarding the effects of multi-modal communication training will direct future studies in CBD, as the authors are aware of no research on the influence of the conversational partner. Baseline assessments addressed receptive and expressive language, memory, motor speech function, executive functions, and attention for the individual with CBD and partner behaviors of her husband. After establishing baseline status, the participants were involved in six weeks of structured partner training. The multi-modality partner training followed a modified Supported Conversation for Aphasia™ approach (Kagan, 1999). Pre- and post-training and two-month follow-up progress were measured with the Measure of Supported Conversation and Measure of Participation in Conversation (Kagan, 1999). Outcome measures revealed a decrease in non-supportive behaviors (e.g., quizzing behaviors) and an increase in supportive behaviors (i.e., acknowledging and revealing competence) at post-testing and maintenance at the two-month follow-up.

Kia Lynn Schilling, Mariah Marie Yeager, and Kayla Lynne Lake (81)

Faculty Mentor/Collaborator: **Vicki M. Samelson**

Teaching Facial Expression Recognition to Children with Autism Spectrum Disorders

Autism Spectrum Disorder (ASD) is a neurodevelopmental disability inhibiting the development of social interaction and communication skills. Individuals with ASD often experience deficits in the ability to recognize facial expressions and interpret others' emotions (Nelson, 2008; Spek et al., 2009). Social Story interventions are used to help individuals understand emotions (Gray, 1999). The Transporters (Golan, et. al., 2009) video intervention aims to improve facial expression recognition in children with ASD by using animated vehicles with predictable movement patterns. The aim of this pilot single-subject design study was to test two interventions, a modified Social Story intervention using static pictures of children expressing emotions, and The Transporters intervention, to determine if one is more effective than the other in teaching children with ASD to recognize facial expressions. This project could impact clinical practice, if results indicated that one intervention was more effective than the other. Several emotions were targeted with each of two participants. Progress for both interventions was tracked with short quizzes and with a generalization task, where the participants labeled large photographs depicting facial expressions. For both participants no differences were found between the two interventions; changes in behavior were noted, however, indicating a need for further research in this area.

Cara Marie Shane (64)

Faculty Mentor/Collaborator: **Lisa R. La Salle**

Evidence-Based Practice of Speech Language Pathologists Working with People Who Have Dementia

Speech Language Pathologists (SLPs) working with people who have dementia (aging disease) are interacting with a heterogeneous group of individuals. Each client has their own unique characteristics which SLPs must base their therapy techniques around. With the increasing number of dementia therapy techniques available to SLPs, it may be difficult to choose which technique is most effective and efficient for each client. Thus, clinicians must use evidence-based practice to find an appropriate therapy technique. This research project was initiated to investigate popular therapy techniques and to learn how SLPs are using evidence-based practice when working with individuals who have dementia. SLPs working with individuals with dementia were asked to provide answers to a short survey with questions pertaining to the SLPs' therapy choices and how they choose each technique for each individual client. With ongoing distribution of the survey, results have not been finalized, but trends have been noted in the areas of therapy techniques used with clients who have dementia and also the evidence-based approach to finding appropriate therapy techniques with individuals with dementia. SLPs are using reminiscence, repetition, spaced retrieval training, and multi-modal stimulation therapy techniques in their practice,

and they are modifying these techniques to best suit their clients' strengths.

COUNSELING SERVICES/PSYCHOLOGY

Caitlin Tracy Campbell, Lindsey Ann Havertape, and Kim Nicole Miresse (17)

Faculty Mentor/Collaborators: **Roberta A. Goodman, Jennifer J. Muehlenkamp, and Allen H. Keniston**

Impact of a Suicide Awareness Program for General Student Population at UWEC

This study was designed to assess the impact of a suicide awareness program presented to the general student population at UWEC. This newly created program is a first step towards preventing suicide at UWEC, which is important given that suicide is the second leading cause of death among college students. A suicide awareness program was created based on existing college suicide prevention programs and in consultation with professionals experienced in suicide prevention. To evaluate the effects of the program, presentations were offered in select classrooms, as dorm events, and through pre-scheduled seminars on campus and pre-post evaluations were collected. Data collection has begun (current n = 62) and we will analyze data to assess changes in awareness and knowledge of suicide and in perceived ability to refer an individual with suicidal thoughts to a professional. We expect to see an increase across all these variables along with a decrease in perceived social stigma for seeking treatment for suicidal thoughts.

KINESIOLOGY

Joshua John Arvey, Spencer Thomas Lindholm, Justin Jon Ellingstad, and Ryan Richard Freye (32)

Faculty Mentor/Collaborators: **Gary VanGuilder and Donald L. Bredle**

Effects of Cold Exposure on Cognitive and Physical Abilities

Previous research indicates that cold water immersion may depress both neural and physical performance, in part by decreasing nerve conduction. These changes can occur in as little as 5 minutes, before core body temperature decreases. The purpose of this study is to determine the effect of cold water immersion on both physical and cognitive performance, in an attempt to simulate environmental cold exposure. This study may provide valuable information to people participating in sports, manual labor, or exercise in cold environments. We will be testing grip strength using a hand grip dynamometer, reaction time using the ruler drop test, balance using a Biodex balance machine, and memory using a thirty-second word recall test. These tests were chosen to assess functional changes that may occur following cold exposure via whole-body immersion in a water tank at 60°F for fifteen-minutes. Core temperature will be monitored using a tympanic thermometer at three-minute intervals to ensure safety. The study is a within-subjects design with approximately twenty male and female participants. Participants between the ages of 18-25 years will be recruited from the University of Wisconsin-Eau Claire community. We expect to see significant decreases in muscle strength, reaction time, memory, and balance following cold stress.

Gregory James Barlow, Brent Paul Dubois, Bryce Thomas Kern, and Robert Martin Niedermeyer (31)

Faculty Mentor/Collaborator: **Gary VanGuilder**

The Effect of Spatting on Speed, Agility, Power, and Balance

Spatting is a prophylactic application of tape over the shoe that is typically combined with ankle bracing and taping to limit the range of motion of the ankle joint. The purpose of this study was to determine the effects of spatting on performance. Subjects were randomly assigned a treatment that consisted of no brace or spat (bare ankles), ankle braces, or ankle braces with spatting. Following a 5 minute warm-up, each subject completed in random fashion a balance test, vertical jump, T-test, and a 40 yard sprint without a brace or spat, with a brace, and with a brace with spat. There was a negative effect of ankle bracing with spatting on vertical jump performance (bare: 23.0±4.3 inches; brace/spat: 21.4±4.6 inches; P<0.001), T-test (bare: 10.1±0.8 sec; brace/spat: 10.43±0.95 sec; P<0.01) and 40 yard sprint time (bare: 5.53±0.6 sec; brace/spat: 5.65±0.67 sec; P=0.05) compared with no treatment (bare). Although more research needs to be conducted, our findings suggest that spatting may have a negative effect on performance. The benefits and drawbacks of spatting the ankle joint with respect to injury prevention and performance should be weighed appropriately before an athlete elects to apply tape over a brace.

Kelsey Lynn Figg, Colleen Marie Kirk, Kelcie Anne Wittman, Ashleigh Rose Handorff, and Kathryn Kaye Appel (42)

Faculty Mentor/Collaborators: **Gary VanGuilder** and **Jeffrey M. Janot**

The Effects of Core Endurance Training on Running Economy

The core, including the abdominal, lower back, buttocks and hip flexor muscles, help stabilize the body and align the spine. Poor core-endurance may result in back injury and inefficient body mechanics. Improving core-endurance may produce favorable changes in body posture and stability that could improve health and exercise performance. With respect to exercise performance, previous studies have demonstrated conflicting data on the potential benefits of core-endurance training on running performance. The aim of the present study is to determine if four weeks of core-endurance training improves running economy in healthy young adults. This information can be useful for athletes training for distance running and could strengthen the importance of core exercise to optimize running performance. To complete the study, we will assess running economy and core-endurance in 16 male and female subjects before and after a four-week program of twelve 30-minute core-endurance exercise sessions. The post-test results will be used to observe if core training improves running efficiency. Findings of this research have not been obtained thus far; however, it is hypothesized that an increase in core-endurance will improve running economy. We expect it may be easier to run at a self-selected pace after the four week exercise program.

Kayla Rae Lemke, Kelly Lynn Brock, Elizabeth Anne Klocker, Maria Sophie Peloquin, Amy Marie Kedrowski, Gina Fay Grinde, Torin Jeffrey Stegemeyer, Erik Michael Halverson, and Nathan Matthew Woodward (40)

Faculty Mentor/Collaborator: **Gary VanGuilder**

Quantifying the Amount of Electricity Produced During Aerobic Cycling Exercise in Young Adults

The aims of the study were to assess electricity production of structured cycling exercise in young adults, and to determine whether high-intensity interval training (HIIT) produces more electrical power than continuous exercise. Twenty-three adults participated in one of two stationary cycling exercise interventions using a bike-power electrical generator. First, eleven subjects cycled at a moderate intensity for 4 days (40-minutes/session). The other twelve subjects completed two 40-minute exercise bouts consisting of either HIIT or continuous training. Total electricity produced (watts, watt-hours, amperes) among the exercise sessions was measured using a power monitor attached to the generator. Average daily electricity produced over the 4-day study was $\sim 30 \pm 18$ watts, which was equivalent to about 45 watt-hours of electricity. Total electricity produced over 4 days of exercise was 877 watt-hours. HIIT produced significantly ($\sim 65\%$) more electrical power (watts) and electrical current (amperes) compared to continuous exercise. Twelve adults completing a 4-day exercise program can produce enough electricity to power a modern television for ~ 6 hours. Electrical production can be significantly enhanced if repeated bouts of HIIT are incorporated into the exercise session. Utilizing exercise as an alternative form of electricity production may help to motivate people to increase their physical activity while promoting energy sustainability.

Brittany Lee Malin, Ryan Joseph Cook, Melissa Elizabeth Jordan, Andrew David Draeger, and Jacob Russell Hagenbucher (65)

Faculty Mentor/Collaborator: **Jeffrey M. Janot**

Effects of Self Myofascial Release & Static Stretching on Anaerobic Power Output

The aim of this study was to determine the effects of static stretching (SS) and myofascial release (MFR) on anaerobic power output. Cycling (30-sec Wingate) tests were used to assess power output in 9 male and 14 female subjects. Peak power output (PPO) and percent power drop (PPD) were examined among subjects to determine the differences between interventions. In female subjects, PPO was significantly reduced following SS, in comparison to control (Control: 536.29 ± 69.11 W, SS: 508.295 ± 67.097 W). PPD was significantly decreased in the SS and MR treatments compared to the control (Control: $44.951 \pm 5.29\%$, SS: $40.453 \pm 6.69\%$, MFR: $41.53 \pm 5.97\%$). In male subjects, PPO was significantly increased following SS, in comparison to control (Control 850.624 ± 165.411 W SS: 881.1389 ± 169.3275 W). PPD was significantly increased in MFR compared to the control group (Control: 44.69 ± 7.75 , MFR: $48.91 \pm 8.27\%$). The effects of MFR on anaerobic power output remain inconclusive. Given that there is very little scientific inquiry with respect to the influence of SS and MFR on maximal anaerobic power performance, the possible mechanisms for gender disparity can only be speculated on.

Morgan Kathleen Mason, Brett Allen Jensen, and Kalan Clete Stittleburg (57)

Faculty Mentor/Collaborator: **Gary VanGuilder**

Varying Cleat Length and Type and Its Effect on Sport Performance in Division III Football Players on Field Turf

This study evaluates the effect of varying cleat type and length on speed and agility in Division III football players. Specifically we will determine if varying cleat types (molded vs. interchangeable) and length ($\frac{1}{2}$ inch vs. $\frac{3}{4}$ inch) influence sport performance. As Athletic Training students and a Division III football athlete, we are interested in this study because it is relevant to our professional interests of improving sport performance and safety. Findings of the present study may benefit any athletic population that uses cleats on artificial turf. Our findings may improve sport performance in the realm of speed and agility by educating athletes on the effect of different cleats lengths and types. We will use the following accepted field turf cleats: $\frac{1}{2}$ inch interchangeable, $\frac{3}{4}$ inch interchangeable and molded cleats. We will assess speed (40 yard dash), and agility (3-cone drill) in twenty football athletes while wearing different cleats on artificial turf. We hypothesize that tests done with the $\frac{3}{4}$ inch interchangeable cleat will perform better in agility (3-cone drill) and tests done with the plastic molded cleats will have better results with the speed tests (40 yard dash).

Benjamin M. Pearson, Paul Nicholas Waldvogel, Morgan Katherine Kolbeck, Allison Marie Mater, and Bryan David Vandreese (56)

Faculty Mentor/Collaborator: **Gary VanGuilder**

Caloric Expenditure of Treadmill vs. Outside Running at a 1% Grade

Quantifying the caloric expenditure of physical activity is a very important tool to prescribe exercise in a variety of settings, from a home weight loss program to training elite endurance athletes. Aerobic exercise reduces the risk of pulmonary, cardiac, and metabolic diseases. In addition, recent research has shown that increasing caloric expenditure through aerobic exercise is a good approach when designing exercise programs to optimize health benefits. One of the most common forms of aerobic exercise is running. The two most common modalities for running are using a treadmill or running outside. The question remains, does a difference in caloric expenditure exist between these two modalities at similar pace? To address this question, we will examine caloric expenditure in 9 healthy college age women and 6 men between a treadmill running protocol and an outdoor running protocol. We hypothesize that healthy young adults experience an increase in caloric expenditure during a session of outside running versus a session of treadmill running at a 1% grade. If we demonstrate support of our hypothesis, we would advise that individuals seeking greater caloric expenditure and health benefits for a workout period of thirty minutes select outdoor running as their modality.

Nolan Peterson, Christopher Thewis, Jacob Charette, Shane Forsting, and Luke Grosskreutz (41)

Faculty Mentor/Collaborators: **Gary VanGuilder** and **Jeffrey M. Janot**

Modifying the University Classroom to Increase Energy Expenditure in College Students

The purpose of the present study is to determine whether energy expenditure in college students can be increased by modifying a traditional-seated learning environment into a standing/activity permissive environment. We hypothesize that students in a standing/activity-permissive classroom setting will expend more daily caloric energy compared to a traditional-seated classroom. Support of this hypothesis may provide the rationale to transform learning environments from sedentary to a more activity-driven. The importance of this study is in response to the rise in obesity and how current interventions focusing primarily on diet and purposeful exercise have not been able to counteract rising obesity rates. This topic needs to be further researched in order to increase its validity and to determine whether modifying the college classroom setting to an activity-permissive environment is useful to enhance learning. In the present study, participants will wear physical activity monitors in two different classroom environments, a traditional/seated classroom and an activity-permissive/standing classroom. Activity monitors will measure the participants' body movements and record caloric energy expenditure. We expect to find that energy expenditure will be greater when students learn in a standing/activity-permissive classroom compared to a traditional-seated classroom.

Keisha Jo Schoenike, Brittany Rose Larocque, and Jessica Elaina Haller (55)

Faculty Mentor/Collaborator: **Gary VanGuilder**

The Effects of Resistance and Aerobic Exercise Sequence on Energy Expenditure.

There has been little research to determine the optimal order of aerobic and resistance exercise with respect to caloric expenditure. This knowledge would be beneficial for designing exercise programs with maximum efficiency. The specific aim of our study is to better understand energy expenditure during and after exercise when the order of aerobic and resistance

training is manipulated. The experiment consists of participants performing two 1-hour exercise sessions consisting of thirty minutes of resistance exercise (8 whole body exercises; 2 sets of 10 repetitions) and thirty minutes of aerobic exercise (70% VO₂ max; running on treadmill), completing the subsequent session in opposite order of the first session. Portable oxygen consumption will be measured in twenty participants throughout the entirety of the session, and thirty minutes post-exercise, to determine energy expenditure. We hypothesize that completing resistance training prior to aerobic exercise will yield higher overall caloric expenditure. We expect caloric expenditure during recovery to remain elevated after performing resistance exercise first and aerobic second.

Matthew McKaskle Sundby, Danielle Marie Beilke, Allison Lynn Jentz, and Jenna Marie Hersant (66)

Faculty Mentor/Collaborator: **Donald L. Bredle**

Underwater Treadmill Training in High School Cross Country Runners

Underwater treadmill (UTM) exercise is emerging as an innovative method of injury rehabilitation but there has been little research on performance and injury prevention. The low-impact nature of UTM has been suggested to expedite recovery while providing a cardiovascular training effect. Our aim was to test our hypothesis that UTM would decrease overuse symptoms and increase performance in high school cross country runners. 16 subjects (16 ± 2 yr) exercised on a HydroWorx™ UTM in small groups for 30-45 minutes, 1-2 times per week for 10 weeks in place of a dry-land practice. Sessions began with a dynamic warm-up and emphasized either recovery or speed. Daily questionnaires regarding injuries, discomfort and performance were administered before dry land and UTM practices. Race times were gathered at the conclusion of the season. We observed a rate of 1.8 injuries/1000 athletic exposures. This injury rate was an improvement over the previous season (2.8/1000) as well as historical controls (17/1000). Significant improvements in average race times from the previous season were seen at 3 races. We cannot say for sure that the benefits we observed were due to the UTM. Future research needs to be done on a larger sample over several seasons.

MUSIC & THEATRE ARTS

Rachel Elizabeth Benz and Kimberly Elizabeth Weiss (16)

Faculty Mentor/Collaborator: **Lee Anna Rasar**

Anger Managed: Using Music Therapy Techniques at the County Jail

The goal of our presentation was to inform fellow student music therapists who have not had music therapy experience in a forensic setting about providing music therapy services in a jail setting with many safety rules limiting types of activities and materials which are allowed. Our previous research grants to develop clinical applications for percussion and dance courses and to examine racial attitudes of inmates prepared us for this work. Methodology included weekly provision of music therapy anger management sessions in multiple contexts for adult inmates and juveniles along with session critiques and therapeutic processing in supervision. Techniques which were effective for inmates included but are not limited to: therapeutic issues sessions with song-writing, lyric analysis, theatre and art projects paired with music, expressive singing and musical performance involving energy release, use of music and sign language for emotional expression, and musical relaxation activities. Inmates reported positive mental and physical changes, identified their anger triggers, and planned and practiced choosing and using healthy responses to anger triggers.

NURSING

Rachel Ann Philipps and Teresa Anne Coughlin (33)

Faculty Mentor/Collaborator: **Susan D. Moch** and Becky Harper, Community Health Partnership

Students and Clinical Agency Staff Mutually Benefit from Collaboration

Clinical agency staff is assisted by undergraduate nursing students in overcoming the barriers that prevent them from utilizing research in their practice. Implementing research into nursing practice is an expectation of the profession, however, many practicing nurses lack time, accessibility, or resources to obtain research. Undergraduate students can assist agency staff in finding research while simultaneously preparing themselves for their future practice. Undergraduate students are present at a clinical agency twice a week and staff is able to utilize the students' researching skills by submitting requests for research on topics relevant to their practice. The students deliver a minimum of three scholarly articles to the nursing staff, and then the staff completes a post survey reflecting on new knowledge gained and application in practice. At the beginning and end of each semester, students fill out a pre- and post-survey to determine their satisfaction of the learning experience. This research project includes findings from the third year of the study. By evaluating qualitative and quantitative data from

the surveys of the past two years, it has been shown that both clinical staff and undergraduate students have demonstrated learning, satisfaction, and confidence in obtaining and utilizing research.

PUBLIC HEALTH PROFESSIONS

Gregory Thomas Nelson, James Joseph Robert Fay, and Andrew Kleist (1)

Faculty Mentor/Collaborator: **Crispin H. Pierce**

Particulate Pollution: UW-Eau Claire Student Center and Chippewa Falls Sand Plant

Air quality is an integral component of environmental and public health. Construction and industrial processes are known to degrade the clarity and quality of respirable air, and the existence of air particulates is directly correlated with respiratory disease, heart disease, and cancer. This research generates data from an on-campus fine particulate (PM_{2.5}) monitor to assess air quality as the new student center is being built. Data from three additional monitors around, and one onsite at the EOG Resources sand processing plant in Chippewa Falls are also analyzed, to answer the following questions: 1) Are particulate pollution levels generated from student center construction above the EPA 35 µg/m³ 24-hour or 15 µg/m³ annual standards? 2) Are particulate levels at the sand plant construction site above these EPA levels? 3) Assuming 10% of particulate matter from the sand plant will be crystalline silica, are the current particulate monitors adequate to protect citizen health? This study benefits from collaboration of UW-Eau Claire faculty and students with the Concerned Chippewa Citizens community group and the Wisconsin Department of Natural Resources.

HUMANITIES

ENGLISH

Michael Joseph Fox (52)

Faculty Mentor/Collaborator: **Erica J. Benson**

"I'm from Altoona Don'tcha Know": The Vowels /u/ and /o/ in Eau Claire, Wisconsin

The quality of the vowels in "boot" and "boat" show significant regional variation: their nucleus fronts in some regions but remains back in others. Labov, Ash, and Boberg (2006, 187) claim that unfronted /o/ is a defining characteristic of the Northern dialect region, with /u/ also not fronted in this region of the North. Few studies have examined these vowels in the Upper Midwest (Ash 1996; Labov et al. 2006; Thomas 2001). Using data from 27 residents of Eau Claire, Wisconsin, I demonstrate that younger speakers are indeed fronting /u/ and /o/ and argue that this is a change in progress. Statistical and quantitative results indicate moderate age-correlated fronting of the "boot" vowel's nucleus in some environments, with the fronting of "boat" strongly correlated with "boot" ($r = 0.62$), lending more evidence to /u/- and /o/-fronting as a change in progress. Although speakers exhibit more fronting than previously thought (Labov et al. 2006; Kurath and McDavid 1961), it is still moderate compared to other fronting dialects. I explore possible motivations for the change in progress, reasons for the moderate fronting (Ash 1996), and avenues for future research.

Brittany Pearl Gauer (53)

Faculty Mentor/Collaborator: **Erica J. Benson**

"I can has rules?" A Syntactic Analysis of Lolspeak

The goal of this study was to analyze the sentence structure (syntax) of the language used in the internet meme "LOLcats." By investigating the use of syntax in the context of creative language play, I aim to shed light on how sentence structure can be manipulated, how these manipulations compare to standard usage, and how these creative structures follow rules (similar to those found in various dialects). A corpus of sentences used in LOLcat was compiled from various online sources, primarily from the largest body of LOLcat text: the LOLcat Bible Project. Patterns in syntax were identified and analyzed from the perspective of the theory of generative grammar. The analysis resulted in a series of grammatical rules (for the language of LOLcats) that were used systematically, but also with a degree of interchangeability, with standard English usage; for example, an optional main or auxiliary form of "to be" ("I not that kynd uf kittel"), omission of the pronoun "it" as a subject ("Iz good"), and a lack of do-support in questions and negative constructions ("No like waterz").

Paula Christine Hagen (45)

Faculty Mentor/Collaborator: **Erica J. Benson**

Imperative Constructions in English

In English, commands, requests, assertions, instructions, etc. are typically expressed by sentences called imperatives. Because English does not provide specific morphological markers to differentiate between imperatives and other constructions, speakers must rely on other factors in order to determine the intent of such an utterance. This was the basis for my research, to examine how imperative constructions work in English: in particular how linguists might be able to account for specific rules for their syntax and how they are used in varying contextual settings. In the broader field of linguistic study, being able to comprehensively label and understand the specific phenomena that occur in imperative constructions is crucial to understanding the inner-workings of the entire English language.

Ian Roy Jacoby (3)

Faculty Mentor/Collaborator: **Jonathan R. Loomis**

Research and the Novel: Fact Informing Fiction About Arson On Cape Cod

I was faced with the challenge of helping Professor Jon Loomis sift through many details of fire response and safety for his new novel, *Fire Season*. These included a list of the major arson fires in the city of Provincetown, MA, a better understanding of the Fire Department's response to an arson call, and the physics of an arson fire. To accomplish these goals I examined every paper published for mention of an arson fire between the years of 1996 (when the database went online) through the present day. I interviewed Bradley Olson of the Madison Fire Dept. I also read numerous articles and papers on fire safety and management. My conclusions are still being formulated, but I would say that arson fires and the response teams that deal with them are almost always unique, but still follow the guidelines set up by local and state governments. I was fortunate in my research because the Madison and Provincetown governments both handle arson fires with similar protocol.

Matthew Donald Mabis (43)

Faculty Mentor/Collaborator: **Stephanie S. Turner**

Recombinant Comments: Analyzing the Public Response to Proposed rDNA Products

A significant issue in the public understanding of science is the way in which citizens use digital media to influence the creation of policy related to cutting-edge research and emerging technologies. Because online communication allows for broad participation over a short period of time, it may enable a more democratic science policy-making process. Yet, it may also reaffirm some of the patterns of public discourse that existed prior to online forums. In this study, we examine the public comments on the Food and Drug Administration's proposed guidelines for ATryn®, the first drug manufactured from nonbacterial recombinant DNA, that is, human-animal gene splicing. Using the qualitative content analysis software NVivo, we identified "categories of concern" in the online public comments that characterize the public's response to new biotechnologies, and we further linked these comments to categories of stakeholders. Our preliminary conclusions suggest that consumers tend to focus on transparency in labeling of genetically modified products, animal rights groups are concerned with animal welfare issues, and universities and other public institutions are interested in the scientific significance of ATryn® and the ethical implications involved in the study.

Megan Louise Risdal (54)

Faculty Mentor/Collaborator: **Erica J. Benson**

"I'ma Tell You 'bout I'ma": A Sociolinguistic and Syntactic Analysis of the Reduced Form of "I'm Gonna"

The present study is the first to define the unique syntactic properties of *I'ma* (cf. *I am going to*). Linguists have extensively studied the rules governing grammatically acceptable usage of *to*-contractions (e.g., *going to* → *gonna*) and auxiliary reductions (e.g., *I am* → *I'm*) (see Kaisse, 1983; Pullum, 1997; and Hudson, 2006). However, as an apparent contraction of *I'm* and *gonna*, *I'ma* is a combination that has yet to be understood syntactically. The present study uses native speakers' judgments of acceptability to determine the rules governing its usage in different contexts (e.g., negations, questions, declarative sentences). Additionally, scores on a language attitudes survey are used to reveal native speakers' perceptions of *I'ma* as compared to forms of *be going to*. Previous research indicates that non-standard dialects tend to be derogated relative to the standard dialect (Coupland & Bishop, 2007). *I'ma* is typically associated with non-standard dialects such as African American Vernacular English and Southern dialects (*go* Def. 4e, DARE; Bradley, 1954). However, reductions like *gonna* are associated with casual discourse in general (Biber, 1994). It is expected that *I'ma* will be judged as less correct and less acceptable as compared to other reduced forms of *be going to*.

Matthew Patrick Troge and Benjamin Harlow Klema (8)

Faculty Mentor/Collaborator: **Allyson A. Loomis**

“Everything and Nothing” Film Project

The goal of our faculty/student research project was to create an original story through the medium of digital film that would not only entertain any audience, but also would be worthy of submission into any amateur-level film festival throughout the state and country. The two students involved in the project (Matt Troge and Ben Klema) have Communications and English major backgrounds (respectively), and decided to combine Matt’s visual communications skills with Ben’s storytelling ability to create a film that would relate a compelling and captivating story. The methods used to create the film began with a story written by Ben and edited by our project advisor, Allyson Loomis. Then, the two students began their visual research for the story, eventually storyboarding the entire project from start to finish. From there, the students worked together to compile the necessary components of a limited-budget film production in three phases: pre-production, production, and post-production. While the project itself is not yet complete, the result will be a collaborative student-faculty film that demonstrates what can be accomplished when students collaborate to apply a liberal arts education towards a creative venture.

Mee Yang (44)

Faculty Mentor/Collaborator: **Kelly A. Wonder**

Cultural Identity Awareness of Hmong Students in Higher Education at the University of Wisconsin-Eau Claire

This study gives an overview of how Hmong students at UW-Eau Claire view their cultural identity. Asian Americans are the most diverse ethnic group in the United States; research does not often accurately reflect this diversity, especially with regard to the Hmong experience. During the fall of 2010, we issued a survey to collect data on demographics and identity practices of Hmong students. College years are considered to be critical for the development of identity, and the cultural and linguistic background of a student influences how a student engages academically and socially. Hmong students account for the majority of the multicultural population on campus; thus, an increasing awareness of how strongly students identify with their cultural heritage can help promote diversity. Our study indicates that regardless of birth place, (Laos, Thailand, or the United States) participants across all levels of proficiency displayed an interest and pride in Hmong culture to include history, religion, language, reading, and writing skills. The degree to which Hmong youth can maintain their ethnic identity while adapting to the majority culture is critical to their self-esteem, psychological well-being, and academic success.

FOREIGN LANGUAGES

Beatris Alejandra Mendez Gandica (2)

Faculty Mentor/Collaborator: **Manuel Fernandez**

Effects of the Labor Immobility Law (Job Security Law) on the Economic Development of the Private Sector in Venezuela.

Job security means that the employee has a secure job that is under the jurisdiction of the courts. To achieve this, a labor immobility law was enacted in Venezuela in 2001. Since the implementation of the law, the government has shown constant economic growth figures. This apparent positive effect of the law is paradoxical given that the government has subsequently also put into practice other drastic measures to preserve employment. To determine this law’s true impact, negative or positive, on the economic growth of the private sector it is necessary to take into account various types of considerations: economic growth, business policies, government policies, etc. This study will make use of newspaper articles, laws, and interviews from Venezuelan sources in order to determine the effects of this law, if any, on the Venezuelan economy. This research is important not only with regards to Venezuela but also to the international business field because companies need to be aware of what is going on in a country before investing there. Preliminary results have so far shown that there are more political than economic reasons to sustain labor control, aside from price, currency, and tax controls. Further research will elaborate on those results.

Jason Jerome Hansen (77)

Faculty Mentor/Collaborator: **Matthew W. Waters**

The Alcmaeonidae and Their Role in the Battle of Marathon

My research addresses the question of whether or not the Alcmaeonidae (a leading aristocratic family in ancient Athens) signaled the Persians in their attempted invasion of the city of Athens, following the Battle of Marathon in 490 BCE. The Battle of Marathon was a confrontation roughly 25 miles northeast of Athens between allied Athenian and Platean forces against King Darius’ Persian forces. Because this possibility is only briefly mentioned by ancient authors (Herodotus

VI.115), modern historians can do little more than speculate on the validity of such claims. I have approached this issue by examining Athenian-Persian relationships in the late 6th and early 5th centuries BCE, specifically looking at cases involving the Alcmaeonidae. My research has indicated that, due to their roles as leaders in Athens as early as the 7th century BCE, the Alcmaeonidae had long connections with Anatolia (present Turkey), before and during its rule by Persia (c. 6th century BCE). The power granted to aristocrats during emergencies and the Persian act of rewarding those willing to turn to the Persian side are two reasons why I argue that the Alcmaeonidae chose to support the Persian invaders.

Kristen Kay Snyder (78)

Faculty Mentor/Collaborator: **Carter E. Smith**

Mock Spanish? No Problemo

“Mock Spanish,” a term coined by anthropologist and linguist Jane Hill, describes the uses of Spanish in communications between non-Spanish-speaking Anglos and monolingual Spanish speakers. This research is to find out in what context and by whom Mock Spanish is used, what it is the speaker intends to convey, and what is understood by the hearer when it is used. It is important to the field of Spanish because if Mock Spanish is indeed a form of covert racism, as Hill suggests, the understanding and awareness of this phenomenon will prevent further reproduction of racism. The initial plan was to interview Hispanic restaurant workers in the Chippewa Valley, but unfortunately no businesses would give permission to do so. Therefore, the style of the project changed into a more explanatory one, trying to analyze Mock Spanish through other scholars’ research on sociolinguistics. Currently the project is still in process, but it is clear from the work I have done that Mock Spanish is an unconscious practice that can reproduce racist stereotypes of Hispanics and legitimize English-only public spheres. The outcomes also show that more research is needed on this topic.

HISTORY

John Eugene Barth (67)

Faculty Mentor/Collaborator: **Patricia R. Turner**

The Civil War as Total War: Madison, WI, and the Creation of a Homefront

This paper studies Madison, Wisconsin during the Civil War and analyzes how it served as a “homefront” during the conflict. It examines how the media, government, soldier interaction, and involvement of women created an atmosphere that led ultimately to the mobilization of people in Madison. In a limited war those civilians with relatives in the military have a higher motivation to fight for the war effort at home. The mobilization of the entire citizenry of Madison supports the contention that the American Civil War was, in fact, not a limited war but a “total war.” This study supports this contention through the use of a variety of primary sources including newspapers, political proclamations, and memoirs of the war. Madison, Wisconsin was on the U.S. frontier in the 1860s and thus was completely separated from the battlefield. The arguments in this paper can be extrapolated to suggest that communities throughout the Union served similar functions in the Civil War. This project thus contributes a new perspective regarding the historical debate on the status of the Civil War as a total war.

Robert Allen Bell (76)

Faculty Mentor/Collaborator: **Richard D. St. Germaine**

Ojibwe and Dakota War

The goal of this project was to look into the conflicts and individual battles that occurred during the one hundred and thirty year war between the Ojibwe and Dakota Indians. Dr. St Germaine and I wanted to document as many of the battles between the two tribes as we could find. Very little research has been done on this war and the individual battles. No project has ever looked at the entire war. The battles took place over two states and the only research that has ever been done has been on a very local level by county historians. Another goal we had was to look at the conflict from the Dakota and Ojibwe perspective, and this has never been attempted before. We have found many stories of battles from the Ojibwe perspective, but only four from the Dakota perspective, and I am working on finding more stories from the Dakota side. I have travelled to several county historical societies, the Minnesota and Wisconsin Historical societies and visited the Tribal Preservation officers at Red Cliff and Bad River Reservations in Wisconsin. I am presently working to set up some personal interviews to get some more information on places we know battles occurred but only oral stories are available about them.

Michael Richard Drew (68)Faculty Mentor/Collaborator: **Patricia R. Turner***A Milwaukee Tradition: A Comparative History of the Gay People's Union and the City Club of Milwaukee*

For over a century, there has been a tradition of progressive grassroots organization in the city of Milwaukee, Wisconsin. As a result, a recognizable pattern has emerged amongst groups seeking reform, even in vastly different eras like those inhabited by the early City Club of Milwaukee in the 1910s and the Gay People's Union (GPU) in the 1970s. Using available archival evidence, this paper will show that the GPU fit into that tradition, but pushed that tradition to a level never seen before. In the early 1970s, grassroots community and student groups supportive of Gay-Lesbian-Bisexual-Transgender rights, like the GPU, formed in Milwaukee and began pushing for the rights of their members. They executed this push by pursuing inter-group networking, and developing organizational methods and political agency that were consistent with and comparable to techniques developed by progressive-era rights groups like the City Club of Milwaukee. The GPU also developed a much more complex strategy for public outreach to help obtain their vastly different goals.

Elizabeth Anne Wallace (69)Faculty Mentor/Collaborator: **Patricia R. Turner***A Case Study of Murder in a Midsized Urban Area: Homicide in Eau Claire, Wisconsin in the Interwar Period*

The interwar period saw an increase in murder rates throughout the United States. But, murders were taking place in Eau Claire for different reasons than those taking place in larger urban areas such as New York or Chicago. A case study of murder in Eau Claire was done in order to examine the aspects and causes of murder in a midsized urban area from 1920 to 1940. Areas such as Eau Claire are a clearer lens with which to view murder during this period, since it was not nearly as masked by the media glare covering famous criminals and crime trends, such as organized crime and other such phenomena. Each death found in the Eau Claire County Coroner's reports from the years 1920 to 1940 was entered into a database, focusing on numerous criteria. Queries were then run through the database to find emergent trends. Court documents and trial transcripts were used to investigate the legal process that occurred following crimes that warranted further research. The fundamental aspects of murder in the midsized urban area of Eau Claire, WI that were found as the result of this research were domestic violence, class conflict, and explicit issues of privacy.

NATURAL & PHYSICAL SCIENCES

CHEMICAL SCIENCE

CHEMISTRY**Lindsey D. Baumgartner** with Yifei Xu, Nanjing University of Technology (154)Faculty Mentor/Collaborator: **James E. Boulter***Experimental and Computational Explorations of Uncommon Oxygen Species in Microwave-Frequency Discharge-Activated Oxygen*

Ground-state molecular oxygen, activated using a microwave-frequency discharge, is known to populate a variety of higher-energy species including triplet oxygen atoms, singlet oxygen molecules and ozone. More exotic molecular oxygen species (including O₂ dimers and oligomers up to O₈) have been generated from other sources and infrequently reported in the literature. We are investigating these and other such weakly-bound species using complementary experimental and computational approaches. A gas stream containing oxygen is passed through a microwave-frequency discharge-induced plasma and admitted into a high-vacuum chamber where it impinges on a gold mirror maintained at 35 K. Fourier-transform infrared reflection-absorption spectra of products condensed either in an oxygen or argon matrix are measured along with the matrix thickness, determined by laser interferometry. The structure, bonding, and energetic properties of various candidate molecules are characterized by density functional theory and Hartree-Fock calculations for comparison to experimental observations.

Erick Jeffrey Carlson and Asia Marie Stephanie Riel (156)

Faculty Mentor/Collaborator: **Bart J. Dahl**

The Design, Synthesis, and Characterization of “Smart” Donor-Acceptor Biaryls

The purpose of our project is to investigate the synthesis of tethered organic biaryl systems for ultimate application in sensing and molecular electronics. The properties of biaryl-containing molecules, such as conductance and fluorescence, are highly dependent on their dihedral angle, θ . We aim to synthesize biaryls with a tether that can be reversibly opened and closed. Thus these molecules can be “tethered” shut ($\theta=0^\circ$) or left “open” ($\theta \gg 0^\circ$), depending on external stimuli such as pH, thereby reversibly and controllably affecting their physical properties such as conductance and fluorescence. The effect of the addition of different substituent groups, such as electron donating/accepting groups, will be studied. The molecules made during the project have broad application in the field of material science and the synthetic pathway represents a novel strategy for the synthesis of biaryl lactones. Herein we will report the progress toward the multi-step synthesis of two new tethered biaryl molecules.

Bach Viet Cao, Robyn Marie Mueller, with Briane Shane, Ohio State University (132)

Faculty Mentor/Collaborator(s): **Sanchita Hati, Sudeep Bhattacharyay**, and Dr. Karin Musier-Forsyth, Ohio State University

Role of Coupled-Dynamics in the Catalytic Activity of Bacterial Prolyl-tRNA Synthetases

The internal dynamics of a protein are crucial for biological functions like substrate binding and catalysis. To understand how the non-catalytic residues contribute in maintaining the enzyme dynamics and catalysis, a combination of computational and biochemical strategies have been used to study the function of *Escherichia coli* prolyl-tRNA synthetase. We compare the dynamics and catalytic efficiencies of wild-type and mutant variants of *Escherichia coli* prolyl-tRNA synthetase. Herein, we will present experimental kinetic data and molecular dynamics simulations/principal component analysis data. Our results demonstrate that these noncatalytic residues regulate the internal protein dynamics and their mutations influence enzyme catalysis through correlated motions.

Tim James Deckers (133)

Faculty Mentor/Collaborator: **Christine M. Morales**

A Computational Study of Ligand Effects on First Row Transition Metal-Hydrides

Transition metal-hydrides are important to study because of their use in hydrogen storage, hydrogenation of drug targets and catalysis. Understanding transition metal-hydride trends in bond characteristics and geometry proves useful in catalysis because of their role in reactivity of the reaction. Density functional theory (B3LYP/LANL2DZ) was used to investigate these trends. Preliminary results show that transition metal-hydride bond characteristics such as bond strength, bond length and vibrational frequencies are related to the position of the ligand. We hope to better understand transition metal-hydride bond characteristics and geometry by studying a variety of ligands including molecular hydrogen, methylamine, dimethylamine and trimethylamine.

Matthew D. Hammers and Justin Jeffrey Wichman (110)

Faculty Mentor/Collaborator: **Kurt N. Wiegel**

Hydrogen-Bonded Liquid Crystals: Distonic Mesogenic Acceptors with Increasing Flexibility

A series of supramolecular liquid crystals have been created. The two series of these systems are based on differing hydrogen bond donors - a monofunctionalized acid (4-octyloxy benzoic acid) and a flexible bisacid (tetraethyleneglycoxy bis benzoic acid). Hydrogen bond acceptors vary from a rigid bispyridyl species (tetraethyleneglycoxy bis-4-(4-oxystyryl) pyridine) capable of forming liquid crystalline phases and a series of flexible, non-mesogenic polypyridines - tetrakis (tetrakis(4-pyridyloxy methylene)methane), tris (1,1,1-Tris(4-pyridoxymethylene)ethane), and bis (2,2-Dimethyl-1,3-di(4-pyridyloxy)propane) and a rigid bis-pyridyl (1,2-Di(4-pyridyl)ethylene). Stoichiometric mixtures of the benzoic acids and rigid pyridyl portion produce a well known liquid crystal. Mixtures of the acids and the non-rigid pyridyl systems are not mesogenic. As increasing concentrations of the flexible polypyridyls are added to the systems, the mesogenic to crystal transitions are reduced in all systems. The transitions temperatures are also dampened with inclusion of the less-functionalized flexible pyridyl systems.

Cheng Her (158)Faculty Mentor/Collaborator: **Thao Yang***Structural Properties of Substituted Mucin Peptides in Solution by 2D NMR*

The short mucin peptide with the sequence Glycine-Valine-Threonine-Serine-Alanine-Proline-Aspartic acid has been shown to have significant interactions with a specific monoclonal antibody. Its proline residue appears to be required for the binding. To explore the function of proline further, we studied the structures of three substituted mucin peptides. The three substituted peptides have their proline residues replaced by phenylalanine, aspartic acid, and leucine. We employed two-dimensional nuclear magnetic resonance (2D NMR) to study the structures of these peptides in aqueous solution. The Nuclear Overhauser Effect (NOE) and temperature coefficients of the amide hydrogens were used to evaluate for structural properties. The structure of the peptide will help us understand the function of the different groups on the peptide, and thus better assist us in the analysis of the binding experiments that will be carried out in the future. This poster will present structural properties of the three peptides in aqueous buffer in the presence and absence of Sodium Dodecyl Sulfate (SDS). Results showed that there are more NOE's on the peptide structures in buffer with SDS than those in buffer without SDS.

Georgeann Carol Kujawa (107)Faculty Mentor/Collaborator: **Warren H. Gallagher***Copper Binding Analysis of Chemically Modified Methanobactin Harvested From Methylosinus trichosporium OB3b*

This study was undertaken to better understand the copper binding and reducing ability of methanobactin harvested from *Methylosinus trichosporium*OB3b (mb-OB3b). The structure of the methanobactin was modified so that only one of the two oxazalone rings was present. The two rings are known to be intimately involved in copper binding. The modified methanobactin was then observed on a UV-Visible spectrometer and mass spectrometer during a series of copper titrations. From these experiments, it was determined that modified methanobactin molecules are still able to bind copper (II) ions, and reduce them to copper (I), much like the unmodified mb-OB3b. We also observe evidence that pairs of the modified methanobactin molecules may share a single copper ion during the binding process. This may help to broaden our understanding of how the intact methanobactin binds and reduces copper (II) ions.

Kyle Lasure and Michael Dennis Zenner (109)Faculty Mentor/Collaborator: **Kurt N. Wiegel***Hydrogen-Bonded Liquid Crystals: Polymeric Networks Utilizing Rigid Tetrafunctional Netpoints*

A series of supramolecular liquid crystals have been made utilizing a bis-functionalized hydrogen bond donor (tetraethyleneglycoxy bis benzoic acid) and differing concentrations of a rigid, non-mesogenic tetrapyrindyl-tetrakis(4-(4-oxystyryl)pyridine) methane and a rigid, mesophase-forming bis-pyridyl. Stoichiometric mixtures of the benzoic acid and rigid pyridyl portion produce a well known liquid crystal. Mixtures of the acid and rigid pyridyl systems are non mesogenic. Mixtures of the three components are liquid crystalline at surprisingly high concentrations of the non-mesogenic portion - loadings of 75% and higher still display anisotropy.

Brent Phillip Lehman, James Michael Johnson, Bach Viet Cao, and Robyn Marie Mueller (131)Faculty Mentor/Collaborators: **Sanchita Hati and Sudeep Bhattacharyay***Statistical Thermal Coupling Analysis Method for Identifying Allosteric Communication Pathways in Proteins*

We have developed a computational method known as "Statistical Thermal Coupling Analysis" (STCA) to identify allosteric communication pathways in large protein systems. In this method, we have used both dynamic and evolutionarily coupling information to extract the communication pathways between distant sites. We have applied this method to two protein systems: *Escherichia coli* prolyl-tRNA synthetase and leucyl-tRNA synthetase. Herein, we will describe the STCA method and present some preliminary experimental results.

Irene Celia Mueller, Matthew John Tschudy, Bach Viet Cao, and Karl Jet Meitzner (130)Faculty Mentor/Collaborators: **Sanchita Hati and Sudeep Bhattacharyay***Probing the Role of Highly Conserved Lysine (K279) Residue in the Editing Domain of Bacterial Prolyl-tRNA Synthetases*

The *Escherichia coli* prolyl-tRNA synthetase enzyme possesses three distinct domains. Each of these three protein domains has a unique function towards attaching proline to tRNA^{Pro}, a charged tRNA^{Pro}. One of those domains, the editing domain,

is critical for proofreading the charged tRNA^{Pro}, ensuring the correct amino acid has been attached to the tRNA molecule. In this editing domain, a highly conserved lysine has been found to be absolutely essential for proofreading, however, its exact role is not yet clear. Through site-directed mutagenesis and enzyme kinetic studies we have attempted to probe the role of this lysine residue (K279). Herein, we will present some of our preliminary results.

Robyn Marie Mueller (135)

Faculty Mentor/Collaborators: **Sudeep Bhattacharyay** and **Sanchita Hati**

Interplay Between Flavin's Redox States and Functional Protein Dynamics in Dihydronicotinamide Riboside (NRH): Quinone Oxidoreductase 2

Dihydronicotinamide riboside (NRH): quinone oxidoreductase 2 (NQO2) and its close analog, dihydronicotinamide adenine dinucleotide phosphate (NADPH): quinone oxidoreductase 1 (NQO1) belong to a group of cytosolic enzymes, known collectively as quinone reductases (QRs). QRs are upregulated in tumor cells and are targeted for designing anti-cancer drugs. They also help relieve the effects of oxidative stress by preventing semiquinone formation. The chemical catalysis requires a two-electron reduction of quinones into hydroquinones. During catalysis, the enzyme-bound cofactor (FAD) undergoes a two-electron redox transition while the enzyme active site performs substrate shuttling through “ping-pong” kinetics. Using molecular simulations, we studied the dynamics of NQO2's active site during the electron transfer reaction. We found spectacular changes in the direction of atomic fluctuations within the flavin-bound active site in response to flavin's redox change. We also performed charge perturbation analysis. We deleted the partial charges of charged active site residues, individually, and observed their effects on protein dynamics. The perturbation analysis demonstrates that the change in active site dynamics is correlated with the energetics of electron transfer, which results in a charge-separation between flavin and the enzyme matrix. This alteration of active site dynamics provides an insight into the “ping-pong” kinetics exhibited by NQO2.

Alex James Nett and Thomas C. Jones (155)

Faculty Mentor/Collaborator: **Michael John Carney**

Transition Metal Complexes Incorporating Amidine-Based Ligands for Selective Ethylene Oligomerization

Most commercial α -olefin processes produce a full product range (e.g. $C_4 - C_{20} + \alpha$ -olefins). However, catalysts that selectively trimerize and tetramerize ethylene to 1-hexene and 1-octene, respectively, are becoming more prominent due to the higher commercial value of these α -olefin fractions. The selective catalysts are often chromium-based, such as the Cr-pyrrole catalyst used in Chevron Phillips Chemical Company's commercial process for 1-hexene. Other chromium complexes supported by multidentate ligands (e.g. PNP, SNS) are also effective. We have expanded the family of selective catalysts by supporting transition complexes with amidine-based ligands incorporating additional donors. Synthetic schemes have been developed for the ligands and for the resulting metal complexes. X-ray crystallographic, spectroscopic and magnetic susceptibility characterization data, as well as ethylene oligomerization results will be presented.

Michael Alexander North (134)

Faculty Mentor/Collaborator: **Sudeep Bhattacharyay**

Model for Energetics of the Two-Electron Reduction in Dihydronicotinamide Riboside Quinone Oxidoreductase 2

Dihydronicotinamide riboside quinone oxidoreductase 2 (NQO2) catalyzes a mandatory two-electron reduction of quinones to hydroquinone, avoiding toxic semiquinones. Flavin, a substituted isoalloxazine, is the redox active moiety of the cofactor, flavin adenine dinucleotide (FAD), which appears noncovalently bound to this enzyme. Using quantum mechanical/ molecular mechanical simulations, we have computed the free energies of the electron and proton transfer processes of flavin in the free state as well as when it is bound to the active site of the enzyme. The active site interactions in NQO2 environment was found to significantly reduce the reorganization energy cost (the hypothetical energy amount that is required to alter the active site of the oxidized state to that of the reduced state prior to the electron transfer) of the two-electron reduction process when compared to the one-electron process. In addition, we have also computed the aqueous free energies of the electron transfer reaction of flavin in presence of noncovalent p-p-stacking interactions. An in-depth understanding of these interactions and their effects on flavin's redox potential will aid in designing new activators of NQO2 that can potentially act as anti-cancer prodrug.

Ashley Brooke Van Galen and Benjamin David Krentz (106)

Faculty Mentor/Collaborator: **Warren H. Gallagher**

Isolation and Characterization of a New Form of Methanobactin Isolated from Methylocystis Strain SB2

Methanobactins are peptide-derived, copper-binding molecules produced by methane-oxidizing bacteria (MOB), which use methane as their primary source of carbon and energy. They synthesize methanobactin to scavenge copper ions from the environment needed by the monooxygenase enzyme. The monooxygenase enzyme catalyzes the conversion of methane to methanol. Here we report the structure of a new form of the previously published structure of methanobactin that is isolated from *Methylocystis* Strain SB2. This new form appears to contain an additional threonine, which we believe is located at the C-terminus. This structural analogue was identified by mass spectrometry. Further analyses by HPLC separation and NMR spectroscopy are currently underway, and will be used to identify the presence and location of the additional threonine. The significance of the new form is that it may actually represent the intact form of methanobactin SB2. It also suggests a mechanism for the transformation from the one form to the other involving a di-ketopiperazine intermediate. Such a mechanism may help to explain the multiple forms of methanobactin that have been observed for other MOBs.

Michael Dennis Zenner and Joshua Tessner (111)

Faculty Mentor/Collaborator: **Kurt N. Wiegel**

Hydrogen-Bonded Liquid Crystals: Competitive Mesogen Formation

A series of supramolecular liquid crystals have been made utilizing a mono-functionalized hydrogen bond donor (4-octyloxybenzoic acid) and differing concentrations of a flexible, non-mesogenic poly pyridyl- tetrakis (4-pyridyloxy methylene)methane), tris (1,1,1-Tris(4-pyridyloxymethylene)ethane), and bis (2,2-Dimethyl-1,3-di-(4-pyridyloxy) propane) and a rigid bis-pyridyl (1,2-Di(4-pyridyl)ethylene). Stoichiometric mixtures of the benzoic acid and rigid pyridyl portion produce a well known liquid crystal. Mixtures of the acid and flexible pyridyl systems are non-mesogenic. Mixtures of the three components are liquid crystalline at surprisingly high concentrations of the non-mesogenic portion; loadings of 99% and higher still display anisotropy. It is supposed that the 4-octyloxybenzoic acid is retaining its liquid crystalline dimer structure when concentrations of the rigid bispyridyl hydrogen bond acceptor are sufficiently low as to not out-compete the acid/flexible pyridyl formation. Variable temperature infrared spectroscopy will be used to determine the nature of the hydrogen bonds formed in the mesophases.

MATERIALS SCIENCE CENTER

Emely Christine Hamann, Bret D. Meier, Jason A. Leicht, and Caramon Alexander Ives (157)

Faculty Mentor/Collaborator: **Douglas J. Dunham and Marcus T. Mc Ellistrem**

Nanoswitches for Energy Savings Applications

Many current electronic devices use excess electricity. In this project we are looking at development of nano and micro electro mechanical switches (NEMS and MEMS respectively) to address this problem. We have analyzed current Silicon-based switches and are also trying to develop Silicon Carbide NEMS. We are testing a theoretical reaction of Silicon (Si), Carbon monoxide (CO), and heat to produce Silicon Carbide (SiC): $\text{Si} + \text{CO} + \text{heat} \rightarrow \text{SiC}$. We have found that this produces Silicon Carbide and are looking into means of controlling this reaction. We are also performing elemental analysis on current silicon switches, testing for impurities.

Emily Jo Hoida and Alison Rachel Banks (179)

Faculty Mentor/Collaborator: **Marcus T. Mc Ellistrem**

The Effect of pH on Methanobactin and Gold Nanoparticle Formation

Methanobactin is a biomolecule found in methane-oxidizing bacteria that is involved in the transportation of copper into the cell, which is required for a specific enzyme function. Methanobactin can also bind and reduce other atoms as well, including gold. We have studied the effect pH has on the formation of gold nano particles, which form from the reduction of gold (III) ions by methanobactin. We have found, through UV-vis analysis and visually that we can control nano particle formation by adjusting the solution from basic to acidic, and also stop the process by adjusting the pH back to basic.

Nicholas John Warren (180)

Faculty Mentor/Collaborator: **Marcus T. Mc Ellistrem**

Transition Metal Ion Binding and Reduction Characterization of Methanobactin

Methanobactin is a 9 amino acid polypeptide involved in the transport of copper ions in bacteria. The copper is subsequently incorporated into an enzyme that oxidizes methane (natural gas) to methanol. Not much was previously known about how methanobactin obtains copper. Aside from copper, methanobactin has been found to bind and reduce other ions as well, such as gold and silver, which helped piece together how the molecule works. In this study, we have examined the binding and reduction of copper (II), silver (I) and gold (III) ions by methanobactin using X-ray photoelectron spectroscopy and liquid chromatography – mass spectrometry. We found that methanobactin binds to and reduces approximately 2 metal ions per molecule. However, the source of the electrons needed for reduction is still unknown.

COMPUTER SCIENCE, INFORMATION SYSTEMS, AND MATHEMATICS

COMPUTER SCIENCE

Lucas Tyler Komiskey and Ethan Daniel Frei (256)

Faculty Mentor/Collaborator: **Daniel E. Stevenson**

Head Tracking for Virtual Environments

The purpose of this research is to discover an alternative method to track head movements using inexpensive Nintendo Wii's controls, particularly with the Wii MotionPlus attachment released in June 2009. Although more expensive tracking solutions exist, the purpose of this research is to provide mobility through inexpensive alternatives. Tracking head movements provides a more immersive user experience in a variety of fields beyond computer science including computer-aided surgery, molecular modeling, and aviation simulation. Our project has been split into three distinct phases: communicating our motion tracking system with a central computer, calibrating head tracking movement and location tracking with respect to the user's physical environment, and tracking orientation and movement to drive a virtual environment using 3D graphics. The project team has put a particular emphasis on tracking head orientation error profiles using the Wii MotionPlus because of the varying accuracy and calibration in rotation information. The results we expect to report include our findings from using the inexpensive Wii controls and the feasibility of accurately measuring head movement in virtual environments using the Wii MotionPlus attachment. We also hope to present a working head tracking prototype for contributions in future Wiimote research.

Michael Glenn Seaholm (175)

Faculty Mentor/Collaborator: **Paul J. Wagner**

Resolving Word Sense Ambiguity in Natural Language Processing

The issue of word sense disambiguation, in which the correct meaning of a given word is determined based upon contextual information, is one of great importance within the field of natural language processing. Producing a system that can better the present rates of successful disambiguation would be of considerable benefit in computer applications that deal with parsing, analyzing and interpreting natural language. The primary objectives for this research project were to investigate current computational methods of resolving ambiguity in language, and then to hybridize a select few of these methods to achieve a greater overall rate of successful word sense disambiguation. We approached this problem first by researching what approaches were currently being used in the field and producing workable implementations based on those specifications. Two implementations, one using structural semantic interconnections and the other naive Bayesian (probabilistic) classification, have been developed, with a third (either decision lists or neural networks) yet to be determined. Once all three implementations are complete, they will be evaluated based on their ability to disambiguate words from a set of sample sentences, after which the best two will be hybridized to create a more precise system.

Matthew Nicholas Wisby and Isaac Marshall Schemm (161)

Faculty Mentor/Collaborator: **Joline P. Morrison and Mike Morrison**

Comparing Software Documentation Approaches

Our research problem is: what is the best method to document software? At UW-Eau Claire's Computer Science department, former students have written software in the Java programming language that facilitates peer review of computer science assignments, but did not provide documentation. Documenting the system is important because it helps its users to better understand how it works and makes the process of modifying the software easier. We explored each class of the software and documented how they relate to each other. We used two methods, Unified Modeling Language class diagrams and use-case diagrams, to document the components of the system. We then came up with possible situations in which users or developers might want to learn more about the system, and we determined which of the two methods gave more valid information in each case. We are unsure of which method would best increase our understanding of the system, but we expect that class diagrams will help the most for developers working on the software, and use-case diagrams will help the most for students and instructors using the software. We also expect that the front-end (user interface) aspects of the software will be better described by use-case diagrams, while the back-end (database) aspects will be better described by class diagrams.

Benjamin David Zimmer and Austen Isaac Ott (176)

Faculty Mentor/Collaborator: **Daniel J. Ernst**

Accelerating Exact Logic Synthesis Using Parallel Computing Methods

Exact synthesis is the process of creating a minimal-cost representation of a logic function. These representations are used in the design of microprocessors and other digital devices. Finding a minimal representation is possible, but it is computationally demanding and can require days on a desktop computer for even a single logic function. We have modified an existing exact synthesis program to utilize the combined computing power of multiple computers or supercomputers with the goal of speeding up the process. Using the OpenMPI library, we have created a working parallel version which demonstrates a significant speedup over the original. We continue to optimize the program, and hope to eventually run it on a supercomputer to synthesize a large set of logic functions.

INFORMATION SYSTEMS

Jeremiah Jordan Isaacson (177)

Faculty Mentor/Collaborator: **Matt Germonprez**

PictureMe Universe

Sharing Communities are created, largely by participants engaged with processes of secondary design (Germonprez et al., 2007; 2009). The technical artifacts underlying these communities are initially designed with the intention of supporting, promoting, and encouraging people to contribute and negotiate the content of a system. But a technology artifact is empty and devoid of meaning without the activities of the community. Wikipedia is blank without contributions of authors and editors. Flickr is empty without people posting and tagging images. Twitter is nothing without the tweets. Sharing communities are unique in that they require the loyalty of a community willing to share time, energy, and expertise in the ongoing co-creation of value for an organization and its participants. In this project, we are particularly interested in *ad hoc* sharing communities, communities that form without the obvious technical platforms of Wikipedia, Flickr, or Twitter. The communities in question form around specific *items* and a loose assemblage of personal technologies. We explore how a GPS device takes a photo, uses a focal point algorithm to identify the location of the picture taker, identifies other GPS devices in the range of view, and shares that photo with people in the newly created *ad hoc* sharing community.

MATHEMATICS

Samuel Austin Brueggen and Kyle Timothy Vogt (178)

Faculty Mentor/Collaborator: **Manda R. Riehl**

Genome Rearrangements with Insertions and Deletions

Many mathematical models have been developed to help solve the genome rearrangement problem, whose goal is to find the optimal sequence of mutations for the transformation of one genome into another. However, few of these representations consider small segments of DNA in which insertions and deletions are the primary mutations that occur. A disease called Neurofibromatosis inspired us to develop the Insertion/Deletion model for genome rearrangement. This disease is located

on a gene on chromosomes 17q11 and 22q12 and is responsible for uncontrollable neuron growth. This disease is caused primarily by insertion and deletion mutations during DNA replication. An insertion is when an extra gene is inserted between two others in the sequence during replication, and likewise a deletion is when a gene is removed. We represent a gene sequence as a permutation of numbers going from 1 to n . We have devised a way to determine the fewest mutations necessary for the original healthy gene sequence to result in any different genome (the diseased gene sequence), and we call this number the distance. We have found a method, using matrices and graph theory, for calculating the distance between two gene sequences using our model.

Abigail May Doering (251)

Faculty Mentor/Collaborator: **James S. Walker**

Practical Research in Observing Improvement in Vocal Performance

We did research in applying spectrograms (sonograms) to watch the improvement of technical vocal performance. We did the following: (1) periodically recorded vocal performances by the student collaborator, Abigail Doering, and used spectrogram analysis to identify strengths and weaknesses of her vocal technique; (2) developed a systematic, and minimal-cost, protocol for improving vocal technique using spectrogram analysis, in a way that can be used by most other vocalists; and (3) worked on areas for improvement of Abigail's vocal technique using our protocol. We expect to see a larger overtone series on spectrograms taken at the end of the project, compared to spectrograms at the beginning of the project. We also want to see more consistency in vocal phrases with vibrato.

Joshua Joseph Frinak and Austen Isaac Ott (228)

Faculty Mentor/Collaborator: **Michael R. Penkava**

Constructing the Moduli Space of Low Dimensional Infinity Algebras

Infinity algebras are generalizations of associative and Lie algebras. An associative or Lie algebra has a product, which is a function that takes two inputs and gives one output, their product. Infinity algebras are functions which take any number of inputs and generate an output. These algebras have recently played an important role in mathematics and physics, but are not well understood, even in the finite dimensional case. For associative algebras, we can construct the moduli space of higher dimensional algebras from the moduli space of lower dimensional algebras by using the Fundamental Theorem of Finite Dimensional Algebras, which gives a decomposition of the algebra as extensions. We have been studying extensions of infinity algebras, and it turns out that most infinity algebras of a fixed degree are not extensions, unlike the associative algebra case. These algebras are rigid in the sense that they have no nontrivial deformations. In the infinity algebra case, some of the simple algebras have nontrivial deformations, so there is a fundamental difference between the theories of infinity algebras and their simpler associative and Lie algebra counterparts. Recently we have constructed several examples of moduli spaces of low dimensional infinity algebras.

Jeanne Marie Knauf (252)

Faculty Mentor/Collaborator: **James S. Walker**

Transformations of Musical Cords: A Mathematical Approach to Musical Structure

Applying mathematical operations for chord transformations as well as implementing the concepts of transposition and inversion, we analyzed a portion of Beethoven's Ninth Symphony. We identified specific transformations to overall chord progressions with Hugo Riemann's operators P, Q, and R and discovered some interesting patterns within the musical score. Using mathematical transformations to better understand the structure of a musical piece combines two seemingly different fields of study and can provide deeper understanding of both.

Austen Isaac Ott and Bret D. Meier (203)

Faculty Mentor/Collaborator: **Colleen M. Duffy**

Use of 4-D Diagrams to Solve Equations

How many solutions does an n th degree polynomial equation over k by k matrices have? $n? kn?$ Until recently little was known about the answer to this question. Previous researchers proved that the number of solutions to any given equation is either between 0 and kn choose k or infinite. They also proved that when the matrices are 2 by 2, for each of these numbers there is an equation with exactly that number of solutions. We are investigating if this is also true for different matrix dimensions by creating diagrams. We have shown using 4D diagrams that this holds for 2nd degree polynomials over 4 by 4 matrices. We conjecture that in general almost all numbers between 0 and kn choose k can be obtained.

Elizabeth Marie Parent and Joshua Joseph Frinak (204)

Faculty Mentor/Collaborator: **R. Michael Howe**

Inductive Bases on $P(V)$

Let V be an irreducible polynomial representation of the symmetric group and let $P(V)$ be the vector space of polynomials on V . We obtain an inductive basis on $P(V)$ by first using Young's semi-normal operators to obtain an inductive basis on V and then solving the eigenvector problem for the Jucys-Murphy elements. A basis is a way of explicitly writing vectors. For example $(0,1)$ and $(1,0)$ is a basis for vectors in the plane. An inductive basis for a representation of a group G is a basis that also restricts to a basis for a representation of a subgroup of G . Such bases are important in applications when explicit calculations need to be made.

Shawn Patrick Peters (229)

Faculty Mentor/Collaborator: **Carl P. Schoen**

The Mathematics of Perfect n -Shuffles

The purpose of this project has been to analyze and generalize the behavior of playing cards as they move through the deck via perfect shuffles. Using concepts based in number theory and abstract algebra, these movements can be followed and card positions can be predicted. By way of shuffling both by hand and using a computer, patterns emerge when shuffling a deck of any size. A generalized equation has resulted for the number of perfect n -shuffles taken to return the deck to its original state, and another equation for predicting where the d^{th} card will be in the deck after k shuffles. Further research is being performed in the area of different types of perfect shuffles, such as interlacing j cards perfectly instead of the traditional single card interweaving.

Shawn Patrick Peters and Rebekah Kristine Sippert (181)

Faculty Mentor/Collaborator: **Simei Tong**

Classifying Complemented Subspaces of L_p with the Alspach Norm

Understanding the complemented subspaces of L_p has been an interesting topic of research in Banach space theory since 1960. In 1999, Alspach proposed a systematic approach to classifying the subspaces of L_p by introducing a norm given by partitions and weights. We will show that with the Alspach Norm we are able to classify some complemented subspaces of L_p ; $2 < p < \infty$. We have a complete classification of subspaces of L_p with the Alspach norm with one partition, and we also have a partial classification of L_p with two partitions.

Tristan Jay Newman Williams, Douglas Alan Muskett, Austen Isaac Ott, and Joshua Joseph Frinak (205)

Faculty Mentor/Collaborator: **Robert N. Andersen**

Nimbers: An Extension of the Surreal Numbers

D. E. Knuth introduced surreal numbers in his book, *Surreal Numbers*, but they were first developed by J. H. Conway. Surreal numbers are completely determined by two rules. Every surreal number is a pair of sets in which no element of the left set is greater than or equal to any member of the right set. The second rule defines what it means for one number to be less than or equal to another. We have modified the first of these rules to extend the surreal numbers. Our modification allows numbers in the left set to be equal to numbers in the right set. This extension includes numbers that have been referred to by Conway and others as nimbers. In the study of nimbers, an operation is used that results in a field of characteristic two; however, we have opted to use the same operations that Conway defined for surreal numbers. The surreal numbers could be further extended to "pseudo numbers" by allowing elements in the left set to be greater than elements in the right set, with this set being much larger and more complicated. Our extension to nimbers is merely the first step toward this broader goal.

Tristan Jay Newman Williams and Amy Kristine Wells (206)

Faculty Mentor/Collaborator: **Chris R. Ahrendt**

Removing Singularities of Solutions to the Generalized Logistic Equation on Time Scales

We study the generalized logistic equations on time scales. A time scale is a non-empty closed subset of the real numbers. The study of the time scale calculus unifies and extends discrete and continuous analysis. We use a generalized form of the exponential function to determine solutions to the generalized logistic equation on various time scales. Our aim is to completely analyze the behavior of this equation given certain initial conditions. We use a substitution commonly found in the study of population dynamics, and we assume that the exponent of the generalized exponential is constant. In the

continuous case, this solution is only defined on a finite interval, but we show that a time scale, which is unbounded above, can be constructed so that the solution is defined everywhere. Several examples of this are explored. We also explore a similar situation that involves a linear exponent rather than a constant exponent, and analyze the differences and similarities to the constant exponent case.

MATHEMATICS/COMPUTER SCIENCE

Mark Patrick Bauer and Hong Yang (182)

Faculty Mentor/Collaborator: **Simei Tong**

Optimizing the Evacuation of a Shopping Mall, Phase I

After successfully constructing a sandbag distribution plan for Dane County and evacuation plans for Owen City, Luther Midelfort Hospital, and the city of Eau Claire, our research team has decided to mathematically construct the most efficient evacuation plan for shopping malls. The shopping mall we investigated was quite different from previous evacuations. This shopping mall has several staircases / elevators in addition to multiple exits. Thus, the attendees of the shopping mall have two sets of evacuation combinations from which to choose; these multiple options present a new challenge for this type of model that we have not faced before. In addition, the number of mall attendees varies throughout the day so functions of time were introduced to the demand constraints. This Linear Programming problem (LP) was solved with the Simplex Method of Operations Research and the optimal evacuation method was obtained.

Mark Patrick Bauer, Eric Daniel Lafferty, Brian Joseph Buell, and Hannah Jean Miller (183)

Faculty Mentor/Collaborators: **Simei Tong and Daniel J. Ernst**

Optimizing the Evacuation for Eau Claire County, Phase III

In the event of a natural disaster or another related emergency, it is crucial for a city to properly and efficiently evacuate its citizens. Therefore, we have created a mathematical model that utilizes optimization techniques from Operations Research that was seamlessly integrated into ArcGIS, a Geographical Information System suite. Using Python, we created a script for ArcGIS that executes the evacuation process and Simplex Method algorithms. Specifically, the emergency management officers of the City of Eau Claire can obtain the optimal routes and times for an intended region that they may want to evacuate.

MATHEMATICS/GEOLOGY

Nicholas Ryan Sullivan and Paul Eric Thompson (226)

Faculty Mentor/Collaborators: **Jessica J. Kraker and Katherine R. Grote**

Spatial Statistics for Estimating Soil Depth and Composition

The study of spatial methods is a quickly developing field in statistics due to the use of processes that require high-power computing speeds that have only recently become available. While geology is far from the only field that applies spatial statistics, it is one of the disciplines that pioneered mathematical analyses of spatial data such as kriging. In this project, we used spatial statistics to characterize the relationship between high-resolution geophysical data gathered along traverses in a field and measurements of soil texture gathered more sparsely along the same traverses. The spatial interpolation and regression techniques applied in the analysis provided a good compromise between geological and statistical methodologies. The analysis was carried out in the statistical program R utilizing the geologically-oriented package of functions called gstat. In our conclusions, estimates of variability are implemented to quantify the uncertainty present in some of the geophysical measurements, i.e., the predictor variables. Additionally, we use simulations to describe the impact of such measurement error on predictions of soil texture at new locations. Finally, we predict the soil texture characteristics based on the geophysical measurements.

MATHEMATICS/MUSIC & THEATRE ARTS

Michael Graham Jacobs, Kyle Timothy Vogt, Gregory Matthew Ellis, Nicholas Riley Brewer, Promise Kate Lohse, Eric Daniel Lafferty, and Jarrod Michael Lentz (4)

Faculty Mentor/Collaborator: **James S. Walker** and **Gary W. Don**

Dynamic Geometry of Musical Chords

Our research involved applying Tymoczko et al.'s theory of geometric aspects of chordal structure in Western music to our own musical examples and theoretical perspectives. Utilizing Dr. Tymoczko's software to analyze and interpret the mathematical organization of chord structures, we developed a common foundation bridging music theory and mathematic study which we will be able to develop into an interdisciplinary educational approach to music. Although a final medium for this information has yet to be set, our research will be presentable as working knowledge and perspectives that will continue to be incorporated into future research on the topic by Dr. Walker and Dr. Don.

Michael Graham Jacobs and Kyle Timothy Vogt (5)

Faculty Mentor/Collaborator: **James S. Walker** and **Gary W. Don**

Video Approaches to Mathematics and Music

This project developed a visual-aural approach to musical education from physical and theoretical perspectives to enhance students' appreciation and performance for the nature of musical sound. We created a series of multimedia videos tying spectrograms (graphs of pitch frequency and amplitude with respect to time) to videos of live performances and graphical demonstrations of overtone series/harmonic tonality. Teaching not only how the fundamental building blocks of sound come together to create real-life music, these videos also prepare students to analyze music using spectrographic software to explore the musical structure of any and all recorded sounds. The results of this research are embodied in the videos produced, which are made up of a two-part (roughly 10 minute) instructive video as well as over six example videos combining recorded performance and spectrographic analysis.

EARTH SCIENCE

GEOGRAPHY & ANTHROPOLOGY

Charlie Daehler and Jake Ring (200)

Faculty Mentor/Collaborator: **Sean Hartnett**

Mapping With Eagles: A Bathymetric Survey of the Lower Chippewa River

This project involved the completion of a bathymetric survey of the Lower Chippewa River extending from Eau Claire to the Mississippi River. UW-Eau Claire students Charlie Daehler (Geography) and Jacob Ring (Biology) assisted Geography Professor Sean Hartnett in this survey during the summer of 2010. The survey methodology involved geo-referencing river depth data with GPS positions. The depth data was derived from sonar/depthfinders mounted on a Zodiac and a canoe. The survey itself involves navigating back and forth across the river and along the shorelines much like 'mowing' the river such that all areas of the river are covered. A total of 42 days on the river was required to complete the 59 miles of the main channel and another 16 miles of back channels. After completion of the survey, 88,000 depths points were combined with and outline of the river shoreline to generate a TIN – a 3D rendering of channel depths. Beyond the collection of the survey data, much was learned about the Lower Chippewa River habitat as the survey progressed 1-2 miles each day. In particular we became quite familiar with the region's bald eagles nest by nest.

David Frank Hon and Kyle James Wells (207)

Faculty Mentor/Collaborator: **Christina M. Hupy**

Spatial Comparison of Soil Drainage Index to Tree Species in the Central Lower Peninsula of Michigan

The purpose of this project is to examine the role of soil moisture in tree species distribution across the forest tension zone, an ecotone between the Laurentian mixed forest and Eastern broadleaf forest in the Lower Peninsula of Michigan. Conservationists, biogeographers and forest ecologists will find the results of this research especially valuable since it describes how tree species are related to long term moisture content in the soil. This project will use the soil drainage index (DI) of each soil type, which is an ordinal index based on county level soils data, quantifying long-term soil wetness. The study area within Lower Michigan will be divided into 20 subsections to provide further detail of the spatial distribution of

the tree species. Overlay analysis will be performed within each subsection to associate each tree species with a soil drainage index value. The tabular and graphical data resulting from this project will provide insight into what role soil moisture plays in tree species distribution across an ecotone.

Mark Lester Ingham (209)

Faculty Mentor/Collaborator: **Douglas J. Faulkner**

Particle-Size Analysis of Streambank Alluvium along the Lower Chippewa River

The objective of this research is to determine if spatial variations in streambank alluvium could have contributed to spatial variations in lateral channel migration of the lower Chippewa River. Past studies of historical aerial photos reveal that the river experienced significant lateral migration along some reaches (over 300 meters since 1938 in extreme cases), while along others it experienced little. Why channel migration has been pronounced along some reaches and absent from others is unknown. One possibility is that particle-size characteristics of streambank alluvium differ between reaches, resulting in differences in streambank erodability. For this study, trenches were dug into the river bank at multiple sites and streambank alluvium described and sampled at each. Samples are currently being analyzed utilizing a Gilsonic AutoSiever, which uses vibration and sonic pulses to separate the particles of a sample into different size classes in order to determine the particle-size distributions of the alluvium at each site. Since the alluvium is mostly sand, sonic sifting is a viable technique for particle-size analysis. Results will reveal if there is a difference in particle sizes between active and stable sections of the river. This research should contribute to our understanding of the river and provide a foundation for future research.

Mark Lester Ingham (210)

Faculty Mentor/Collaborator: **Joseph P. Hupy**

The Impact of Warfare on a Landscape: Khe Sanh, Vietnam

A significant amount of research within military science has focused on how a landscape has influenced the outcome of a conflict, but a limited amount details the converse relationship - how warfare has impacted a landscape. This research focuses on how warfare, primarily explosive munitions, produce impacts upon the landscape. In addition, the overall recovery of disturbed landscapes is assessed, via remote sensing imagery analysis of land use practices from before the disturbance to the present day. The landscape of focus is Khe Sanh, Vietnam, which was significantly impacted by explosive munitions in the course of several key combat events during the Second Indochina War. The overall goal of this research is to assess spatial patterns of landscape disturbance and recovery. Methods utilized were primarily classification techniques provided by ArcGIS and ENVI software. In addition, qualitative research into land use practices, primarily through personal veteran accounts and post-war histories of the central highlands of Vietnam, was conducted. The results of this research provide some quantitative evidence of LULC (land use land cover) change surrounding events associated with the Second Indochina War and post-war economic practices.

Joel Charles Jahnke with Ty Bejin, Kayli Ennen, Caitlyn Fetter, and Nick Schreiter, North High School (201)

Faculty Mentor/Collaborator: **Garry Leonard Running** and Adam Keeton, North High School

Soils and Best Land Use: A Case Study at the North Star Middle School Site, Eau Claire, Wisconsin

The North Star Middle School site located in Eau Claire, WI along a west-facing, wooded, bedrock ridge behind the school, and other green spaces like it are threatened by development, but may be unsuitable for it and better left as natural green spaces. We examined soil morphology to inform best land use for the study area. Three soil pits were excavated collaboratively with the UW-Eau Claire geography department within the study area. Soil profiles exposed were described in the field to determine horizon: color, texture (confirmed in the lab using a Gilson sonic sifter), structure, and boundary depths and architecture. Profiles were then photographed and sampled. The soil profiles we observed exhibit sandy texture and weak horizonation (A-Bw-C) typical of soils formed from sandy bedrock on 6-12% slopes and are consistent with previous soils work in the study area (and with Boone-Plainbo Complex soils as described by the NRCS). These sandy soils are fragile and when disturbed are prone to wind and water erosion. They are unsuited to high traffic activities and are difficult to develop without causing erosion. We recommend the study area remain an area used for light recreation (e.g., Frisbee golf), as an outdoor classroom, and as wildlife habitat.

Chad Arthur Ronchetti (208)

Faculty Mentor/Collaborator: **Garry Leonard Running**

Spatial Patterns in the Natural Communities of Chippewa and Flambeau River Islands

The Federal Bureau of Land Management (BLM) is steward for 98 islands on the Chippewa and Flambeau Rivers of

west-central Wisconsin. Understanding the spatial distribution of habitats on these islands can facilitate management practices by identifying at-risk ecosystems, possible habitat for threatened species, and areas with recreation potential. The Chippewa and Flambeau rivers extend across three level III ecoregions (from north to south): Northern Lakes and Forests, North Central Hardwood Forests, and Driftless Area. There are 60 islands in the Northern Lakes and Forests, 16 in the North Central Hardwood Forests, and 22 in the Driftless Area. In order to develop comprehensive management plans encompassing recreation, habitat conservation, and education, the BLM conducted a survey of natural communities on the islands. Using indicator plant species defined by the Wisconsin Department of Natural Resources, major natural communities were identified and their boundaries mapped using aerial photographs. Preliminary results indicate that island natural communities are consistent with the ecoregion within which they reside. Nearly 100% of emergent aquatic, bedrock glade, wet prairie, and alder thicket occurrences are in the Northern Lakes and Forests ecoregion, while a greater percent of islands in the Driftless Area have occurrences of floodplain forests.

Sarin Rheann Strobush (202)

Faculty Mentor/Collaborator: **Christina M. Hupy**

Bottled Watershed: Carbon Footprint of Transporting Bottled Water

This project intends to calculate the carbon footprint of transporting bottled water from the bottling plant to grocery store locations in Eau Claire, Wisconsin. The release of carbon dioxide from burning fuel plays a significant role in the discussion of global climate change. Transportation distances were calculated using geocoded source data from 14 domestic and 8 international bottled water brands and a transportation network. The distances were analyzed using several conversion equations to determine the amount of carbon dioxide that is released for each brand. Maps were created to show the source location of the bottled water brands and the network used in this analysis. The information found in this investigation shows that the transportation of bottled water releases a substantial amount of carbon dioxide into the atmosphere.

Jacob Lee Wise (199)

Faculty Mentor/Collaborator: **Joseph P. Hupy**

Locations of Vietnam War Helicopter Crashes in Southeast Asia

Helicopters were one of the major technological innovations of the Vietnam War. The locations of helicopter crashes during the war are spread all over Southeast Asia. There were many factors that contributed to helicopter crash location, including proximity to combat areas, severe weather conditions and direct enemy ground fire. The overall goal of this research is to compare different helicopter model crash types, analyzing their proximity to each other and Landing Zones, along with performing analysis that relates crashes to weather conditions. Weather conditions used in this analysis include wind speed, maximum wind speed, wind gust speed, visibility, and precipitation. The ESRI Military Analyst extension was utilized to apply each helicopter crash location to a geographic point. Current and future research goals seek to create an interpolated weather surface grid, drawing upon historical weather data. Preliminary results from this research indicate that helicopter types maintain distinct patterns from one another. Also, crash patterns are in close proximity to Landing Zones, with higher concentration of helicopter crashes related to inclement weather patterns.

GEOLOGY

Anya Ingrid Benda and David Frank Hon (223)

Faculty Mentor/Collaborator: **Katherine R. Grote**

Increasing the Efficacy of GPR Groundwave Techniques for Estimating Soil Water Content using Common-Offset Surveying Methods

Ground penetrating radar (GPR) groundwaves are a geophysical technique that can be used to estimate soil water content, which is an important parameter for monitoring contaminant flow and for managing agricultural resources such as irrigation. Previous research using GPR groundwaves for water content estimation has often used the variable-offset surveying method, where antennas are moved further apart with each measurement. Variable-offset data require little calibration and are easily interpreted, but are very time-consuming to acquire, have relatively poor resolution, and cover only a small area. Common-offset surveying, where antennas are kept a constant distance apart for each measurement, can be performed quickly and with high resolution over large areas. However, using common-offset data for water content estimation is complicated by uncertainty over the exact location within the antennas where the GPR groundwave originates. In this project, we developed a calibration method for determining the origin of the GPR groundwave within the antennas and investigated how the transmitter-receiver separation distance (an important variable in common-offset surveying) affects water content measurements. Using this calibration method to determine the groundwave origin for each pair of antennas can significantly

improve the accuracy of water content measurements acquired from common-offset GPR data.

Michael Kristoff, Audrey Rose Mohr, Anya Ingrid Benda, and Taylor Lea Crist (224)

Faculty Mentor/Collaborator: **Katherine R. Grote**

Monitoring Infiltration in Sandy Soil Using GPR Groundwave Techniques

Estimating soil water content is important for environmental and agricultural applications, but conventional methods of measuring soil moisture cannot capture the spatial and temporal heterogeneity of this property. Ground penetrating radar (GPR) groundwaves are a geophysical technique that can be used to estimate soil water content with high resolution over large areas. GPR groundwaves travel in the shallow subsurface between two GPR antennas, and recent studies indicate that the groundwave sampling depth is a function of antenna frequency. In this research, we explore the potential of multi-frequency GPR groundwave data for monitoring an infiltration front caused by irrigation over a predominantly sandy field site in northern Wisconsin. GPR data were acquired over an 11-acre field site using three pairs of antennas with frequencies of 100-, 500-, and 1000-MHz. The antennas were pulled in traverses across the site, and data were acquired simultaneously with all antennas and used to estimate the soil water content. Data were acquired prior to, soon after, and several hours after irrigation. Data processing is ongoing, but preliminary results indicate that multi-frequency GPR groundwave data can detect changes in soil moisture at different depths as water moves through the near-surface soil.

Todd R. Lau (227)

Faculty Mentor/Collaborator: **Robert L. Hooper**

Individual Grain Analysis of the Rare Dioctahedral Mica Celadonite Using Analytical Transmission Electron Microscopy

This project explores the occurrence of a rare dioctahedral mica found along the Cambrian-Precambrian boundary at Big Falls county park in Eau Claire county, Wisconsin. Bulk chemical analysis has been done on the altered amphibolites that appear to contain the blue-green aluminoceladonite ($\text{KAl}(\text{Mg,Fe})[\text{Si}_4\text{O}_{10}]$). Celadonite forms a solid solution with iron- and magnesium-rich illite/smectite (I/S 90% I). The celadonite crystals are near stoichiometric with a maximum celadonite composition of $\{\text{K}_{0.82}\text{Al}_1(\text{Mg}_{1.40}\text{Fe}_{0.40}\text{Al}_{0.11}[\text{Si}_{3.71}\text{Al}_{0.29}\text{O}_{10}])(\text{OH})_2\}$. Our goal is to do individual grain quantitative chemical analysis, using a Jeol Jem-2010 high resolution Analytical Transmission Electron Microscope (ATEM), by Energy Dispersive X-ray Spectroscopy (EDX) (Thermo Electron Corporation). This allows us to quantitatively measure the composition of individual grains on the nanoscale, without the contamination of non-celadonite grains, which bulk chemical analysis cannot provide. We used the following microbeam standards provided by the Smithsonian Institution for calibration of the TEM: Natural Bridge Diopside; Johnstown Meteorite Hypersthene; Kanai Hornblende, Yellowstone National Park Rhyolitic Glass. We expect to report individual grain chemical analysis, as well as continue to study the relationship between the celadonite mica and the clay mineral illite, for the altered rock found in Big Falls county park, Wisconsin.

Jessica Lee Meyers and Bryan Hardel (185)

Faculty Mentor/Collaborators: **Geoffrey S. Pignotta and J. Brian Mahoney**

Geochemical Characterization and Geochronology of the Paleozoic Mt. Attree Volcanic Complex, Terrace, British Columbia

The Paleozoic Mt. Attree volcanic complex, exposed in the Terrace, British Columbia region, contains potentially economic volcanogenic hosted massive sulfide (VHMS) mineralization. The primary objective of this research is to establish a geochemical and geochronologic framework for the region and assess economic mineralization in the Mt. Attree volcanic complex. Geochemical and geochronologic samples were collected during the summer of 2009 from six target areas within the volcanic complex and from cross-cutting dikes interpreted to be potential feeders for the volcanics. Field observations and preliminary geochemical analysis shows that Mt. Attree volcanic complex compositions range from basaltic through rhyolitic, with andesitic compositions dominating. Initial interpretation of this geochemical pattern is that the volcanic complex was formed in a continental margin or an island arc setting. Further analysis of these samples will provide a better understanding of the tectonic setting during deposition/intrusion. Geochronology results from intrusive and volcanic units have shown that volcanics and associated intrusions within the targeted areas are Mississippian and Pennsylvanian in age with other dated intrusions revealing ages of deformation within the Mt. Attree volcanic complex. This area is of potential economic interest because it is similar to other Paleozoic VHMS deposits found in British Columbia.

Audrey Rose Mohr and Anya Ingrid Benda (225)

Faculty Mentor/Collaborator: **Katherine R. Grote**

Comparison of Geophysical Techniques for Soil Texture Estimation

Soil texture is an important parameter for agricultural, environmental, and geotechnical applications. The spatial distribution of soil texture is often quite variable both laterally and vertically, and conventional methods of measuring soil texture are time-consuming and limited to point measurements that cannot capture the natural heterogeneity of this property. This study investigates the potential of multiple high-resolution geophysical techniques for mapping soil texture. In this project, measurements of soil texture were acquired in 27 boreholes across an 11 acre field. High-resolution geophysical data, including ground-penetrating radar (GPR) groundwaves, electrical conductivity, and magnetic susceptibility were acquired in traverses across the field. The soil texture measurements were divided into data subsets, and parameters describing the spatial correlation between each geophysical data set and each subset of soil texture measurements were calculated. Geostatistical methods were then used to create a high-resolution map of soil texture estimates using one subset of soil texture data in conjunction with high-resolution geophysical data. The accuracy of these estimates was determined by comparing the estimates to true soil texture measurements not included in the subset used for estimation. Preliminary results indicate that GPR data offer more improvement in soil texture estimation than the other types of geophysical data.

Nathan Neal Nushart and Jessica Lee Meyers (184)

Faculty Mentor/Collaborator: **Geoffrey S. Pignotta**

Quantifying Mineral Fabrics in the Coast Plutonic Complex, Bella Coola, British Columbia

The Coast Plutonic Complex (CPC) of western British Columbia, Canada consists of a long, narrow belt of Jurassic to Eocene granitic to dioritic intrusive rocks that represent more than 100 Ma of nearly continuous subduction-related magmatism. This study investigates deformation within Mesozoic CPC intrusions in the Bella Coola region using field and analytic techniques. Deformation in intrusive rocks can be recorded as a mineral fabric (foliation and/or lineation). In the Bella Coola region, mineral fabrics range in intensity from very weak (magmatic) to very strong in mylonitic shear zones. In order to determine the orientation and intensity of mineral fabrics in weakly deformed plutonic rocks, digital image analysis techniques were utilized. Fabrics were quantified using three orthogonal images taken of planes cut in each sample. By combining the data from each of the three images an overall fabric ellipsoid is obtained and orientations of foliation/lineation for the whole rock are determined. Results of the image analysis suggest that samples proximal to shear zones produce moderate to steep NW-SE trending fabrics, and that magmatic fabrics record the transition from NW-SE shearing to N-S contraction, while some fabrics show a general lack of consistent orientation within intrusions post-dating deformation in the CPC.

Christopher Brian Spencer (186)

Faculty Mentor/Collaborator: **Phillip D. Ihinger**

Computer Simulations of Magma Chamber Evolution: Further Testing an Alternative Model for the Development of Layered Mafic Intrusions and the Origin of Granite

Basalt is the rock type that makes up over 75% of the Earth's solid surface. However, the nature of crystallization within basaltic magma chambers is controversial. Although nearly complete exposures of crystallized basaltic bodies exist around the globe, the observed variations in mineral compositions within these bodies do not match the sequence predicted from experimental observations. Here, we build on an earlier study to test the viability of a new model for magma evolution in basaltic chambers that can explain this paradox. The new model invokes the sequential extraction of evolved felsic liquids from within a crystal mush zone located behind the advancing crystallization in the magma chamber. We employ code written in C++ that combines object-oriented and event-driven design. Three classes govern the execution of the simulation: Reservoir, a container for chemical data; Rule, an action that occurs on a Reservoir; and Clock, which manages the execution of the simulation. In this model, the compositions of three reservoirs (a host magma chamber, an active crystallizing layer, and an evacuated granitic residue) are followed as magma crystallizes. Our results constrain the degree of open system behavior that matches the mineral chemistry observed in natural magmatic bodies.

Sarah Ann Ulrich (231)

Faculty Mentor/Collaborator: **Robert L. Hooper**

Determination of Trace Metals in Individual Air Particulates Using Transmission Electron Microscopy

Soils in the Central Valley, CA are contaminated with Cr and Ni from the Coast Range and foothills of the Sierra Nevada ultramafic complexes (note: serpentinites are the CA state rock). Both Cr and Ni represent potential carcinogens if inhaled,

depending on the bioavailability of the phase containing the metals. Air particulates also contain a host of other trace metals with potential health impacts. This study utilizes a Transmission Electron Microscope (TEM) to examine air filters from the Central Valley particle by particle to determine the trace metal content of air sample particulates. The project involved development of new TEM techniques for the air samples supplied on Millipore filters. Particulates analyzed include mineral dust, complex sulfosalts, and carbonaceous combustion products (soot). Trace metal contents are highest in Ba sulfate with up to 4,700ppm Pb, and 300ppm As, in sulfosalts with up to 23,100ppm Zn and in clays with up to 2,400ppm Cr, 2,900ppm Ni, and 1,200ppm Zn. Analysis of point by point particulates is extremely time consuming (approximately ten minutes per individual grain), and we have numerous samples supplied by the US Geological Survey (USGS) that are yet to be analyzed. The study, in collaboration with the USGS, is a work in progress.

Sarah Ann Ulrich and Todd R. Lau (230)

Faculty Mentor/Collaborator: **Robert L. Hooper**

Development of Techniques for Trace Metal Analysis Using Analytical Electron Microscopy

Analytical Electron Microscopy (AEM) using a Transmission Electron Microscope (TEM) with an energy dispersive spectrometer (EDS) is usually considered a semi-quantitative analytical technique for major elements (>1 wt %). At UW-Eau Claire, the JEOL 2010 200Kv TEM was uniquely designed to maximize EDS analysis by installing a lower resolution analytical 20mm pole-piece. Using a special Be sample holder, holey carbon substrate, an ultra-light element window and extremely long count times, it is now possible using UW-Eau Claire's AEM to perform quantitative trace element analysis on individual 5nm particles. Trace element analytical accuracy for metals >100ppm have been verified using microbeam analytical standards from the Smithsonian, National Institute of Testing and Technology, and the United States Geological Survey. The techniques developed in this lab are being used to examine individual soil and air nano-particulates. The ability to analyze individual particles for trace metals will result in a much better understanding of the behavior of the metals and their potential health risks. This breakthrough opens a new frontier in understanding trace element behavior.

GEOLOGY/GEOGRAPHY & ANTHROPOLOGY

Corrie T. Floyd (253)

Faculty Mentor/Collaborators: **Kent M. Syverson and Christina M. Hupy**

Using LiDAR Data and ArcGIS to Evaluate Subtle Landforms Associated with the Early Chippewa and Emerald Phase Ice-Margin Positions, Barron County, WI

Glacial landforms in Barron County, Wisconsin, are a result of at least four glacial advances during the Pleistocene Epoch (2.58 to 0.012 Ma) (Johnson, 1986; Syverson and others, 2011). During the early Chippewa and Emerald Phases (Late Wisconsin Glaciation, 31-17 ka), tills of the Pokegama Creek and Poskin Members were deposited over till of the River Falls Formation (Illinoian Glaciation, >130 ka). Johnson (1986) was unable to map the location of the Emerald Phase ice margin using glacial landforms because these till surfaces do not display obvious glacial landforms in the field. High resolution terrain models have been generated using LiDAR data to evaluate the Emerald Phase ice-margin proposed by Johnson (1986). Even with LiDAR's sub-meter resolution, primary glacial landforms are lacking on till surfaces in the 90 sq km study area. However, ArcMap's 3D analyst tools and ArcScene's 3D visualization capabilities reveal four distinct fluvial channels incised in the Poskin and Pokegama Creek till surfaces. These channels are evidence for a younger, less-eroded landscape than the River Falls till surface, which lacks fresh meltwater and glacial landforms. However, LiDAR data did not reveal a sharp landform-assemblage contact between the Late Wisconsin and Illinoian till surfaces.

LIFE SCIENCE

BIOLOGY

Kara Marie Braunreiter, Andrew James Polzin, Candice Alesia Bartels, Katya Verenice Voelker, and Mary Ann Jeanette Hall (11)

Faculty Mentor/Collaborator: **Jamie S. Lyman Gingerich**

Altered Behaviors: Sensory Functions Depend on Intact Cilia and Proper Receptor Localization in Caenorhabditis elegans

Primary (nonmotile) cilia, found on most human cells, act as cellular antennae to perceive the surrounding environment. Non-functional cilia result in a number of diseases including polycystic kidney disease (PKD). PKD is primarily caused by mutations in one of two genes, PKD1 and PKD2, which normally encode ciliary receptors. *Caenorhabditis elegans* cilia are similar to human cilia. Unlike humans, though, *C. elegans* do not require functional cilia for viability so *C. elegans* are a good model for studying cilia in a living organism. The *cil-5(my13)* mutant *C. elegans* were originally identified because PKD-2 is not properly localized in the primary cilia. We have identified multiple phenotypes associated with the cilia defects caused by the mutation in the *cil-5* gene, including altered cilia structure, defects in behaviors such as chemotaxis, and changes in ciliary localization of other receptor proteins. We also present progress on identifying the molecular nature of the *cil-5* gene.

Greg John Fischer (12)

Faculty Mentor/Collaborators: **Julie A. Anderson** and **Daniel P. Herman**

Elucidating the Role of MBP1 in the Pathogenesis of Candida albicans

The yeast species *Candida albicans* is the most commonly-isolated yeast in human disease. Systemic infections of *C. albicans* have emerged as important causes of mortality in premature infants and in the immunocompromised, with the number of cases on the rise. To infect host tissue, the usual unicellular form of *C. albicans* switches into an invasive, multicellular filamentous form. This morphogenesis or conversion to the filamentous state has been shown to contribute significantly to *C. albicans*' pathogenicity. We have been investigating the role of the *MBP1* gene in this process. The *MBP1* homolog in the nonpathogenic yeast *Saccharomyces cerevisiae* has been well studied and plays a role in the G1-S transition within the cell cycle. To further our understanding of the function of *MBP1* in *C. albicans*, we are expressing *C. albicans*' *MBP1* within a *S. cerevisiae* *MBP1* knockout strain to assess whether the *MBP1* protein carries out similar functions in both organisms. Experimental results will help elucidate the role *MBP1* plays in morphogenesis, which could lead to novel therapies for these types of infections.

Chad Michael Glisch (34)

Faculty Mentor/Collaborator: **Daniel P. Herman**

Verification of Methicillin-Resistant Staphylococcus aureus in Ecuador Hospital and Community Samplings by Use of Polymerase Chain Reaction

There are very few published studies about the prevalence of Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Ecuador. Nasal swabs collected in both rural communities and hospitals in the Loja province were brought back to the University of Wisconsin-Eau Claire to be analyzed for MRSA. Nasal swabs were cultured on media containing oxacillin (a stable derivative of methicillin) in order to identify suspected MRSA samples. In order to confirm that these samples were *Staphylococcus aureus* and were in fact resistant to methicillin, DNA was isolated and polymerase chain reaction (PCR) was used to detect specific genes found only in *Staphylococcus aureus* and MRSA. FemB primers were used to identify samples as *Staphylococcus aureus*, while Meca primers were used to identify strains of *Staphylococcus aureus* that are methicillin-resistant. 16s rRNA primers were used to confirm that isolates belonged to the genus *Staphylococcus*. PCR results confirmed that samples which grew on oxacillin media contained the Meca gene while samples that did not grow do not contain the Meca gene and are not MRSA strains. The results of studying MRSA prevalence have significant implications for public health policy and procedure in Ecuadorian hospitals and communities.

Bryan Christopher Gontarek (108)

Faculty Mentor/Collaborator: **Wilson A. Taylor**

Comparison of Lower Paleozoic Era Fossils to Extant Algal Analogs

The earliest evolutionary history of extant land plants is ambiguous due to sparse remains of sufficient age, and lack of appropriate knowledge of prospective algae that may have produced these remains. This project was conducted to ascertain the identity of half billion year old fossils from the lower Paleozoic Era via comparison to extant algal analogs. Extant desiccation-resistant algae were identified by screening specimens with light microscopy and searching the literature. The identified resistant algae were then subjected to simulated fossilization (acetolysis – boiling in a solution of 1 part concentrated sulfuric acid and 9 parts acetic anhydride) and the surviving residue embedded in epoxy resin. The embedded specimens were sectioned and examined with transmission electron microscopy (TEM). The goal of the project is to identify homologous resistant-walled structures in the fossils and the extant algae. The results of the study will add to the knowledge of the evolutionary history of extant land plants at a point in time before they colonized the land surface in any great number.

Georgeann Carol Kujawa (58)Faculty Mentor/Collaborator: **Lloyd W. Turtinen***TICK CHECK: The Prevalence of Lyme Disease-Causing Ticks in Wisconsin*

Little is known about the prevalence of Lyme disease-infected ticks in Wisconsin. This study was undertaken to detect the presence of Lyme disease-causing bacteria, *Borrelia burgdorferi* (*B. burgdorferi*), in deer ticks (*Ixodes scapularis*). A rapid Real Time PCR assay was developed and used to amplify a portion of the *recA* gene from *B. burgdorferi* DNA found in deer ticks in Wisconsin from 2009-2010. A tick was presumed to harbor *B. burgdorferi* bacteria if the amplified DNA was a 222 base pair product and had a melting temperature of 82°C. Currently, 19.6% of the 58 deer ticks tested so far presumably harbored the *B. burgdorferi* bacteria. Ticks testing positive for bacteria were found in Eau Claire, Granton, Fall Creek, and Drummond, Wisconsin. This type of assay could potentially assist physicians in the diagnosis and treatment of Lyme disease cases.

Lauren Mary Lamers (39)Faculty Mentor/Collaborator: **Daniel P. Herman***Prevalence of Methicillin-Resistant Staphylococcus aureus in Loja Province, Ecuador*

Methicillin-resistant *Staphylococcus aureus* (MRSA) is an antibiotic-resistant strain of the bacterium *Staphylococcus aureus*. MRSA poses serious health threats both in the United States and globally, accounting for a significant portion of hospital-acquired infections and resulting in thousands of deaths annually. Little published data exists on the prevalence of MRSA in Ecuador, however, and its health impact in Ecuador is therefore poorly understood. In this study, nasal swabs were obtained from individuals in rural communities and from patients and staff at a regional hospital in Loja Province, Ecuador. Health surveys were also conducted to assess risk factors for MRSA colonization. Samples were inoculated onto mannitol salt agar (MSA), and Gram stains, catalase, and coagulase tests were conducted to identify isolates of *S. aureus*. Samples were also inoculated onto MSA containing oxacillin to identify potential MRSA specimens. Preliminary results indicate that 106 (37.9%) of the 280 community samples were positive for *S. aureus*, and 9 of these (3.2%) were MRSA positive. Of the 255 hospital samples, 158 (62.0%) were *S. aureus* positive, and 41 of these (16.1%) were MRSA positive. The results indicate that MRSA is a potentially serious health threat in Loja Province that warrants further investigation.

Megan Marie Lindner (13)Faculty Mentor/Collaborator: **Daniel P. Herman***The Role of the Ypd1 Protein in Morphogenesis in Candida albicans*

Candida albicans is a pathogenic yeast that is able to undergo morphogenesis, transforming from yeast to hyphal form. The dimorphism allows *C. albicans* to cause systemic infection. Morphogenesis can be triggered by limited nitrogen, neutral pH, presence of serum, and lack of a fermentable carbon source. These environmental cues are transmitted by several different signaling pathways to the nucleus. The Ypd-1 protein is present in both the yeast and hyphal morphologies and could be an intermediate used in signaling pathways that promote morphogenesis. Disrupting the gene and then phenotypic characterization will show whether the Ypd-1 protein is actually an intermediate in these signal transduction pathways. The *ura-blaster* technique was used to disrupt the *YPD-1* gene. Then gene disruption was confirmed by Southern blot analysis. We have created a *C. albicans YPD-1* heterozygote strain and are currently working on creating a null mutant. The strains will then be examined for defects in morphogenesis using phenotypic characterization media.

Christopher Nolan Maierhofer, Matthew Jerome Moris, and Kaleigh Spickerman (60)Faculty Mentor/Collaborator: **Todd A. Wellnitz***Exploring the Effects of Biological Filters on Lichen Populations in the Boundary Waters Canoe Area Wilderness*

This project examined the effects of biological filters, e.g. the abrasive action of wind and waves, on lichen populations in the Boundary Waters Canoe Area Wilderness (BWCAW). Data were collected from exposed rock faces in the BWCAW over one week in the fall of 2010. Measurements of lichen species distribution and abundance were taken at three different stress levels, i.e. distances from the water, at 21 distinct sites. Overall, distance from water acted as a biological filter, determining what types of species can inhabit certain areas. Species richness significantly increased with distance from water, and lichen populations near the water had significantly less similar species compositions than those at medium and far distances.

Joshua David McHugh (14)

Faculty Mentor/Collaborator: **Daniel P. Herman**

Detecting Proteins that Interact with the Mbp1 Protein Using Yeast Two-Hybrid Analysis

Morphogenesis is the process by which *Candida albicans* changes from the yeast to filamentous morphology and has been demonstrated to be essential in the organisms' ability to cause systemic infections. Previous research has shown that Mbp1 is required for morphogenesis under nitrogen limiting conditions. Yeast two-hybrid analysis is being used to determine if the Mbp1 protein interacts with itself, the Swi6 protein, and/or the Skn7 protein during the regulation of morphogenesis. Yeast two-hybrid analysis utilizes a process by which a transcription factor binding domain is attached to the Mbp1 protein and the activation domain is attached to either the Mbp1, Swi6, or Skn7 proteins. If the Mbp1 protein interacts with itself, Swi6, and/or Skn7, the transcription factor domains are brought together and transcription of a reporter gene ensues. Strains of *Saccharomyces cerevisiae* are being created that carry genetic constructs so that they express one of the fusion proteins described above. PCR analysis will be used to ensure the *S. cerevisiae* strains carry the correct genetic construct. The strains will then be mated to create a diploid strain that can then be tested to determine if the reporter gene is expressed, which indicates the proteins interact.

Megan Elizabeth Meller, Caitlin Rose Borchardt, and Morgan Marie Laffey (84)

Faculty Mentor/Collaborator: **David Lonzarich**

Histological Analysis of ASC Density in Relation to Creek Chub Surface Area and Parasite Load

It is generally thought that alarm substance cells (ASC) in fish epidermis evolved as a means of reducing predation risks via the release of a chemical substance these cells hold. It has been recently hypothesized however, that the evolution and presence of ASC in fish may have more of a relationship with parasitism than predation. The goal of our study is to determine if an increase in infestation of the black-spot parasite (*Neascus periformes*) in creek chub (*Semotilus atromaculatus*) also correlates with an increase in the density of ASC. Additionally, we want to determine whether or not there is a correlation between epidermal surface area and ASC density. To our knowledge, this is the first study to field test this recently developed parasitism hypothesis concerning the evolutionary origins of ASC in freshwater fish. We have collected 103 fish from seven regional streams which were histologically prepared (it takes two weeks to generate ten slides) and then subjected to data analysis. Preliminary results show a potential relationship between surface area (body size) and ASC density among the sample size.

Jordan Teal Montpetit (36)

Faculty Mentor/Collaborator: **Derek J. Gingerich**

Investigating the Function of LRB-Interacting Proteins in Arabidopsis thaliana

E3 ubiquitin ligases are cellular protein complexes which are important in regulating signaling pathways. These ligases accomplish this by attaching a protein called Ubiquitin to target proteins, effectively designating the targets for destruction. LRB1 and LRB2 are BTB (Bric-a-Brac, Tramtrack, and Broad Complex) proteins found in the model dicotyledonous plant *Arabidopsis thaliana*. BTB proteins are known to act as E3 ligase target adapters (by directly binding to the protein to be ubiquitinated). We have shown that LRB1 and LRB2 play a major role in red light signaling responses in Arabidopsis. What LRB1 and LRB2 do in this pathway, however, is not clear. To learn more about LRB1/2 function, yeast two-hybrid screens were conducted to identify LRB-interacting proteins, which may also have roles in light signaling. To determine this, we have been identifying *Arabidopsis* T-DNA insertion mutants with disruption in the genes that encode these LRB-interacting proteins. We grew seedlings with potential T-DNA disruptions and screened for homozygous mutants by PCR and agarose gel electrophoresis analysis. Plants that were found to be homozygous mutants were grown and seed was harvested for future light experiments. We will present data from our screening process and analysis of light responses in these mutants.

Rachelle Lynn Peterson and Sara Schiedler (35)

Faculty Mentor/Collaborator: **Sasha A. Showsh**

Comparison of Sanitizing Efficacy of the Ionator and Active Ion to Water

We tested the efficacy of the Ionator and Active Ion, eco-friendly multipurpose cleaners that, according to the manufacturer, kill 99% of bacteria (MRSA) and viruses (H1N1). According to the manufacturers, the Ionator takes regular tap water and converts it to ionized water that contains a low level electric field, which is responsible for killing bacteria. When we compared the chemical properties of tap water and distilled water versus water coming out of the Ionator we found no difference in pH, conductivity (charged particles), or concentration of hydrogen peroxide between them. We also tested the ability of the Ionator in comparison to disinfectants, tap water, and distilled water to kill bacteria such as *Escherichia coli*

and *Staphylococcus aureus*. From these tests, we determined that the Ionator and Active Ion are just as effective as regular tap water in their ability to kill or inhibit bacteria. There was no chemical or biological evidence to support the claims that the Ionator kills bacteria more effectively than tap water alone. Based on our results we conclude that the Ionator is an ineffective and expensive alternative to traditional methods of sanitization.

Jennifer Nichole Pomeroy, Zachary Robert Snobl, and Ong Xiong (61)

Faculty Mentor/Collaborators: **Eric C. Merten** and **Todd A. Wellnitz**

Phenology of Aquatic Insect Emergence in a Northern Minnesota Stream

Emerging insects of stream habitat play important roles in aquatic and terrestrial ecosystems. As such it is imperative we understand the timing and cyclic pattern of the insect emergence so as to better avoid disturbing the ecosystem with human interaction. The purpose of this study was to better understand the phenology of aquatic insects in a northern Minnesota stream. We sought to determine which taxa had patterns of emergence that were seasonal (i.e., those whose emergence peaks were during a relatively short period) and which were non-seasonal (i.e., those whose emergence is relatively even throughout the open-water months). Fifty floating, 0.5m² tents were stationed at random locations in the stream within a forty meter stretch to trap emerging insects. Emerged insects from each trap were then identified and compared against other collection periods to determine whether taxa have seasonal or non-seasonal phenology. Examples of seasonal emergence included *Perlodidae* stoneflies (emerging exclusively in May) and *Leptoceridae* caddisflies (emerging exclusively in July). By contrast, *Chironomidae* showed a non-seasonal pattern, with fairly consistent emergence across May, July, and August. These determinations of aquatic insect phenology should be considered when resource managers are planning management and conservation efforts.

Kathryn Joanne Prince, Christopher Nolan Maierhofer, Brian David Pauley, Andrew Charles Ludvik, and Katrina Cleghorn Jacobs (83)

Faculty Mentor/Collaborator: **Deborah Ann Freund**

The Effects of Agrochemicals on Biodiversity in Cambodian Rice Paddies

The harvest of rice is central not only to the Cambodian economy, but to the country's very culture. Cambodian farmers harvest more than just rice; they also make use of the diversity in the rice paddy ecosystem by harvesting and consuming the fauna that live within their paddies. The purpose of this study was to determine the effects of fertilizer and agrochemical use on the net biodiversity and species richness found within Cambodia's lowland-irrigated rice paddies. We mapped the area and water coverage of individual rice paddies, and measured the species richness and biodiversity of amphibians and arthropods. We found that species richness was significantly affected by the variety of rice grown, and both species richness and biodiversity were significantly affected by the percent water coverage of paddies. We found no significant difference in species richness or biodiversity for agrochemical-treated or organic paddies. This may indicate that the close proximity of rice paddies undergoing treatments led to cross-contamination.

Kathryn Joanne Prince, Christopher Nolan Maierhofer, Matthew Jerome Moris, Emilie Martha Carlson, and Andrew Charles Ludvik (82)

Faculty Mentor/Collaborator: **Deborah Ann Freund**

Wildlife Conservation in a Third-World Country: Problems of Implementation in Kulen Prum Tep, Cambodia

Cambodia is a country in Southeast Asia that is defined by its diverse landscapes and fauna as much as it is by its people. In an effort to protect its diminishing forests and wildlife, and in response to international pressures, the Cambodian government set up the Kulen Prum Tep Wildlife Sanctuary in the northern Cambodian province of Oddar Meanchey in 1993. Unfortunately, due to a lack of regulation and a corrupt political system, the protected area commonly experiences prohibited activities like logging, slash-and burn agriculture, illegal settlements, and poaching. Frontier Network, a British conservation organization and NGO (non-governmental organization), undertook a preliminary study of the area to document the species living in the sanctuary, especially those that are endangered or of special concern. While working with Frontier, we were able to document many of the illegal activities in Kulen Prum Tep and, by living in close proximity to park rangers, illegal residents, and many of the animal species in the area, we were able to see how difficult it is to implement real conservation practices in a country where many people go without the basic necessities of life.

Sophia Ana Ruff-Berganza (86)Faculty Mentor/Collaborator: **Daniel S. Janik***Methamphetamine-Induced Circadian Clock Resetting in Mice*

Mice are nocturnal animals that exhibit predictable activity patterns controlled by their internal (circadian) clock. Previous studies have shown that a mouse's circadian clock can be reset to an earlier time through the administration of methamphetamine, a drug that stimulates the release of the neurotransmitters norepinephrine and dopamine. We wanted to determine whether methamphetamine-induced clock resetting was due to the drug's affect on norepinephrine or dopamine levels. Therefore we administered methamphetamine (40 mg/kg) in conjunction with propranolol (20 mg/kg), a drug that blocks norepinephrine receptors, or clozapine (5 mg/kg), a drug that blocks dopamine receptors. Our data suggest that methamphetamine affects clock resetting through both the dopamine and norepinephrine pathways. We now plan to selectively stimulate and block norepinephrine pathways to further clarify the role this pathway has in clock resetting.

Phillip Paul Rynish (85)Faculty Mentor/Collaborator: **Chris H. Floyd***How Do Characteristics of Aspen Stands and the Surrounding Landscape Influence the Prevalence of Aspen Heartrot Fungus?*

One of the most important keystone species is the red-naped sapsucker, which nests in aspen woodlands of western North America. This woodpecker excavates a new nest cavity every year, providing future nesting habitat for many other cavity-nesting species. The sapsuckers nest almost exclusively in aspens infected with aspen heartrot fungus, which softens the heartwood, thus facilitating excavation. Surprisingly little is known about the ecology of the fungus. Our objective was to determine how characteristics of aspen stands and surrounding vegetation influence the fungus' prevalence (proportion of trees infected with the fungus). In June–July 2010, we measured multiple variables within 48 randomly-selected plots (0.25-ha) in the Colorado Rocky Mountains. Our study attempted to account for the effects of elevation and willows. We therefore sampled plots within two elevation belts, higher (3000–3050 m) and lower (2850–2900 m); within each belt we selected 12 plots with high and 12 plots with low amounts of willow cover within 300 m. Contrary to results of previous studies we found no effects of stand maturity on fungal prevalence. At high elevation sites, fungal prevalence was significantly greater in plots with high amounts of willow, compared to plots with low amounts.

Sara Schiedler and Rachelle Lynn Peterson (38)Faculty Mentor/Collaborator: **Sasha A. Showsh***Surveying UWEC Campus for the Presence of Methicillin Resistant Staphylococcus aureus*

Methicillin-resistant *Staphylococcus aureus* (MRSA) was first discovered in 1961 shortly after the introduction of the antibiotic methicillin. In 2005 the CDC reported 94,000 cases of MRSA infections and of those infections 19,000 resulted in deaths. Approximately 85% of the MRSA cases were associated with hospitals (hospital acquired MRSA) and the remaining 15% were from the community (community acquired MRSA). We surveyed the UW-Eau Claire campus for the presence of MRSA. The results indicate that of all the bacteria isolated, the percentage of *S. aureus* isolated from the student athlete equipment (gymnastics beams) was up to 43%. Of those *S. aureus* isolates we tentatively confirmed 3 (1.8%) MRSA isolates. Similarly, of all the bacterial isolates from general student athletics we isolated up to 16% *S. aureus* from which we tentatively confirmed 3 additional MRSA isolates (from elliptical and treadmill). In the general student population areas (ATM keypads, water fountains, etc.) up to 36% of the isolates were *S. aureus*, with all of the strains testing negative for methicillin resistance. We are currently in the process of gathering more samples and potential MRSA isolates as well as confirming the identities of isolates by polymerase chain reaction (PCR).

Leah Katherine Schumerth and Michael Shane Farrell (37)Faculty Mentor/Collaborator: **Winnifred M. Bryant***Generation of Transcription Factor Constructs for Mammalian Transfection*

The overall goal of this project was to generate high quality gene (DNA) constructs for estrogen receptors alpha and beta, and the nuclear proteins Egr-1, Sp1. This required that gene sequences of interest be inserted into plasmids (circular DNA in bacteria), cultured on a large scale, then isolated and purified. We then assessed the quality and purity of our constructs by measuring the concentration of our samples and determining the presence of contaminating agents. DNA encodes proteins, which are made via the processes of transcription (copying the DNA into RNA form) and translation (converting the RNA to protein). The functionality of our samples was determined by introducing the constructs into mammalian cells after chemical disruption of the plasma membrane (transfection). Gene activation in cells was measured via reporter assays.

DNA-related factors influencing transfection efficiency include: form (DNA should be in circular form and tightly coiled) and purity. Current results: highly purified, milligram quantities of each gene were generated. The functional aspects of these genes are currently being assessed.

Kaitlin Heather Snider (87)

Faculty Mentor/Collaborator: **Daniel S. Janik**

The Effect of Varying Dim Light on Non-Photic Clock Shifts

Research into the underlying mechanisms controlling circadian rhythms is essential to progress in understanding the many areas of human circadian pathology. Previous studies in the Janik lab have shown that exposing mice to a dim light at night (as compared to darkness) increases the size of a non-photic clock shift. In this study, we examined how varying the dim light affected the clock shift. We examined the effects of varying the intensity or duration of the dim light, and we also examined a possible after-effect of dim light that may affect future clock shifts of mice previously exposed to dim light. Intensity varied between 0.01 lux and 1 lux; duration varied from 40 to 10 days. In the test for after-effects, we returned mice to normal conditions for 60, 40, or 20 days after dim light at night for 17 days and a 3-day clock shift. We also tested the effects of previous dim light only without a clock shift, and a previous clock shift with no exposure to dim light. We found that a dim light at night had a significant effect on clock shifts and that this effect interacts with mouse wheel running activity.

Christopher Michael Wojan, Matthew James Haak, and Joseph J. Weirich (59)

Faculty Mentor/Collaborator: **Todd A. Wellnitz**

Assemblage of Lichen Communities on Rocky Shorelines of the North Woods

Two classic ecological models exist that attempt to explain how communities assemble: Gleason's Individualistic model and Clements' Organismic model. The former suggests that populations within a community distribute according to their physiological needs. The latter suggests that competition drives community formation, leading to distinct boundaries between species groups. Our objective was to test these models by examining assemblages of lichen communities along rocky shorelines in the Boundary Waters Canoe Area Wilderness (BWCAW). Rocky lakeshores in the BWCAW were sampled. At each site, data was recorded at one meter increments along a 5-meter transect starting at the shoreline. Physical variables (slope, canopy cover, aspect) as well as the relative abundance of each species present were recorded at each increment. Relative abundance was determined by recording the number of squares occupied by each lichen species within a 30 cm² quadrat with a 6x6 meter overlay. A multi-dimensional analysis revealed that the observed lichen communities do not form discrete species groups. Furthermore, slope and distance from shoreline were found to influence species richness on rocky shorelines. These results suggest that lichen communities in the BWCAW assemble according to their own physiological needs, or in accordance to Gleason's Individualistic Model.

Ong Xiong, Zachary Robert Snobl, Jennifer Nichole Pomeroy, Christopher Michael Wojan, and Stephanie Drew Vinetas (63)

Faculty Mentor/Collaborators: **Eric C. Merten** and **Todd A. Wellnitz**

Reach-Scale Effects of a Stream Logjam on Benthic Macroinvertebrate Diversity, Richness, Evenness, and Feeding Guilds

Logjams are accumulations of fallen and drifting wood that alter the flow of water and provide diverse benefits to streams. They create habitat complexity, low-velocity refugia for benthic organisms, and fixed surfaces for colonization. However, it is poorly understood how logjams affect the composition of the benthic invertebrate community. To gain insight on the ability of logjams to accommodate aquatic insects, we examined the richness and proportion of feeding groups and genera in the benthic invertebrate community as a function of distance from a spanning logjam. The study was conducted in summer of 2010 at Cabin Creek in the Superior National Forest. Surber samples were collected from 50 sample sites randomly assigned within a 40-meter stretch centered at the logjam. Data from the first sampling period (late May) show that areas upstream of the logjam exhibit less richness, diversity, and abundance than areas downstream. The number of feeding groups appears to increase downstream of the logjam, while evenness increases upstream. Herbivores were well represented immediately about and above the logjam, while detritivores were found in greater numbers away from the logjam. Our findings suggest that the habitat complexity downstream from logjams accommodates a greater number and variety of species.

PHYSICAL SCIENCE

PHYSICS & ASTRONOMY

Nicholas Riley Brewer and Thomas David Nevins (247)

Faculty Mentor/Collaborator: **Thomas E. Lockhart**

Dynamics of Antibubbles

When a jet of canola oil is incident on a bath of the same oil at an appropriate range of angles and speeds, it is possible to form antibubbles below the surface of the bath. Preliminary discussion will include what an antibubble is and how it is formed. A high speed camera was used to obtain data about the air film thickness and the dynamics of antibubble formation. Analysis was carried out using Excel and the image processing program ImageJ.

Larry Chan (232)

Faculty Mentor/Collaborator: **Nathan A. Miller**

Imaging the Sun in Hydrogen-Alpha Light

The Sun's visible surface is continually changing. Understanding the complex interactions of solar plasma and magnetic fields near the Sun's surface requires constant monitoring and recording. Knowledge of events on the Sun's surface is important because of their effects on "space weather," the charged-particle environment of the earth which causes aurorae and can interfere with some forms of radio communications. We have assembled a system to image that surface using a solar telescope and an SLR camera in order to record the development of features on the Sun's surface and document how those features change through time. Hydrogen-alpha light is utilized for greatest surface contrast. Maintaining consistent focus was one of the major challenges of the project. By using a range of exposure times, both the bright solar surface and dimmer features such as filaments were observed. It was necessary to image the solar surface in portions and then combine images for a full-face photo of the sun. The resulting images clearly show the main solar features: prominences, sunspots, and granulation. Working with the physics machine shop allowed the addition of a Calcium-K telescope, however further work will be required to fully utilize that wavelength.

Cole John Cook and Geoffrey Stephen Root (250)

Faculty Mentor/Collaborators: **Lyle A. Ford and George J. Stecher**

Troubleshooting the 24-Inch Telescope and Photometric System at Hobbs Observatory

Asteroids are remnants from the formation of the Solar System. By studying the properties of asteroids, insights about this period of time and the Solar System itself can be gained. In order to study the rotational properties of asteroids, we make photometric observations using the 24-inch telescope at Hobbs Observatory. After recent modifications to this telescope, we observed inconsistencies within our photometric data. It appeared that the pixel sensitivity of our support images differed from that of our images of the target asteroid. Support images are used to correct for varying pixel sensitivity from the images. The brightness of our target asteroids will not be accurately measured if the pixel sensitivity is not properly accounted for. In this poster, we examine the possible causes of these inconsistencies such as improper collimation and light leaks from new fan ports.

Kurt Bradley Flesch (254)

Faculty Mentor/Collaborator: **Scott B. Whitfield**

Experimental Analysis of Guitar String Vibrations

In this project we studied the standing waves of a vibrating guitar string. The guitar string is a great physical example of how the superposition of many travelling waves forms standing waves, which can be described by a Fourier series. In order to analyze a guitar string tuned to 82 Hz, we took a video of it being plucked with a camera operating at 1200 frames per second. Then we used a computer program called ImageJ to convert the string images into sets of xy pairs and used Maple to generate an ideal model of the string. We plucked the string at different points along it to explore the resulting wave forms. Overall, there was significant agreement between the data and the model. Deviations did occur, however, where there were sharp angles in the model that were physically impossible for the string to form. We also studied the effects that the initial amplitude of the plucked string had on the amount of deviation from the model.

Katherine Ann Kuehn (248)Faculty Mentor/Collaborator: **Kim W. Pierson***Autonomous Robot Navigation using LabVIEW Vision*

This project is directed toward developing a robot that can autonomously navigate to a predetermined position selected by a person. New hardware and software recently made available via a UWEC Lab Modernization grant and a donation from an international company (National Instruments) will be used to construct the robot and develop its software control program. The robot will be equipped with vision and distance detection by means of a camera, an ultrasonic range finder, and other sensors. The data from the sensors and camera will be synchronized so that an object will be associated with its distance from the robot, allowing the robot to map its surroundings. An algorithm for obstacle-avoiding navigation will be written using National Instrument's LabVIEW programming language. The goal is to write an algorithm that will allow the robot to make decisions rapidly and get to the target location as quick as possible.

Katherine Ann Kuehn (249)Faculty Mentor/Collaborator: **Matthew M. Evans** and Bethanie J. H. Stadler, University of Minnesota-Twin Cities*Galfenol Nanowires for Touch Sensors and Electroplated Thin Films*

The goal of this project, done at the University of Minnesota, was to electroplate and characterize thin films of metal alloys that have not been previously studied. Galfenol ($\text{Fe}_{1-x}\text{Ga}_x$) was found to be highly magnetostrictive, so other materials also containing Gallium may show similar characteristics. All of the desired thin films were able to be electroplated, but the compositions of the films were not ideal. The biggest obstacle encountered was oxides in the films. To minimize this, the molarities of the initial electro synthesis solution must be optimized. Once perfected, these alloys will be used to grow nanowires to develop touch sensors.

Justin Allen Vasel, Andrew Ralph Bartlein, and Nicholas Riley Brewer (234)Faculty Mentor/Collaborator: **George J. Stecher***Achieving a Closed Orbit Around Neptune Through Aerobraking*

Placing a spacecraft in orbit around a planet can be a very expensive task. Aerobraking--using atmospheric drag to slow a spacecraft--can be used to reduce these costs by minimizing the amount of fuel needed to achieve orbit. We developed a numerical simulation to determine the most efficient way to use aerobraking to place a spacecraft in a circular orbit around Neptune.

Justin Allen Vasel and Gregory James McGill (233)Faculty Mentor/Collaborator: **Nathan A. Miller***Determining the Radial Location of the X-ray Emitting Zones of Spica*

Although it is well known that O and B type stars are X-ray emitters, the mechanism driving this process is not entirely understood. Knowing the radial location of the X-ray emission is key to understanding which models of X-ray emission are correct. Emission line ratios of highly ionized, Helium-like ions can be used as a diagnostic tool for determining these radial positions, but a correct analysis relies on a complete understanding of the far-ultraviolet photospheric flux from these stars. In this project, we analyzed several photospheric models to determine which should be used, and reconciled discrepancies within the model with observational data of the B type star, Spica.

Vang Yang and Bee Vang (255)Faculty Mentor/Collaborator: **Kim W. Pierson***Regenerative Breaking DC Motor Controller*

This project is directed toward developing an electronic system that can be used to recycle the energy lost during braking of a motor vehicle. Most regenerative systems store the energy to be recycled in batteries. Our direction of research involves using a new electric energy storage system called an "ultra-capacitor" rather than a battery. Ultra-capacitors have many advantages over batteries and our circuit is unique in the way that we reconfigure the ultra-capacitor during charging and discharging cycles. The method of optimizing the regenerative braking system consisted of adding capacitors in different configurations and investigating various circuit parameters to determine which configuration performs the best. A computerized data acquisition and control system was developed to perform the tests and analyze the data. Results indicate

that a much simpler design from what was originally proposed is the most efficient configuration so far. Further tests to confirm efficiency gains are being conducted. The system is also being computer modeled with the help of a local electrical engineer.

SOCIAL SCIENCES

ACCOUNTING & FINANCE

Adam Thomas Montgomery (216)

Faculty Mentor/Collaborators: **Ling Liu** and **Nan Hu**

Online Review Manipulation

The goal of this project is to assess the awareness and ability to identify manipulated online reviews. The impact of fraudulent online reviews on influencing consumers' purchase decision is analogue to the impact of earnings management on investors' trading behavior. This project was completed with secondary data as a crutch to aid in the creation of an open/closed-ended survey. The pilot survey indicates that regardless of the wide evidences of the existence of online review fraud, awareness of such a manipulation is not vast, and that most people do not believe it to be a very large problem. The results from the main survey should reinforce these possible outcomes with an added section on whether different product classes are more susceptible to being manipulated.

AMERICAN INDIAN STUDIES

Melissa Keim, Chippewa Valley Technical College (93)

Faculty Mentor/Collaborator: **Wendy Makoons Geniusz** and Mark Barker, Chippewa Valley Technical College

The Miami of Indiana's Fight for Federal Recognition

Currently, there are two separate tribal Miami entities in the United States: the federally recognized Miami of Oklahoma (Western Miami) and the non-federally recognized Miami of Indiana (Eastern Miami). Without federal recognition, the Miami of Indiana continue to face economic and social burdens because they are not eligible for federal benefits. This research project focuses on the federal recognition issue from a general perspective with an independent study of the Miami Tribe of Indiana, hereafter "MNI." The MNI have not been federally recognized since 1897 and currently are fighting to be federally recognized by the United States government. This project is presented from a legal and historical perspective. The researcher is using various resources including: legal cases from Westlaw, Treaties, the Code of Federal Regulations, Government reports, scholarly articles and historical documents. This project encompasses three areas of law; Federal Indian, Constitutional and International Policy law with a broader focus on Federal Indian law.

COMMUNICATION AND JOURNALISM

Elizabeth Naomi Dohms, Alex Arnold Luedtke, and Scott Adam Morfitt (260)

Faculty Mentor/Collaborators: **Jan M. Larson** and **Martha J. Fay**

Moldova Media Credibility and Family Communication Patterns

In a study of adults and children in Moldova, a former Soviet Republic, media use, perceptions of media credibility, and family communication patterns were examined using a combination of observational and interview analysis and a questionnaire. In conjunction with the Peace Corps, a university research team established a student-run radio station in the village of Giurgiurlesti and gathered related perceptual and behavioral data. Based on interview and observational data, Moldovan adults and children reflect distrust of government influence on the media and a lack of trust in current media to escape bias, but they reflect belief in the role of journalism in society and hope for the future. Using the Revised Family Communication Patterns scale (Fitzpatrick & Ritchie, 1994), adults rated their family communication resulting in a conformity (values deference to parental authority) or conversation (values free and open expression of ideas) orientation. Conformity orientation was positively associated with believability of state-run radio ($r = .51, p < .05$) and negatively associated with believability of independent print news ($r = -0.49, p < .05$). Conversation orientation was positively associated with higher frequency of reading state-run newspapers ($r = .43, p < .05$).

Alexandra Leann Finley, Emily Jo Amundson, Stephanie Campbell Sweeney, Natalie Grace George, Amanda Rae Michalski, and Stefanie Marie Anderson (235)

Faculty Mentor/Collaborator: **Martha J. Fay**

Racial Diversity in the Workplace

The U.S. Census Bureau has predicted that the number of racial minorities will increase 19% by 2050, which makes workplace diversity a central challenge for businesses in the 21st century (Hostager & Meuse, 2008). Diversity in the workplace has been shown to increase creativity, innovation, and performance (Williams & O'Reilly, 1998). However, these benefits are only enjoyed when employees exhibit intercultural communication competence (Holladay, 2008). While diversity awareness is generally perceived to be beneficial, recent studies have shown that an information overload can cause employees to be apathetic toward diversity (Kalev, Dobbin, & Kelly, 2006). However, little is known about how diversity-related messages are received with regard to key recipient communication variables. This study examines diversity-related messages to determine possible links between these messages and the communication variables of apprehension and competence. Participants from a variety of organizations responded to a survey asking about type and frequency of diversity messages received by completing the communication apprehension survey (Ayres, Booth-Butterfield, McCroskey, & Spielberger, 1986) and the intercultural communication competence scale (Amundson, Anderson, Finley, George, Michalski, & Sweeney, 2011). Results showed that organizations should consider communicator variables when designing diversity-related messages.

Amy Jo Fredman and Amy Lynn Bainbridge (211)

Faculty Mentor/Collaborators: **Nicole Schultz and Mary F. Hoffman**

The Unheard Voices: Communication of LGBTQ Concerns in Wisconsin Classrooms

Current events demonstrate a critical need to address Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning (LGBTQ) topics in schools. Findings from the 2009 GLSEN (Gay Lesbian and Straight Education Network) national survey on school climate for LGBTQ students show that 84.6% of LGBTQ students have reported experiencing verbal harassment and 61.1% reported feeling unsafe in their schools because of responses to their sexual orientation (Kosciw, Greytak, Diaz, and Bartkiewicz, 2010). Although other studies have explored harassment and bullying of LGBTQ students (Nichols, 1999; Gross, 2005; Grace & Wells, 2009), this study seeks to explore how communication about LGBTQ issues in schools influences and is influenced by curriculum, school and district policy, classroom climate, and the presence of heteronormativity in the classroom. We employed a grounded theory approach to analyze interview data from 16 high school and middle school educators in the state of Wisconsin. Tenets of queer theory (Sullivan, 2003) and hegemony (Lull, 1995) guided our research. Findings reveal the role communication plays in Wisconsin educators' experiences incorporating LGBTQ concerns in schools and classrooms.

Alicia Rae Gerber, Kallie Jo Sandell, Emily Elizabeth Schreiner, and Katie Vivian Jamison (222)

Faculty Mentor/Collaborator: **Martha J. Fay**

Study Abroad and the Spiral of Silence: Does Encouraging Participation Create Apprehension for Those Who Don't?

Research has shown that study abroad strengthens students' worldviews, reflective thought, and self-confidence (Kitsantas, 2004); accordingly, universities are placing greater emphasis on study abroad. However, little is known about the effect this increased emphasis has on those who do not study abroad. Using spiral of silence theory (Noelle-Neumann, 1974), this study investigates student participation in courses that invite discussion of international experiences to determine whether students who have not studied abroad experience communication apprehension (CA) as compared to those who have studied abroad. College students at a Midwestern university with a heavy emphasis on study abroad responded to an electronic survey about their study abroad experiences and their behaviors in classes where study abroad is discussed, and ranked their communication apprehension using McCroskey's (1982) scale. It is hypothesized that students who have not studied abroad experience CA when discussion of international experiences occurs in class. Results can be used to foster a more collaborative learning environment for both students who have studied abroad and those who have not.

Jessica Deanna Gossett, Amy Sue Pepper, Laura Candace Soderlund, and Melissa Marie Dettwiler (221)

Faculty Mentor/Collaborator: **Martha J. Fay**

Facebook and Career Motivation

While the use of the social network Facebook has continued to increase among college students (Nesbitt & Marriot, 2007), studies show that this group may not be aware of the influence their social networking profile content can have on potential

employers (Peluchette & Karl, 2010). However, level of motivation with regard to finding a job has not been studied as it may relate to Facebook content choices among college students. College students responded to an online survey that included questions on Facebook use, content, perceptions of privacy of postings, and career motivation using the Career Motivation Scale (Rubin, Palmgreen and Sypher, 1994). Results show a link between motivation to find a job among college students and their Facebook content, which may be useful to both job applicants and employers.

Chelsea Rebecca Jacobson, Nessa Severson, Pierce Koch, Joseph Michael Tierney, and Anne Moser (262)

Faculty Mentor/Collaborator: **Judy Rene Sims**

An Examination of Culture Shock Experiences and Difficulties in Cultural Adaptation: Rich Description from Sojourners, Immigrants, and Long-Term Refugees

This research is part of a larger study, “Culture Talk,” conducted in 2008-2009 by UW-Eau Claire students Joseph Tierney, Nessa Severson, Anne Moser, and Pierce Koch. Culture shock has been defined as a feeling of disorientation or discomfort due to the lack of familiar cues in one’s environment (Martin and Nakayama, 2010). The purpose of this research study is to examine and understand the culture shock experiences and struggles of cultural adaptation encountered by migrants (sojourners, immigrants, and long-term refugees) who have attempted to adjust to U.S. American culture. Such knowledge can heighten the cultural intelligence of migrants, as well as members of the host culture, resulting in the increased effectiveness of intercultural interactions. Survey methodology was used to gather self-report data through interviews with 20 participants from 16 cultures. The sample - non-random, convenience, and purposive – includes: (1) international students and scholars studying at the UW-Eau Claire from Austria, Bolivia, China, Ethiopia, Kuwait, Malaysia, Moldova, Nepal, South Korea, Spain, Tunisia, and Ukraine and (2) community members that emigrated from other cultures (Kenya, Iran, Laos, and Portugal). The results reveal 10 different categories of culture shock experiences, which appear to be influenced and stimulated by, for example, direct challenges to the participants’ learned cultural values, etiquette, and verbal and nonverbal communication behaviors. The results reveal a variety of culture shock experiences in rich description.

Catherine Ann Karst and Lora Kay Steinmetz (245)

Faculty Mentor/Collaborator: **Won Yong Jang**

Effects of Alcohol Advertising Exposure on Intentions to Drink or Drinking Among Caucasian and Hmong College Students

This study tests whether cultural background is a factor in moderating the impact of alcohol advertising on intentions of college age students to drink as well as their actual self-reported consumption. To explore the role of culture in these relationships, this study compares alcohol advertising effects on Hmong college-age youth with those of Caucasian college students. Furthermore, it explores differences within these two ethnic groups between under-age drinkers and those of legal drinking age. Data was collected through questionnaires in a classroom setting. The results indicated that there was a significant difference between the two ethnic groups with regard to intentions to drink while under the legal drinking age: specifically, Hmong Americans exhibited less intent to drink in adolescence. These findings have implications for how educators go about tailoring anti-drinking campaigns to diverse youth populations.

Catherine Ann Karst, Jeremy Albert Ernst, Kara Ann Pedersen, McKenzie Kristine Scholz, and Sara Marie Gawinski (246)

Faculty Mentor/Collaborator: **Won Yong Jang**

Gender Differences Regarding Text-Messaging Usage

This study focuses on the disparities between males and females regarding their text message usage. Text messaging usage differences between genders is worthy of investigation because it has changed the meaning of interpersonal communication; it is no longer only non-mediated, face-to-face communication. An online survey was generated by Qualtrics and was distributed to a convenience sample via Facebook. It was completed on a voluntary basis. The survey was completed by 30 males and 35 females between the ages of 18-25. The questions in the survey inquired about overall text messaging usage including who, what, where, when, why and how. The results of this study concluded that there are no significant differences between males and females regarding their text message usage, and the null hypothesis was accepted.

Allison Jeanne Kimble, Kelsey Lynn Kemper, Joseph Robert Nicol, and Britni Andreske (213)

Faculty Mentor/Collaborator: **Maureen M. Schriener**

Media Exposure and Issue Knowledge of Natural Disasters for UW-Eau Claire Students

This study examines UW-Eau Claire students' knowledge, attitudes and behaviors resulting from news coverage of natural disasters. We focus on news about earthquakes during the past two years in Haiti, Chile, New Zealand and Japan, which received varying levels of media coverage. We examine agenda-setting effects from the perspective of the students' experiences with news of each event. Applying a triangulation of research methods, we explore connections between students' use of news media, their knowledge and attitudes about the four earthquakes, and their participation in activities to support donations for earthquake relief. The results provide insight into whether agenda-setting effects occur with young adults in the fragmented, multi-media news environment.

Eric Andrew Larson, Samuel Ryan Rosenberry, Eric Charles Christenson, and Jessi Lyn Van Natta (237)

Faculty Mentor/Collaborator: **Won Yong Jang**

Journalism in the Digital Age: Comparing Traditional Print News and Online News Sources in the U.S.

The purpose of this study was to find which news source (i.e. newspapers or online news) college students preferred and the reasons why. A short survey outlining individual news preferences was administered to 113 college students via Facebook. Chi-square tests were used to find out why a college student chose a news source and the tests were used to examine the relationship between news source use and trust. The first test found a strong correlation between why somebody would choose a news source and if newspapers will be around in 20 years (chi square = 20.215, $p = .003$). A strong relationship was found in the second test as well (chi square = 24.768, $p = .000$).

Emily Ann Schwingel, Adam Arthur Fairbanks, Alexandra Lea Randall, Elizabeth Ann Bailey, Brittanna Marie Potocnik, and Andrew Charles Prevost (220)

Faculty Mentor/Collaborator: **Martha J. Fay**

Wellness Programs and Job Satisfaction: The Role of Perceived Employer Intent

With an over 60% increase in per capita healthcare expenses in less than a decade, companies are seeking ways to lower company cost by implementing insurance wellness programs (Ghandakly, 2008). Researchers have shown that employees' perceptions of their work environment are an important factor in their performance (Lowe, Schellenbert & Shannon, 2003) and that one aspect of the environment is wellness programs. Research also shows that wellness programs result in increased employee health and savings to the company (Grant et al., 2007; Parks & Steelman, 2008). However, studies have failed to examine the possible negative effects of wellness programs. Job satisfaction and employee efficacy may have a connection to wellness programs. This study examines variables that may be related to both individual and organizational success in relation to wellness initiatives. Employees from several companies were surveyed to determine whether the nature of the wellness program (voluntary or mandatory), perceived employer intent, and efficacy with regard to wellness program goals are associated with employee job satisfaction. Results show that the relationship between job satisfaction and wellness programs is more complex than previously understood.

Kathryn Ann Staats, Joshua Alan Bjerke, Sara Kim Habermeyer, and Danielle Elise Geheran (261)

Faculty Mentor/Collaborator: **Martha J. Fay**

The Medium or the Message: What Affects Youth's Responses to Anti-Tobacco Messages

As the use of social media becomes more widespread among youth in our society (Purcell, 2011), public health officials have looked to new media to promote messages of healthy behaviors. Recent work emphasizes the importance of the internet as a medium when communicating with youth (DeZengotita, 2007). However, whether it is the medium or the message that elicits a response from audiences has long been debated (Barry & Fulmar, 2004). Focusing on anti-tobacco messages, this study examines whether the medium (Facebook, Twitter, or YouTube) or the message (fear, humor or bandwagon appeal) influences youth response. Using focus groups consisting of youth ages 14-18, we presented one message of each appeal in the three different mediums and measured the students' responses via survey. We then compared students' attitudes toward the risk of smoking based on these categories: nonsusceptible never-smokers, susceptible never-smokers, experimenters, and established smokers (Escobar-Chavez and Anderson, 2008). Results provide additional guidance for public health campaigns trying to improve message effectiveness with youth.

Lora Kay Steinmetz (244)Faculty Mentor/Collaborator: **Won Yong Jang***Global Cancer News Coverage*

Cancer has recently become a concern for people around the world. The burden that cancer placed on people globally doubled between 1970 and the year 2000. By 2020 it is expected to double again, and then triple in the ensuing 10 years. Since cancer is one of the leading causes of death around the globe, it is important to understand how the disease is covered by international news agencies. In the past cancer was thought of as a western disease. However, studies have recently found that the majority of the global cancer burden is found in countries with low and medium access to resources, not merely in developed countries. Countries with fewer news resources will ultimately have less information regarding cancer, influencing how the public and government handle cancer situations. Because of this, it is of prime importance to communication and journalism studies to understand what is being covered in global media. This study analyses the amount and content of cancer related articles produced by several international news agencies.

ECONOMICS**Stephen James Fisher, Justin Robert Prah, John William Pepler, and Benjamin Salisbury Streeter (165)**Faculty Mentor/Collaborator: **Eric M. Jamelske***The Great Recession and Subsequent Recovery in the Chippewa Valley: What Did Happen and What is Happening?*

Beginning in late 2008, the financial sector of the US economy fell on rough times. Very quickly it became evident that what began as a financial crisis had turned much worse and America soon found itself in the *Great Recession*. By most accounts, this was the deepest economic downturn since the *Great Depression* with substantial job losses and rising unemployment. In addition, many households were also finding it difficult to maintain their health insurance and their mortgages. In short, the *Great Recession* created a significant burden on the economy and in people's lives throughout 2009 and into 2010. As we are now in 2011, there is talk that the recovery has begun, but there are still warning signs that the trouble has not completely passed. Our research poster will examine the extent of the damage from the Great Recession on many fronts in the Chippewa Valley. We will then examine the degree to which the recovery has taken hold in this region. All data will be presented graphically as well as described and analyzed in text.

Zachary Michael Hines (174)Faculty Mentor/Collaborator: **David L. Schaffer***A U.S. Analysis of Full-Time and Part-Time Wage Differentials*

A fundamental question in Labor Economics is whether full-time workers have higher wages than part-time, after adjusting for major factors. We will compare differentials between men and women from a variety of racial categories. This research is important to our field of study as nobody has recently tackled this question using U.S. data. Data used are from the 2006-07 Census. Our method was a long process that included, in the beginning, drawing simple inferences from our data and then steadily increasing the specificity of our analysis as we moved through time. Our research is classified as "observational," as our purpose is not to prove or disprove that differentials exist, but to examine the nature of the U.S. condition and provide good solid economic reasoning as to why things are the way they are. We will be using a variety of techniques to reach conclusions including (but not limited to) tables, graphs, regression, and differential decomposition. We expect to see results where full-time workers have a higher wage than their part-time counterparts overall. Breaking down this differential by gender and race will give us less predictable results, but interesting results, which have yet to be determined.

Zachary Alexander Meinen (147)Faculty Mentor/Collaborator: **Laura A. Berlinghieri***An Examination of the Variation of Speeding Fines across States*

This project examines the varying speeding fines set across state borders. Regression analysis is used to determine an estimated model, which explains the variation of speeding fines through a multitude of political, economic, and geographic variables. The project does not produce a strong-fitting model, but it does lead the way to future research with its findings associated with key variables within the models.

Justin Eldon Mork (150)Faculty Mentor/Collaborators: **Eric M. Jamelske** and **Wayne D. Carroll***Effects of Health Indicators on Wage Differentials, Employment, and Employer Discrimination*

Worker health and health care costs within the US economy have long been issues of steadily increasing concern as individual workers and small employers are slowly priced out of competitive markets because of rising health care costs associated not only with direct pricing increases but also an aging and increasingly more infirm labor force. It is the goal of this project to discuss the issues surrounding the moral hazard provided by health insurance from a positive economic approach with an emphasis on discrepancies between healthy and unhealthy individuals within the labor market. This project will explore the effects of two common health indicators (smoking and obesity) on worker productivity and wages. The analysis will be a result of comparing available data from multiple sources to determine if a material productivity gap exists and how severe any existing gap may be. Data and conclusions will be used to determine if employees (a) receive a comparable wage differential based on their higher non-wage costs, and (b) are effectively discriminated against by receiving a lower wage than their non-wage costs and productivity gap suggest, or instead, if the higher costs of workers with negative health indicators show discrimination against healthy workers.

Eric Peter Nohelty, Zachary Michael Hines, Matthew Michael Porwoll, and Lauren Marie Buxton (163)Faculty Mentor/Collaborator: **Eric M. Jamelske***Testing Two Market Hypotheses: The Counter-Cyclical Nature of Gold Prices & January as a Predictor of Market Performance for the Year*

There are many different theories and strategies concerning the stock market. We have compiled data to test two of these theories. The first theory we will be looking at is one that states that market performance in the month of January can be used as a predictor for the performance of the entire year. The second theory is that gold is counter-cyclical to the broad market and is a good place to invest in a bear market. The Chippewa Valley Center for Economic Research and Development (CVCERD) collects market data on four different investment strategies and also provides an overview of overall market conditions through its Stock Market Project. Our research poster will use this data to examine the legitimacy of these two stock market theories.

Matthew Louis Sackmann, Drew R. Christensen, Joy M. Larson, and Benjamin Thomas Ponkratz (173)Faculty Mentor/Collaborator: **Eric M. Jamelske***What do College Students across China Think About Global Warming?*

Global warming has become a very important issue. It is not just an issue for one country or a few countries, but rather it is a global issue. But is Global warming really happening and if so what is causing it, what are the consequences and what could or should we do about it? Motivated by the above statement/questions we are conducting a survey examining what college students in China think about this important issue. Our focus is on college students because they are young and therefore represent the future. Similarly, we are focusing on China for two reasons. First, in absolute terms, China is the single largest emitter of CO₂ in the world. Second, they are one of the world's fastest-growing economies, but there is still much poverty in China as per-capita GDP lags behind almost all developed countries. We are just now collecting this data and thus do not have any results to include in this abstract. We are also conducting the same survey among college students at four universities in different regions of the US. Therefore, part of our presentation will compare the viewpoints of young adults in China to their counterparts in the US.

Matthew Louis Sackmann, Joy M. Larson, Drew R. Christensen, and Benjamin Thomas Ponkratz (172)Faculty Mentor/Collaborator: **Eric M. Jamelske***What do College Students across the United States Think about Global Warming?*

Global warming has become a very important issue. It is not just an issue for one country or a few countries, but rather it is a global issue. But is Global warming really happening and if so what is causing it, what are the consequences and what could or should we do about it if anything? Motivated by the above statement/questions we are conducting a survey examining what college students in the US think about this important issue. Specifically, we compare student responses from college campuses across the US including the northeast, midwest, southeast, southwest and west coast. Our focus on college students is for two reasons. First, because they are young and therefore they represent the future and also because it is likely that we can get a reasonably high participation rate, thus making the data more valid. Similarly, we are focusing on the United States for two reasons. First, the US is one of the wealthiest nations in the world as measured by per-capita income and is also disproportionately responsible for the amount of CO₂ in the atmosphere with per-capita emissions much greater

than most other developed nations. We are just now collecting this data and thus we do not have any results to include in this abstract. We are also conducting the same survey among college students at four universities in different regions of China. Therefore, part of our presentation will compare the viewpoints of young adults in the US to their counterparts in China.

Daniel J. Smith (164)

Faculty Mentor/Collaborator: **Eric M. Jamelske**

Examining the Impact of the Great Recession on the Operations of the Chippewa Valley Free Clinic

The recent economic downturn has come to be known as the Great Recession. By most accounts this has been the deepest economic downturn since the Great Depression, with substantial job losses and rising unemployment. With this degree of job loss it was also the case that many people found themselves without access to their normal health care services. Therefore, one might expect that people would be actively seeking other options to meet their health care needs. This study examines the effects of the Great Recession on the operations of the Chippewa Valley Free Clinic. In particular, we highlight the trends in patient utilization of clinic services over this period. In addition, we also report the impact on donations and other funding sources for the clinic. All data will be presented graphically as well as described and analyzed in text.

ECONOMICS/PSYCHOLOGY

April Christine Ross, Aaron David Wingad, Laine Jean Hoffman, Tyler Robert Christiansen, and Kevin Michael Reinhold (149)

Faculty Mentor/Collaborators: **Eric M. Jamelske** and **Lori A. Bica**

Do Free Coupons Given to Families Increase Fruit and Vegetable Consumption Among Their Children?

Poor nutrition, especially low fruit and vegetable intake, has long been considered one of the central causes of overweight and obesity in children. The USDA established the Fresh Fruit and Vegetable Program (FFVP) in 2002 to increase fruit and vegetable consumption as part of a broad effort to combat childhood obesity. Our initial research revealed that the FFVP did increase fruit and vegetable intake of participating students at school snack. In subsequent research we showed that the impact of the FFVP can be expanded through a mix of teacher modeling and incentives provided to children in the classroom. However, this added impact was relatively small and there was still no influence on fruit and vegetable consumption in the home. In this study, families received free coupons redeemable only for fruits and vegetables. We measure the rate that families used the coupons and if fruit and vegetable intake increased among their children. Fruit and vegetable consumption was measured before the coupons were distributed as well as during and also after the coupon period ended. The data has been collected, but the analysis has just begun and therefore we do not have any results to include in this abstract.

Aaron David Wingad, April Christine Ross, Laine Jean Hoffman, Tyler Robert Christiansen, and Kevin Michael Reinhold (148)

Faculty Mentor/Collaborators: **Eric M. Jamelske** and **Lori A. Bica**

Using Positive Role Modeling and Incentives to Expand the Reach of the USDA Fresh Fruit and Vegetable Program

The prevalence of overweight and obesity among children in the US has more than doubled over the past 20 years. Poor nutrition, especially low fruit and vegetable intake, has long been considered one of the central causes of overweight and obesity in children. The USDA established the Fresh Fruit and Vegetable Program (FFVP) in 2002 to increase fruit and vegetable consumption as part of a broad effort to combat childhood obesity. Our initial research revealed that the FFVP did increase fruit and vegetable intake by providing free fruits and vegetables as a morning snack. Unfortunately, there is no evidence that the FFVP increased fruit and vegetable consumption outside of school. Perhaps most disappointing was that students did not begin to bring fruit or vegetable snacks from home on days when one was not provided through the FFVP. This study investigates whether a mix of teacher modeling and incentives can increase children's fruit and vegetable intake beyond just participating in the FFVP. The results showed that toy prizes had a limited positive influence, but that a simple homework reminder worked even better. Moreover, a dedicated and enthusiastic teacher also made a big difference in increasing fruit and vegetable consumption.

FOREIGN LANGUAGES

Kelsey Jane Roets and Ian Kenneth Allen (257)

Faculty Mentor/Collaborator: **Amy Isabel Young**

The Political Effects of Group Lending on Nicaraguan Individuals

In January 2011 we went to Teustepe, Nicaragua, to study the political effects of microfinance on Nicaraguan individuals. While the economic ramifications of microfinance have been studied, the political effects are often overlooked and undervalued. Working with PRESTANIC, a microlending organization, we collected quantitative and qualitative research while interviewing individuals who received microloans. Based on our research we found that group lending helps expand women's spheres of influence by encouraging community participation through the formation of groups and small businesses. Group lending teaches skills, such as group governance and organization, that enable individuals to organize politically if they so chose. Moreover, we found that microloans coupled with financial education not only increase trust of financial institutions, but they also prepare women for potential leadership roles. We did not find anything that implies that receiving a microloan increases formal political participation, nor does there appear to be any direct correlation between the microloan groups and political activism; however, group lending teaches organizational and financial skills that are essential to political activity. As these skills continue to be developed in traditionally neglected populations, further research should be conducted to see if this methodology creates a new generation of political leaders.

GEOGRAPHY / ANTHROPOLOGY

Alyson Marie Diller (191)

Faculty Mentor/Collaborators: **Ezra J. Zeitler and Ryan D. Weichelt**

Spatial Patterns of Lottery Sales in Milwaukee County, Wisconsin

The relationship between governments and the lotteries they have established is historically controversial. Studies suggest that lotteries draw disproportionately from the poor, less educated and minority groups (Clotfelter and Cook 1987; Price and Novak 1999). Using data from the U.S. Census Bureau and the Wisconsin State Lottery, this research analyzes the spatial relationship between lottery sales and the characteristics of the communities they inhabit within the urban landscape of Milwaukee, Wisconsin. We examine the spatial patterns of both lottery outlet distribution and annual lottery sales and their correlation to specific socio-economic characteristics, including income, race and education. The methods used in this research include both a statistical analysis of the independent variables explaining lottery sales, and a spatial analysis of lottery outlet density at the neighborhood scale. The findings of this research reveal that lottery outlets in Milwaukee County are concentrated in lower class neighborhoods with high percentages of Hispanics and African Americans. And, while the volume of lottery sales tend to be higher in majorly white-middle class areas, comparatively, poorer neighborhoods tend to spend a higher percent of their income on lottery items.

Alyson Marie Diller, Nicole Ruth Larson, and Corey Joseph Salzwedel (192)

Faculty Mentor/Collaborator: **Paul J. Kaldjian and Ryan D. Weichelt**

Socio-Spatial Integration of Hispanic Immigrants in the Eau Claire Community

According to recent census data, the number of Hispanics in Wisconsin grew about 75% between 2000 and 2010. Using recent studies on immigrant incorporation in rural areas (Nelson and Hiemstra 2008), this research analyzes the development of place and belonging among recent Hispanic immigrants living and working in the Eau Claire region. Using primary and secondary sources – including interviews, newspaper accounts, census data and observations of the landscape – we explore the spaces of social interaction between Hispanic immigrants and non-immigrants and the degree to which the new immigrants contribute to place-making. A strong community cares about all the people that define it, and therefore it is important to understand the socio-spatial integration and participation of each people group that comprises our local community here in Eau Claire. The goal of our research is to characterize the ways in which community and sense of belonging happen for Hispanics in the Eau Claire community. This project attempts to identify where and how Hispanics perceive belonging in Eau Claire. This, in turn, helps us understand and plan for an increasingly diverse and welcoming region.

Eric Adam Fuerstenberg (169)Faculty Mentor/Collaborator: **Daniel P. Strouthes***Again the Stállu Come: The Role of Folklore in the Resurgence of Traditional Sami Culture*

In modern times traditional folk stories have retreated from their prominence as explanatory tales into more aged, well-respected positions within the greater culture. It is in this way that folk legends find a place within the oral history of a people. Traditional Sami tales represent a rich history of storytelling and interpretation of the natural phenomena that surrounded the early inhabitants of northern Scandinavia. As such, they were a prized focus for restoration as the Sami language became successfully adapted to print and the first authors of Sami poetry and literature were able to share their writings with the world. The current study presents an interpretation and report of data collected during a two and a half month experience in the field and an account of the role that a small community of Norwegian Sami has continued to play in the revival of local traditional culture.

David John Melsness (190)Faculty Mentor/Collaborator: **Ryan D. Weichelt***Spatial Crime Displacement in South Side Chicago: From the Projects to the 'Hood*

This project is a case study of the effectiveness of the Chicago Housing Authority's revitalization efforts in creating new lower-crime/livable communities after the demolition of the Robert Taylor Homes on Chicago's South Side. Specifically, this project examines implications of population displacement on crime from the 2nd Police District (where the Robert Taylor Homes were) to other, neighboring police districts that serve impoverished, racially-segregated, high-crime neighborhoods. The goal of the project is to see if there is a correlation with the demolition of the housing project and crime trends in surrounding police districts. This study is premised on the concept of geographic displacement theory, which suggests that when governmental agencies attempt to eliminate crime by changing the local situation in which it occurs rather than eliminating crime, they move it to a different location. Data will be collected at the beat level (and geo-coded) for the South Side districts. My hypothesis is that there will be a direct correlation with increased crime in the neighboring police districts while there will be decreased crime in the 2nd district during the time the demolition that took place between 1998 and 2007.

Miriam Celeste Russell, Laurel Alyce Hanson, Erik Lee Janssen, and Tyler Jonathan Anderson (193)Faculty Mentor/Collaborators: **Paul J. Kaldjian** and **Ryan D. Weichelt***The African Immigrant Place-Making in Rural Western Wisconsin*

Immigration to Western Wisconsin is dynamic and challenging for the immigrant and non-immigrant communities alike. In diffusing out from the Twin Cities, some Somali refugees have settled in the Western Wisconsin community of Barron, Wisconsin. Attracted by jobs in the meat packing industry, the recent immigrants face challenges in their claim to space and in their interactions with the host community. Participation in place-making is an important element of belonging. To help us understand the nature of, and extent to which, Somalis are making Western Wisconsin home, this research explores the socio-spatial relationships between recent immigrants and the non-immigrant host community. The research draws from personal interviews with Somali immigrants, data from businesses and public sources, local news accounts, and field observations of Somali semiotics within the landscape. As the immigration of Somalis to Western Wisconsin is ongoing, our research will help us understand migration dynamics and evaluate the sense of place the Somali community is developing in Western Wisconsin with the goal of making the process better for immigrant and non-immigrant alike.

Matthew Louis Sackmann (189)Faculty Mentor/Collaborators: **Ryan D. Weichelt** and **Christina M. Hupy***Predicting Crime Locations in Eau Claire*

The purpose of this study is to run multiple regression models for different crime categories per census block in Eau Claire County to explore the geographic relationship between crime and the suite of explanatory variables. Crime was categorized into nine datasets including sex offense, drugs, burglary/theft, personal/violent, disturbances, traffic-OMV, property crimes, OWIs, and total crime. These classifications include crime that occurred between the years of 2003 and 2009. All of the crimes and liquor outlets were geocoded, which means their addresses were converted to latitude/longitude locations. Each record in the datasets includes the crime count, geographic location, liquor outlet count, and all 2000 census data per block group. The suite of explanatory variables includes percent white, percent no education, number of liquor outlets, percent unemployed, median household income, and percent higher education. Our results compare the difference between ordinary least squares regressions and spatially lagged regressions, and indicate a spatial relationship between crime and the suite of explanatory variables.

Kelli Kathleen Schlegelmilch (195)

Faculty Mentor/Collaborator: **Paul J. Kaldjian**

The Role of the Hmong in the Eau Claire Downtown Farmers Market

The Eau Claire Downtown Farmers Market is Eau Claire, Wisconsin's most prominent and vibrant source of seasonal produce. At a time when 'sustainable' and 'local' are at the forefront of consumers' food demands, the Eau Claire Downtown Farmers Market is flourishing as a highly-valued scene in the summer landscape. As roughly 90 percent of the farmers market's vendors, members of the local Hmong community represent the market's core. The market's success is commonly attributed to the Hmong who provide a wide array of high-quality and low-cost produce. Based on interviews with market vendors and administrators, Hmong and non-Hmong community leaders, and others, this research examines the role of the Hmong in the Eau Claire Downtown Farmers Market and the place of this role in the Eau Claire community. What, for example, does this close association between the Hmong and the market mean for the Hmong? And how does this set of meanings intersect with the meaning of the market for the majority non-Hmong consumers? Further, the shifting demographic of the Hmong community has implications for the future of the market. How this plays out will influence the place of the farmers market – and perhaps the Hmong community – in Eau Claire.

Roger Thomas Schulz (188)

Faculty Mentor/Collaborator: **Joseph P. Hupy**

Linking the Land to Those Who Paid the Price 1964-1972

Khe Sanh remains one of the best-known engagements during the Vietnam War. During the 1968 siege, Americans were glued to their televisions, waiting for updates on the situation at Khe Sanh. The public knew about and heard about Khe Sanh as it happened, yet somehow the events at Khe Sanh, along with the Vietnam War, have slipped through the cracks of American History, replaced by an oft-too-studied WWII. An estimated 58,000 men died during the Vietnam War, 1,879 of whom died due to events in and around the area of Khe Sanh. The goal of this study is to honor the memory of those who died by linking their sacrifice to the landscape they fought upon. Ray Stubbe's Battalion of Kings is the source for all of the Khe Sanh locations, and his book does a good job at answering the questions of who these men were and how they died. The maps created here are a visual display of Ray's work and show where the men died and their hometown origins.

Sandy Mee Thao, Nicholas Allan Lilek, Sarah Rebecca Kruse, and Brandon Lee Schleicher (194)

Faculty Mentor/Collaborators: **Paul J. Kaldjian** and **Ryan D. Weichert**

Becoming Locals: Place-Making and the Hmong in Eau Claire, Wisconsin

Since they first began arriving in the United States in the late 1970s, Hmong refugees have established numerous communities across Wisconsin and Minnesota. Though immigration from Southeast Asia continues, the Hmong community is well-established as first and second generation Hmong-Americans participate in community and local place-making. This research uses the framework developed by Nelson and Hiemstra (2008) to examine the incorporation of immigrants into the non-immigrant host community in rural areas. We examine how Hmong immigrants in Wisconsin's Chippewa Valley interact with the non-immigrant host community and the extent to which the Hmong are participating in local place-making. That is, after three decades, are the Hmong becoming the host community and establishing a sense of belonging in places like Eau Claire? To help us answer this question, and to understand the relationship between the Hmong immigrants and the non-immigrant population, we investigate the socio-spatial patterns of the Hmong and how these relationships have changed over time. We draw on interviews and first-hand accounts of Hmong immigrants, census data, newspaper archives, and public and school records in our effort to better understand the changing diversity of Western Wisconsin.

GEOGRAPHY AND ANTHROPOLOGY/GEOLOGY

Shilo Alena Bender (187)

Faculty Mentor/Collaborators: **Robert J. Barth Jr.** and **Phillip D. Ihinger**

Determination of Chemical Composition of Red Lithic Artifacts Using Handheld X-Ray Fluorescence

Stone tools and flakes from the manufacturing and maintenance of pre-contact tools are the most common artifacts found in Wisconsin. Determining the source of raw materials employed in the manufacture of artifacts has long been an important component of archaeological analysis (Klawiter 2000). Past visual methods of identifying artifact sources were ambiguous. Chemical analysis provides an unambiguous quantifiable means of sourcing archaeological artifacts. The geochemistry of pre-contact American Indian artifacts from western Wisconsin was analyzed using Handheld X-Ray Fluorescence (XRF).

XRF can distinguish the chemical composition of the materials from which these artifacts were manufactured. The whole-rock chemical composition can be used to identify rock type and can potentially identify the source locality of the material. Once the source localities of artifacts are accurately identified, this information can provide vital information about territory size, trade networks, migration patterns, and how the environment was used. Chemical fingerprints collected so far indicate that the majority of stone tools and flakes in our study originated from one source; however this source has yet to be determined.

INFORMATION SYSTEMS

Lucas Harold Johnson and Shaughn David Meixner (218)

Faculty Mentor/Collaborator: **Jean A. Pratt**

Identifying Systems Development and Business Analyst Skills and Traits Desired by Employers in Graduating Information Systems Students

The purpose of this research was to identify the qualities and skills that current employers seek in graduates with IS degrees. This research will provide current and future students majoring in IS with a better understanding of what skills and traits make a good IS graduate and will aid students in deciding which emphasis, either *Systems Development* or *Business Analysis*, to pursue. We first conducted a literature review of prior articles related to our topic. We then surveyed approximately 230 recruiters within the IS field. Our research showed that the primary skills that employers and recruiters were seeking in graduates were communication (oral and written) and interpersonal skills. Teamwork, technical skills, and strong work ethic were also high on the list. The main developmental/technical skills that recruiters seek are troubleshooting, coding/programming, Java knowledge, networking, and software installation and knowledge. The top analytical skills that are sought after are problem solving, effectively communicating ideas, being able to formulate solutions, planning, and critical thinking. The top interpersonal skills are ability to work in a team, professionalism, leadership, being able to translate IT language to non-IT personnel, and patience.

James Alexander Kasson (217)

Faculty Mentor/Collaborator: **Bruce W. N. Lo**

Analysis of the Online Behavior of Global Internet Audiences

This research seeks to better understand the online behaviors of global Internet audiences. Measurements of online behavior may be classified into three major categories: clickstream, stickiness, and reach. *Clickstream* measures the genealogy of website visits, consisting of a triplet of the upstream site, the target site, and the downstream site. *Stickiness* measures how effective a website can hold the attention of its visitors. This includes average stay, daily attention, page views, and pages per visit. *Reach* measures how widely a website can attract its potential audience. Metrics for reach may include daily reach, number of visits, and unique visitors. Accurate online audience data are difficult to get. We consolidated web analytic data from three providers: Alexa, Compete, and Quantcast. These statistics were compared for the visitors to top-20 websites in 10 subject domains: finance, entertainment, e-retailing, health, media, social networking, recreation, online services, corporations, and knowledge sites. Trends and patterns were determined and discussed to assist e-business marketing specialists and web designers to more effectively reach out to their targeted audience.

MANAGEMENT AND MARKETING

Ashley Nicole Hofer (214)

Faculty Mentor/Collaborator(s): **Charles L. Tomkovick and Rama Yelkur**

Super Bowl Ads and Firm Value Enhancement

As advertisers spend millions of dollars for commercials on Super Bowl Sunday, it is becoming increasingly important to produce returns on these pricey investments. This study compared the stocks of publicly traded Super Bowl advertising companies to the S&P 500 as one way to examine Super Bowl advertising effectiveness. After exploring 15 years of data (1996-2010), data indicated stocks of Super Bowl advertisers surpassed the S&P 500 results by over 1 percent during the test period. In addition, this study identified a performance difference across 10 trading days, but no difference was found in the control period. This study also examined but found no links connecting stock price differences to ad likeability or industry category. The results of this research suggest simply advertising in the Super Bowl is an event independent of industry category, ad popularity and actual ad content.

Kelsey Jean Irvine and Justina Elizabeth Forsythe (219)

Faculty Mentor/Collaborator: **Julia R. Pennington**

An Analysis of the Relationship and Conceptualizing the Motivations and Benefits of Participating in The Freecycle Network

This research project investigated the benefits and motivations of participation in the Freecycle network. Freecycle is a voluntary network in which people gift their used possessions to others. The purpose of this project was to develop an understanding of this under-studied element of participation within a marketing system using gifting exchanges. This study examined how and why people participate within Freecycle in both a receiver and giver position. Interviews were conducted both via telephone and face to face to receive information on how and why participants are involved in the Freecycle community. Interviews were analyzed in a qualitative software package. Several themes emerged from this research on why participants are members of the Freecycle community including participants wanting to recycle products, keeping products out of landfills, and enjoyment of gifting items.

Allison Kay Williams (215)

Faculty Mentor/Collaborators: **Rama Yelkur and Charles L. Tomkovick**

Olympic Games Advertising and Firm Performance of Advertisers: An Analysis of the Relationship and Trends

The purpose of this study is to examine whether Olympic advertisers experience stock price gains during the event and if this only occurs during the period of the Olympics games. We identified advertisers that participated in the 2000, 2002, 2004, 2006, 2008, and 2010 Olympics and in total 225 firms that advertised during the previous six Olympics were included in this study. We measured the success of Olympics advertising by evaluating stock price performance of firms that advertise in the Olympics. We proposed that Olympics Stocks would outperform the market in the four-week period surrounding the games. We tested for a four week period 13 weeks prior to each of the games to verify that Olympics stocks don't always outperform the market. Results indicate that Olympics stocks outperformed the market by approximately 2 percentage points in the period surrounding the six games studied at a 0.001 significance level. No significant difference was found ($p=0.116$) between the performance of the Olympics stocks and the market in the control period. The study also confirms that the stock price gains for television advertisers during the Olympics holds true for both the summer and winter games.

POLITICAL SCIENCE

Jamie Kieran Browning (198)

Faculty Mentor/Collaborator: **Geoffrey D. Peterson**

Examining How Immigration Waves Have Altered Cuban-American Politics

Using the recent "National Poll Of Cuban & Cuban Americans On Changes To Cuba Policy" from the Florida-based public opinion research firm Bendixen & Amadi, we find that common media portrayal of the Cuban-American population as homogeneously pro-Republican and anti-Castro is inaccurate. The data show clear differences between several cross-cutting groups, including those that live in Florida and those that do not. We also find differences based upon whether the respondents came to the United States before or after the 1980 Mariel boatlift.

Patrick W. FitzGerald-Fleck (197)

Faculty Mentor/Collaborator: **James W. Tubbs**

Who Watches the Watchmen: National Security Letters and the Need for Oversight

National security letters (NSL's) are an information gathering tool used by our government to obtain a wide variety of information including transactional records, email and phone records. Issued in secrecy with the help of a gag order that prevents the recipient from disclosing that they even received a letter, NSL's require little or no probable cause or judicial oversight. This research project is split into three areas surrounding NSL's: their different types and early history, the Patriot Act's expansion of their powers and the government's abuse of that power, and finally a discussion on proposed oversight and reform. The importance of government accountability in the field of political science is unquestionable, but as a person majoring outside of that discipline, I can attest to the universal importance of being able to trust one's own government. Information was gathered via research into congressional records, law reviews and court cases, in addition to analysis of journal articles and other publications concerning NSL's. From these sources, this project concludes that the government's oversight of NSL's is insufficient to prevent future abuse. The increasing ease with which personal information can be accessed necessitates a renewed effort to protect our privacy from prying eyes.

Charern Lee (196)

Faculty Mentor/Collaborator: **Justin W. Patchin**

Assessing Differences in School Resource Officer Perceptions of Cyberbullying

Using data from 509 school resource officers (SRO) from across the United States, this paper evaluates how important SROs believe it is for law enforcement to respond in several cyberbullying scenarios. We hypothesized that the female SROs, SROs who have children under age 18, and SROs who have earned at least a four year degree will report a greater law enforcement responsibility than their counterparts. SROs were invited to participate in the study if they were members of the National Association of School Resource Officers (NASRO) during the summer of 2010. At the time there were approximately 6,000 registered members of NASRO, although it is uncertain what proportion of members are sworn officers (membership includes researchers, administrators, and others who are not practicing school resource officers). Overall, 509 respondents started the survey but only two thirds (339) completed it (66.6%). Results, however, largely failed to uncover statistically significant differences between SROs based on these characteristics. We discuss the possible explanations for this lack of a finding and implications for the role of law enforcement in dealing with nontraditional forms of adolescent deviance.

PSYCHOLOGY

Holly Mae Albers and Madeline Giacomino Dugolenski (124)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Who's Cheating Who? Perceptions of Infidelity Across Gender and Sexual Orientation

Our study investigated differences in perceptions of infidelity given different scenarios. Participants were split into groups, receiving a description of only one type of infidelity within the scenario: heterosexual infidelity, homosexual infidelity or mixed infidelity (for example, a heterosexual individual engaging in homosexual relations). Participants were asked to read the scenario and rate their perception of infidelity for different activities, ranging from flirting to sexual intercourse, on a scale of 1 to 5, where 1 = definitely cheating and 5 = definitely not cheating. Results of the study show no difference in perception of infidelity for any of the scenarios, as a function of participant gender. The results did show a significant difference in the perception of infidelity dependent on the type of scenario given to the participant. The prediction that men and women would rate perceptions of infidelity differently was refuted in this study, but the implication that people would rate their perceptions of infidelity differently according to the type of infidelity encountered was supported. The findings suggest that people are held to different standards in conjunction with their perceived sexual orientation.

Kevin Lee Anderson (145)

Faculty Mentor/Collaborator: **Lori A. Bica**

Army Women's Experiences with the Glass Ceiling

Upon entering the workforce, women often have aspirations of climbing the corporate ladder based on performance. However, many will be subject to the glass ceiling effect, an invisible barrier that prevents women from reaching the top levels of professional corporations. Service women are subject to the same barriers as their civilian counterparts. For example, women are the minority in the Officer and Enlisted Corp of every branch of the military. The purpose of this study is to investigate military women's perceptions of the glass ceiling. Participants will be Army women at various career stages. The data collection method will be an online survey containing questions about current rank, years of service, plans to choose the military as a career, goals for advancement, and experiences with differential treatment on the basis of gender. It is hypothesized that later career stages and higher goals for advancement will be associated with greater perceptions of a glass ceiling.

Alyssa Faye Bell and Haley Nicole Scheer (46)

Faculty Mentor/Collaborator: **Mary Beth Leibham**

The Relationship Between College Students' Pedagogical Preferences and Their Epistemic Beliefs: Preliminary Findings

One area of research that has not been addressed is the relationship between students' epistemological development (beliefs about learning and knowledge) and their teaching/learning preferences. Given the vast array of teaching techniques it is likely that students' preferences for these techniques may be related to their beliefs about knowledge and learning. If indeed there is a relationship between students' epistemological development and pedagogical preferences, then instructors can use

this information to tailor their teaching and meet students' needs/developmental levels. Two surveys were administered to students enrolled in psychology classes. The first survey, the Epistemic Beliefs Inventory (Schraw et al., 2002) assessed students' epistemological development. The second survey, the Instruction Preference Questionnaire (Hativa & Birenbaum, 2000) assessed students' preferences for various pedagogical practices. Data analyses will determine whether or not relationships exist between epistemological development and pedagogical preferences. The expectation is that students who have more sophisticated beliefs about knowledge and learning will prefer teaching practices that promote active learning and self-regulation.

Alyssa Jeane Collura and Kaija Michelle Muhich (75)

Faculty Mentor/Collaborator: **Jennifer J. Muehlenkamp**

Role of Parental Influences on Eating Attitudes and Body Image

Previous research on eating disorders has shown that poor parental bonding plays a role in the etiology of eating disorders. It remains unclear to what extent parental bonding factors differentially impact risk between eating disorder sub-types after other known risk factors, like personality, are controlled. The purpose of the current study is to look at parental bonding influences on anorexic and bulimic behavior in a sample of adults from eating disorder websites. Participants will complete an online survey assessing parenting relationships, temperament, and eating disorder behavior. It is expected that parental bonding will have a greater influence on the personality characteristics seen in bulimic and anorexic sub-types than personality traits observed in individuals who do not demonstrate disordered eating behaviors.

Christina Marie DeLapp and Vincent Edward Campbell (48)

Faculty Mentor/Collaborator: **Michael I. Axelrod**

Using Brief Experimental Analysis (BEA) to Identify Effective Math Interventions

Elementary aged students in the United States have begun to fall behind in math competency internationally. The purpose of this study was to identify math computation fluency interventions for three low-achieving elementary school students using Brief Experimental Analysis (BEA) methodology with addition and subtraction. BEA has been used primarily to identify individualized oral reading fluency interventions with little empirical research validating the procedure for math computation. The application of BEA to academic problems can provide a direct link between assessment and intervention. The current study involved two related phases. Phase one empirically evaluated several interventions to determine which produced the greatest increase in Digits Correct Per Minute over baseline. Phase two investigated the effects of the empirically-selected interventions on the math computation fluency. Results suggest that BEA of math computation fluency can empirically select interventions that improve math computation skill over time in addition and subtraction.

Elizabeth Ann Farin, Allie Marie Hensel, Vincent Edward Campbell, Karl Joseph Zimmerman, and Elise Natalie Gotta (99)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

Increasing Eye Contact in Children with Autism using Vocal Stimuli

The Diagnostic and Statistic Manual of Mental Disorders (American Psychiatric Association, 2000) lists impairment of nonverbal behaviors, such as eye-to-eye contact, as a characteristic of autism. Eye contact has been shown to be a crucial step in the acquisition of new skills as well as an integral part of the developmental process. The current study will extend previous research done by Morrison (1999) on increasing eye contact of a child with autism using natural cues (i.e., conversation and praise) instead of prompting eye contact with cues such as "look at me." Using a multiple-probe research design, researchers will explore the effectiveness of bringing eye contact under stimulus control of vocal stimuli. Researchers will begin by reinforcing every instance of eye contact with preferred edibles, and will gradually and systematically thin reinforcement schedules as eye contact to vocal stimuli becomes more reliable. Requiring a simple response, after eye contact is made, in order to gain access to reinforcement may facilitate generalization of the skill to natural environments (e.g., classroom). The purpose of this study is threefold: to increase eye contact toward vocal cues, maintain high rates of eye contact under thinner, more natural, schedules of reinforcement, and increase attending behavior toward therapist's instructions.

Jessica Rae Fields (100)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Ethics or Etiquette?: A Comparison of Student and Faculty Responses to “Grey Area” Ethical Dilemmas in the Academic Setting

In the study of ethics in academia, there is some concern over the differing opinions of professors and students on what professor conduct is ethical and what is not. While the ethicality of some scenarios is generally agreed upon, there is a notable amount of grey area in which there is little to no agreement. When participants in past studies were asked why this might be, a markedly common reasoning was that it was not a question of the grey area scenarios' ethicality, but rather an issue with their standing as ethical issues at all. This study hopes to address this problem. Using an online survey, faculty and student opinions on scenarios regarding professor conduct will be re-examined with a focus on grey-area issues. Unlike previous research, however, participants in this survey will be asked to rate scenarios on two scales: how much they believe they are related to ethics, and how much they believe they are related to etiquette. Hopefully this research will help distinguish true ethical dilemmas from mere concerns over etiquette. This study and others like it will also encourage future discussions on ethics in the classroom, leading to better standards for future students and professors.

Michael Joseph Fox (51)

Faculty Mentor/Collaborator: **Barbara Lozar**

Perceptions of the Low Back Vowels in West-Central Wisconsin

The Low Back Vowel Merger, a phonetic change wherein the vowels in caught and cot come to be pronounced the same, is widespread in the United States, and has been shown to have a presence in Eau Claire, Wisconsin with indications that it is still a change in progress (Benson et. al. 2010). The Low Back Vowel Merger is believed to occur first in perception followed by production (Labov 1994). In order to better assess its progress I examine its time-depth through testing participants' ability to discriminate between caught and cot vowels in two sets (dynamic vs. static features) of five minimal pairs of acoustically re-synthesized 11-step-continua (Total=110), with a subset of speakers (N=14) from Benson et. al. (2010). Results indicate that a perceptual merger of the caught and cot vowels is primarily confined to the younger generation, with respondents showing a pattern that appears to indicate older residents are still capable of distinguishing between the two vowels to a moderate extent. Additionally, I demonstrate that dynamic vowel information had a more significant effect on vowel choice by continuum step than static vowel information only. This research illustrates the important contribution perceptual data makes to studying merger-in-progress communities.

Amber Rose Fritsch and Brittany Rose Henn (122)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

Student Consensus on RateMyProfessors.com

We tested the assumption that students' postings on RateMyProfessors.com reflect emotional responses to instructors rather than objective appraisals of the instruction they have received. If students' ratings are emotional responses, then the ratings should vary widely and it should take many ratings to get consensus around the mean. According to this logic, the number of ratings should be negatively associated with degree of variance in the ratings. To test this assumption we analyzed data from 367 instructors from UW-Eau Claire who had 10 or more student ratings on RateMyProfessors.com. The typical instructor had a mean quality rating of 3.58. The typical degree of variance around the mean, in standard deviation units, was 1.05. Number of raters was not associated with mean quality rating; likewise, number of raters was not associated with variance in quality ratings. That is, consensus about instructors was similar regardless of how many ratings they had. However, instructors with very low and very high quality ratings showed strong student consensus. In summary, we show that student consensus can be achieved with relatively few ratings. Our data refute common negative assumptions about RateMyProfessors.com, and reinforce previous findings to suggest that students are providing objective ratings of quality of instruction.

Eric Adam Fuerstenberg, Danielle Elizabeth Ryan, Stacy Marie Miller, Megan Louise Risdal, Heather Dawn Harris, Brittany Leigh Byrne, Sarah Ellen Camp, and Laura Elizabeth Ritchie (170)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

College Students' Religious Beliefs, Knowledge of Evolution, and Science Literacy: Freshman-Senior Differences and Moderating Effects of Sex and Major

Rates of scientific literacy are lower in America than in 32 European countries and Japan. Concerned researchers have

identified education as a key positive correlate of scientific literacy. If being in college promotes scientific literacy and critical, evidence-based thinking, then college seniors should demonstrate higher levels of scientific reasoning and knowledge than should freshmen. To test this proposal, we collected responses from a representative sample of 264 freshmen and 350 seniors at UWEC. Both samples completed measures of scientific reasoning and scientific knowledge (physics, chemistry, evolution, and genetics), as well as measures of religiosity and young earth creationist beliefs. We predict that: (1) seniors' religious beliefs will be weaker than will those of the freshman sample; (2) seniors' mean scientific reasoning and scientific knowledge scores will be higher than those of the freshman sample; (3) seniors' scientific knowledge and trust in science will differ by major, such that students in the humanities will score lower than will students in the inorganic and life sciences. If these predictions are supported, the findings would imply that growth from freshman to senior year in science mindedness might be largely a function of pre-existing individual dispositions toward science mindedness that influence choice of major.

Eric Adam Fuerstenberg (171)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Sexual Selection and Intelligence: The Role of Vocabulary in Human Courtship

Sexual displays are ubiquitous in the animal kingdom and there are a number of different ways that members of each sex display their fitness in the pursuit of attracting desirable mates. In humans, many researchers have argued that displays of creativity, humor, and intelligence serve a similar purpose, primarily through their role as signals of mental fitness (Miller, 2000). Research in the field of evolutionary psychology indicates that men who are primed with mating cues display higher levels of verbal creativity (Griskevicius, Cialdini, & Kenrick, 2006) and increases in their use of low-frequency words (Rosenberg & Tunney, 2008) on writing tasks. However, none of this work has examined the effect of these cues on spoken verbal communication. The present study was designed to test the hypothesis that vocabulary serves as a sexual display by presenting mating cues in the form of photographs of young, attractive opposite-sex individuals and asking participants to describe a romantic scenario with them. I predict that: (1) men will use more low-frequency words after an imagined romantic encounter with a young woman than they will after viewing photographs of older women, and (2) women will use fewer low-frequency words when imagining a romantic encounter with a young man relative to when they view photographs of older men.

Sara Kim Habermeyer and Wesley David Theuerkauf (101)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Effectiveness of Compost Programs on the Eau Claire Campus

The focus of this study was to determine if differences existed between genders in reference to waste receptacle deposits, primarily the compost bins. We observed 103 participants on the University of Wisconsin-Eau Claire campus. Two different locations inside the Davies Student Center were used to complete the observational portion of the study. A coding sheet describing specific type of waste disposal (compost, recycle, or trash) and whether improper disposal took place (yes or no) was implemented during the study. A chi square test for independence on waste disposal use and gender, $\chi^2(1, N = 103) = 2.315$ $p = .314$, and Cramer's $V = .15$, showed no significant difference existed. There was no significant difference between gender and proper compost use, $\chi^2(1, N = 103) = .890$ $p = .346$, and Cramer's $V = .093$. We conclude that the higher rate of women composting is due to the higher rate of women represented on the University of Wisconsin-Eau Claire's campus.

Heather Dawn Harris and Eric Adam Fuerstenberg (144)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

Twenty-Five Years of GRE Scores and Graduate Enrollment Data by Gender, Ethnicity, and Discipline

In the U.S., graduate training is a primary means of developing intellectual talent. Graduate Record Examination (GRE) general test scores reflect aptitude for graduate work and, in combination with graduate enrollment data, provide a means for tracking the flow of intellectual talent. We compiled data released by the Educational Testing Service (1982–1996; 2003–2007) and enrollment reports from the Council of Graduate Schools (1986–2009). We report on trends in GRE scores and graduate enrollment as a function of gender, ethnicity, and discipline. Regarding gender, men consistently outscore women, and the gap continues to be considerably larger for GRE-Quantitative scores than for GRE-Verbal scores. Concerning discipline, students in Education and Business, two domains that enroll the largest proportion of graduate students and award the most graduate degrees, have consistently scored the lowest on both tests. Regarding ethnicity, the graduate enrollment rate of students in some minority groups has increased over time, but test scores have not risen correspondingly. Because GRE scores are valid predictors of student performance in graduate programs and degree completion (Kuncel et al, 2010), and because cognitive aptitude is predictive of achievement (Lubinski & Benbow, 2006), lagging performance in some groups and disciplines needs to be addressed.

Allie Marie Hensel, Adam John Lobermeier, Laura Margaret Matz, Sarah Ellen Camp, and Valerie Lynn Vantussi (120)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

Generalization of Matching-to-Sample Skills Across Novel Materials in Children with Autism

The purpose of the current study is to conduct a discrimination assessment of changes in materials used when teaching matching-to-sample skills to children with autism. A single-subject alternating treatments design will be implemented to determine whether objects or photographs generalize more effectively to novel materials. Treatment 1 will consist of teaching matching-to-sample skills using photographs of animals. Treatment 2 will consist of teaching matching-to-sample skills using three-dimensional vehicles. Once the participant achieves mastery for both treatments, the participant will be presented with two sets of test trials. The first set of test trials will assess generalization of matching-to-sample skills using novel objects. The second set of test trials will assess generalization of matching-to-sample skills using novel photographs. The test trials will consist of a novel item with a different feature, a novel item of the same class, and a novel class of each object or photograph used during training. The researchers expect that the matching-to-sample skills will generalize more readily to novel objects than novel photographs. The results of the current study will contribute to the field of behavior analysis by indicating which materials provide the most effective generalization when teaching children with autism to match-to-sample.

Katherine Saara Hughes, Eden Marie Anderson, Alyssa Jeane Collura, Jennifer Erin Dobbe, Julia Mary Emch, Alexandra Morgan Koll, Ben Allen Kron, and Katrina Lynn Ryan (73)

Faculty Mentor/Collaborator: **David C. Jewett**

Effects of pentobarbital in rats trained to discriminate between 22 and 2 hr food deprivation

Obesity is a leading cause of premature illness and death in the United States. We have developed a food deprivation discrimination task to investigate neurochemical factors that influence the discriminative stimuli associated with food deprivation. We trained rats to discriminate between 2 hr and 22 hr food deprivation in a two-lever choice procedure. Using this model we examined the ability of pentobarbital to mimic or alter the effects of 22 hr food deprivation. Pentobarbital has been shown to stimulate food intake in several species. Previous studies have demonstrated that pentobarbital increases the palatability of food. We found that pentobarbital did not induce discriminative stimulus effects similar to those of 22 hr food deprivation and did not alter the discriminative stimulus of 22 hr food deprivation. Larger doses of pentobarbital reduced rates of responding. These findings suggest pentobarbital alters food consumption by mechanisms other than those related to "hunger."

Paige Marie Jablonski (116)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Do Ethical Positions Relate to Fear of Death?

Terror Management Theory states that people have an innate fear of their own death and avoid it in various ways. Many will avoid those who are different from them. It is important because understanding the psychology of violence can help diminish or eliminate it. The four conditions of the quasi-independent variable were the participants' scores on the Ethics Positioning Questionnaire (Forsyth, 1982). All participants were randomly assigned to write about thoughts of (a) their death or (b) events of the day. All participants deliberated the guilt of an Islamic-American man accused of prostitution who was perceived as different from them. The dependent variables were categories of language provided by Linguistic Inquiry and Word Count software (Pennebaker, Booth, & Francis, 2007). Expected outcomes are: those who think about their own death will give a more severe punishment and use harsher language in response to the question about the conviction of the man. This pattern would suggest that violence is related to fear of those who are different and suggests that teaching tolerance and acceptance of those different helps to minimize violence.

Alexiss Jeffers (166)

Faculty Mentor/Collaborator: **Lori A. Bica**

College Students' Attitudes About Cohabitation Before Marriage

Cohabitation before marriage is becoming the norm in today's society. One explanation for this trend is a shift in what is considered socially acceptable behavior between romantic partners. Many young people believe that cohabitation results in a more successful marriage; however, numerous studies show a relationship between cohabitation and increased chances of divorce. The purpose of this study is to investigate college students' attitudes about cohabitation and to determine if exposure to information about cohabitation and divorce will change the attitudes of participants who initially indicate an

intent to cohabitate. Participants will complete a questionnaire measuring traditional vs. non-traditional attitudes about marriage, respond to open-ended questions about their knowledge of advantages and disadvantages of cohabitation, and rate on a Likert-type scale the likelihood that they will cohabitate before marriage. After exposure to information about cohabitation and divorce, participants will be asked to once again rate the likelihood that they will cohabitate and provide reasons for their decision. It is hypothesized that before hearing information on cohabitation and divorce, traditional and non-traditional participants will be similar in their likelihood to cohabitate. After exposure to the information, traditional participants are hypothesized to rate themselves as less likely to cohabitate than non-traditional participants.

Nicole Jean Jerdee, David P. Kelley III, Kaija Michelle Muhich, Andrew Michael Tiry, Victoria Lynn Follett, Joseph Douglas Carlson, and Nicholas Kyle Reetz (95)

Faculty Mentor/Collaborator: **Daniel D. Holt**

Economic and Biological Influences on Discounting in Pigeons

An outcome will decrease in value as the delay to its receipt increases. This devaluation, or discounting, is very well established in the human literature with animal models now emerging as appropriate avenues of investigation. Cross-species (e.g., human and pigeon) similarities and differences in discounting have been revealed but are not yet fully understood. For a more thorough understanding of the factors influencing behavior, researchers may need to consider the biological relevance of the required response in addition to the economic context in which choices are made. In the present study, pigeons completed a delay discounting task where the nature of the response varied across conditions. One condition required a key-peck (biologically relevant response) and another condition required a treadle-press (non-biologically relevant response). The pigeons tended to discount much more steeply when key-pecking than when treadle-pressing. An important follow-up manipulation indicates that the differences in the rate of discounting are not due to the effort differential between the two responses, suggesting that the form of the required response may have a meaningful impact (e.g., more impulsivity is demonstrated with a biologically relevant response) and that a fuller understanding of discounting may require an integration of biological considerations.

Katie Lynn Johnson (168)

Faculty Mentor/Collaborator: **Lori A. Bica**

Lesbian, Gay, Bisexual, and Transgender Students' Experiences with UW-Eau Claire's Counseling Services

Lesbian, gay, bisexual, and transgender (LGBT) college students face many of the same stresses and issues as their heterosexual peers. There are also other stresses and issues that LGBT college students frequently face unique to their sexual orientation. The label of being gay, lesbian, bisexual, or transgender often comes with a social stigma that makes it difficult for some people to form a positive and integrated self-identity. Previous studies have explored the unique concerns of LGBT college students, along with what they have found helpful and unhelpful on their campus. The purpose of the current study is to collect qualitative data about LGBT students' experiences with UW-Eau Claire's Counseling Services. Data will be collected through the use of a questionnaire disseminated electronically to LGBT students on campus. It is hypothesized that the results will show both strengths in programming and areas for improvement. Results from this study could be used to make changes that better serve the needs of UW-Eau Claire's LGBT student population.

Carolyn Margaret Kolb and Katherine Emily Quigley, with Amy Steffes, California State University-Fullerton (143)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

Assortative Friendship: Similarity between Female Same-Sex Friends in Facial Attractiveness, Body Attractiveness, and Body Shape

Like dating partners and spouses, friends are similar on a variety of dimensions, including their interests and values, social attitudes, and education level. Under the logic that young women should prefer same-sex friends who are neither much less nor much more attractive than themselves in the competition to attract men, previous researchers have also demonstrated that female friends are rated as similarly attractive. However, perhaps female friends are similar more in the care they take in their appearance, or in the degree to which they display their attractiveness, than in objective level of attractiveness. We designed a study to test that alternative explanation by photographing women in their street clothes, photographing women again in scrubs with their hair pulled back and makeup removed, and measuring body characteristics relevant to mate search such as breast size and waist-hip ratio. We surveyed, photographed, and measured 86 women who came to the lab in pairs for a study of friendship. Preliminary analyses reveal that friends were moderately similar in self-perceived attractiveness, moderately similar in bra cup size, and highly similar in waist-hip ratio. We also present similarity coefficients of friends' attractiveness, based on outside judges' ratings of their facial, bodily, and overall attractiveness.

Joseph Daniel Krohn, Ashlee Marie Wiedeman, Tarama Lynne Poncelet, and Gretchen Elaine Schultz (71)

Faculty Mentor/Collaborator: **Jeffrey A. Goodman**

Stigma Acknowledgment: Is it the Acknowledgment or the Information that Matters?

Acknowledgment of an invisible stigma carries interpersonal costs (e.g., the stigma acknowledger is viewed less favorably and as less psychologically stable), yet the reason for this devaluation is unclear (Goodman & Eidelman, 2011). This study is intended to test whether the effects of invisible stigma acknowledgment are due to the actual acknowledgment or simply stem from becoming aware of negative information. In a study on “forming first impressions,” participants were led to believe they interacted with one of two other students (the stigmatized target or the target’s friend). The participant and target/target’s friend exchanged personal information and the participant viewed a photograph of the target. Half of the participants received acknowledgment information from the stigmatized target including mention of his invisible stigma (i.e., a disease that can produce unattractive bodily markings). Other participants received identical information about the target’s invisible stigma from the target’s friend. We expect participants to view the target more positively when the target’s friend acknowledges than when the target acknowledges his own stigma. If hypotheses are confirmed, our findings will make a substantial contribution to theories of stigma acknowledgment. Furthermore, our findings may assist stigmatized individuals’ success in social interactions.

Kellyn Ann Kroner (94)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Awareness and Knowledge of Ethics and Child Psychology

This project focuses on the level of college-age students’ awareness and knowledge of ethics and child psychology. The importance of the research project to the field of psychology is that the results will indicate how aware and knowledgeable college-age students are of ethical dilemmas in the field; the results will also show if there is a need for more ethical training for this group of people. There are three scenarios, with each involving an ethical dilemma, a child client, and a psychologist. Depending on which group the participant randomly places into, they will read either about a fourteen-year old child or about a five-year old child. Male participants will read scenarios with a male child, and female participants will read scenarios with a female child. After reading the scenarios, the participants answer questions about the ethical dilemmas and the solutions. This project is currently in progress, but I expect to have significant results demonstrating that college-age students are aware of ethical dilemmas and the correct solutions. In addition, I expect to find a significant difference between male participants’ and female participants’ levels of awareness and knowledge of ethical dilemmas and solutions, with female participants being more aware.

Andrea Elaine Krunnusz and Bethany Kristine Matula (121)

Faculty Mentor/Collaborators: **April L. Bleske-Rechek** and **Jeffrey A. Goodman**

Learning Styles to the Test: An Experimental Investigation of the Effect of Matching Learning Preferences with Learning Context

We present the results of a controlled experiment designed to test the hypothesis that students who practice with new information through their preferred context (alone vs. small groups) enjoy the situation more, and gain more knowledge from pre- to post-assessment, than do students who practice with the material in their non-preferred context. Undergraduates enrolled in a general psychology course completed a pre-assessment on classical conditioning and reported their learning style preferences. Students were then randomly assigned to complete a set of practice scenarios either alone or in a small group. Subsequently, students completed an affective evaluation of the practice session and a post-assessment on classical conditioning. With their consent, students’ materials were tracked via their student ID, and their academic histories (ACT score, GPA) were obtained. We report on links between academic history and learning preference, links between academic history and pre- to post-knowledge gain, and tests of the hypothesis that those who are randomly assigned to complete practice in their preferred context gain more knowledge than do those who are randomly assigned to complete practice in a context that does not match their preference. We discuss the need for controlled experiments to test claims about educational interventions.

Randy Lim and Dustin D. Greelis-Vanlaningham (72)

Faculty Mentor/Collaborator: **Jeffrey A. Goodman**

Disclosure of Epilepsy to Potential Employers as a Function of Job Safety and Gender

This study investigates the relationship between willingness to disclose an epileptic condition to potential employers, as a

function of gender and degree of occupational hazard. Surveys contain one of two potential occupations the participant will ostensibly be applying to: a potentially hazardous occupation, or an occupation with no risk. The participants will answer questions involving disclosure of epilepsy. This project will test the hypothesis that people with epilepsy will be less likely to divulge their condition to potential employers if the occupation they seek could be unsafe. This study also hypothesizes that women will be less likely to disclose than men. Our findings will contribute to the ongoing study of the effects of the stigma of epilepsy on those who have the condition, specifically in the realm of employment. If the results offer support for our hypotheses, the study may offer insights into how to address the unusually high rate of unemployment among individuals with epilepsy.

Randy Lim and Nicholas James Asay (50)

Faculty Mentor/Collaborator: **Catya von Karolyi**

Performance Differences Between Spatial and Aspatial Majors on Visual Spatial Tasks

When engaged in visual spatial tasks, people use global strategies (examining figures as a whole) or local strategies (examining figures piece by piece; Gluck & Fitting, 2003). Spatial majors are, generally, more likely to use global strategies on such tasks (Li & O'Boyle, 2008). Therefore, we hypothesized that students in spatial majors (art and physics) compared to those in an aspatial major (psychology) would be better at identifying global information on two computer based visual spatial tasks: The impossible figures task (von Karolyi, 2001) and Fink et al's (1997) hierarchical task. Impossible figures cannot really exist in three-dimensional space, but look as though they could. In the impossible figures task, one must examine both possible and impossible figures; but must use a global strategy to see impossible figures as not possible. In Fink et al's task, stimuli composed of large shapes (i.e., anchors, examined at the global level) are made up of small shapes (i.e., stars examined at the local level). For each task, we examined the global component and assessed participants' performance (speed and accuracy). Our results lead to the question: Does global visual spatial ability predict performance in careers that rely on visual spatial talent?

Randy Lim, Jacob Lawrence Bradley, Benjamin Zachary Domask, Paige Marie Jablonski, and Katherine Saara Hughes (49)

Faculty Mentor/Collaborator: **David S. Leland**

Effects of Head Restraint on Brain Electrical Response to Target Stimuli

The electroencephalogram (EEG) is a noninvasive scalp recording of brain activity. The P3 is an EEG peak that occurs at midline centroparietal sites (i.e., between the top and back of the scalp) between 300 and 500 milliseconds after stimulus presentation. The P3 is associated with images, sounds, and other stimuli that capture our attention as we evaluate and categorize them. It is larger when evoked by infrequent, task-related stimuli as compared to frequent, task-irrelevant stimuli. Previous research has demonstrated this using the Oddball Task, in which participants respond to low-probability target stimuli but not to high-probability standard stimuli. We sought to replicate the classic Oddball effect, in which the P3 is larger to "targets" than "standards," with and without participants using a chin rest. The chin rest maintains consistent head position and distance from the screen, and helps minimize head movement. However, the chin rest may be uncomfortable and distracting to participants as well as representing an additional expense for laboratories. This study will investigate the effects of the chin rest on the P3, behavioral performance, and self-reported comfort and attention during the Oddball Task. Our results will help EEG researchers optimize the balance between participant comfort and data quality.

Alyssa Jane Loveland (146)

Faculty Mentor/Collaborator: **Lori A. Bica**

Mental Health Services for Incarcerated Women: A Study of Taycheedah Correctional Institution

Women in prisons are more likely to suffer from mental disorders than are incarcerated men or non-incarcerated women (Marcus-Mendoza, 2011). Researchers have argued that access to feminist psychotherapy is essential to the well being of incarcerated women. The purpose of the current study is to collect qualitative data about mental health services available to incarcerated women at Taycheedah Correctional Institution in Fond du Lac, Wisconsin. The U.S. Department of Justice (USDOD) and the Wisconsin Department of Corrections entered into a Memorandum of Agreement (MOA) in 2008 related to mental health services for women housed at Taycheedah. The USDOD identified 13 areas for improvement that must be addressed in a 4-year time period. Researchers will use structured interviews with mental health providers at Taycheedah to understand policies and procedures that were in place before the 2008 MOA, changes that have occurred in response to the MOA, and plans for further improvements. Interview questions will also be designed to assess the extent to which feminist principles have been applied to mental health programming at Taycheedah.

Stacy Marie Miller, Danielle Elizabeth Ryan, Eric Adam Fuerstenberg, Heather Dawn Harris, Megan Louise Risdal, Brittany Leigh Byrne, Sarah Ellen Camp, and Laura Elizabeth Ritchie (123)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

Mating Desires and Plans for Work and Family: Comparisons by Sex, Discipline, and Year in College

Past research has documented that young men and women differ in their plans for work and family, with young women more likely to choose career plans that will “work around” their family plans (Bridges, 1989). On one hand, the logic of parental investment theory explains these sex differences in plans for work and family as modern manifestations of evolved differences between males and females in preferences and priorities. Some mainstream social scientists, on the other hand, have argued that male-female differences in plans for work and family are a manifestation of societal pressures; under this logic, sex differences in work-family plans should be ameliorated by progression through four years of liberal education. To test these competing ideas, we surveyed a representative sample of 264 freshmen and a representative sample of 340 seniors. In addition to measures of their short-term and long-term mating orientations and mate preferences, students reported on a variety of plans for the future (as applicable): age of anticipated marriage and child rearing, number of children desired, desired salary and education, and work plans before and after children. We describe students’ plans for work and family as a function of year in college, discipline of study, and sex.

Tarama Lynne Poncelet and Anna Lorraine Lukes (140)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Appropriateness and Effectiveness of Spanking: A Study of Child Misbehavior and Child-Adult Relationship

Children behave mischievously, often simply as a way to express emotion. Two types of misbehavior are common among children. Aggressive misbehavior is defined as either hitting or kicking, whereas passive misbehavior is defined as disobeying or talking back to an adult. Adults should apply disciplinary actions to subdue the misbehavior, however, the perceptions of different forms of discipline can be influenced by the child-adult relationship (either child-parent or child-babysitter). This study explores the appropriateness and effectiveness of spanking as a form of child discipline. Participants read a short paragraph describing one of four scenarios and rated the appropriateness and effectiveness of spanking using a five-point Likert scale (on which higher ratings imply greater appropriateness or effectiveness). Data were analyzed using two-way analysis of variance to assess differences based on type of child-adult relationship and type of child misbehavior. Results indicated a significant main effect for child-adult relationship; specifically, spanking was viewed as more appropriate when a child’s parent performed the discipline rather than a babysitter. However, spanking was not considered effective in either type of relationship. There was no significant difference in either perceived appropriateness or effectiveness of spanking as a function of whether the misbehavior was aggressive or passive.

Emily Carol Prosser and Katherine Emily Quigley (74)

Faculty Mentor/Collaborator: **Jennifer J. Muehlenkamp**

Health Professionals’ Attitudes Toward Self-Harming Patients

Self-injury is a growing problem, particularly among youths, and many report they do not seek help for their self-injuring behavior because they fear the reactions of health professionals. The goal of this study was to examine the attitudes of various health professionals towards individuals who engage in self-injury. An invitation to participate, with a hyperlink to an online survey assessing attitudes towards self-injuring patients, as well as personal experiences with self-injury, was distributed to various groups of health professionals via professional listservs. To date, 65 professionals have completed the survey. We expect to find that the professionals with more experience in treating self-injuring clients, and those with personal experience with self-injury, will express more accepting attitudes towards self-injuring patients. The results will assist with identifying factors associated with negative reactions toward individuals who self-injure and will help guide the development of professional training seminars to reduce pejorative attitudes.

Nicholas Kyle Reetz, Sarah Ellen Camp, Valerie Lynn Vantussi, and Brianne Helen Larson (98)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

Investigating the Use of a Blocked Trial Procedure to Facilitate Conditional Skill Discriminations

Young children with autism who are in the process of building simple skill repertoires (i.e., motor imitation, receptive identification of body parts, etc.) are sometimes unable to discriminate between the initial skills that comprise the repertoire. For example, a young child with autism who previously had no motor imitation skills may be unable to discriminate between when to perform the recently taught skills of imitating clapping and imitating waving. Surprisingly, little to no research to date addresses this problem. The inability to discriminate between newly learned skills can significantly slow

the acquisition of other new skills in a child's developing skill repertoire and may be attributed to a lack of stimulus control. The current study investigated the use of a blocked trial procedure (Saunders & Spradlin, 1993) to facilitate conditional skill discriminations. More specifically, the current study looked at how requiring correct responses to simple discrimination tasks before gradually increasing the level of discrimination task difficulty affected the participant's ability to discriminate between newly learned skills.

Andrea Lynn Rice and Anne Elise Gullickson (70)

Faculty Mentor/Collaborator: **Jeffrey A. Goodman**

Effects of Religious Coping Style on Cognitive Self-Control and Self-Efficacy

Religion plays a crucial role in the lives of the majority of Americans, yet research indicates that holding religious beliefs may not always confer psychological benefits (Pargament, 2002). The purpose of the present study is to evaluate the relationship between religious coping and cognitive self-control and self-efficacy as possible pathways through which religious beliefs contribute to psychological well-being. We believe that the ways in which a person references his/her religious beliefs in times of stress will mediate the potential benefits of religious coping on his/her self-control and self-efficacy. In this correlational study, participants completed measures of religious coping, self-control and self-efficacy, societal power, and religious beliefs. If, as predicted, positive religious coping confers self-control benefits while negative religious coping confers self-control deficits, our research will make a major contribution to several lines of research (i.e., coping, benefits and costs of religion, self-control and self-regulation). Furthermore, our research may have practical implications for understanding people's ability to regulate various behaviors (e.g., academic persistence, smoking, dieting, and practicing safe sex), and to believe in their ability to succeed.

Tehya Mai Rice and Shauna Lee Stoeger (117)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Green Behavior: The Effect of Political Ideology on Eco-Friendly Nature

We intend to present a study examining the persuasiveness of scientific evidence from both sides of controversial topics (global warming and genetically modified organisms) on participants of different political ideologies. Hence, our study will be a 2 (type of evidence) X 2 (political ideology) between-subjects design and our dependent variables will be the participants' willingness to believe in the theories presented, and their attitudes towards the topics in relation to the environment. We hypothesize that participants with less background knowledge on the topic will be more persuaded to agree with the evidence. Moreover, participants will be more persuaded to agree with the evidence presented when exposed to a topic that is not in the forefront of political discussions. Last, we hypothesize that participants with a more liberal political outlook will be likely to express stronger beliefs in the theory of global warming and the negative effects of genetically modified organisms than those with a more conservative outlook. The proposed research addresses a contemporary issue that is prevalent in the media. With the media intending to persuade consumers on these issues, it is important to understand what type of information influences people who identify with different political ideologies.

Megan Louise Risdal and Kevin Matthew Weber (142)

Faculty Mentor/Collaborator: **April L. Bleske-Rechek**

Evaluating Attractive Alternatives: The Moderating Influence of Mating Orientation on Susceptibility to the Blinders Effect

In the current research, we examine a relationship maintenance mechanism known as the "blinders" effect -- the tendency of individuals in committed, romantic relationships to derogate the perceived attractiveness of desirable alternatives (Simpson, Gangestad, & Lerma, 1990). We extend previous studies by investigating the moderating influence of short-term and long-term mating orientation on susceptibility to the blinders effect. Using a cover story about psychology in advertising, half of our participants viewed pre-rated pictures of highly attractive and average attractiveness individuals, and half viewed pictures of only average attractiveness individuals. All participants rated the person in each picture for their attractiveness and (in keeping with the cover story) ability to sell a product. Participants subsequently completed a mating orientation inventory and reported their relationship status. Those in committed relationships answered several questions about their partner and their overall perceptions of the relationship. We report on the results of two predictions. First, we expect that involved participants will succumb to the blinders effect: They will rate the attractive members of the opposite sex as less attractive than will single people. Second, we predict that participants with a stronger long-term mating orientation and weaker short-term mating orientation will show a heightened blinders effect.

Nicole Christine Scharrer, Katie Marie Wiskow, Laura Margaret Matz, Adam John Lobermeier, Andrew Daniel King, Brittany Leigh Byrne, Allie Marie Hensel, Trevor Ryan Goldsmith, and Karl Joseph Zimmerman (97)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

A Comparison of Various Mastery Criteria for Teaching Skills to Young Children Diagnosed with Autism

When teaching new skills to children diagnosed with autism, skills are taught to a predetermined criterion (e.g., 100% for 2 days). A criterion is selected that presumably will result in the skills maintaining after treatment ends. In the past, skills have been taught for varying numbers of sessions. For example, in Eikeseth & Hayward (2009) criterion was one session and in Tarbox, Madrid, Aguilar, Jacobo, & Schiff (2009) criterion was three sessions. The current study is an investigation of the effect of teaching a skill to various criteria (i.e., varying number of days at 100%) on skill maintenance for children with autism. Skills were taught to 100% accuracy for one day and then were put into a maintenance phase. In maintenance, skills were checked daily, then, if accuracy fell below 100% skills were put back into an acquisition phase and taught to 100% accuracy for the previous number of days in acquisition plus one day (i.e., skills were in acquisition for one day, then two days, then three days, etc.).

Nicole Christine Scharrer, Katie Marie Wiskow, Katherine Lynn Lawrenz, Amber Ann Peirce, Kathryn Joanne Prince, Chelsey Rita Oleson, Karl Joseph Zimmerman, and Caitlin Ann Flanigan (96)

Faculty Mentor/Collaborator: **Daniel D. Holt**

Prompting Versus Spontaneous Pairing of the Behavior Sit in Canines

A common and important skill taught to canines is to sit on command. In the Behavioral Applications Regarding Canines (BARC) program at the University of Wisconsin-Eau Claire, canines are regularly taught to perform the behavior sit on command by using a combination of prompting and spontaneous pairing. For the purpose of this study, prompts are defined as the trainer holding a putative reinforcer above the canine's nose and moving the putative reinforcer over and behind the canine's head and spontaneous pairing is defined as reinforcing the canine after the canine performed the behavior sit without prompts. While canine training literature discusses using spontaneous pairing and prompts to train canines (Lindsey, 2000; Pryor, 2005), we are not aware of any published research making a direct comparison of these approaches for basic command acquisition. To address this question, the current study compared the efficacy of prompting to spontaneous pairing when training a canine to sit on command by placing canines into one of two groups: prompting or spontaneous pairing. For each group, the number of sessions and total training time to skill acquisition were recorded.

Christine Ann Schounard and Maddie Jane Sutton (47)

Faculty Mentor/Collaborator: **Michael I. Axelrod**

Investigating the Consistency of Results Obtained from a Brief Experimental Analysis of Oral Reading Fluency

Brief Experimental Analysis (BEA) has made it possible for educators to quickly select reading interventions for Oral Reading Fluency by empirically identifying treatment conditions or teaching strategies that produce the highest levels of student performance. Research on BEA of Oral Reading Fluency suggests that BEA can be used to directly link assessment to intervention (Burns & Wagner, 2008). However, research has not examined the consistency of BEA of Oral Reading Fluency results over time. With the use of archival data collected from the Human Development Center's Academic Intervention Clinic, this study aims to compare BEA of Oral Reading Fluency results for participants from two different assessment periods conducted four months apart.

Amy Kay Thoftne, Anne Elizabeth Kulinski, and Matthew Lee Nolan (27)

Faculty Mentor/Collaborator: **Mary Tusing**

What is Really Measured: Language or Intelligence? A Review of Preschool Intelligence Tests

Intelligence tests commonly use spoken directions to instruct, guide, or give feedback to children completing the assessments. Directions can include basic language concepts that young children may not understand. Previous analyses of preschool tests suggest that all spoken directions contain excessive use of difficult basic concepts (Flanagan et al., 1995). We reviewed current versions of preschool tests to determine the frequency of basic concept words in test directions. Basic concept words were operationally defined as words present on commonly used tests of concept knowledge (Boehm Test of Basic Concepts and Bracken Basic Concept Scale). The Boehm and BBCS provide data on the ages at which concepts are typically understood, allowing for a determination of when words may be more problematic if included in test directions. Our research addressed the following questions: Are certain tests better suited for use with preschool children because of fewer

concept word violations? Do current tests have fewer concept words violations than previous versions? Are there specific age ranges during which individual tests are problematic with regard to concept word violations? Results of this study will assist professionals in choosing the most appropriate assessments to use with preschool children, particularly children from linguistically diverse backgrounds.

Kevin Matthew Weber (141)

Faculty Mentor/Collaborator: **Blaine F. Peden**

Sexual Selection and Risk Taking: The Influence of Exposure to Potential Mates on Risky Decision Making

This project assesses how exposure to potential mates affects risky decision making. This question has recently been addressed by evolutionary psychologists, who have shown that greater mating motivation in men leads to riskier decisions (Baker & Maner, 2008). To replicate and expand on these findings, the current study will expose participants to a series of pictures of potential mates of either high attractiveness or average attractiveness; they will be instructed to rank-order the pictures based on both attractiveness and desirability. They will then be asked to complete both an abbreviated version of the Sensation Seeking Scale V (Zuckerman, 2007) and a Blackjack Risk Task (after Blascovich, Veach and Ginsburg, 1973), which are meant to act as an explicit and a behavioral measure of risk-taking, respectively. Data are still being collected, but are expected to demonstrate that those viewing pictures of attractive members of the opposite sex will exhibit higher scores on the Blackjack Risk Task, especially for males. At the same time, scores on the SSS-V are expected to remain relatively constant, which would suggest that this heightened willingness to engage in risky behavior in a mating context is implicit rather than explicit.

Katie Marie Wiskow, Brittany Leigh Byrne, Nicole Christine Scharrer, Allie Marie Hensel, Kaija Michelle Muhich, Andrew Daniel King, Laura Margaret Matz, and Trevor Ryan Goldsmith (118)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

Assessing Generalization Between Receptive and Tact Verbal Operants in Young Children Diagnosed with Autism

Children with autism benefit from early and intensive behavioral treatment (Lovaas, 1987; Smith, 1999). Although behavioral treatment is effective for children with autism, research needs to be conducted to identify procedures that facilitate treatment as effectively and efficiently as possible. For example, using procedures to teach skills that result in generalization to untaught skills results in more efficient treatment. Typically developing children generally master receptive skills before expressive skills (Fraser, Bellugi, & Brown, 1963) and generalize to expressive skills (Dollaghan, 1985). Children with developmental disabilities also generally acquire receptive skills before expressive skills (Rosenberg & Abbeduto, 1993) but may fail to generalize receptive skills to expressive skills (e.g., Guess & Baer, 1973). Studies have found expressive to receptive generalization more likely to occur (e.g., Cuvo & Riva, 1980). Goldstein (1993) states there may be an equivalence relation between receptive and expressive skills (e.g., verbal cue with a visual-motor action and visual-motor cue with a verbal response). Further research needs to be conducted due to the paucity of studies. The present study taught picture cards to children with autism and found that teaching one skill (i.e., receptive or tact) generalized to the untaught skill in both conditions for most picture cards.

Katie Marie Wiskow and Valerie Lynn Vantussi (119)

Faculty Mentor/Collaborator: **Kevin P. Klatt**

Habit Reversal Training to Treat Tics in a Young Boy Diagnosed with Tourette's Syndrome

Tourette's Syndrome is a neurological disorder. A majority of patients seek medical treatment to manage tics (Piacentini & Chang, 2001). Tic symptoms, however, also fluctuate as a function of the environment (Leckman & Cohen, 1999) suggesting that a behavioral intervention may be effective in managing tics. Habit Reversal Training (HRT) (Azrin & Nunn, 1973) is a multi-component behavioral treatment package for suppressing nervous habits and tics by creating awareness of the behavior and engaging in an incompatible behavior, or competing response, to replace the nervous habit or tic. Studies have found the Habit Reversal Training procedure to be effective for decreasing tic frequency (Peterson, Campise, & Azrin, 1994; Piacentini & Chang, 2001; Woods & Miltenberger, 1995, 2001). One study found that for some patients, self-monitoring each time the tic occurs (awareness training) is a type of competing response that may function as a punisher for the tic, thus decreasing tic frequency (Sharenow, Fuqua, & Miltenberger, 1989). The current study included HRT procedures to treat tics in a 9-year-old patient with Tourette's syndrome.

Karissa Kristine Zastrow (167)

Faculty Mentor/Collaborator: **Lori A. Bica** and **Jeffrey A. Goodman**

Egalitarian Attitudes, Gender Roles, and College Students' Beliefs About Dating Behaviors

Research has shown that despite shifts in gender roles that have occurred in recent decades, many people today still engage in traditional gendered behavior when on a date. The purpose of this study is to investigate why following traditional gender roles in dating is still common practice among college students. In the first phase of the study, participants complete an online questionnaire designed to measure egalitarian attitudes. In the second phase of the study, participants are presented with one of eight different vignettes about a person going on a date. The vignettes differ across three dimensions: female vs. male main character, traditionally masculine/feminine vs. neutral behaviors, and gain frame vs. loss prevention. Using structured interview questions, the researcher will ask participants to discuss whether or not they thought the date was successful. It is hypothesized that there will be no significant differences in ratings of date success between male and female participants and between those with high vs. low egalitarian scores. It is also hypothesized that participants with high egalitarian scores will respond most positively to vignettes involving a gain frame and traditional behaviors. Participants with low egalitarian scores will respond most positively to loss prevention and traditional behaviors.

SOCIAL WORK

Kyrie Marie Smith, Alethia Paynia Moua, Honey Moua, Mai Nhia Vue, and Julie Anne Koehler (238)

Faculty Mentor/Collaborators: **Leah Olson-Mc Bride** and **Ka Vang**

A Vision for the Future of Eau Claire's Hmong Community: A Community-University Collaboration

The Eau Claire Area Hmong Mutual Assistance Association (ECAHMAA) has been providing various educational, vocational, and social services to the growing Hmong population in northwestern Wisconsin for 29 years. The primary purpose of the project was to develop and implement a culturally appropriate research protocol that allowed the research team to collect data regarding the Hmong community's current view of the programming at ECAHMAA and to gather the community's input on a vision for ECAHMAA's future operations. The students, in conjunction with ECAHMAA staff, developed and refined the survey and interview protocol. The student researchers identified sites, such as a meeting of the Hmong Student Association and a gathering at the Hmong Christian Church, and obtained the cooperation of individuals at those sites in order to engage in data collection. The members of the research team who were fluent in Hmong collected data from respondents who preferred to speak Hmong; all members collected data from those who preferred to speak English. While the research is ongoing, an initial thematic analysis of the responses (n=82) indicates that generational differences and the lack of communication, both within the Hmong community and between the Hmong community and the larger community, are primary concerns.

SOCIOLOGY

Hanna Arlene Christ (239)

Faculty Mentor/Collaborator: **Jeff S. Erger**

Exchange Orientation, Electronic Communication, and Satisfaction in Romantic Couples

Our study was focused on how an individual's satisfaction with romantic relationships was related to the exchange orientation within the couple and the perceived equity of communication exchanges including electronic communications. A survey of 58 individuals was conducted and we compared couples in terms of their dyadic exchange orientation (high-high, high-low, and low-low couples) in addition to individual exchange orientations. Following previous research, we hypothesized that couples with a balanced exchange orientation would have higher satisfaction than unbalanced couples. Although there were few significant differences among individuals and couples on the variables studied, there are slight differences among the couples orientation and perceived satisfaction with communication. When individuals perceived communication as one-sided they were less satisfied with communication in the relationship. Due to limitations of the sample, further research is needed to better define the association of exchange orientation, individually or within couples, with relationship and communication satisfaction.

Alexandria Esther Korb (240)

Faculty Mentor/Collaborator: **Jeff S. Erger**

What is a Woman?: An Examination of the Discursive Formation of “Woman” Over Time

This study analyzes the discursive construction of “woman” in key feminist texts across the three waves of feminism. Drawing on sociological theories of Identity, the texts were read and coded for any statements about what women “are,” in part or in whole. Analysis of these resulting codes linked the claims about “woman” in terms of class, race, status, biological sex, and social roles to seek patterned claims about what women are, can be, or should be over time in feminist writings. Analysis, consistent with sociological theories of Identity, showed: (1) an increased focus and use of reflexivity and especially reflection on identity over time; (2) a shift over time from a more essentialist perspective on “woman”, often conflating sex and gender, to a more social constructionist perspective distinguishing sex and gender; and (3) a shift from a more collective identity expression to a more individualistic identity expression over time. The explicit and implicit definitions of “woman” over time as constructed by feminists have rarely been examined through a sociological perspective. This research helps expand our understanding of the central focus (definitions of “woman”) of a long-term social movement.

Kathryn Marie Meinholz and Justine Amy Cornelius (241)

Faculty Mentor/Collaborator: **Jianjun Ji**

Links to Psychological Wellbeing of the Urban Chinese Elderly

As the topic of psychological wellbeing is rarely dealt with in previous empirical studies among Chinese literature, our study was expected to bring new light on this particular research domain. We hypothesized that demographic characteristics (number of children and gender) of the Chinese elderly have an impact on their psychological well-being (health, loneliness, relationships, and life satisfaction), and socioeconomic statuses (family income and state help) of the Chinese elderly have an impact on their psychological well-being. Working with a professor to analyze data and draw conclusions provided us with valuable hands-on experience pertinent to our sociology majors. We used 1992 nationwide survey data collected by China Research Center on Aging and SPSS to analyze that data. We also examined outside literature, incorporated theories, and used statistical methods which measured the variables’ strength and significance. Overall, the findings supported our hypotheses that demographic characteristics and socioeconomic statuses impact the psychological well-being of elderly Chinese individuals. Chinese society may have been reformed or changed in ways that could potentially cause differences and pattern shifts of recent or future results. Because of this, future studies and research should be done to address the implications of newer and improved societal norms and governmental changes.

Lorin Marie Pekarske and Shelly Jean Smith (243)

Faculty Mentor/Collaborator: **Kathleen A. Nybrotten**

Living Together: Now What? Cohabitation Among College Students

Young adult union formation has changed dramatically in recent decades; the greater emphasis on higher education and financial stability and a resulting delay in marriage has increased the amount of college students cohabiting with their significant other. We examine why students cohabit, marital expectations, relationship quality, and parental attitudes towards cohabitation. A random sample of UWEC students was surveyed regarding their attitudes towards cohabitation; an additional survey was conducted for those in cohabiting relationships. Our findings indicate the vast majority of respondents cohabit for relationship convenience and less to test the compatibility for marriage. However, over 80% of the respondents anticipate marrying their cohabiting partner. Approximately 1/3 of our sample indicated a decrease in romance and/or sexual satisfaction since cohabiting. Parental support for cohabitation was surprisingly positive. Our results provide greater understanding about young adult union formation and decision- making within the social context of higher education.

Megan Michelle Reed (242)

Faculty Mentor/Collaborator: **Kathleen A. Nybrotten**

Hooking Up Among College Students

We examine the characteristics of hooking up situations as well as the sexual attitudes and behaviors of college students. Of particular interest is whether the hooking-up process demonstrates a double standard for sexual behavior between men and women. This research is important for several reasons; it will help further understanding of college student behavior and attitudes that may affect university policy regarding alcohol, sexual behavior safety, and psychological safety. Using survey data, we describe what the advantages and disadvantages associated with hook ups from the perspective of college students are. We expect to find a significant amount of college students who hook up especially with the influence of alcohol. We are also expecting to find support for the existence of a double standard, advantages, and disadvantages. According to past

research hooking up has a greater negative connotation for women than it does for men (Hamilton & Armstrong, 2009; Eshbaugh & Gute, 2008; Bogle, 2008). Many articles discussed the double standard which allows men to become sexually promiscuous, while not only maintaining their reputation, but also having the possibility of improving their masculine standing (Hamilton & Armstrong, 2009; Eshbaugh & Gute, 2008; Bogle, 2008).

STUDENT AFFAIRS/DEAN OF STUDENTS

Heather Dawn Harris, Kong Meng Her, Kou Vang, and Lee Vang (125)

Faculty Mentor/Collaborator: **Mary B. Huffcutt**

College Knowledge and Closing the Gap: The Effectiveness of the Blugold Beginnings Middle School College Access Program on College Readiness

The goal of the Blugold Beginnings Middle School College Access Program is to reach out to students in local school districts who are low-income, would be first generation college students, or are in the ethnic minority. Over the course of the last three years, this program has grown from 25 students to 180 students. Currently, there are 70 mentors working in local schools promoting college knowledge, tutoring students, and promoting student confidence in their ability to obtain a college degree. Research has shown that middle school is the age at which college readiness programs have the most impact for students. The Blugold Beginnings Middle School College Access Program attempts to enroll students during this critical time to close the “gap” that these students often fall through. We report the overall increase in college knowledge of 100 middle school students, measured using a pre- and post-assessment of college knowledge. We also report other successful academic behaviors as a function of how long the students have been enrolled in the College Access Program.

Nicholas John Severson, Elsa Dorothy Kraus, Ann Watson, Mary Elizabeth Wolf, Janna Ruth Caspersen, and Sarah Ashley Tweedale (126)

Faculty Mentor/Collaborators: **Jodi Marie Thesing-Ritter** and **Kirby D. Harless**

Assessment of Impact of Civil Rights Pilgrimage on Student Participants

The Civil Rights Pilgrimage was piloted in 2008 and has been developing a foundation of research to better examine the relationship between UW-Eau Claire students and their ideas about the importance of immersion experiences, racial prejudice, and gender inequalities. Every participant will take a pre- and post-test and an evaluation of the immersion experience. These results will be added to the previous studies to further the longitudinal research started in 2008 and 2010 for the immersion experience and course-imbedded experience respectively. We expect to find that participation in this immersion experience will impact students’ attitudes concerning racism, sexism, and white privilege, contributing to a more inclusive environment at UW-Eau Claire. The experience should underscore the value of diversity and diversity education.

Mai Neng Vang and Ong Lo (139)

Faculty Mentor/Collaborator: **Jodi Marie Thesing-Ritter**

Impact of Blugold Beginnings on Student Learning Outcomes and Retention of Learning Community Participants

This study is designed to assess the effectiveness, through learning outcome attainment and student retention, of the Blugold Beginnings Learning Community (BBLC) pilot program at the University of Wisconsin Eau Claire. Twenty-two multicultural first year students participated in the program and research study. This research study provides data for changes to the Blugold Beginnings pilot project. Additionally, research from this project will be utilized in the development of future external grant funding opportunities. The research team tracked semester grades and rates of participation in co-curricular activities and immersion experiences among the participants in the BBLC. These values and rates were compared with the values and rates of other multicultural first-year UW-Eau Claire students. A survey was administered to BBLC students at the end of their initial year to determine the effectiveness of BBLC to promote student success and co-curricular participation. Students in the study did maintain a higher GPA than other multicultural students for the same year.

Index

A

Adler, Julie D. 7
Ahrendt, Chris R. 31
Alasis, Nadar Saad M 7
Albers, Holly Mae 59
Alexander, Christine Jo 11
Al Harbi, Hanadi Eid S. 7
Alhazmi, Najlaa Ali A. 7
Allen, Ian Kenneth 54
Amundson, Emily Jo 48
Andersen, Robert N. 31
Anderson, Eden Marie 63
Anderson, Julie A. 39
Anderson, Katie Rose 3
Anderson, Kevin Lee 59
Anderson, Stefanie Marie 48
Anderson, Tyler Jonathan 55
Andreske, Britni 50
Andrle, Erika Ann 3
Anthony, Ashley 6
Appel, Kathryn Kaye 16
Arvey, Joshua John 15
Asay, Nicholas James 66
Ascher, Beth Louise 4
Axelrod, Michael I. 2, 60, 69

B

Bailey, Elizabeth Ann 50
Bainbridge, Amy Lynn 48
Banks, Alison Rachel 27
Baranek, Michelle Lee 13
Barker, Mark 47
Barlow, Gregory James 15
Bartels, Candice Alesia 38
Barth, John Eugene 22
Barth Jr., Robert J. 56
Bartlein, Andrew Ralph 46
Bauer, Mark Patrick 32
Baumgartner, Lindsey D. 23
Beam, Sarah Nicole 5, 6
Beckett, Amy 6
Beilke, Danielle Marie 18
Bejin, Ty 34
Bell, Alyssa Faye 59
Bell, Robert Allen 22
Benda, Anya Ingrid 35, 36, 37
Bender, Shilo Alena 56
Benson, Erica J. 19, 20
Benz, Rachel Elizabeth 18
Berg, Marguerite 11
Berlinghieri, Laura A. 51
Bhattacharyay, Sudeep 24, 25, 26
Bica, Lori A. 53, 59, 63, 64, 66, 71
Bjerke, Joshua Alan 50

Bleske-Rechek, April L. 61, 62, 64, 65, 67, 68
Borchardt, Caitlin Rose 41
Boulter, James E. 23
Bradley, Jacob Lawrence 66
Brake, Anna Laurel 12
Brandt, Cassidy Megan 10
Braunreiter, Kara Marie 38
Bredle, Donald L. 15, 18
Brellenthin, Nicole Marie 12
Brewer, Nicholas Riley 33, 45, 46
Brewster, Aaron James 3
Brock, Kelly Lynn 16
Browning, Jamie Kieran 58
Brueggen, Samuel Austin 29
Bryant, Winnifred M. 43
Buell, Brian Joseph 32
Buranakorn, Wanrudee 11
Buxton, Lauren Marie 52
Byrne, Brittany Leigh 61, 67, 69, 70

C

Campbell, Caitlin Tracy 15
Campbell, Vincent Edward 60
Camp, Sarah Ellen 61, 63, 67
Cao, Bach Viet 24, 25
Carlson, Emilie Martha 42
Carlson, Erick Jeffrey 24
Carlson, Joseph Douglas 64
Carney, Michael John 26
Carroll, Wayne D. 52
Caspersen, Janna Ruth 73
Chan, Larry 45
Charette, Jacob 17
Charlier, Aubrey Jo 10
Christensen, Drew R. 52
Christenson, Eric Charles 50
Christ, Hanna Arlene 71
Christiansen, Tyler Robert 53
Clark, Scott K. 8
Collura, Alyssa Jeane 60, 63
Cook, Cole John 45
Cook, Ryan Joseph 16
Cornelius, Justine Amy 72
Coughlin, Teresa Anne 18
Crist, Taylor Lea 36

D

Daehler, Charlie 33
Dahl, Bart J. 24
Deckers, Tim James 24
deKoven, Aram 8
DeLapp, Christina Marie 6, 60
Demcak, Lauren Ruth 14
Dettwiler, Melissa Marie 48
Diller, Alyson Marie 54
Dobbe, Jennifer Erin 63
Doering, Abigail May 30
Dohms, Elizabeth Naomi 47

Domask, Benjamin Zachary 66
Don, Gary W. 33
Draeger, Andrew David 16
Drew, Michael Richard 22
Drohman, Chelsey Marie 9
Dubois, Brent Paul 15
Duffy, Colleen M. 30
Dugolenski, Madeline Giacomino 59
Dunham, Douglas J. 27
Durocher, Kaleb 11

E

Ekenstedt, Megan 11
Ellingstad, Justin Jon 15
Ellis, Gregory Matthew 33
Emch, Julia Mary 63
Ennen, Kayli 34
Enright, Morgan Elaine 4
Erger, Jeff S. 71, 72
Erickson, Stacey Michelle 4
Ernst, Beth 6
Ernst, Daniel J. 29, 32
Ernst, Jeremy Albert 49
Evans, Matthew M. 46

F

Fairbanks, Adam Arthur 50
Farin, Elizabeth Ann 60
Farrell, Michael Shane 43
Faulkner, Douglas J. 34
Fay, James Joseph Robert 19
Fay, Martha J. 47, 48, 50
Fernandez, Manuel 21
Fetter, Caitlyn 34
Fields, Jessica Rae 60
Figg, Kelsey Lynn 16
Finley, Alexandra Leann 48
Fischer, Greg John 39
Fisher, Stephen James 51
FitzGerald-Fleck, Patrick W. 58
Flanigan, Caitlin Ann 69
Flesch, Kurt Bradley 45
Floyd, Chris H. 43
Floyd, Corrie T. 38
Follett, Victoria Lynn 64
Ford, Lyle A. 45
Forman, Pamela J. 10
Forsting, Shane 17
Forsythe, Justina Elizabeth 58
Fox, Michael Joseph 19, 61
Fredman, Amy Jo 48
Frei, Ethan Daniel 28
Freund, Deborah Ann 42
Freye, Ryan Richard 15
Frinak, Joshua Joseph 30, 31
Fritsch, Amber Rose 61
Fuerstenberg, Eric Adam 61, 62, 67

G

Gallagher, Warren H. 25, 27
Gandica, Beatris Alejandra Mendez 21
Gantert, Lydia 11
Gauer, Brittany Pearl 19
Gawinski, Sara Marie 49
Gazella, Emily Rose 10
Geheran, Danielle Elise 50
Geniusz, Wendy Makoons 3, 47
George, Natalie Grace 48
Gerber, Alicia Rae 48
Germonprez, Matt 29
Gingerich, Derek J. 41
Glisch, Chad Michael 39
Goldsmith, Trevor Ryan 69, 70
Gontarek, Bryan Christopher 39
Goodman, Jeffrey A. 65, 68, 71
Goodman, Roberta A. 15
Gotta, Elise Natalie 60
Greelis-Vanlaningham, Dustin D. 65
Grinde, Gina Fay 16
Grosskreutz, Luke 17
Grote, Katherine R. 32, 35, 36, 37
Gullickson, Anne Elise 68

H

Haak, Matthew James 44
Haas, Brady Joel 8
Habermeyer, Sara Kim 50, 62
Hacker, Jonas Marcel 12
Hagenbucher, Jacob Russell 16
Hagen, Paula Christine 19
Haller, Jessica Elaina 17
Hall, Mary Ann Jeanette 38
Halverson, Erik Michael 16
Hamann, Emely Christine 27
Hammers, Matthew D. 24
Handorff, Ashleigh Rose 16
Hansen, Jason Jerome 21
Hanson, Laine Elizabeth 13
Hanson, Laurel Alyce 55
Hardel, Bryan 36
Harless, Kirby D. 73
Harper, Becky 18
Harris, Heather Dawn 61, 62, 67, 73
Hartnett, Sean 33
Hati, Sanchita 24, 25, 26
Havertape, Lindsey Ann 15
Hedenstrom, Aaron Norell 12
Hemmy, Sarah Elizabeth 7
Henn, Brittany Rose 61
Hensel, Allie Marie 60, 63, 69, 70
Her, Cheng 25
Her, Kong Meng 73
Herman, Daniel P. 13, 39, 40, 41
Hersant, Jenna Marie 18
Hines, Zachary Michael 51, 52
Hlas, Anne Cummings 7
Hoepner, Jerry K. 14

Hofer, Ashley Nicole 57
Hoffman, Laine Jean 53
Hoffman, Mary F. 48
Hoida, Emily Jo 27
Holt, Daniel D. 64, 69
Hon, David Frank 33, 35
Hooper, Robert L. 36, 37, 38
Howe, R. Michael 31
Huffcutt, Mary B. 73
Hughes, Katherine Saara 63, 66
Hu, Nan 47
Hupy, Christina M. 33, 35, 38, 55
Hupy, Joseph P. 34, 35, 56

I

Ihinger, Phillip D. 37, 56
Ingham, Mark Lester 34
Invie, Brianna Leigh 2
Irvine, Kelsey Jean 58
Isaacson, Jeremiah Jordan 29
Ives, Caramon Alexander 27

J

Jablonski, Paige Marie 63, 66
Jacobs, Katrina Cleghorn 42
Jacobs, Michael Graham 11, 33
Jacobson, Chelsea Rebecca 49
Jacoby, Ian Roy 20
Jahnke, Joel Charles 34
Jamelske, Eric M. 51, 52, 53
Jamison, Katie Vivian 48
Jang, Won Yong 49, 50, 51
Janik, Daniel S. 43, 44
Janot, Jeffrey M. 16, 17
Janssen, Erik Lee 55
Jarvais, Stephanie Renee 1
Jasicki, Stanton Peter 13
Jeffers, Alexiss 63
Jensen, Brett Allen 17
Jentz, Allison Lynn 18
Jerdee, Nicole Jean 64
Jewett, David C. 63
Jiao, Jingjing 7
Ji, Jianjun 72
Jobb, Michael David 6
Johnson, James Michael 25
Johnson, Katie Lynn 64
Johnson, Lucas Harold 57
Jones, Thomas C. 26
Jordan, Melissa Elizabeth 16
Juett, JoAnne C. 5, 6

K

Kaldjian, Paul J. 54, 55, 56
Karst, Catherine Ann 49
Kasson, James Alexander 57
Kedrowski, Amy Marie 16
Keeton, Adam 34
Keim, Melissa 47

Kelley III, David P. 64
Kelley, Jyl A. 11
Kemper, Kelsey Lynn 50
Keniston, Allen H. 15
Kenneavy, Erin Lorraine 12
Kern, Bryce Thomas 15
Kimble, Allison Jeanne 49
King, Andrew Daniel 69, 70
Kirk, Colleen Marie 16
Klatt, Kevin P. 60, 63, 67, 69, 70
Kleist, Andrew 19
Klema, Benjamin Harlow 21
Klocker, Elizabeth Anne 16
Knauf, Jeanne Marie 30
Koch, Pierce 49
Koehler, Julie Anne 71
Kolb, Carolyn Margaret 64
Kolbeck, Morgan Katherine 17
Koll, Alexandra Morgan 63
Komiskey, Lucas Tyler 28
Konsella, Rachel Jeanne 11
Korb, Alexandria Esther 71
Kraker, Jessica J. 32
Kraus, Elsa Dorothy 73
Krentz, Benjamin David 27
Kristoff, Michael 36
Krohn, Joseph Daniel 65
Kron, Ben Allen 63
Kroner, Kellyn Ann 65
Krueger, Elizabeth Mary 2
Krunnfusz, Andrea Elaine 65
Kruse, Sarah Rebecca 56
Kuehn, Katherine Ann 45, 46
Kujawa, Georgeann Carol 25, 40
Kulasiewicz, Jennifer Jill 1
Kulinski, Anne Elizabeth 69
Kurkowski, Lauren Allyce 5, 6

L

Lafferty, Eric Daniel 32, 33
Laffey, Morgan Marie 41
Lake, Kayla Lynne 14
Lamers, Lauren Mary 40
Larocque, Brittany Rose 17
Larson, Brianne Helen 67
Larson, Eric Andrew 50
Larson, Jan M. 47
Larson, Joy M. 52
Larson, Nicole Ruth 54
La Salle, Lisa R. 14
Lasure, Kyle 25
Lau, Alison Mae 9
Lau, Todd R. 36, 38
Lawrenz, Katherine Lynn 69
Lee, Charern 59
Lehman, Brent Phillip 25
Leibham, Mary Beth 59
Leicht, Jason A. 27
Leland, David S. 66

Lemke, Kayla Rae 16
Lentz, Jarrod Michael 33
Lilek, Nicholas Allan 56
Lim, Randy 66
Lindemann, Krista Rose 8
Lindert, Heather Sue 14
Lindholm, Spencer Thomas 15
Lindner, Megan Marie 40
Liu, Ling 47
Lobermeier, Adam John 63, 69
Lo, Bruce W. N. 57
Lockhart, Thomas E. 45
Lonzarich, David 41
Loomis, Allyson A. 21
Loomis, Jonathan R. 1, 20
Lo, Ong 73
Loveland, Alyssa Jane 66
Lozar, Barbara 61
Ludvik, Andrew Charles 42
Luedtke, Alex Arnold 47
Lukes, Anna Lorraine 67
Lyman Gingerich, Jamie S. 38

M

Mabis, Matthew Donald 20
Mahaffy, Ellen D. 10, 11
Mahoney, J. Brian 36
Maierhofer, Christopher Nolan 40, 42
Malagold, Gina Daniela 5
Malin, Brittany Lee 16
Martinez, Lissa Jo 10
Masarik, Diane K. 9
Mashat, Abdulaziz Mohammad 7
Mason, Morgan Kathleen 16
Mater, Allison Marie 17
Matula, Bethany Kristine 65
Matz, Laura Margaret 63, 69, 70
McCarthy, Rachel Katherine 2
Mc Ellistrem, Marcus T. 27, 28
McGill, Gregory James 46
McHugh, Joshua David 40
Meier, Bret D. 27, 30
Meinen, Zachary Alexander 51
Meinholz, Kathryn Marie 72
Meitzner, Karl Jet 25
Meixner, Shaughn David 57
Meller, Megan Elizabeth 41
Melsness, David John 55
Merten, Eric C. 42, 44
Meyers, Jessica Lee 36, 37
Michalski, Amanda Rae 48
Miller, Hannah Jean 5, 32
Miller, Jessica S. 8
Miller, Nathan A. 45, 46
Miller, Stacy Marie 61, 67
Miresse, Kim Nicole 15
Moch, Susan D. 18
Mohr, Audrey Rose 36, 37
Montgomery, Adam Thomas 47

Montpetit, Jordan Teal 41
Morales, Christine M. 24
Morfitt, Scott Adam 47
Moris, Matthew Jerome 40, 42
Mork, Justin Eldon 51
Morrison, Joline P. 5, 29
Morrison, Mike 5, 29
Moser, Anne 49
Mothana, Salwa Mohammed S. 7
Moua, Alethia Paynia 71
Moua, Honey 71
Muehlenkamp, Jennifer J. 15, 60, 67
Mueller, Irene Celia 25
Mueller, Robyn Marie 24, 25, 26
Muhich, Kaija Michelle 60, 64, 70
Musier-Forsyth, Karin 24
Muskett, Douglas Alan 31

N

Nelson, Gregory Thomas 19
Nestingen, Katie Ann 9
Nett, Alex James 26
Nevins, Thomas David 45
Nicol, Joseph Robert 50
Niedermeyer, Robert Martin 15
Nohelty, Eric Peter 52
Nohr, Stephanie Anne 10
Nolan, Matthew Lee 69
North, Michael Alexander 26
Nushart, Nathan Neal 37
Nybroten, Kathleen A. 72
Nyggen, Emily Rose 4

O

Oleson, Chelsey Rita 69
Olson-Mc Bride, Leah 71
Ostrander, Phillip A. 12
Oswalt, Alice Evelyn 9
Ott, Austen Isaac 29, 30, 31

P

Parent, Elizabeth Marie 31
Pastrana, Jill Pinkney 5
Patchin, Justin W. 59
Pauley, Brian David 42
Pawlicki, Elizabeth Jade 3
Pearson, Benjamin M. 17
Peden, Blaine F. 59, 61, 62, 63, 65, 67, 68,
70
Pedersen, Kara Ann 49
Pederson, Jane M. 1
Peirce, Amber Ann 69
Pekarske, Lorrin Marie 72
Peloquin, Maria Sophie 16
Penkava, Michael R. 30
Pennington, Julia R. 58
Pepper, Amy Sue 48
Peppler, John William 51
Peterson, Geoffrey D. 58

Peterson, Nolan 17
Peterson, Rachelle Lynn 41, 43
Peters, Shawn Patrick 31
Philipps, Rachel Ann 18
Phillips, James A. 3
Phillips, Nicholas S. 13
Pierce, Crispin H. 19
Pierson, Kim W. 46
Pignotta, Geoffrey S. 36, 37
Polzin, Andrew James 38
Pomeroy, Jennifer Nichole 42, 44
Poncelet, Tarama Lynne 65, 67
Ponkratz, Benjamin Thomas 52
Porwoll, Matthew Michael 52
Potocnik, Brittanna Marie 50
Prahl, Justin Robert 51
Pratt, Jean A. 57
Prevost, Andrew Charles 50
Prince, Kathryn Joanne 42, 69
Prosser, Emily Carol 67

Q

Quigley, Katherine Emily 64, 67

R

Rajkovacz, Kari Marie 10
Randall, Alexandra Lea 50
Randy Lim 65
Rasar, Lee Anna 9, 18
Reed, Megan Michelle 72
Reetz, Nicholas Kyle 64, 67
Reid, Rebecca Nichole 1
Reinhold, Kevin Michael 53
Retherford, Kristine 4, 13
Reynolds, Kate Mastruserio 6, 7, 8
Rice, Andrea Lynn 68
Rice, Tehya Mai 68
Riehl, Manda R. 9, 29
Riel, Asia Marie Stephanie 24
Ring, Jake 33
Risdal, Megan Louise 20, 61, 67, 68
Ritchie, Laura Elizabeth 61, 67
Robinson, Josephine 8
Roets, Kelsey Jane 54
Roffers, Kimberly Jean 11
Ronchetti, Chad Arthur 34
Root, Geoffrey Stephen 45
Rosenberry, Samuel Ryan 50
Ross, April Christine 53
Ruff-Berganza, Sophia Ana 42
Running, Garry Leonard 34
Russell, Miriam Celeste 55
Ryan, Danielle Elizabeth 61, 67
Ryan, Katrina Lynn 63
Rynish, Phillip Paul 43

S

Sackmann, Matthew Louis 52, 55
Sadeghpour, Mitra M. 12

Salaway, Haley Marie 4
Salzwedel, Corey Joseph 54
Samelson, Vicki M. 4, 14
Sandell, Kallie Jo 7, 48
Sanislo, Teresa M. 1
Sawalani, Gita M. 10
Schaffer, David L. 51
Scharrer, Nicole Christine 69, 70
Scheer, Haley Nicole 59
Schemm, Isaac Marshall 5, 29
Schiedler, Sara 41, 43
Schilling, Kia Lynn 14
Schlegelmilch, Kelli Kathleen 56
Schleicher, Brandon Lee 56
Schmidt, Roxanne Stephanie 10
Schoen, Carl P. 31
Schoenike, Keisha Jo 17
Scholz, McKenzie Kristine 49
Schounard, Christine Ann 69
Schreiner, Emily Elizabeth 48
Schreiter, Nick 34
Schriner, Maureen M. 50
Schroeder, Mikayla Rae 7
Schultz, Gretchen Elaine 65
Schultz, Nicole 48
Schulz, Roger Thomas 56
Schumerth, Leah Katherine 43
Schwedler, Caroline Marie 4
Schwingel, Emily Ann 50
Seaholm, Michael Glenn 28
Sejini, Abdulelah Uthman 7
Severson, Alyssa Rae 12
Severson, Nessa 49
Severson, Nicholas John 73
Shane, Briane 24
Shane, Cara Marie 14
Shimon, Cara Mee 10
Showsh, Sasha A. 41, 43
Sims, Judy Rene 49
Sippert, Rebekah Kristine 31
Smith, Carter E. 22
Smith, Daniel J. 53
Smith, Daniel Lee Ruff 11
Smith, Kyrie Marie 71
Smith, Shelly Jean 72
Snider, Kaitlin Heather 44
Snobl, Zachary Robert 42, 44
Snyder, Kristen Kay 22
Soderlund, Laura Candace 48
Spencer, Christopher Brian 37
Spickerman, Kaleigh 40
Staats, Kathryn Ann 50
Stadler, Bethanie J. H. 46
Stadler, Marie A. 3, 4
Stecher, George J. 45, 46
Steffes, Amy 64
Stegemeyer, Torin Jeffrey 16
Steinmetz, Lora Kay 49, 51
Stevenson, Daniel E. 28
St. Germaine, Richard D. 22

Stittleburg, Kalan Clete 17
Stoeger, Shauna Lee 68
Streeter, Benjamin Salisbury 51
Strobush, Sarin Rheann 35
Strouthes, Daniel P. 55
Sullivan, Nicholas Ryan 32
Sundby, Matthew McKaskle 18
Sun, Yijing 7
Sutton, Maddie Jane 69
Sweeney, Stephanie Campbell 48
Syverson, Kent M. 38
Szymanski, Laura Jean 8

T

Tappe, Amber Serene 9
Taylor, Wilson A. 39
Terpstra, Glenn Allen 11
Tessner, Joshua 27
Thao, Sandy Mee 56
Thesing-Ritter, Jodi Marie 73
Theuerkauf, Wesley David 62
Thewis, Christopher 17
Thoftne, Amy Kay 69
Thompson, Paul Eric 32
Tierney, Joseph Michael 49
Tiry, Andrew Michael 64
Tomkovick, Charles L. 57, 58
Tong, Simei 9, 31, 32
Trobe, Matthew Patrick 21
Tschudy, Matthew John 25
Tubbs, James W. 58
Turner, Patricia R. 22, 23
Turner, Stephanie S. 20
Turtinen, Lloyd W. 40
Tusing, Mary 2, 69
Tweedale, Sarah Ashley 73

U

Ulrich, Sarah Ann 37, 38

V

Vandreeze, Bryan David 17
Van Galen, Ashley Brooke 26
Vang, Bee 46
Vang, Ka 71
Vang, Kou 73
Vang, Lee 73
Vang, Mai Neng 73
VanGuilder, Gary 15, 16, 17
Van Natta, Jessi Lyn 50
Vantussi, Valerie Lynn 63, 67, 70
Vasel, Justin Allen 46
Vinetas, Stephanie Drew 44
Voelker, Katya Verenice 38
Vogt, Kyle Timothy 29, 33
von Karolyi, Catya 66
Vue, Mai Nhia 71

W

Wagner, Paul J. 28
Waldvogel, Paul Nicholas 17
Walker, James S. 30, 33
Warren, Nicholas John 28
Waters, Matthew W. 21
Watson, Ann 73
Watson, Shevaun E. 6
Weber, Kevin Matthew 68, 70
Weichelt, Ryan D. 54, 55, 56
Weirich, Joseph J. 44
Weiss, Kimberly Elizabeth 18
Wellnitz, Todd A. 40, 42, 44
Wells, Amy Kristine 31
Wells, Kyle James 33
Whitfield, Scott B. 45
Wichman, Justin Jeffrey 24
Wickman, Ethan F. 12
Wiedeman, Ashlee Marie 65
Wiegel, Kurt N. 24, 25, 27
Williams, Allison Kay 58
Williams, Tristan Jay Newman 31
Wingad, Aaron David 53
Wisby, Matthew Nicholas 5, 29
Wise, Jacob Lee 35
Wiskow, Katie Marie 69, 70
Wittman, Kelcie Anne 16
Wojan, Christopher Michael 44
Wolf, Mary Elizabeth 73
Wonder, Kelly A. 21
Woodward, Nathan Matthew 16

X

Xie, Jibao 7
Xiong, Ong 42, 44
Xu, Yifei 23

Y

Yang, Hong 32
Yang, Thao 25
Yang, Vang 46
Yang, Ying 9
Yeager, Mariah Marie 14
Yelkur, Rama 57, 58
Young, Amy Isabel 54

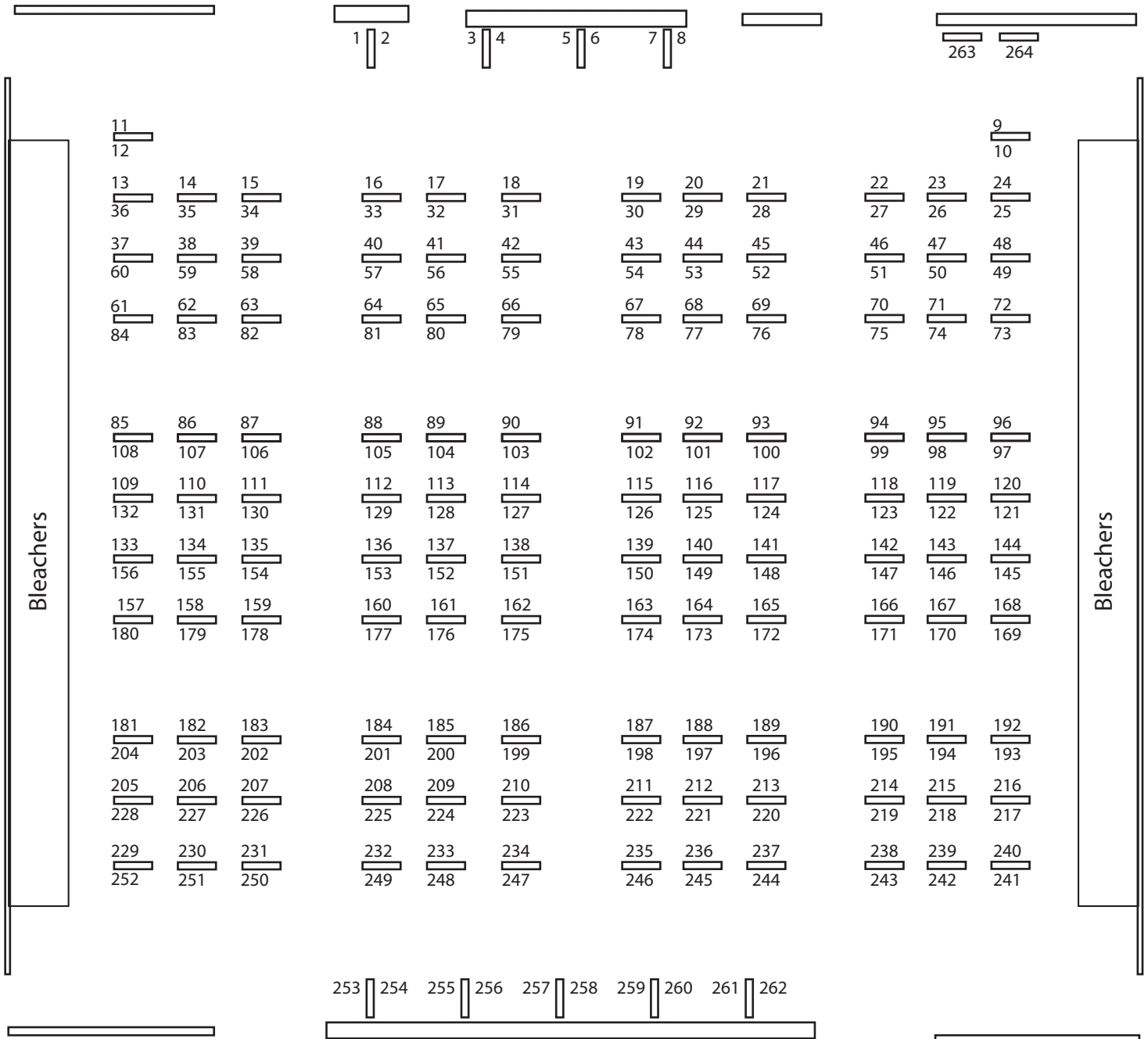
Z

Zaldarriaga, Iansa Lucia 9
Zank, Amber Jo 2
Zeitler, Ezra J. 54
Zenner, Michael Dennis 25
Zimmer, Benjamin David 13, 29
Zimmerman, Karl Joseph 60, 69

Map of Zorn Arena

Hibbard Hall

Garfield Ave



Parking Lot and Campus Mall

